

## Top incomes in Croatia and Slovenia, from 1960s until today

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World Inequality Lab

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## Abstract

The income tax data are used to show that the transition to the market economy has led to a moderate increase in income inequality in Croatia and Slovenia. Inequality increased in the 1990s and stabilized afterwards, with the increase in inequality being mainly driven by the rising shares of top income groups. This development is explained by the 'gradualist' transition course. In both Slovenia and Croatia, the slow privatization and the large public sector have contributed to the emergence of labour market institutions that procured low inequality social equilibrium. Further, the substantial importance of the state ownership of the corporate sector in Slovenia and the foreign and state ownership in Croatia has made the concentration of private capital income less pronounced at the top of the income distribution. Finally, new inequality series for Croatia and Slovenia are a valuable contribution in assessing the role and showing the importance of policies and institutions in shaping inequality.

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\* This work is based on the chapter entitled "After self-management: top income shares in Croatia and Slovenia, from the 1960s until today" by F. Novokmet (Novokmet 2017).

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## 1. Introduction

The fall of socialism in Eastern Europe has been one of the key junctures in recent world history. A decades-long sharp world dichotomy into two economic blocks ended, and some claimed that the world has reached the 'end of the history'. But in whichever direction the historical progress has been heading to, the fall of socialism signified in former Yugoslavia yet another in line of the twentieth century upheavals. The country became the sight of the greatest violent struggle in Europe after the Second World War. Following its breakup, seven new countries emerged on the world map.<sup>1</sup>

Former Yugoslavia makes an especially compelling case to study the evolution and determinants of inequality. The list of motivating questions is extensive, spanning from the country's unique socialist experience to its tragic end. The specific institutional design of the Yugoslav socialism or the institutional change to the market economy make Yugoslavia an interesting historical case study that might shed new light on the relationship between institutions and inequality (Acemoglu et al. 2005; Acemoglu and Robinson 2012). Further, the experience of Yugoslavia is interesting in the development context, as the country was characterized by considerable regional income disparities and displayed thus distributional patterns documented in the recent research on global inequality (Bourguignon 2015; Milanović 2016). The fact that these large disparities coincided with ethnic divisions, and that social cohesion was generally weak along many dimensions, makes the county's experience relevant for understanding many challenges that Europe is facing today.

This work analyses the evolution of inequality in two of once constituent Yugoslav republics, Croatia and Slovenia in the period from the 1960s until today. Croatia and Slovenia made a more developed north-western part of the country, with Slovenia enjoying the highest living standard in Yugoslavia and subsequently. Countries share many institutional and cultural traits, and many similarities in their experience allow us to use (for most of the period) a uniform analytical framework.<sup>2</sup> The countries are of similar area and population size and both are today members of the European Union.

We construct top income shares series for the period from the 1960s until today, covering thus the socialist period, the transition and its aftermath. To our knowledge, this is the first time that fiscal data have been used to analyse top incomes during the socialist phase in

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<sup>1</sup> Namely, Bosnia and Herzegovina, Croatia, Kosovo, Macedonia, Montenegro, Serbia and Slovenia.

<sup>2</sup> Both countries were until 1918 were a part of the Habsburg Monarchy.

Eastern Europe.<sup>3</sup> Top incomes were a concealed category in the socialist countries. No information was published and the subject was hence rarely treated. Yugoslavia was the only socialist country in Eastern Europe that had introduced the comprehensive income tax (on high incomes). We have found the corresponding statistics of this tax in the national archives in Croatia and Slovenia. Top income shares for the post-socialist period are estimated from the income tax microdata. As a result, the analysis covers the important time period, comprising the rise and fall of the 'market' reforms in socialist Yugoslavia, the crisis of the 1980s culminating with the breakup of Yugoslavia and the war in Croatia, and the transition to the market economy.

We find that top income shares in Croatia and Slovenia moderately increased in the course of the transition to the market economy. During socialism, the top 1 per cent income share increased following the 'marketization' reforms in the late 1960s, and more notably declined with the termination of reforms in the early 1970s. Looking at the development within the top percentile, we find that income shares of lower constituent groups of the top percentile (the top 1-0.5 per cent or top 0.5-0.1 per cent) largely induced this fluctuation, while the very top income groups (the top 0.1 per cent), showed marked stability. We relate different evolution of top incomes to changes in the institutional design of the Yugoslav socialism (see more Novokmet 2017). On the other hand the transition was featured by the moderate increase in top income shares, with Slovenia displaying the most limited increase among former socialist countries. The rise in inequality was mainly induced by the growing wage dispersion. The upward adjustment of top shares was immediate in Slovenia, while in Croatia the increase occurred in the late 1990s. Top incomes have stabilized in both countries from the early 2000s.

This development should be understood in the light of the most 'gradualist' transition course (in particular in the case of Slovenia) among former socialist countries in Eastern Europe. This course has led to the emergence of the specific institutions that have contributed to the moderate rise in inequality during the transition. The slow privatization and still substantial state ownership of the corporate sector (which is in Slovenia the highest among former socialist countries) have plausibly contributed to the emerging institutional setting, which, coupled with the legacy of the social dialogue from the self-management and strong social partnership, procured low inequality equilibrium in both countries. Finally, the substantial importance of the state ownership of the corporate sector in Slovenia and the foreign and state ownership in Croatia has made the concentration of private capital income less

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<sup>3</sup> The income tax data for China are available from 2006, and have been exploited by Piketty, Yang and Zucman (2017).

pronounced at the top of the income distribution. Relatively lower capital share could be also related to the higher bargaining power of labour.

Finally, charting inequality patterns in Croatia and Slovenia has been rewarding in international perspective, especially for the comparison of the post-communist inequality experience across countries. Most importantly, markedly divergent post-communist inequality patterns point to the central importance of policies and institutions in shaping inequality (e.g. Novokmet et al. 2018).

This paper is organized as follows. Section 2 describes the data and the methodology used. Section 3 presents long-term income inequality trends in Croatia and Slovenia, while section 4 offers explanations of the observed patterns. Section 5 presents a detailed technical analysis of top incomes. In Section 6 we compare the income tax data and survey data. Section 7 provides international comparison. Section 8 concludes.

## 2. Data and methodology

Top income shares series for Croatia and Slovenia are constructed using the income tax data. The data for the period of socialist Yugoslavia come from the statistics of the tax on the total personal income of citizens. This was the only tax on the total income in the former socialist block (Jelčić 1983, p. 219). In Yugoslavia, specific income sources were subject to schedular taxation, but individuals whose total income exceeded certain exemption threshold<sup>4</sup> were subject in addition to the personal income tax on their total income. This, however, implied that only a limited number of individuals were subject to the tax, and as a result reported in the tax statistics, compelling us to focus on income shares of groups at the top of the income distribution. Schedular taxation of personal incomes was proportional, in line with the dictum “to each according to his work” (itself included as a constitutional category), while the tax on total income had steep progressive structure (assuming thus a redistributive role;<sup>5</sup> with rates ranging from 3% to the top marginal rate of 70%). For the post-socialist period, we use personal income tax microdata. Croatian series are constructed from the micro files of PIT taxpayers for the 1997-2013 period.<sup>6</sup> For Slovenia, we use top income

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<sup>4</sup> Two times the average wage in the social sector until 1979; three times afterwards.

<sup>5</sup> The tax on the total income aroused much public interest, which was largely concerned with the equity issues (Jelčić 1983). Although distributional concerns were the main reason of its introduction, the number of taxpayers subject to the tax has been falling with time.

<sup>6</sup> We are especially grateful to Ivica Urban from the Institute for Public Finance in Zagreb, who computed the estimates for 1997 and 1999 on the basis of personal income taxpayers samples (see Urban 2006).

shares series for the 1991-2012 period from the PIT microdata and tabulations of all PIT taxpayers.<sup>7</sup>

The tax unit in Croatia and Slovenia, both in the socialist and the post-socialist period, has been the individual. Top income groups are defined in proportion to the total number of adults (above 18 years of age) in each country. The corresponding data is found in censuses and the annual statistics of population. Our preferred income concept is that of gross income, before personal deductions and personal income taxes. The total annual income during socialism (hr. *ukupni godišnji čisti prihod*; sl. *skupni dohodek občanov*) was defined as the sum of all personal incomes after social contribution and schedular taxes, but before taxes on the total personal income of citizens. However, schedular taxation of personal incomes applied proportional rates,<sup>8</sup> thus preserving the monotonic relationship to the gross income distribution.<sup>9</sup> The access to the microdata for the recent period allow us the use of various income concepts, as well as the estimation of both the pre-tax and the post-tax income shares.

The new income tax legislation in the 1990s replaced the dominant schedular taxation with the taxation of the comprehensive (Haig-Simons) income concept, previously applied only to top incomes. The coverage of income sources did not undergo a fundamental change with the change of the political regime and, as a result, there is continuity in the coverage of the top incomes. Taxable income in the socialist period comprised income from employment, part-time work, pensions, income from agriculture, income from crafts and other independent activities, income from intellectual services and authorship rights, income from buildings and other property, and income from property rights. Slovenia introduced the taxation of capital income (dividends and share in profits, capital gains) with the 1991 tax reform, while Croatia taxed capital income only during the period from 2001-4 and since 2012. Additional details are provided in the appendix.

### 3. The long-term evolution of income inequality

Figure 1 presents the long-term evolution of national income per adult in Croatia and Slovenia together with the average for Austria, Germany and Italy (termed Western Europe) – countries with which both Croatia and Slovenia have traditionally had the most intense

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<sup>7</sup> See appendix for the explanation of the data sources.

<sup>8</sup> Roughly similar on different income sources (see appendix)

<sup>9</sup> Thus, not raising the problem of re-ranking.

economic relations. Today, living standards in Croatia and Slovenia are respectively 55% and 75% per cent of the Western European levels. The growth experience since the fall of socialism has been especially disappointing in Croatia, where the pre-transition level was only reached in the early 2000s. In general, the absence of convergence to Western European levels has been one frustrating feature of the transition process to the market economy and its aftermath. In fact, the income gap between Western Europe and Croatia and Slovenia is roughly the same as it had been in the late 1970s (thereafter the socialist growth came to a halt and the gap widened). After the ‘transformation’ recession, growth rates in Croatia and Slovenia have not been high enough for them to catch up with Western Europe. Compared to other former socialist economies, Slovenia and Croatia once enjoyed comparatively high living standards, but not anymore, as most former socialist countries in Central Eastern Europe have surpassed (Croatia) or almost caught up (Slovenia) with them.

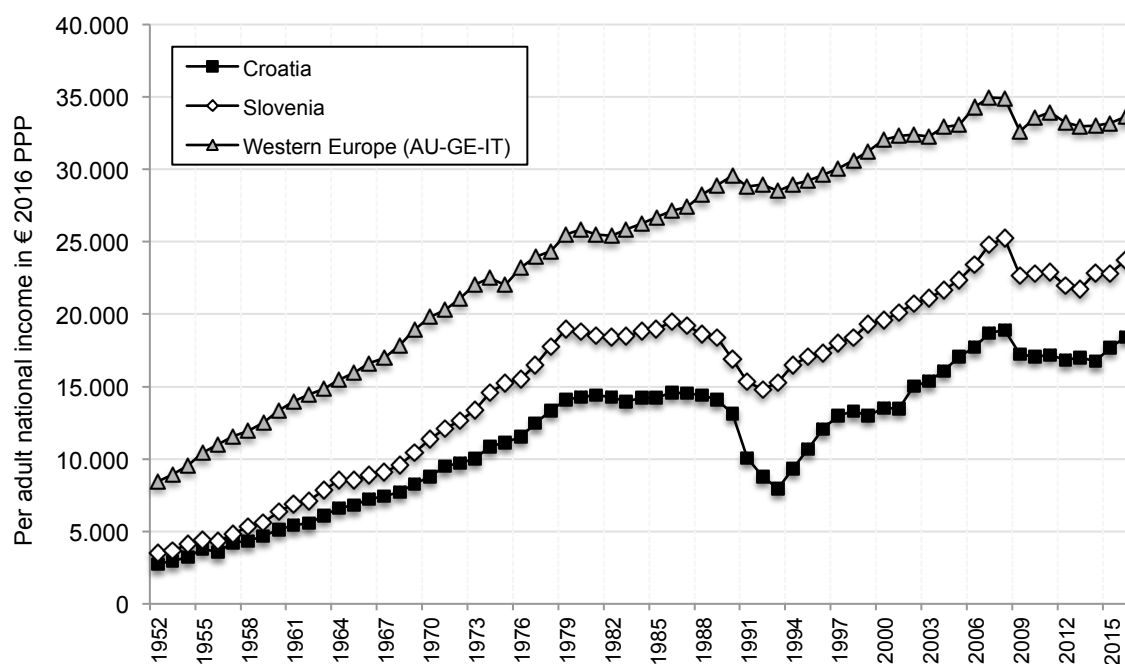


Figure 1: The long-term growth of national income per capital

Source: Croatia and Slovenia: 1990-2016 WID; backward extrapolation from Maddison (2013)

Note: Western Europe: unweighted average of Austria, Germany and Italy

The sluggish convergence is familiar from former Yugoslavia, where once poorer Yugoslav regions could not catch up with richer Slovenia and Croatia. Namely, Yugoslavia was characterized by considerable differences in economic development between its republics and various regions. As a result, the income inequality was to the greatest extent determined by large regional income disparities, with the ratio of 7 to 1 between the most developed Slovenia and the least developed Kosovo (Milanović 1990). Thus, while income inequality

was, as a consequence, higher in Yugoslavia than in socialist countries in Central Eastern Europe, inequality in Slovenia or Croatia did not differ substantially from that in Hungary, Czechoslovakia or Poland (Atkinson and Micklewright 1992).<sup>10</sup> In particular, the state policy aimed to neutralise regional differences by pushing for greater equality in more developed republics and enterprises (Flakierski 1989; Orazem and Vodopivec 1995). Although constitutional changes in the 1970s gave republics considerable autonomy in economic and fiscal matters, this largely meant only a transfer of authority from federal to republic party organs, and the state intervention into the economy and income distribution remained pervasive.

Figure 2 shows the evolution of the income distribution in the Slovenia since 1991 until today. It can be seen that inequality in Slovenia was relatively low at the outset of transition. During the transition, the major changes occurred at the top and the bottom of the distribution, while middle 40 per cent income share has remained stable (the income share of the middle 40 per cent equalled 45% at the outset of the transition to market economy as in 2012). The top 10 per cent gained what the bottom 50 per cent lost. This is in line with findings of Milanovic and Ersado (2010), who find that in the transition countries an increase in shares of top deciles and a decline of bottom deciles, while intermediate deciles were generally not affected.<sup>11</sup>

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<sup>10</sup> Accordingly, relatively higher income inequality in the Soviet Union was to a considerable extent due to larger regional differences in average income.

<sup>11</sup> But modest growth performance should be kept in mind when analysing the development of inequality, especially with respect to perceptions of inequality or egalitarian leanings. For example, egalitarian attitudes are presumably still ingrained in social norms in Slovenia and Croatia (Malnar 2011; Burić and Štulhofer 2016), and it would be interesting to know to what extent this is due to some older legacies and their long-term persistence (Županov 1977), or if it is related to new experiences of the post-transition societies. For example, there is a notably higher divergence between (low) measured and (high) perceived inequality in former socialist countries (Gimpelson and Treisman 2015). In Croatia, for example, despite a moderate increase in inequality, a sluggish growth and traumatic experiences of the war, the transformation and non-transparent privatization could have translated into higher sensitivity and negative perceptions of top incomes as unfair and undeserved (Nestić 2002, p. 612; Franičević 2004). This work shows that this divergence is not due to critical mismeasurement of top incomes in surveys.



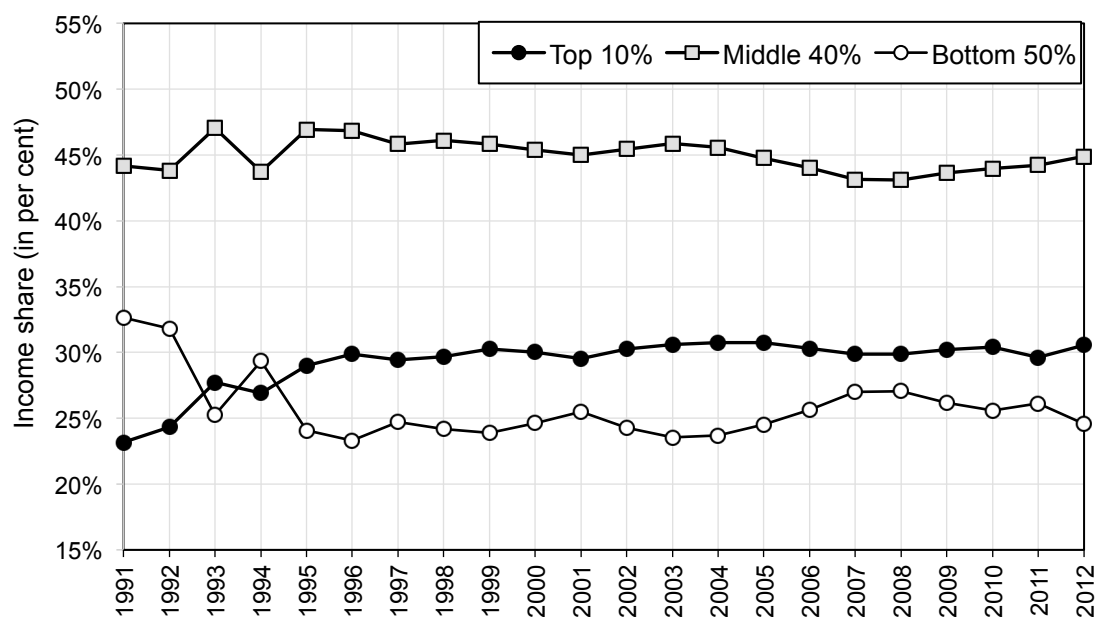


Figure 2: The evolution of the income distribution in Slovenia

Source: authors' computations based on the income tax data

Figure 3 shows the long-term evolution of the top 1 per cent income share in Croatia and Slovenia from the end of the 19<sup>th</sup> century until today. In the course of the 20<sup>th</sup> century, inequality in Croatia and Slovenia followed more closely the L-shaped evolution (Atkinson and Piketty 2007). The socialism reduced the pre-WW2 inequalities and there was a moderate rise after its fall. There is an indication that top 1% slightly rose following the 'marketization' reforms in the late 1960s, and fell more notably with the termination of reforms in the early 1970s.

The evolution of the top percentile share in Slovenia suggests that the transition from socialism to the market economy was accompanied by the immediate rise in top shares. It further shows that the increase in top shares was sharpest during the first transition years (1991-4). The top 1 per cent share continued to rise throughout the late 1990s and stabilized eventually in the 2000s. Data for Croatia are not available for the early 1990s, and we observe only a more notable rise from 1997 until 1999, while - as in Slovenia - the top 1 per cent stabilized from the early 2000s. During socialism, on the other hand, the Croatian top percentile saw a more notable fall after the termination of marketization reforms and in the course of the subsequent institutional change of the system.

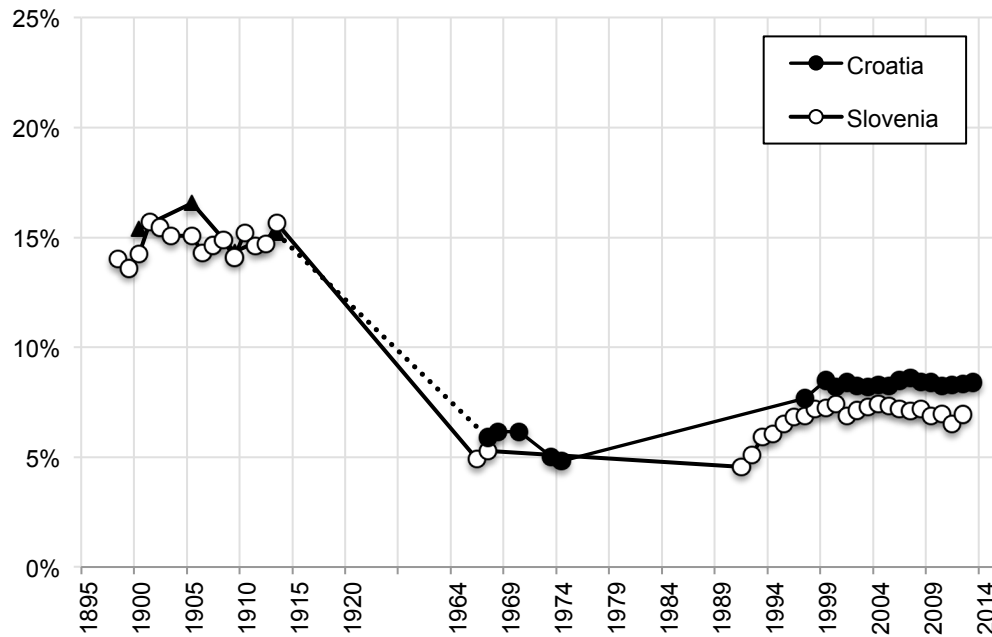


Figure 3: The long-run evolution of top 1% income shares in Slovenia and Croatia

Source: authors' computations based on the income tax data

Note: Series for Slovenia before WW1 refers to the Habsburg province of Carniola; for Croatia to the Habsburg province of Dalmatia

Figure 4 looks at the constituent groups of the top percentile in Croatia from 1970 until today. The figure suggests a divergent experience. The evolution of the top 0.1 per cent in Croatia shows greater stability during the socialist period. There was a relatively smaller fall in the early 1970s, a slight recovery in the late 1970s, and the general stability throughout 1980s. Both in Croatia and Slovenia the top 0.1 per cent experienced the strongest rise during the transition in the 1990s. The 'bottom' constituent groups of the top percentile experienced a more notable fall in the early 1970s than the top 0.1 per cent.

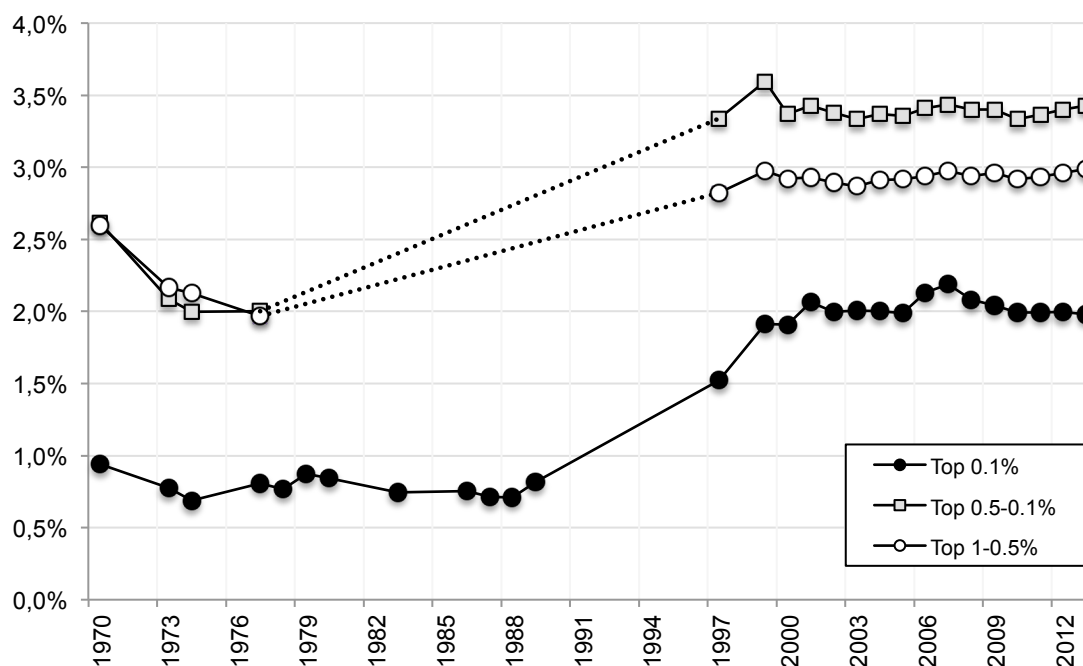


Figure 4: Top income shares in Croatia: top 1-0.5, top 0.5-0.1 and top 0.1 per cent  
Source: authors' computation based on the income tax data

### 3.1. The period 1898-1990

Figure 3 shows that top income shares were at notably higher level at the beginning of the 20<sup>th</sup> century and overall displayed the L-shaped long-run development.<sup>12</sup> In order to explain higher top income shares at the beginning of the 20<sup>th</sup> century, it is useful to look at the income composition of top shares. Figure A3 compares the composition of the top 5% in Slovenia at the beginning of the 20<sup>th</sup> century, in 1910, and right at its end, in 2000.<sup>13</sup> Besides assuming higher level (around 30% in the 1900s, around 20% today), a half of top quintile's incomes during the Habsburg period were derived from unearned sources, or roughly capital income, while today, in contrast, almost 90 per cent of top quintile's income is made of earnings. This would be consistent with the top incomes literature, which finds that top income shares were at very high levels at the beginning of the 20<sup>th</sup> century due to strong concentration of capital income at the top of the income distribution. Furthermore, it is reasonable to assume that capital income accounted for still more important part of the

<sup>12</sup> As a robustness check we look only at the concentration at the top indicated by the evolution of the inverted Pareto-Lorenz coefficient (the Pareto coefficient estimated from the Lorenz curve; see Atkinson 2007), which is generally found to be a good indicator of changes in top income shares (Atkinson et al. 2011). According to it, the shape of the top tail has changed more in line with the L-evolution evolution, showing a moderate increase after the fall of socialism. In Slovenia inverted Pareto coefficient equalled 2.3 at the beginning of the century, 1.3 during socialism, and rose to 1.65 in the recent decade.

<sup>13</sup> For the pre-WW1 period there is only reported income sources for all taxpayers. We show 1910 because in that year the number of taxpayers subject to personal income tax equaled 5 per cent of the total control population.

income of the higher income groups before WWI.<sup>14</sup> For example, although the land income made one tenth of the income in Slovenia (Carniola), the huge land inequality in the hands of the Habsburg nobility (such as the Auersperg family) made it more concentrated at the top. The nobles had regularly augmented it by assuming important roles in industrial branches such as mining and metallurgy (especially ironworks) (Hočevar 1965). In particular, the construction of the Vienna-Trieste railway in the middle of the 19<sup>th</sup> century stimulated commercial exploitation of the rich Slovenia's ore and coal deposits (Lampe and Jackson 1982, p. 74).<sup>15</sup> In Dalmatia, on the other hand, elites were largely constituted of the urban merchant strata (Novak 1943; Allcock 2000, p. 173).

The Second Yugoslavia was created after the Second World War under the communist rule. The immediate post-war arrangement closely imitated the Soviet model. As a result, the Yugoslav communists engaged wholeheartedly in creating preconditions for the construction of the socialist society. The private property ownership was largely abolished in the post-war nationalizations, expropriations and the land reform. A tight central control of the economy made possible the sharp earnings compression.

The social structure in Yugoslavia markedly changed after WWII. A decisive impact of the communist accession to power on concentration at the top may be inferred from the fact that affluent social groups were literally wiped out from the socialist reality. This is evident in the case of the *haute bourgeoisie*, which occupied the top of the distribution in the First Yugoslavia (Vinski 1967, 1970), but was wholly expropriated after WWII.<sup>16</sup> High-salaried social groups were also hit strongly by the communist policies. Immediately following their accession to power, the communists enacted policies that led to strong earnings equalization. These were motivated both by the immediate economic challenges, such as providing means to reconstruct and expand industry, as well as to eliminate 'unjust' inequalities from the pre-war period. Further, there was an especially sharp compression in the pay differential of civil servants and other white-collar workers, such that, as pointed by

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<sup>14</sup> This might be concluded from the lower proportion of earnings in the total taxpayers' income in previous years, when the smaller proportion taxpayers was subject to the personal income tax.

<sup>15</sup> Unfortunately, we could not find tax data for Croatia-Slavonia (then in the Hungarian part of Austria-Hungary), but it is reasonable to assume that there were many similarities to Slovenia, with even more pronounced commercial orientation of the big landlords (Stojsavljević 1965, 1973).

<sup>16</sup> The same fate beset middle and small entrepreneurs, while the new land reform eliminated large and middle-size landholdings. The private sector was allowed exclusively in the small-size agriculture (the size of the private landholdings was limited to 10ha) and the small-scale self-employment (limited to five non-family employees). Yet, as Lydall (1984, p. 272) notes, the average size of the private farm in Yugoslavia was much smaller than the maximum of 10 ha and self-employed very rarely employed the non-family labour. The latter (the 'petty-bourgeoisie') were in addition strongly discouraged and subject to constant ideological attacks.

Flakierski (1989, p. 4), “manual workers achieved near-parity of pay” with them.<sup>17</sup> Besides, the mass education and large-scale industrialization benefited mostly manual workers, which made the support base of the new regime.

One could argue that the ‘pact of friendship’ between the workers and the Party was still further cemented by the introduction of the self-management and the egalitarian ideology set down as its seal of approval. The Party assumed for itself the role of defending the interests of workers, and for this aim, it did not refrain from the constant interference into the economy. In consequence, tendencies towards income dispersion were reluctantly accepted and condemned as a deviation from the ideals underpinning the Yugoslav self-management. ‘Yugoslav egalitarianism’ was a complex amalgam of institutional arrangements, prevailing social norms, historical legacies and the political control. Socialism undoubtedly showed lower toleration for wider income dispersion, but egalitarian tendencies could be also seen in part as institutional arrangements, ideological ‘indoctrination’ (e.g. Kornai 1992, p. 311), even a reaction to quite idiosyncratic income determination process in the Yugoslav self-management, or a tool of political control.

The evolution of top income shares in Croatia and Slovenia during the self-management period was to a considerable extent shaped by the (idiosyncratic) developments of the institutional framework in Yugoslavia (see Novokmet 2017, ch. 4.1 on the historical setting of self-management and its impact on income inequality).<sup>18</sup> Correspondingly, there was an increase in top shares following the marketization reforms in the late 1960s (Figure 3). In particular, the rising importance of managers and technicians (popularly dubbed as ‘technocrats’) in the economy was a logical follow-up to the 1965 reform, as decentralization and the greater business autonomy directly called for an increased personal initiative, expertise, and responsibility for major business decisions. However, economic decentralization and limited democratization challenged the Party’s political and economic monopoly and induced its reaction.<sup>19</sup> The conservative backlash in the early 1970s led to the termination of the Yugoslav ‘laissez-faire’ socialism. The new institutional arrangement

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<sup>17</sup> Civil servants commanded high differential in the interwar period, both due to the generally scarce skilled labour as well due to their traditionally high status.

<sup>18</sup> Thus the system exerted a divergent extent of the government wage administration and/or intervention to specific social groups. It appears that top income groups directly engaged in the real economy were more susceptible to the abrupt state intervention (comprising lower constituent groups of the top percentile such as the top 1-0.5 and 0.5-0.1 per cent) than those in the ‘administrative’ sphere, which dominantly made the top 0.1 per cent. Novokmet (2017, ch. 4.2) looks in more detail at the social composition of these groups. A different social composition of top incomes in the socialism implied that the peculiar idiosyncratic character of the Yugoslav institutional framework affected top income groups in quite heterogeneous manner.

<sup>19</sup> The market reforms crystalized top elite groups, largely formed in the opposition to the communist nomenklatura (Novokmet 2017).

fostered egalitarianism and led to an immediate income levelling.<sup>20</sup> As a result, there was a compression of the income distribution and the fall of top inequality after 1971 (Figure 4; see more below on the development of the wage distribution).<sup>21</sup> The Party, through its republic and local organs, regained control of the economy.

However, the communist apparatus could not have precluded a collapse of the communist regime once the prolonged economic crisis and a rise of unemployment put an end to ‘the pact between workers and the party’ (Woodward 1995). Communists eventually lost their legitimacy among the working class. They rapidly lost general support amid the prolonged economic hardship (e.g., massive strikes in the late 1980s), which paved a way for party’s re-liberalization and gradual democratization. It led eventually to pluralistic elections.<sup>22</sup>

### 3.2. The Transition and its Aftermath

The approaching end of socialism in Eastern Europe was probably inevitable once it became clear that the race with the capitalist world was lost. There was a widespread support for the return to capitalism. The long stagnation of the 1980s and the everyday experience of the system’s flaws had persuaded majority that no future is possible of reforming the system. To the vast majority of people the change was rationalized by the recognition of what Kornai (2006, p. 211) believes to be a robust fact, that “capitalism is more productive, more innovative, with a faster growth rate that produced a higher increase in the standard of living”. On the other hand, some countries related the fall of communism with the national independence, a description that fits to a large extent the experience of Croatia and Slovenia. The majority of the population in Croatia and Slovenia believed that they were in discriminated or forlorn position and shared many grievances against the union. These feelings eventually led to independence from Yugoslavia.

A development of the income distribution in transition economies was equally complex and shaped by a multitude of factors (e.g., Mitra and Yemtsov 2006). To put it simply, it was influenced both by the rising earnings dispersion and the concentration of the private

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<sup>20</sup> Flakierski (1989, p. 13) thus comments that “by 1972 the state organs had imposed controls over the distribution of income per worker between personal income and internal funds, and over the distribution of net personal income among employees.”

<sup>21</sup> The system of taxation was fully decentralized, while attempts to restore some of the federal authority faced resistance from the republics. The republics did not push in the direction of further marketization once the federal power was substantially restrained.

<sup>22</sup> The liberal party leadership of Slovenia in the 1980s actually played a key role in achieving the independence of Slovenia, and probably this was a key for its political legitimation and eventual election successes.

property income.<sup>23</sup> Milanović (1999) shows that the rising wage concentration was the most important factor behind the increase in income inequality during the transition. Although the share of wages in the total personal income decreased, the wage concentration sharply increased. Compressed socialist wage grids were abruptly loosened, and market forces acted on labour market distortions. Rutkowski (2001, p. 33) finds that developments at the distribution tails caused a rise in earnings inequality during the transition, but that the overshooting of the top tail had the dominant effect. Most importantly, the rising income shares of the top groups largely induced an increase in income inequality (Milanović and Ersado 2010). Consequently, top incomes have assumed the most prominent role in the development of inequality during the transition from socialism to capitalism.

This is consistent with the finding that top incomes shares saw the largest increase in Slovenia during the transition to market economy (Figures 2 and 3). Figure 5 shows that earnings have been the main income source of top income shares, as well as the main driver of top income development in Slovenia. Business and property income,<sup>24</sup> on the other hand, make relatively small part of the top percentile's income. The figure further suggests that top earnings rose until 2000 and stabilized afterwards. Other researchers have equally documented stability of the income distribution from the 2000s, in the first place Stanovnik and Verbič (2014), who use the same data source.

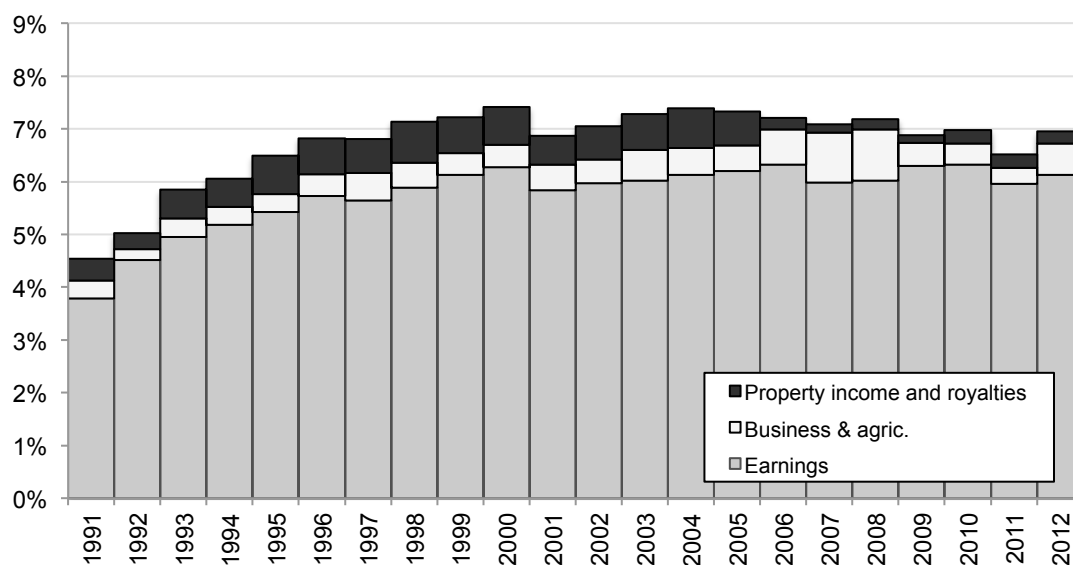


Figure 5: Income sources of the top 1 per cent in Slovenia

Source: authors' computation based on the income tax data

Note: property income does not include dividends from 2006

<sup>23</sup> Notwithstanding different privatization strategies (e.g., see for property income Grosfeld and Hashi 2003; for earnings Rutkowski 2001)

<sup>24</sup> Royalties make almost all 'property income and royalties' at the start of the transition, and still half of it in mid-2000.

A similar picture is documented in Croatia (Figures 3 and 4). Figure 6 shows the composition of the top decile by the specific income source in Croatia. Here equally the employment income has been the predominant income source for top income groups. It accounts for almost 90 per cent of the top 10-5% income and its importance declines fairly moderately with income rank, still accounting for almost 70% of the income of the top 0.1-0.01 per cent group. Wages are displaced by capital income (excluding capital gains) as the dominant income source only for the top 0.1 per cent and higher groups. Although the very richest Croatians rely dominantly on capital income, they still derive over a third of their income from employment.

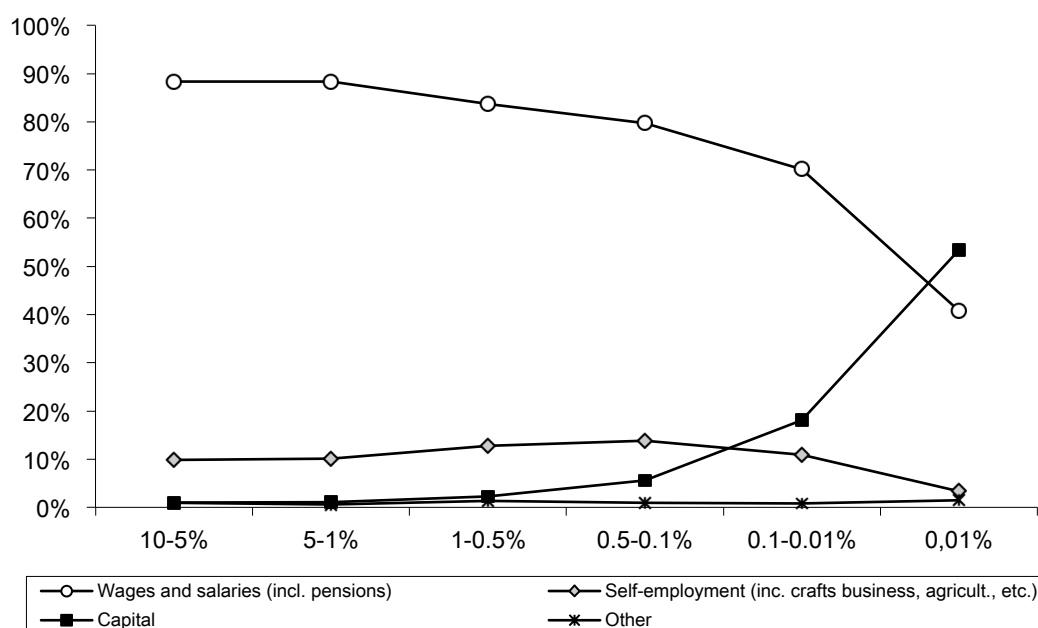


Figure 6: Income composition of the top decile, Croatia in 2013

Source: authors' computation based on the income tax data

Note: Wages and salaries are after SSC paid by employees

## Wage distribution development

Having identified rising wage dispersion as the main force behind the rise of top income shares in Slovenia and Croatia, we look next in more detail at its development. The enterprise survey is an especially revealing source on the long-run wage distribution (see appendix). Figure 7 shows the evolution of the upper and the lower part of the wage distribution from the employer survey in Slovenia since the 1960s – the upper tail depicted by the evolution of the 90th percentile (P90) and the 95th percentile (P95), and the lower by the evolution of the 10th percentile (P10) (percentiles are expressed as a percentage of the median wage (P50)). The series for the socialist period show the wage compression after the



termination of ‘marketization’ in the early 1970s, primarily induced by the reduced dispersion of the upper part of the distribution.<sup>25</sup> The largest increase in wage inequality occurred from 1987 until 1991/2, when there had been both a sharp rise in P90 and P95, and a fall in P10. The bottom part of the distribution stabilized afterwards, but we observe a ‘fanning out of the top’, with the rise of P95 outpacing that of P90. Orazem and Vodopivec (1995) explain a substantial rise of inequality during 1987-91 by the “dismantling of government controls”. The evolution of P90 and P95 indicates indeed a broad stability since the start of the present century, as observed in the tax data. Both data sources seem to suggest that earnings distribution already reached new equilibrium level by the late 1990s.

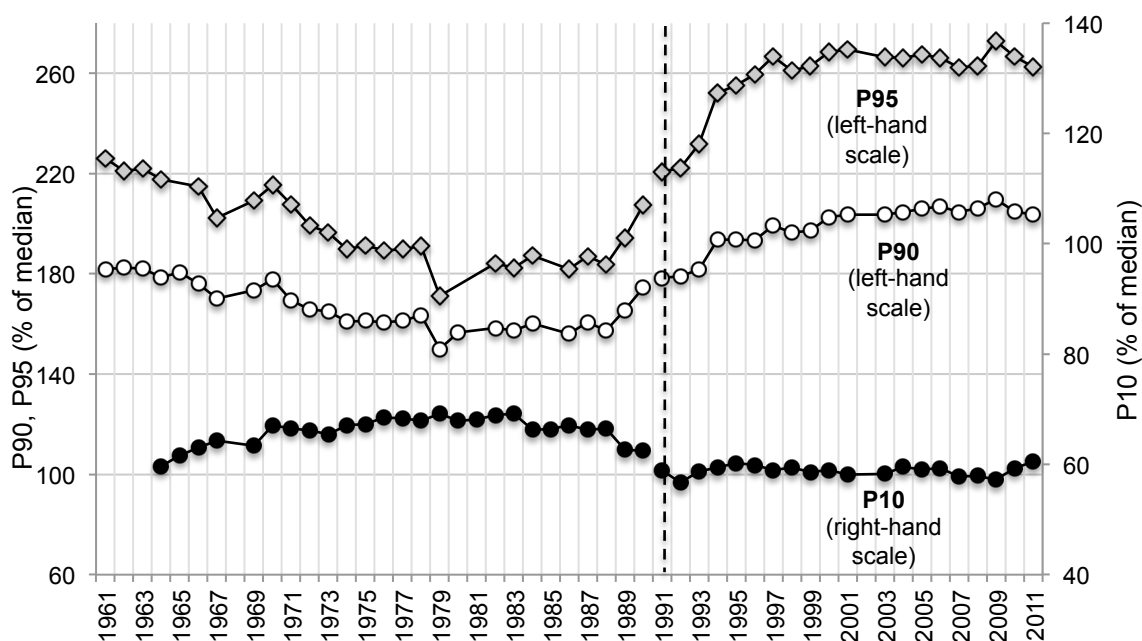


Figure 7: Earnings distribution in Slovenia based on the Employer survey

Source: authors' computation using the Pareto interpolation; from the Statistical Yearbook of Slovenia (various eds.)

Note: The break indicates a shift from net to gross earnings distribution (see Appendix)

For Croatia, unfortunately, the earnings survey according to gross earning concept is not available for the post-socialist period. However, the alternative evidence suggests similar evolution of the wage distribution in Croatia and Slovenia (see appendix). And equally as found in Slovenia, there has been the ‘fanning out’ of the top in Croatia. Top earnings constructed from the income tax data show that the growth of real average earnings in Croatia was stronger for higher earnings shares (Figure 8; see in Table A4 quite similar top wage shares in Croatia and Slovenia). The growth of earnings of the very top earning groups, such as the top 0.1% or the top 0.01%, significantly outpaced the rise of the ‘lower’ top

<sup>25</sup> This is also consistent with patterns for top incomes documented in Croatia from 1970 (Figure 4)

earnings groups. In general, these trends are in line with the fanning out of the top documented worldwide (Atkinson 2008).

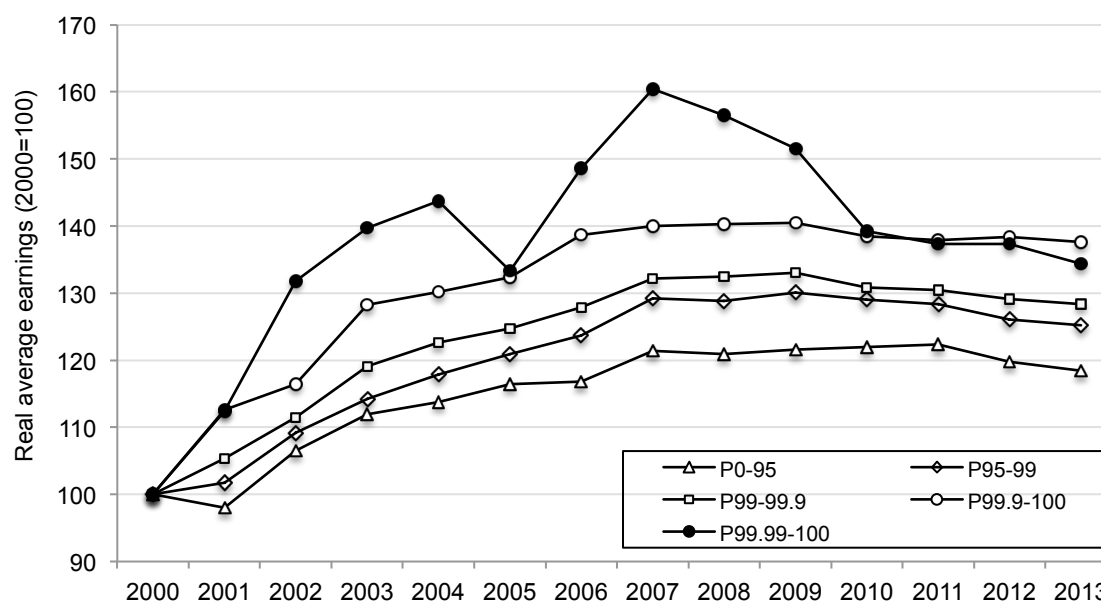


Figure 8: Development of real average earnings of top earning shares, Croatia 2000-13

Source: authors' calculation based on income tax data; deflator

In the international comparison, it is especially interesting to compare the wage distribution development in Slovenia and Croatia to that in other ex-communist countries in Central Eastern Europe. As noted, comprehensive enterprise surveys carried out in socialist countries allow us to chart the wage distribution over the longer time span (Atkinson and Micklewright 1992; Atkinson 2008; Rutkowski 2001). Figures 9a and 9b show that the top earnings decile saw an immediate adjustment in Central European countries with the inception of the transition to the market economy. We can see that the top decile (relative to median) assumes today in Slovenia, together with Poland, an intermediary position, above the Czech Republic but below Hungary. But there has been equally a rising dispersion in countries that pursued the 'gradual' privatization, such as Poland or Slovenia, and the 'big bang' privatization, such as the Czech Republic. As noted above, probably the common factor has been the relaxation of the government controls in the wage setting.<sup>26</sup> On the other hand, the lower part of the distribution has been less dispersed in Slovenia than in other countries. This should be related to institutional framework and government measures (e.g., a stronger increase in minimum wage in 2010), at which we look below.<sup>27</sup>

<sup>26</sup> A sharp rise of P90 relative to median in Slovenia and Poland in the late 1980s was probably in part related to the hyperinflation in former Yugoslavia and Poland (Bulir 2001; Orazem and Vodopivec 1995, p. 228).

<sup>27</sup> Similarly, a higher volatility of P10 in Hungary after 2000 is related to the government interventions (e.g., doubling of minimum wage in 2000/1; Atkinson 2008, p. 245).

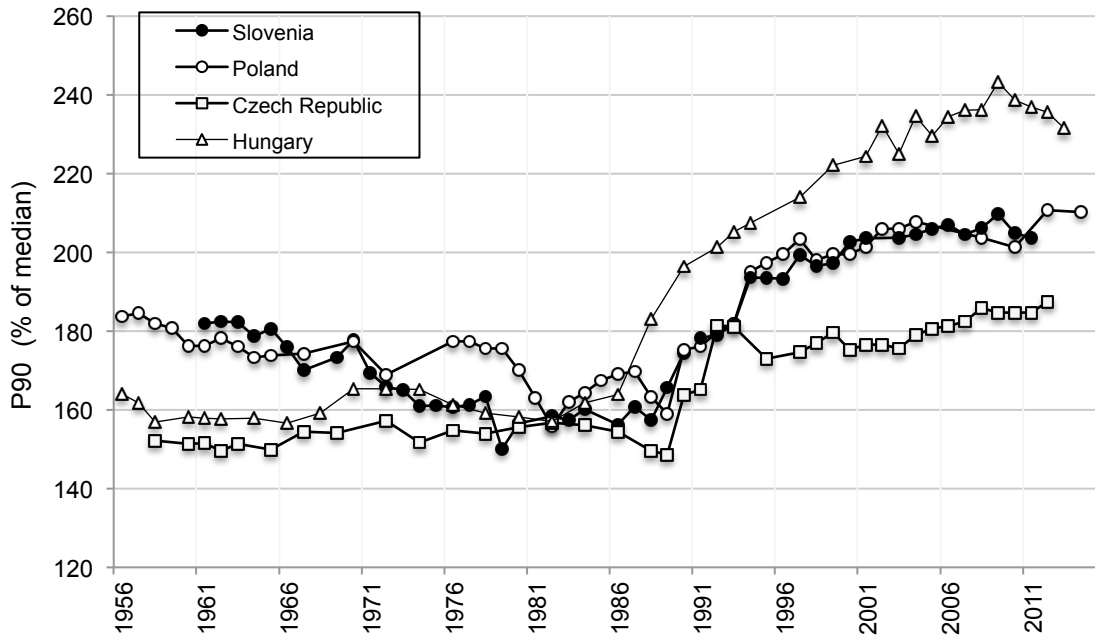


Figure 9a: The upper part of the earnings distribution in CEE countries, 1956-2014

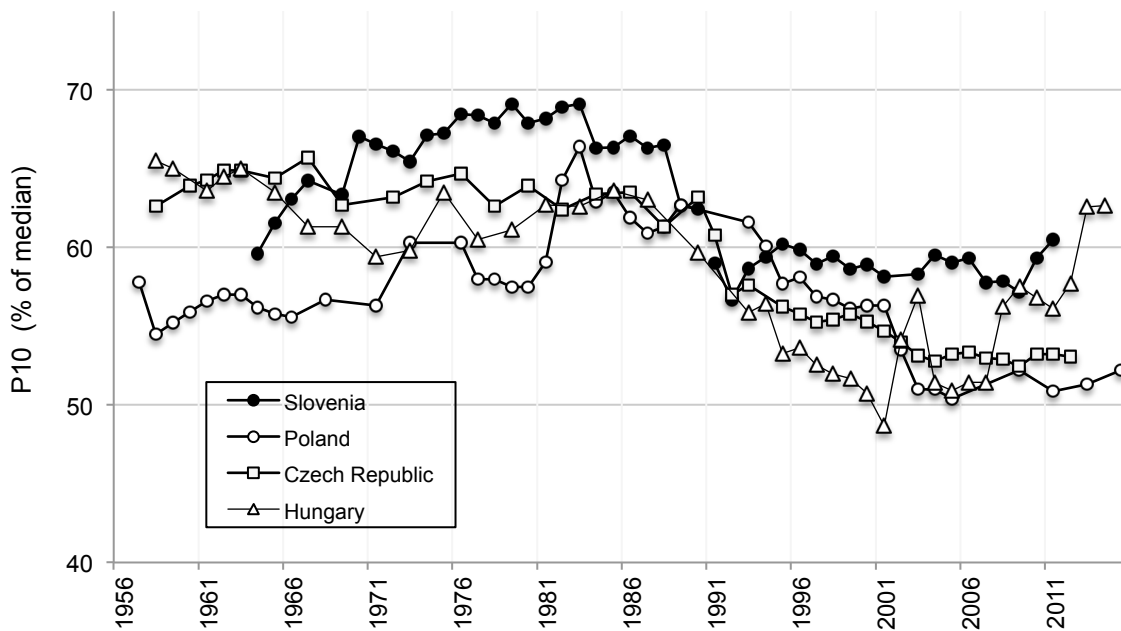


Figure 9b: The lower part of distribution in CEE countries, 1956-2014

Note: gross earnings distribution; Slovenia 1961-1990 and Poland 1970-1990 net earnings distribution

Source: Slovenia: authors' computation using Pareto interpolation; other countries: Atkinson and Micklewright 1992, Atkinson 2008, OECD database

## 4. Looking for explanations:

### The ownership structure and labour market institutions

The most popular explanation of the rising earnings dispersion during the transition to market economy has been that decentralization of the wage setting process substantially increased educational returns, strongly suppressed during the socialist period (Orazem and Vodopivec 1995, Švejnar et al. 2000, Keane and Prasad 2006). To the point that higher education is translated into higher productivity, the transition implied that earnings became more indicative of productivity. Today earnings are linked to the productivity for much larger proportion of workers than was the case during the socialist period.

Milanović (1999), for example, sees a large shift of labour from the relatively equal public sector to the more unequal private sector as a common factor behind the rising earnings dispersion in transition countries. However, the growing wage dispersion occurred both in the private and the public sector (Svejnar et al. 2000, Rutkowski 2001; Keane and Prasad 2006). For example, a more notable rise in top incomes in Croatia between 1997 and 1999 (Figure 4) might be attributed to the substantial increase in public sector wages, accompanied by the loosening of wage grids (World Bank 2001, p. xii). Vodopivec (2004, p. 310) points out that wages did not differ significantly between public and private sector in Slovenia, and as we look below, it seems that the public sector has been leading the way with the private sector adjusting (Stanovnik and Verbič 2014).

Further, the earnings dispersion was reinforced by the labour shift from the manufacturing to more dispersed financial and services sectors. Primarily foreign firms initiated the practice of individualized pay for the top management (at least in Croatia; see below), while bringing at the same time the steeper hierarchical pay structure and making thus a sharp break with egalitarian compensation practices from the socialism. A strong rise in top wages in Croatia in the early 2000s (Figure 8) might be thus related to the strong inflow of foreign investment at the beginning of the century. Bičanić et al. (2010, pp. 22-3) point out that exactly FDI-privatized sectors experienced the largest rise of inequality in Croatia. They note that “this sector is known for employing foreign managers and for having boards dominated by foreigners and may, thus, be less constrained by domestic social norms.” Furthermore, they point to the financial sector as the most representative of these developments (which is almost wholly in the foreign ownership). This is consistent with the disproportional contribution of the financial sector to the rising top concentration internationally (Bakija et al. 2012; Phillipon and Reshef 2009).

This brings us to the important issue of the ownership structure of the corporate sector, that is, the relative importance of the private, public and foreign control in the economy. In this respect, a determining factor has been the outline and the pace of the privatization of the former state owned enterprises (SOE). Slovenia is the outstanding example of the 'gradualist' transformation course and we may ask how has the slow gradualism, as practised in Slovenia, affected the evolution of top earnings. For example, the rise of the private or especially foreign ownership (e.g. multinationals) of the corporate sector could have affected social norms of top remunerations, or increased the bargaining power of top managers.<sup>28</sup>

Figure 10 approaches these issues by looking at the equity holdings of households, the government and the rest of the world in Croatia and Slovenia from the turn of the century.<sup>29</sup> It is interesting that there is a still notable state ownership of the corporate sector in Croatia and Slovenia. In fact, the state has been the dominant corporate owner in Slovenia according to the market valuation of the equity. Equity holdings of the private sector have equalled around 30% of the national income, which in 2015 was lower than the market value of government and foreign equity in both countries. In Croatia, foreigners have become the dominant corporate owner from the mid-2000s. The increasing prominence of foreign ownership in Croatia might be related to the rise of the very top wages, as indicated by a positive correlation between development of very top wages (Figure 8) with the market value of the foreign equity (Figure 10). There has been a rise in top wages until the global economic crisis and stagnation afterwards.

It is plausible that the substantial state ownership of the corporations facilitated the specific development of the Slovenian labour market. In the words of Schleifer and Vishny (1994, p. 193): "when the government controls firms, it has considerably more ability to convince them to pursue its political objectives than when the government must persuade private shareholders". The large public sector and specific labour market institutions have prevented a more notable rise of earnings inequality in Slovenia (Stanovnik and Verbič 2014). Overall, the wage distribution has remained compressed in Slovenia in the last two decades, especially of the bottom part of the distribution (Figure 9b). It has been frequently argued that Slovenia has succeeded in developing well-functioning 'neo-corporatist' institutions with the substantial inclusion of labour. Crowley and Stanojević (2011) trace the inclusive social

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<sup>28</sup> For example, it has been often claimed that the corporate governance in the private sector with dispersed small shareholders provides managers with more bargaining power; similarly, the bargaining power of managers was weaker with the 'social' property during the self-management (see Novokmet 2017, section 4.2. for the issue of the 'separation of ownership and control').

<sup>29</sup> But excluding the corporate cross-ownership.

dialogue in Slovenia to the legacy of the self-management.<sup>30</sup> One should probably also add to this a deliberate policy choice to fashion its labour market institutions in resemblance to corporatist institutional setting in neighbouring Austria or in Germany ('codetermination').<sup>31</sup> Inclusive social partnership has remained an important feature of the labour negotiation and wage setting in Slovenia (the negotiation has been made through Economic and Social Council (ESS) consisting of trade unions, employers and the government). Stanovnik and Verbič (2014) attribute exactly to the strong social partnership and the accompanying legislation the stabilization of the inequality from the mid-1990s. The timing of the inequality stabilization seems to be right (ESS was established in 1994, the introduction of minimum wage in 1995, etc.).<sup>32</sup>

The broad institutional framework expounded for Slovenia is discernable in Croatia.<sup>33</sup> Shared historical legacy of self-management – as pondered over for Slovenia – may have been important for the specific development of the labour market in Croatia. The fact that countries shared similar institutions during socialist Yugoslavia, and indications of their recent convergence, has probably underlined similar long-term evolution of the earnings distribution (Figure A2). Croatia and Slovenia are characterized by the more extensive coverage of employees by the collective agreements. In this respect, Slovenia has been unrivalled in Europe, with almost all labour force covered by the collective bargaining (see EIRO).<sup>34</sup> Trade union density is still relatively high in the international context (although constantly falling, especially after joining EU). Holzner and Leitner (2009, p. 10) see very high coverage of collective agreements and union density as critical in securing relatively low inequality in Croatia. Further, Croatia and Slovenia have relatively higher minimum wage (for example, in comparison to other former transition countries).

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<sup>30</sup> Bohle and Greskovits (2007, pp. 452-3) point out along these lines that "Slovenia had a long experience of relatively autonomous self-management that added a level of participatory decision-making unknown in other state socialist countries, and produced managers, unionists, and bureaucrats who had the skills and were habituated to seeking accommodation between economic and social considerations".

<sup>31</sup> Crowley and Stanojevič (2011) dismiss the persistence of Austro-Hungarian corporatism in shaping the current neo-corporatist institutions in Slovenia. Their argument chiefly rests on the assumed lack of neo-corporatism in the Czech Republic, which would be the natural candidate for the neocorporatism today if the 'Habsburg' persistence mattered (the Czech lands were industrially the most developed Habsburg province with the strong labour movement). They further emphasize that the greatest industrialization spur in Slovenia actually occurred during socialism.

<sup>32</sup> In line of what has been considered above, Stanovnik and Verbič (2014, p. 461) ask whether "a large and strongly wage-regulated public sector...could act as a 'wage-setter' also for the private sector". As noted already, wages have not differed in the public and private sector in Slovenia (Vodopivec 2004).

<sup>33</sup> Although its development has lagged in many respects behind Slovenia.

<sup>34</sup> The proportion of employees covered by the collective bargaining in Croatia is around 60%, while in Slovenia is as much as 90%. This proportion is the highest among former socialist countries (see <http://www.worker-participation.eu/>).

## Capital transformation: From 'social' to state ownership

The ownership structure is further indicative of the importance of the capital and business income source in top income shares. The strong concentration of capital income at the top of the income distribution made it the predominant income source in top incomes and was the major source of high top income shares in the first half of the 20<sup>th</sup> century (Atkinson and Piketty 2007, 2010). The communist nationalizations and expropriations eliminated the largest part of the private capital income, and it had been almost a commonplace to see the absence of capital income as the chief reason behind the relatively lower inequality in socialist that in contemporary capitalist countries (Atkinson and Micklewright 1992, pp. 30-2).

Transition implied, in theory, a return of this inequality channel. The transfer of public to private capital has been the main avenue to create new riches in former socialist countries – and it can be quantitatively important, as evidenced by the rise of the so-called oligarchs in Russia (see Novokmet, Piketty and Zucman 2017). Great fortunes are reflected in high capital incomes, yet Figures 5 and 6 does not show large share of capital or business income in the top 1% share in Slovenia and Croatia.

How to explain this seemingly lower concentration of capital income at the top in Croatia and Slovenia? We believe that it is again important to point to the ownership structure of the corporate sector. The fact that the government ownership of the corporate sector is substantial in Slovenia (or the foreign ownership in Croatia) means that the corresponding top capital incomes are not concentrated in the hands of resident individuals. It is usually the financial corporate and business wealth that is strongly concentrated and makes the dominant part of the portfolio of the richest (Roine and Waldenstrom 2015; Saez and Zucman 2015). Thus, countries with most valuable companies in foreign or state ownership will have, *ceteris paribus*, lower (interpersonal resident) inequality than countries with most valuable companies in the private ownership (note as well that the pronounced concentration of the corporate ownership among the small number of private owners (usually families) is a feature of many developing countries (La Porta et al. 1999)).<sup>35</sup> For example, Kessler and Wolf (1991) attributed lower documented wealth inequality in France than in the US in the 1980s primarily to higher level of non-private (in this case state ownership) of the corporate stock in France than in the US.

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<sup>35</sup> Having rather state as the 'ultimate' capitalist, or foreigners as holders of top capital incomes, reduces the capital income inequality channel (especially since the big state companies are sizeable due to socialist 'giantism' and were often monopolists during the socialist era, and many have remained so).

With respect to the accumulation channel, there has not been enough time to amass private great fortunes on the grander scale by reinvesting.<sup>36</sup>

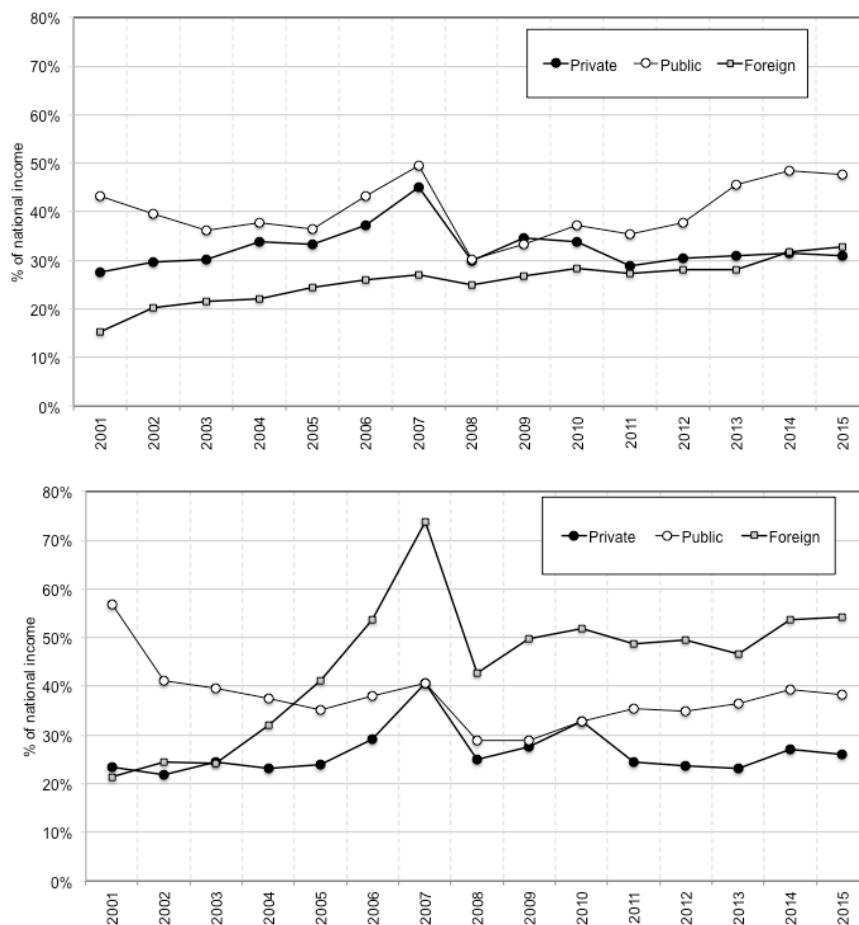


Figure 10: Equity of corporations in Slovenia (top figure) and Croatia (bottom figure)

Source: authors' computation from the Financial Accounts (Croatian National Bank and Slovenian National Bank)

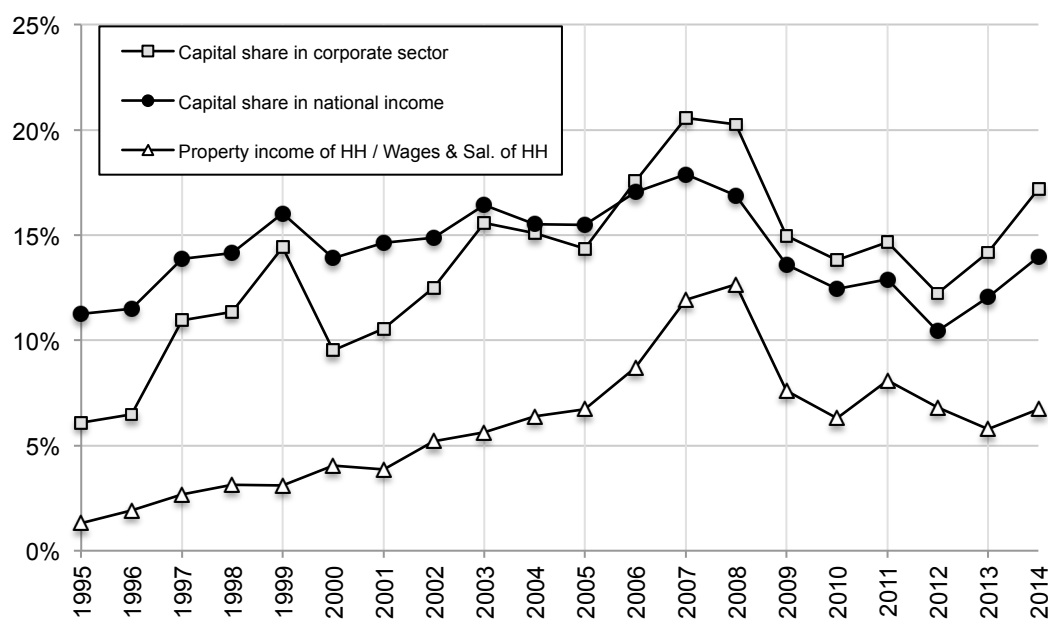
Figure 11 looks at the importance of capital income in the Slovenia's economy. The capital share is relatively low in international comparison (Piketty and Zucman 2014). For example, the capital share in the corporate net value added has recently been less than 15 per cent, which is notably lower than documented in the case of the Czech or Polish corporate sector (see Bukowski and Novokmet 2017). It has increased since the mid-1990s, when it was artificially low, conceivably due to the transition-related plunge in the profitability (and large losses related to restructuring). But rather than deducing that Slovenian corporations are

<sup>36</sup> In addition, one needs to have caveats in mind, especially regarding the rising importance of the offshore wealth internationally (Zucman 2015). However, there is no reason that rich in Croatia and Slovenia have been more proportionally 'successful' in this than their counterparts internationally.



relatively more labour-intensive,<sup>37</sup> we may hypothesize - in line with the above argument - that relatively higher bargaining power of labour versus capital might have ensured higher labour share, primarily due to the extensive state corporate ownership.<sup>38</sup> The lower levels of capital share, without exhibiting a clear trend, stand in opposition to the prevalent fall in the labor share internationally. Thus, when Glyn (2009, p. 116) points out that “the prime suspects for the decline in labor’s share are factors that have weakened the bargaining position of labor – globalization, deregulation... – and technological shift that have reduced the demand for unskilled labor”, it might have been the case that the decline was precluded in Slovenia due to more inclusive labour market institutions, as well as due to the limited inflow of foreign capital.<sup>39</sup> This issue, however, requires further investigation.

In addition, the ratio of the property income received by households (dividends, interests and rents) to wages and salaries has been also relatively low. The ratio foreseeably increased from the 1990s, reached a peak before the financial crisis, then fell and stabilized around 6-7%. Therefore, the lower concentration of private capital income is not only due to egalitarian distribution of the private wealth (as suggested by sources such as HFCS), but also due to the lower capital share (see Piketty 2001).



<sup>37</sup> In fact, industrialization in Slovenia had been rather capital intensive, especially in Yugoslavia). High depreciation rates of corporate capital (consumption of fixed capital in the corporate sector is on average 25% of the corporate gross value added) equally do not suggest lower capital intensity.

<sup>38</sup> Here, another evocation of self-management is brought to mind, namely the practice that real wage often exceeded productivity, which is also in line with the experience of the ‘profit squeeze’ in Western Europe in the 1970s, when higher bargaining power of labour pushed for wages increases amid productivity slowdown (Glyn 2006; Eichengreen 2007).

<sup>39</sup> Which, for example, in the case of the Czech Republic, has led to the sharp fall of labour share in the corporate sector.

### Figure 11: The importance of the capital income in Slovenia

Source: authors' computation based on the National Accounts of Slovenia

Note: 1) '*Capital share in national income*': capital share in factor cost national income (it is assumed that product taxes are equally paid by capital and labour); capital income is estimated as equal to the net operating surplus plus a part of capital income in the net mixed income of the households sector (net mixed income in the household sector is split between capital and labour income as observed in the corporate sector); 2) '*Capital share in corporate sector*': capital share in net value added of the corporate sector; capital income is estimated as equal to net operating surplus of the corporate sector 3) '*Property income of households / Wages and salaries of households*': ratio of property income (dividends, interests and rents) received by households to wages and salaries (not including social security contributions paid by employers) received by households

The relatively substantial government ownership of the corporate sector almost three decades after the official end of the socialism is a distinguishing feature of the Slovenian economy in comparison to other former socialist countries. Slovenia has also been an 'outlier' in terms of quite limited foreign ownership.<sup>40</sup> In order to explain this, we should return once more to the 'gradualist' strategy pursued in Slovenia.<sup>41</sup> Slovenia largely disregarded the 'Washington consensus' prescriptions since it embarked on the transition with fairly liberalized prices, relatively decentralized decision-making and a number of Slovenian firms were competitive in the western market (Plešković and Sachs 1993, p. 193). Between the two competing privatization strategies, the gradualist approach prevailed over the so-called 'big-bang'. In the majority of cases, the privatization of large SOEs was postponed for later period and the government remained an important corporate owner. Slovenia has repeatedly advertised a 'transparent withdrawal of the state from the economy', but Mencinger (2010) remarks that the reality has been the opposite: the government has actually increased its role in the economy (especially through two major state-owned funds) (see Figure 10).

The so-called 'tyconization' of the 1990s generally led to wealth destruction rather than wealth concentration. This phenomenon was especially prominent in Croatia, where the popular perception has linked privatization with the large-scale plunder.<sup>42</sup> In many cases, tycoons siphoned funds and ruined companies, eventually returning shares to the government.<sup>43</sup> The government received back companies in still worse condition. Further, many former SOEs were distressed by the 'creative destruction' and deindustrialization.

<sup>40</sup> For example, it is the only ex-communist country where the banking sector has remained dominantly in the government rather than in the foreign ownership.

<sup>41</sup> In Slovenia, the privatization strategy to be taken turned into a heated dispute, at "the root of the matter being who should control the economy" (Mencinger 2004, p. 111). In a struggle between the so-called insider versus outsider privatization models, the former prevailed, advanced by the political parties succeeding the communist party and state managers (Plešković and Sachs 1993, Mencinger 2004). This way, Slovenia decided on the gradualist path through the transition to the market economy. Rather than taking the radical break with the socialist past, as the competing (big-bang) approach advanced, Slovenia made a deliberate choice of continuing on many legacies (e.g., self-management), with its positive and negative implications.

<sup>42</sup> By many accounts, there were attempts in Croatia to create the national capitalist class by simply giving firms to political loyalists. The push for privatization moreover occurred with the war raging in the country amid weak institutional framework (lacking thus minimum transparency in most deals). The economy assumed contours of the 'crony capitalism', characterized by kleptocracy, corruption and rent-seeking (Bičanić and Franičević 2004).

<sup>43</sup> Shares in the Croatian fund for privatization sharply increased in the late of the 1990s for exactly this reason.

Rather than engaging in much needed restructuring, the government has often cling to old practices such as subsidization of ailing firms/industries and soft budget constraints, all resulting in the gradual loss of competitiveness of the Croatian economy (World Bank 2000).

But, it should be noted that the state ownership of the corporate sector is not bad in itself (e.g. Mazzucato 2013), despite all the usual rhetoric,<sup>44</sup> and most of assumedly inherent inefficiencies can be equally applied to private sectors. But, the growing evidence of the collusion of political and economic elites in Croatia and Slovenia has thrown negative light on concepts of 'entrepreneurial' or 'developmental' state. There is especially concern of adverse effect on the entrepreneurship and hindering a development of the vibrant private sector. Criticisms have been often heard both in Slovenia and Croatia that slow privatization reflected intentions of the old elites to retain the control of the economy. Higher government ownership can perpetuate well-known conflicts from socialist Yugoslavia (see Novokmet 2017). For example, Mencinger points out that the governments in Slovenia have often used this stronger position to install managers according to loyalty rather than competence. Simoneti et al. (2004, p. 234) further note that state-controlled funds are frequently used for political interference in the decision making of corporate sector.<sup>45</sup>

## 5. TOP INCOMES: FURTHER INSIGHTS

### **Robustness of estimates: shares within shares and inverted Pareto coefficient**

An additional insight into the concentration at the top could be obtained by looking at 'shares within shares' (e.g. see Atkinson 2007a), which, as the name suggests, look at the distribution within the top groups (while 'top shares' indicate the importance of top groups in the whole population). As the computation of this measure consists solely in identifying top groups in the population, and refrains from relating the income of these groups to external controls of total income, it circumvents the uncertainty that often accompanies estimates for

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<sup>44</sup> One clear example is the public investment in scientific research and technological progress (Atkinson 2015), and one should not forget certain achievements in both countries during the socialist Yugoslavia.

<sup>45</sup> In still bleaker scenario, the pervasive state becomes the source of clientelism and corruption (Acemoglu and Robinson 2012; Milanović 2017; Szeleny (2014), for example, sees Croatia (together with Bulgaria, Romania and Serbia) as a typical representative of the 'neoprebendalism' which he defines as "an on-going process of the reallocation of property rights after repeated loyalty tests".

the total income (Atkinson 2007). Thus, 'shares within shares' provide quite useful robustness check, especially with respect to short-term developments. Figure 12 depicts the share of 1% in the share of top 10% in Croatia and Slovenia and the share of the top 0.1% in the share of top 1% in Croatia. Shares within shares are similar in two countries, which is consistent with similar levels of top income shares. We can see that shares of top 1% in top 10% and of top 0.1% in top 1% in Croatia experienced quite similar development (suggesting that the top of distribution follows Pareto distribution). A rise from 2012 indicated by intermittent lines was driven by the inclusion of capital income into the taxable base, which is found to be highly concentrated and leading to higher inequality within top income groups. Shares within shares provide more nuanced picture, but confirm the general finding of broad stability in the top concentration.

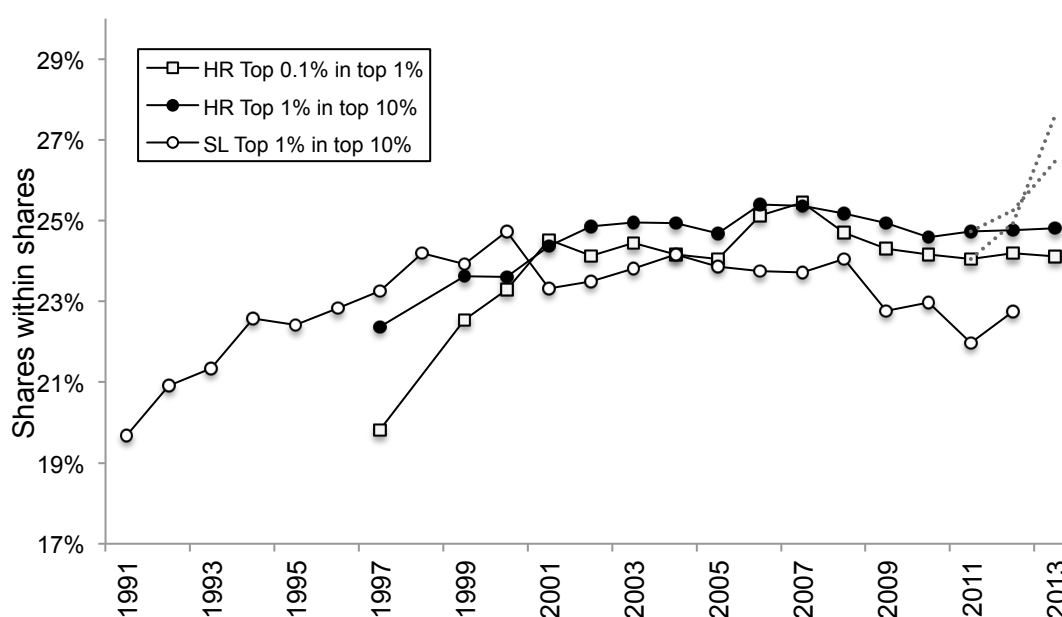


Figure 12: Shares within shares, Croatia and Slovenia

Source: authors' calculation based on income tax data

Note: dashed lines indicate estimates including capital income in Croatia after 2012

We can also look at the inverted Pareto-Lorenz coefficient (in further text Pareto coefficient  $b$ ) as an alternative indicator of concentration (Atkinson et al, 2011). It is a well-established empirical observation that the upper tail of the income (and wealth) distribution could be well approximated by the Pareto distribution. Just a brief reminder on the Pareto distribution: the cumulative distribution function  $F(y)$  for income  $y$  is given by  $1 - F(y) = (k/y)^a$ , where  $1 - F(y)$  is the proportion of individuals with income above  $y$ . Parameters  $k$  and  $a$  are constant;  $k$  stands for minimal amount to which power law is applicable while  $a$  is Pareto coefficient. An important feature of Pareto distribution is that the average income above a certain threshold is proportional to that threshold (van der Wijk law). This constant is referred

as Pareto coefficient  $b$ , and indicates the fatness of the upper tail of the income distribution. Thus, higher Pareto  $b$  points to higher inequality at the top. While it has been found that Pareto coefficient  $b$  is constant for the largest part of the top tail of the income distribution in a given year, its value varies between countries and over time. Atkinson et al. (2011, pp. 13-15) point out that Pareto coefficient  $b$  has generally taken values between 1.5 and 3, with lower limit indicating relatively lower top inequality.

Figure 13 shows Pareto  $b$  for the top tail of income distribution in Croatia in 2013. It can be seen that it is roughly constant for the largest part of the top tail, and that the relation breaks down only for the very top incomes within the top percentile. The observed value of coefficient between 1.7 and 1.8 indicates comparatively lower inequality in the international context, with similar levels documented recently in less unequal countries such as France, Italy, or Spain. This also provides some reassurance concerning our estimates of top income shares, which are similarly found to be close as in the mentioned countries (Atkinson and Piketty 2007, 2010).

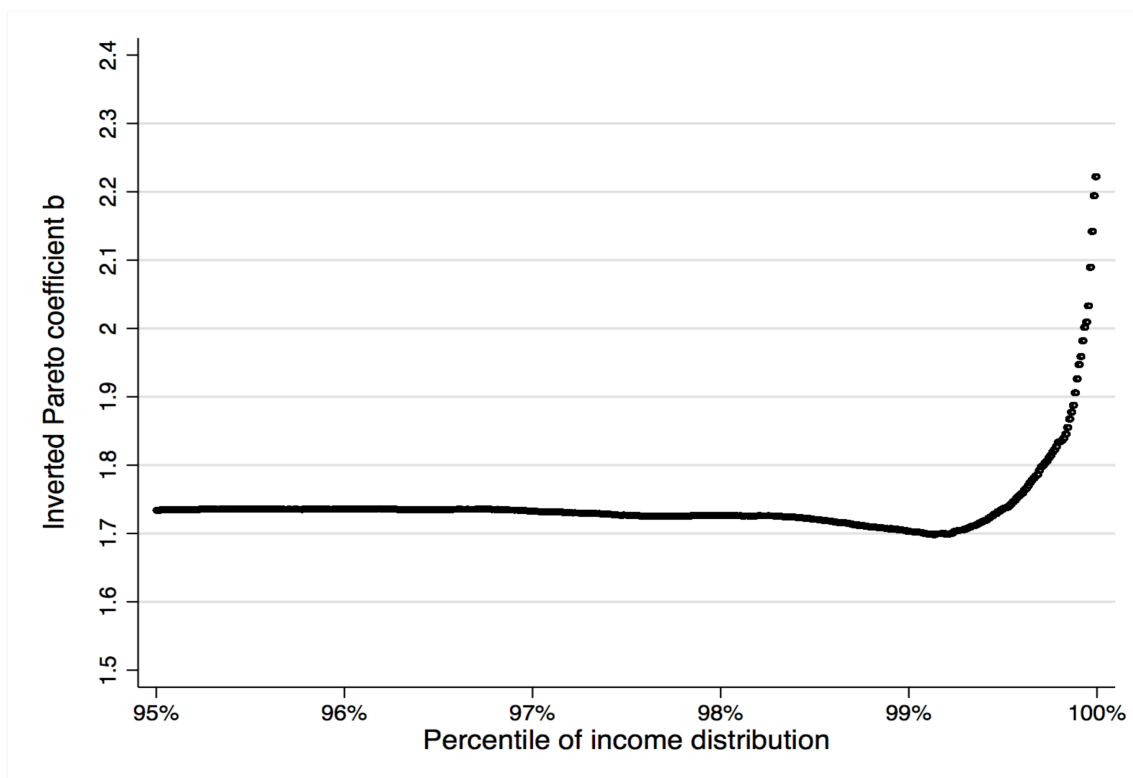


Figure 13: Inverted Pareto coefficient in Croatia in 2013

Source: authors' computation from the income tax data

## Top mobility

To what extent are annual measures of inequality, such as top income shares, reliable indicators of mid-term and longer-term inequality? It has been frequently argued that inequality estimates obtained from the annual cross-sectional data could be misleading since they do not take into account lifetime (permanent) income of individuals and are strongly influenced by the transitory component. One needs, therefore, to analyse income mobility and understand how individual's income is correlated over time. For example, Gottschalk (1997, p. 24) pointed out that: "without information on mobility it is impossible to tell what proportion of low earners in one cross-section also had low earnings in a subsequent cross-section. If many low earners in one year have high earnings in other years, then the cross-sectional earnings distribution is not very informative." Consequently, in order to account for these issues there is a growing need for panel data which follow individuals over a longer time period (see Jäntti and Jenkins (2013) for detailed overview).

Saez and Vaell (2005) use Canadian income tax panel data and document quite modest mobility within top income groups in Canada since the 1980s. Kopczuk, Saez and Song (2010) use the social security panel data to assess the mobility of high-earning individuals in the US in the last three decades, and equally find rather limited mobility at the top. Both studies conclude that a surge in wage concentration in North America has not been caused by rising top mobility.

Croatian income tax data allow us to track individuals through years.<sup>46</sup> Following the above-mentioned studies, we look at the probability of staying in the top income groups after specified number of years.<sup>47</sup> Thus, Figure 14 shows that in recent years the probability to be still in the top percentile after one year is as high as 80%, it is 65% after three years and 55% after five years. One could argue that mobility at the top in Croatia is low, characterized by modest dynamism and rigidity, and that top income shares are fairly good indicator of (at least) mid-term inequality. Moreover, Figure 14 reveals that the top mobility has actually slightly declined since the mid-2000s.

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<sup>46</sup> Individuals in microdata keep the same identifier over the whole period under consideration.

<sup>47</sup> see Kopczuk, Saez and Song 2010, Fig. VIb

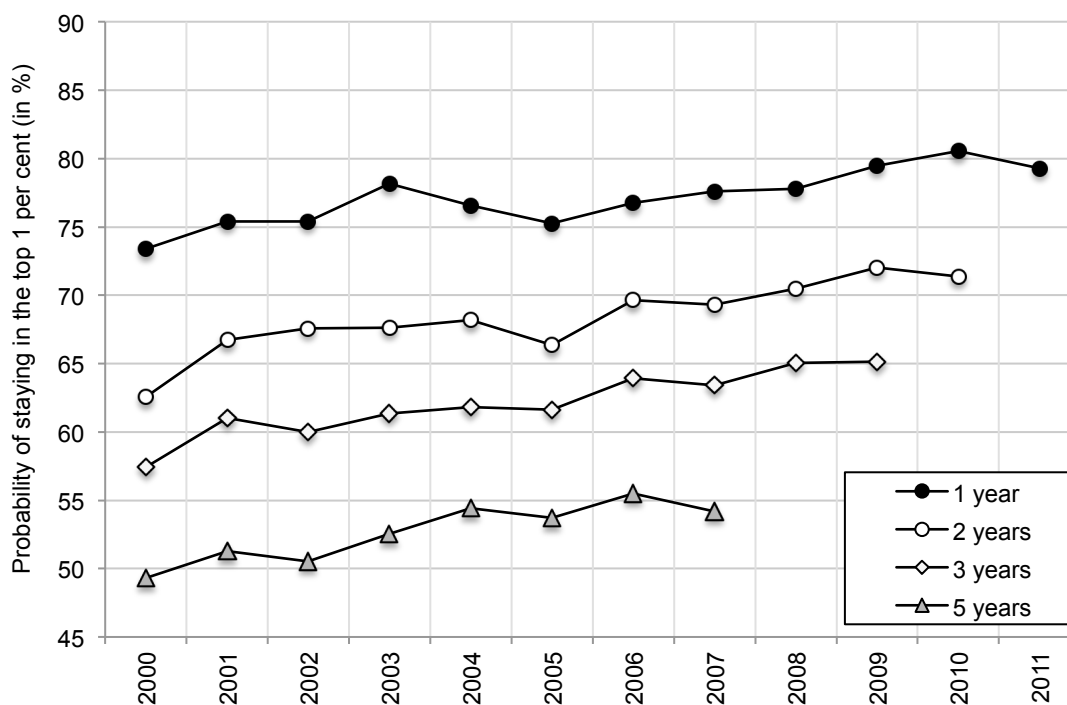


Figure 14: Probability of staying in the top 1 per cent of income distribution after indicated number of years, Croatia 2000-11

Source: authors' computation based on income tax data

## Gender

We further look at the gender composition of top incomes. Atkinson et al. (2016) have recently brought attention to the gender dimension of top incomes, by looking at the female representation at the top. Figure 15 shows the share of women in top income groups in Slovenia in the period from 1991 until 2012. There was a steady increase in the female share in top groups since 1991, rising from 30% to 40% in the top 10 per cent income group, and from 20% to 30% per cent in the top 1 per cent income groups. As documented for other countries, the female share in top groups falls with the income rank. However, this is the highest proportion among the studied countries (Atkinson et al. 2016), so in this aspect as well, Slovenia shows to be the most egalitarian country (this is backed by of the lowest gender wage gaps; see OECD 2017). It is interesting that the proportion of women in top income groups increased during the crisis.

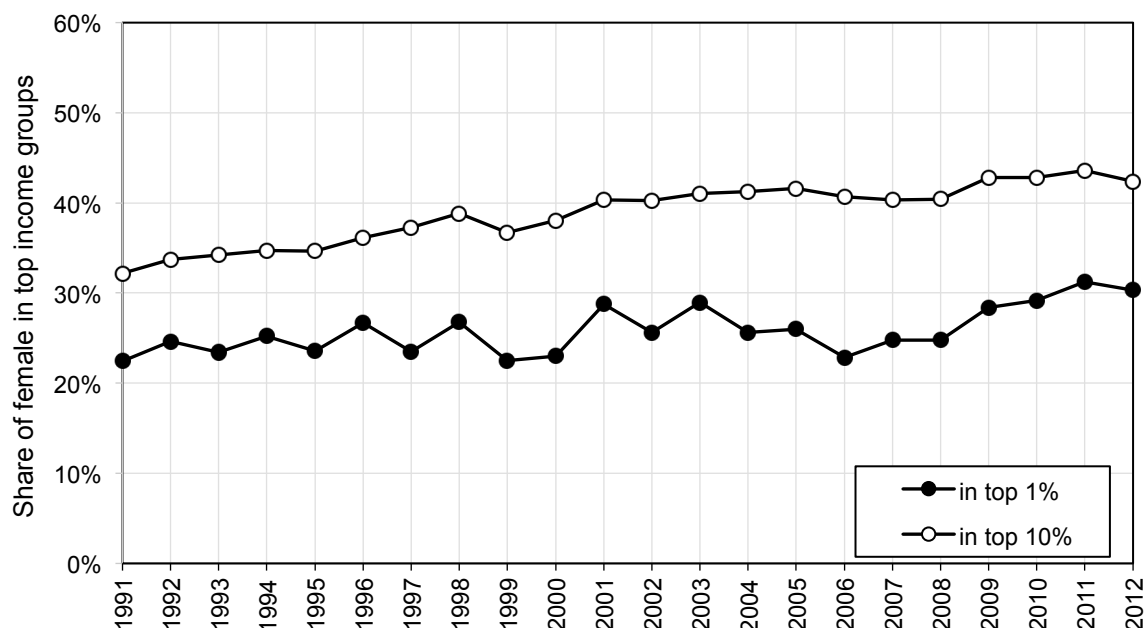


Figure 15: Share of female in top 1% and top 10% in Slovenia, 1991-2012

Source: authors' computation based on the income tax data

## Taxation

We turn next to the taxation of top incomes. Up this point we have looked at the distribution of gross or before-tax income<sup>48</sup>, but it is important to determine the impact of taxation and redistribution on top income shares. Croatia and Slovenia have maintained the progressive structure of the personal income tax during the whole period under considerations<sup>49</sup>, which should imply in theory that high-income groups bear the largest burden of personal income taxation. But in practice, looking only at the legislative tax design, such as statutory marginal tax rates, is an imperfect indicator of the actual tax burden, since the gap between the two could be substantial, depending in the first place on the extent of the tax base erosion due to available tax exemptions, allowances or reliefs. In addition, different tax schedules are increasingly applied to different income sources. This has primarily been the case for the capital income taxed proportionally at considerably lower rates.

A special appeal of the Croatian dataset lies in the fact that we deal with actual taxpayers (all taxpayers at the top in Croatia), so we can see how their reliance on tax preferences correlates with income and, most importantly, how much tax different high-income individuals eventually end up paying. Figure 16 presents estimates of average tax rate for different top

<sup>48</sup> Also including pensions

<sup>49</sup> In fact, since the first post-communist income tax legislation was introduced in 1994.



income groups in Croatia in 2013. Average tax rate is calculated as the total tax liability (includes personal income tax and surcharge, as well as social security contributions paid by employee) divided by the total gross income of the particular top income group.

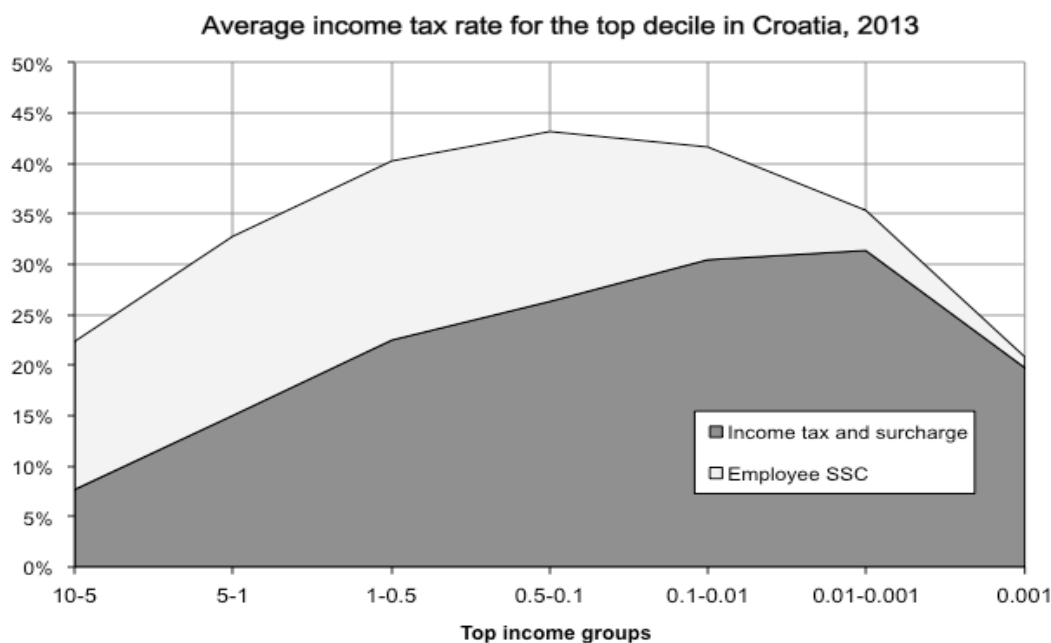


Figure 16: Average effective tax rate for the groups constituting the top decile

Source: authors' computation based on the income tax data

Note: Gross income is taken after social security contributions paid by employers, while the liability used to calculate the average effective tax rate does not include social security contributions paid by the employer

One first notices that the average income tax rate (dark grey area) rises with income until the very top of the distribution. Personal income tax ceases to be progressive above the level of the top 0.01-0.001 per cent (or until the top 0.1 per cent as shown in Table 1). In line with the results of the previous section, this should be explained by the predominance of capital income at the highest income echelons. As capital income is taxed at the flat rate of 12% (while the top statutory marginal tax rate for progressive schedule is 40%), we observe a sharp drop in the average effective tax rate at levels where the income composition shifts from employment towards capital income.<sup>50</sup> Moreover, capital income was until recently entirely exempt from the personal income tax,<sup>51</sup> and this should be singled out as the main source of the tax base erosion for high-income individuals. In contrast to some other exempt income, such as imputed rents of owner-occupiers, the importance of capital income rises

<sup>50</sup> We look here only at the personal income tax burden and do not consider how imputing corporate income tax to individuals (e.g. see Feldstein 1988) would affect tax progressivity at the top of the income distribution. However, it would be misleading to automatically assume that capital income bears the burden of corporate income taxes, since corporate income tax could be (and often is) shifted towards employees in the form of lower wages, or towards consumers in the form of higher prices (Harberger 1962).

<sup>51</sup> Capital income was exempt on dividends and profit shares until March 2012, on interests until January 2015 and on capital gains from a disposal of financial assets from January 2016.

with the rank of gross income. Finally, let us note that the progressivity at the top has been little affected by various personal deductions and reliefs due to steady broadening of the tax base in the recent years.

Table : Average tax rates paid by top income groups in 2013

Top group	PIT	Employee SSC	Top group	PIT	Employee SSC
Top 10%	15,7	16,1	Top 10-5%	7,7	14,7
Top 5%	19,3	16,7	Top 5-1%	15,0	17,8
Top 1%	25,8	14,8	Top 1-0.5%	22,6	17,6
Top 0.5%	27,5	13,4	Top 0.5-0.1%	26,3	16,9
Top 0.1%	29,3	8,4	Top 0.1-0.01%	30,5	11,0
Top 0.01%	26,8	2,8	Top 0.01-0.001%	31,4	4,0
Top 0.001%	19,8	0,9	Top 0.001%	19,8	0,9

Table 1: Average tax rate for the groups constituting the top decile

Source: authors' own computation

Figure 16 shows that social security contributions paid by employees become equally regressive at the top. Almost a flat structure is observed until the top 0.5-0.1 per cent (however, it is slightly lower for the top 10-5%, probably due to larger prevalence of pensioners in this group relative to higher groups), above which it breaks down as the cap on employees' SSC becomes operative,<sup>52</sup> as well as due to the above mentioned shift in income composition from salaries and wages for the very top income groups.

The combined impact of personal income tax and employees' SSC on top income shares is presented in Figure 17, which shows top shares of disposable (or after-tax) income as the proportion of before-tax income shares, ranked by the level of gross income (see Atkinson 2007b). As can be seen, top groups from the top 0.1-0.01 per cent and above were disproportionately less impacted by the taxation due to the lack of progressivity at the very top.

<sup>52</sup> The annual cap on employees' SSC was set to 556,424 HRK in 2013.

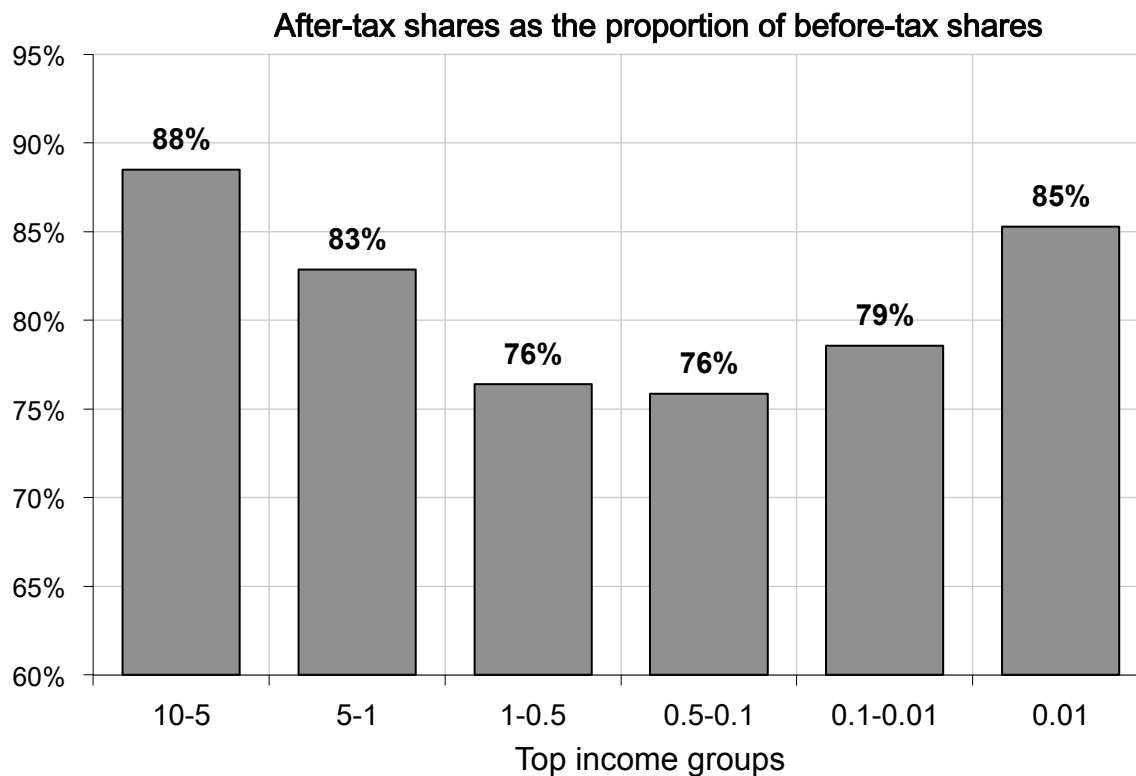


Figure 17: After-tax shares as the proportion of before-tax shares in 2013 in Croatia

Source: authors' computation from the tax data

Note: after social security contributions paid by employees and personal income tax

## 6. Comparison to survey data

Tax data have proven to be particularly useful in portraying the upper end of the income distribution. At the same time, it is often emphasized that exactly the coverage of the top of distribution stands for the weakest point of household surveys. For example, surveys are prone to misrepresent the top of income distribution due to higher non-response and under-reporting among the richer respondents, as well as due to specific survey collection constraints and top coding (UN 2011, p. 93). Occasionally, changes at the upper end of income distribution documented in the tax data can critically impact the overall distribution, for example, as famously showed in the case of the US by Piketty and Saez (2003). As pointed in Canberra Group Report (UN 2011, p. 96): "... studies based on tax records point to patterns that are large enough to change the analyst appreciation of what is happening to income distribution. They highlight that care must be taken to assess trends in the upper end of the distribution based on survey results alone, particularly if there is evidence that these may not be totally representative of the population."

Recently, and in part to overcome this difficulty, data collection for sources on income and poverty has started combining traditional survey methods, such as interview, with administrative (or ‘register’) data, such as tax data and social security data. The well known application of this approach has been in the EU Statistics on Income and Living conditions (EU-SILC) (see Jäntti, Törmälehto and Marlier 2013), where several participating countries use register data for income variables in combination with surveys, which provide, in turn, more extensive information on demographic characteristics.<sup>53</sup> Surveys, in addition, generally provide more comprehensive coverage of the population than the tax data, in particular by additionally including the population of non-filers.

Croatia has been participating in EU-SILC since 2010 and should be regarded as a ‘pure’ survey country as it relies exclusively on survey interview as the data collection method. Therefore, we assess how ‘accurately’ is the top of income distribution captured by the survey and whether more reliable estimates could be obtained in combination with the tax data. First, we adjust the EU-SILC data to make it comparable to income tax data. We take adults as our unit of observation (as the number of all potential taxpayers) and apply income definition corresponding to taxable income in the tax data.<sup>54</sup> Income available only at the household level in the survey, such as capital income and rents, is imputed to the highest earning adult in the household (thus making it an upper bound).

Table 2 compares estimates obtained from the EU-SILC and income tax data in 2013.<sup>55</sup> As expected, total income obtained from survey is lower than the reference income used to construct top income shares from the tax data (which is estimated from national accounts). It can be seen that 90<sup>th</sup> percentile as well as the average and the total income of the top 10-5 per cent group are quite close in the survey as found in the tax data, and the divergence between estimates based on two sources becomes more substantial as we move upwards the distribution.<sup>56</sup> The top 1 per cent income share estimated from the tax data is 3 percentage points higher than the top percentile share estimated from the EU-SILC (9,2% versus 6,3%).

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<sup>53</sup> ‘Register’ countries include Denmark, Finland, Iceland, the Netherlands, Slovenia and Sweden

<sup>54</sup> As a measure of pension in the EU-SILC we take i) old-age benefits plus ii) survivor benefits plus iii) disability benefits.

<sup>55</sup> Which is the year when the most comprehensive definition of income is available in the tax data.

<sup>56</sup> See Burkhauser et al. (2009) for the US.

Income group	EU-SILC				Tax data			
	Threshold (in HRK)	Average income (in HRK)	Total income (in mln. HRK)	Income share (in HRK)	Threshold (in HRK)	Average income (in HRK)	Total income (in mln. HRK)	Income share (in HRK)
P0-100	0	42.825	143.539		0	49.739	168.067	
P90-95	98.273	109.073	18.226	12,7%	100.278	112.722	19.059	11,4%
P95-99	119.900	148.062	19.693	13,7%	134.155	172.146	23.285	14,2%
P99-99.5	197.657	219.918	3.555	2,5%	268.693	304.769	5.153	3,1%
P99.5-99.9	236.858	292.534	3.922	2,7%	351.421	446.759	6.043	3,6%
P99.9-100	388.755	507.504	1.568	1,1%	648.871	1.263.059	4.272	2,5%

Table 2: Comparison of the estimates at the top of distribution in the EU-SILC and income tax data, Croatia in 2010

If we assume that tax data better capture the top of the distribution, while surveys, on the other hand, are thought to be more representative of the lower parts of the distribution, one is tempted to combine two sources in order to obtain more reliable estimate of the overall distribution. Since, as we saw, the main divergence between tax-based and survey-based estimates occurs roughly in the upper half of the top decile, we consider the impact of adjusting the very top of the survey distribution with the tax data. But which criteria, besides comparison to alternative data sources as in Table 2, should be used to pinpoint levels where incomes reported in surveys become unrepresentative of the underlying population? In the absence of the specific criterion, one can check (by eye) whether data exhibit some statistical regularity.

Figure 23 displays the top of the income distribution observed in the EU-SILC in 2013, with the log of the population share on the y-axis (complementary cdf) and the log of income on the x-axis (the so-called Zipf plot). This relationship is linear if the underlying distribution conforms to Paretian form, and the slope of the straight line then corresponds to Pareto coefficient  $a$ , as indicated in the section.<sup>57</sup> Thus, if the observed data display linearity on the double logarithmic plot, one might be inclined to conclude that it obeys a power law and simply estimate parameter  $a$  by ordinary least squares.<sup>58</sup> However, OLS might result in biased estimates and maximum likelihood method is preferred instead to detect the power

<sup>57</sup> One should point immediately to many caveats in assuming Pareto distribution simply based on graphical inspection; see Cirilo (2013).

<sup>58</sup> As cddf is  $1 - F(y) = (k/y)^a$ , then  $\log(1 - F(y)) = a \log(k) - a \log(y)$ . Pareto  $a$  is simply the negative of the regression coefficient.

law in the empirical data (Clauset et al. 2009). Here we use maximum likelihood estimation to fit the Pareto distribution to the survey data.<sup>59</sup>

Figure 18 points that the deviations from the Pareto fit become marked slightly above P99, and it seems reasonable to assume that it is quite likely that the upper tail containing the top percentile is poorly represented in the survey. As already discussed, the higher prevalence of non-response for higher incomes gives a distorted picture of this section of the distribution. Furthermore, it can be seen that reported top incomes are substantially lower than observed in the tax data (Table 2), thus providing a direct evidence of missing high-earning individuals in the survey. For example, the top observations in the survey have incomes well below 1 million HRK, while Figure 19 clearly shows that this is not the case.

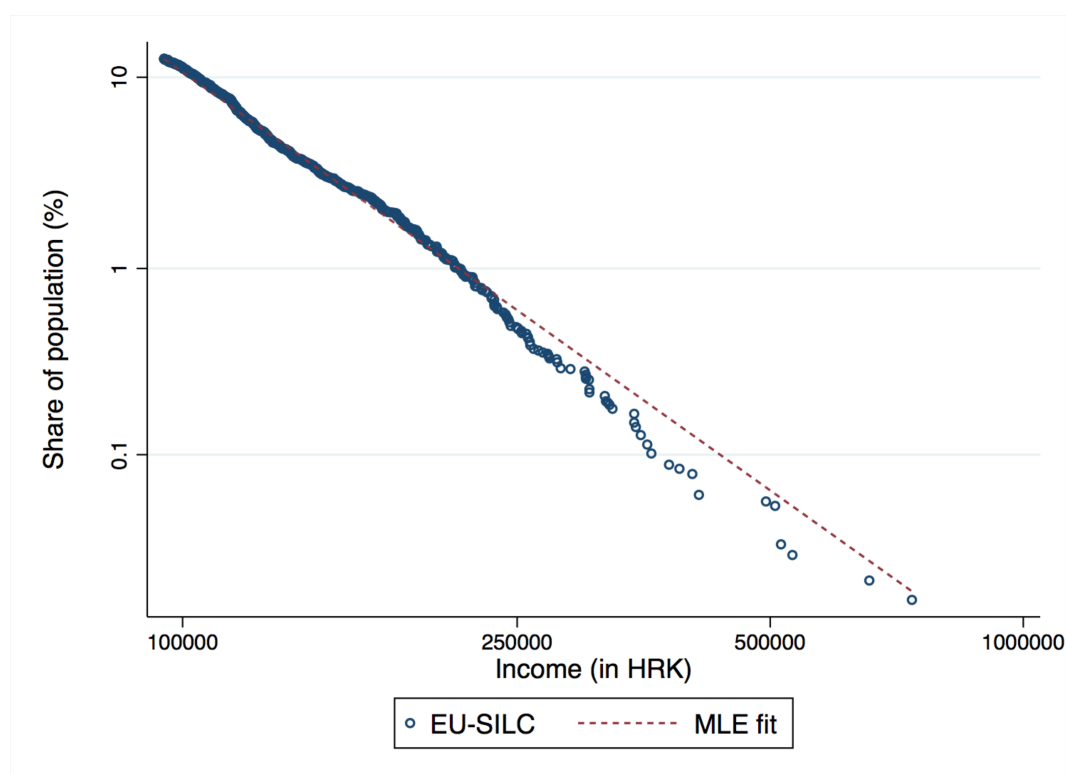


Figure 18: Top of the income distribution in EU-SILC, Croatia in 2013 (log-log scale)

Source: authors' computation from EU-SILC

We replace all observations in the EU-SILC above 200 thousand HRK with observations from the tax data above that amount. The underlying assumption is that many top incomes are missing from the survey, while all survey observations above that level are contained in the tax data. Figure 19 displays the resulting upper tail of the distribution. Note that besides the

<sup>59</sup> See Vermuellen (2014)

Pareto distribution is fitted to values above the 90th HRK threshold, which is simply chosen by the visual inspection.

obvious elongation of the tail, the line becomes less steep, indicating higher concentration. The slope of the line equates to the exponent  $a$ , which falls from 3.0 to 2.4, and corresponds by definition to values around 1.7 for inverted Pareto coefficient  $b$  ( $b = a/(a - 1)$ ) observed in Figure 13. The rise in concentration from the P99.99 is indicated by falling  $a$  in Figure 19 or rising  $b$  in Figure 13.<sup>60</sup>

There is under-coverage of the top in the survey, but relatively low top inequality documented in the tax data makes correction is not huge.

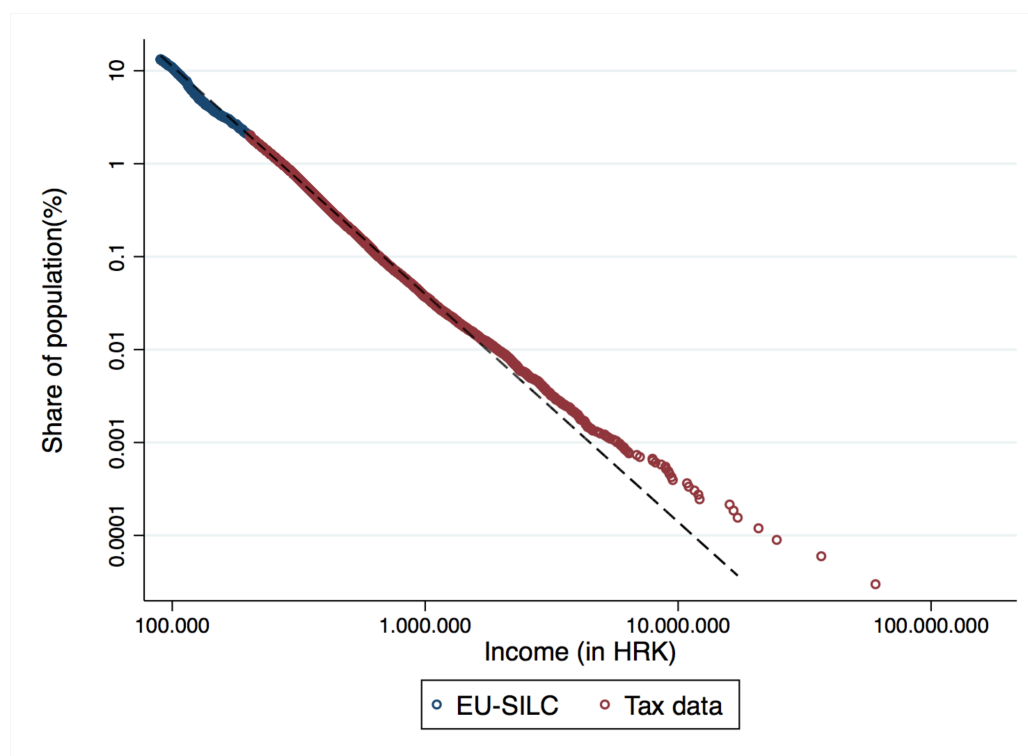


Figure 19: Top of income distribution in Croatia: survey (EU-SILC) adjusted for income tax data

Source: authors' computation from EU-SILC and

Note: the highest point above 100 million HRK is not seen in the figure

## 7. International comparison

Figure 20 presents the evolution of the top 1 per cent income share in Croatia and Slovenia together with several larger European countries. The figure shows that the top percentile's share in Croatia and Slovenia has in recent years been similar to relatively less unequal group of European countries, settling between levels of Sweden and France. The figure suggests a somewhat different trajectory of the top concentration observed in other larger

<sup>60</sup> This is roughly the level where capital income becomes the predominant income source.

European countries, such as the UK or Germany, with the gap reaching 5 percentage points in recent years.<sup>61</sup> The latter group of countries shows both higher concentration at the top as well as greater fluctuation in the development of top income shares. In particular, in Germany and the UK the evolution of top incomes has displayed a strong pro-cyclical character. On the other hand, one can observe broad stability of top income shares in all Croatia and Slovenia since 2000.

The available estimates for Croatia during the socialist period show a certain similarity to the development of top incomes in Sweden and the UK in the period between 1965 and 1980. The top 1% per cent in Croatia assumed almost equivalent levels as in Sweden for the available years. The top percentile's share in the UK was slightly higher, but the evolution is quite similar until 1980. As noted above, this should be in largest part explained by the stronger bargaining power of labor in these countries in the 1960s and 1970s. With respect to the egalitarianism in the wage setting, Yugoslav self-management shared many similarities to the social democracy in Sweden.<sup>62</sup> This social equilibrium was dissolved in the 1980s and 1990s, and, as can be see, it was more abrupt in the UK following the Thatcherist policies than during the transition to market economy in Croatia and Slovenia. Figure 21 further suggests that top 0.1 in Croatia and Slovenia experienced quite similar evolution as in Sweden since the 1960s.

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<sup>61</sup> However, one should be careful in pointing to the clear-cut distinction between (two groups of) countries due to well-known peculiarities of the tax data, primarily caused by numerous complexities in the workings of the tax code across countries as well as due to potential computation errors. For example, Atkinson et al. (2011, p. 48) identify different patterns in the evolution at the top between Anglo-Saxon countries, Continental European countries and Japan, Southern European and Nordic countries, but note that the frontier "is somewhat arbitrary and should not be overstressed".

<sup>62</sup> Note in addition that the timing of the end of marketization and the introduction of egalitarian 'social compacts' in Yugoslavia coincides in development in Sweden, where "wage solidarity took a more radical egalitarian form" (Hibbs 1992, cited from Atkinson 2008, p. 349). Edin and Homlund (1995) take 1968 as the beginning of the dramatic changes in wage distribution in Sweden (Atkinson 2008, p. 349).



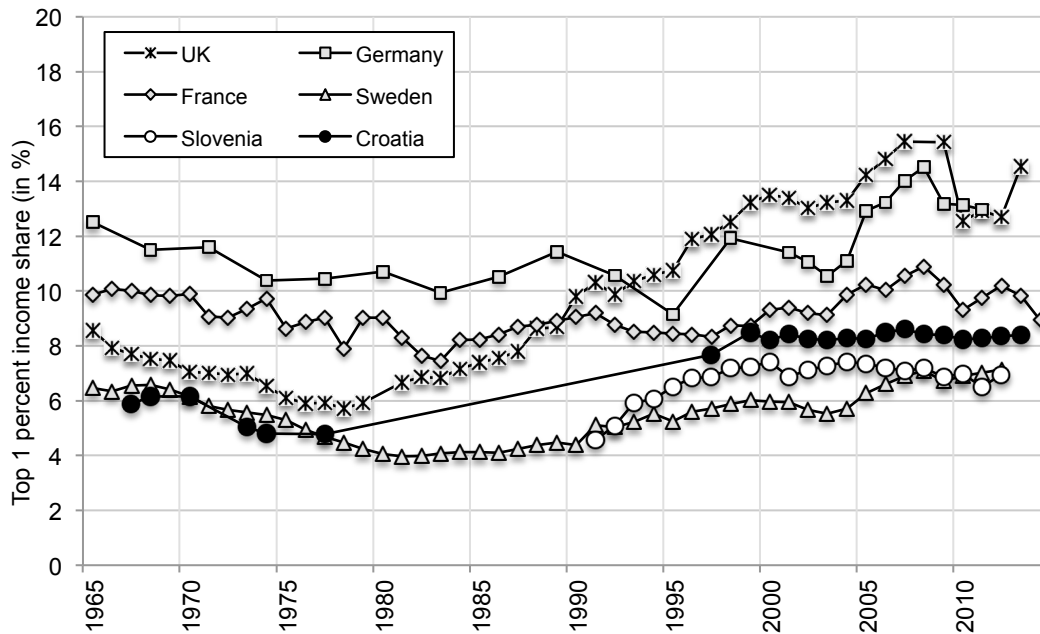


Figure 20: Top 1% income share in Croatia and Slovenia and selected European countries (fiscal income, not including capital gains)

Source: authors' computation for Croatia and Slovenia; other countries WID

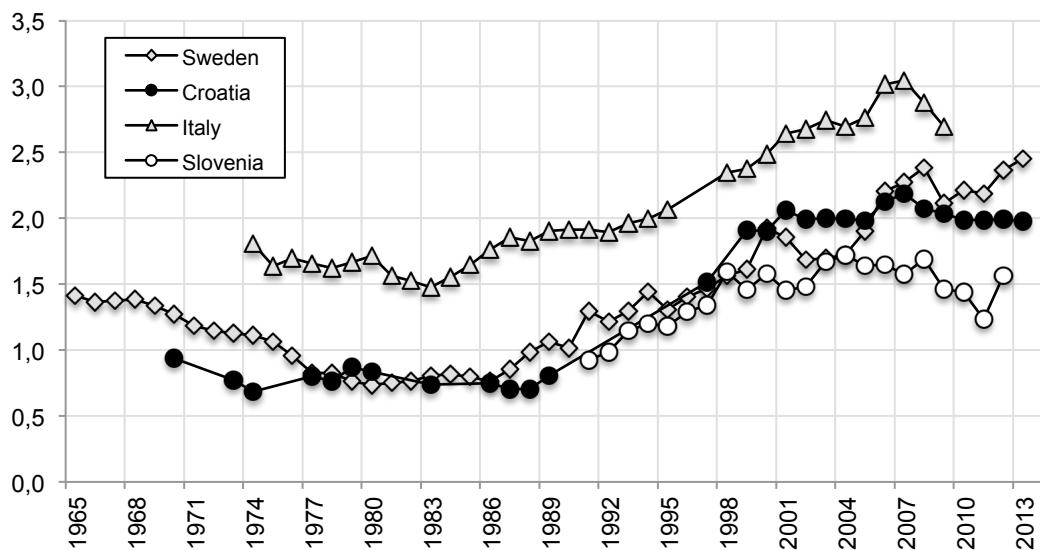


Figure 21: Top 0.1 income share in Croatia, Slovenia, Italy and Sweden (fiscal income, not including capital gains)

Source: authors' computation for Croatia and Slovenia; other countries WID

It has been hinted already that the stability in the Croatian and Slovenian series could be attributed to the stability of the wage distribution in the last fifteen years. Similarly, it has been noted that the general rise of top wages has been of more moderate magnitude in continental and southern Europe (in sharp contrast to the US and other Anglo-Saxon countries), and that it has stabilized in the recent decade. Wage income has often manifested certain rigidity in its

response to economic shocks, and one could tentatively argue that the predominance of wage income (as opposed to capital and business income) at the top has made top income shares more resilient to economic fluctuations in Croatia and Slovenia. Most notably, it can be seen that the recent financial crisis has not brought about significant disruption in concentration patterns at the top in countries that have been especially adversely affected by the crisis, such as Croatia or Slovenia.<sup>63</sup> In line with this argument one finds indeed a growing share of business income at the top percentile level in countries which experienced more sizeable fluctuations in top income shares, such as Germany (Dell, 2007; Bach et al. 2009) or Poland (Bukowski and Novokmet 2017).

The comparison to ex-communist countries in Eastern Europe is of particular interest. Figure 22 show top 1% income share in Croatia, Slovenia, the Czech Republic, Hungary, Poland and Russia since the early 1990s. It can be seen that Slovenia has assumed the bottom position and Russia the top position, with other countries placing in-between. The stark contrast between Russia and Slovenia is a fitting way to finish our journey, since differences in the transition course between Russia and Slovenia, and markedly different inequality equilibrium, give to the institutional argument an additional weight. Similarly, we can think to what extent have markedly different power relations during socialism in the Soviet Union and Yugoslavia influenced these different institutional outcomes (Novokmet, 2017, Roland 2017).

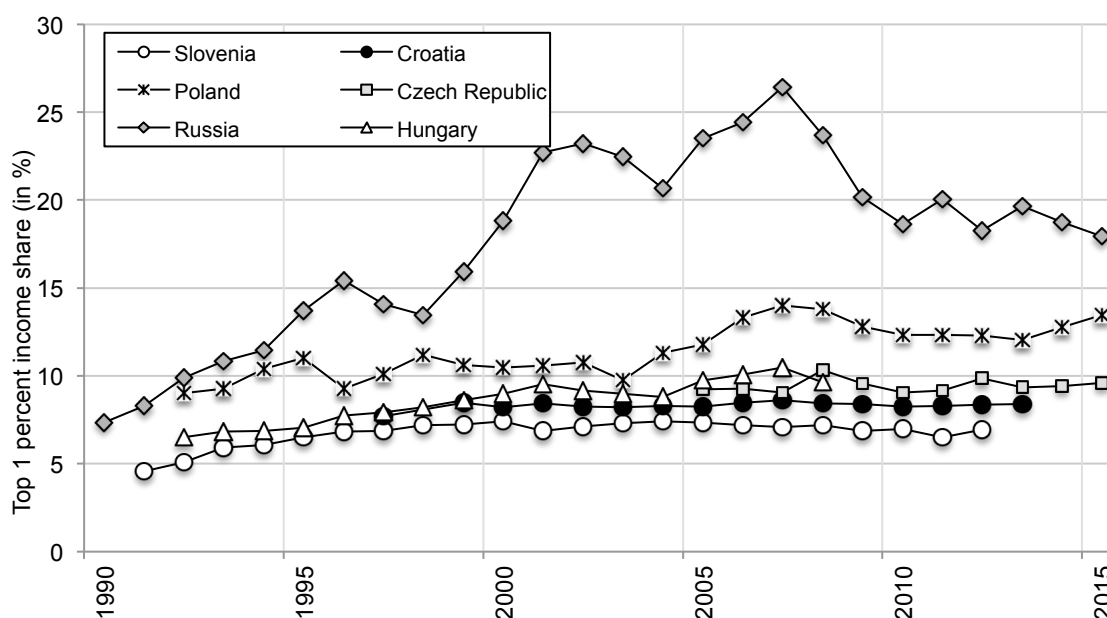


Figure 22: Top 1 per cent income share in former socialist countries (fiscal income)

Source: authors' computation for Croatia and Slovenia; other countries WID

<sup>63</sup> To the extent that income of top groups has not fallen relatively more than the total income.

## 8. Conclusion

We have used income tax data to chart income inequality patterns in Croatia and Slovenia since the breakup of Yugoslavia until the present day. In both countries, inequality has increased moderately during the transition. Inequality increased in the 1990s and stabilized afterwards. Rising wage concentration largely drove an increase in inequality. We relate this experience to the most 'gradualist' privatization path among the former socialist countries in Central and Eastern Europe. This has included slow privatization and labour market institutions that precluded more notable rise of inequality. Next, the substantial importance of the state ownership of the corporate sector in Slovenia and the foreign and state ownership in Croatia has made the concentration of private capital income less pronounced at the top of the income distribution. It remains to be seen how the low-inequality social equilibrium faces challenges posed by the globalization.

## APPENDIX

### A.1. Top income shares – Tables

Table A.1.: Income distribution in Slovenia, 1991-2012

	Bottom 50%	Middle 40%	Top 10%	Top 5%	Top 1%	Top 0.5%	Top 0.1%
1991	32,7	44,2	23,2	14,2	4,6	2,8	0,9
1992	31,8	43,8	24,3	15,3	5,1	3,1	1,0
1993	25,3	47,0	27,7	17,5	5,9	3,6	1,2
1994	29,4	43,7	26,9	17,4	6,1	3,8	1,2
1995	24,1	46,9	29,0	18,8	6,5	3,9	1,2
1996	23,3	46,8	29,9	19,5	6,8	4,2	1,3
1997	24,7	45,8	29,5	19,3	6,8	4,2	1,3
1998	24,2	46,1	29,7	19,5	7,2	4,6	1,6
1999	23,9	45,8	30,3	20,0	7,2	4,5	1,5
2000	24,6	45,4	30,0	19,8	7,4	4,7	1,6
2001	25,5	45,0	29,5	19,3	6,9	4,3	1,5
2002	24,3	45,4	30,3	19,8	7,1	4,5	1,5
2003	23,5	45,9	30,6	20,0	7,3	4,7	1,7
2004	23,7	45,6	30,7	20,2	7,4	4,8	1,7
2005	24,5	44,7	30,8	20,2	7,3	4,7	1,6
2006	25,6	44,0	30,3	19,8	7,2	4,6	1,7
2007	27,0	43,2	29,9	19,5	7,1	4,5	1,6
2008	27,1	43,1	29,9	19,6	7,2	4,6	1,7
2009	26,2	43,6	30,2	19,5	6,9	4,3	1,5
2010	25,6	44,0	30,4	19,7	7,0	4,4	1,4
2011	26,1	44,2	29,6	19,0	6,5	4,0	1,2
2012	24,6	44,9	30,5	19,6	7,0	4,4	1,6

Source: authors' computation based on the income tax data

Table A.2.: Top income shares in Croatia

	Top 10%	Top 5%	Top 1%	Top 0.5%	Top 0.1%	Top 0.01%	Top 0.001%
1997	34,4	22,0	7,69	4,86	1,52		
1999	35,9	23,0	8,48	5,51	1,91		
2000	34,7	22,7	8,20	5,28	1,91	0,50	0,14
2001	34,6	22,6	8,42	5,49	2,06	0,53	0,13
2002	33,2	21,9	8,27	5,37	2,00	0,53	0,15
2003	32,9	21,8	8,21	5,34	2,01	0,53	0,13
2004	33,2	22,0	8,28	5,37	2,00	0,54	0,14
2005	33,4	22,1	8,26	5,34	1,99	0,50	0,12
2006	33,4	22,2	8,48	5,54	2,13	0,58	0,15
2007	33,9	22,5	8,60	5,63	2,19	0,64	0,19
2008	33,5	22,2	8,42	5,48	2,08	0,57	0,15
2009	33,7	22,2	8,40	5,44	2,04	0,56	0,15
2010	33,5	22,1	8,24	5,32	1,99	0,54	0,13
2011	33,5	22,1	8,29	5,36	1,99	0,54	0,13
2012	33,8	22,3	8,36	5,40	2,00	0,51	0,12
2013	33,8	22,4	8,40	5,41	1,98	0,50	0,12

Source: authors' computation based on the income tax data

## A2. Personal income tax in Yugoslavia

The first 'version' of the personal income tax in socialist Yugoslavia was introduced in 1958 as the 'tax on personal income of citizens' (hr. *porez na osobni prihod građana*;). The taxpayer was defined as the individual with the total net income (*čisti prihod*) above 500.000 dinars. However, in order to arrive at the tax base specific incomes already subject to the so-called 'income tax' (introduced in 1952; hr. *porez na dohodak*, sl. *dohodnina*) were subtracted from the total net income, as these were already taxed at progressive rates under the 'income tax'. Incomes subject to the 'income tax' were: incomes from land, income from buildings, income from private activity, and from property and property rights.<sup>64</sup> Thus, the tax on personal income of citizens predominantly taxed high personal incomes from work (regular and part-time work, pensions, etc.). The tax applied progressive rates.

<sup>64</sup> The activities subject to the 'income tax' were in fact penalized on the ideological grounds. On the other hand, personal income from work had not been altogether taxed in the period from 1950 to 1957 (Šimović 1989, p. 37).

A major legislation change took place in 1964 (*Osnovni zakon o porezima i doprinosima građana*), when the taxation of physical persons had come to be realized through various schedular taxes (Jelčić 1983).<sup>65</sup> The 'income tax' was abolished, and the 'tax on total income of citizens' (hr. *porez na ukupni prihod građana*; sl. *davek od skupnega dohodka občanov*)<sup>66</sup> was now applied to the total net income, defined as the sum of all personal incomes. In contrast to its predecessor, it included all income sources (in addition to income from employment). The tax base of the 'tax on total income of citizens' consisted from: personal incomes from work, from agriculture, from crafts and other independent activities, from intellectual services and authorship rights, income from buildings and other property, and income from property rights.

The exemption threshold was set at two times the average wage in social sector, while from 1979 the exemption threshold was increased to three times the average wage in the social sector. The exemption level was annually adjusted. The total net income was defined as the sum of all personal incomes, net of taxes and contributions paid through schedular taxes. Proportional taxes on personal incomes, at roughly similar effective rates, imply that the distribution of gross income (before schedular taxes) corresponds to the distribution of the net income (after schedular taxes). On the other hand, income subject to the 'tax on total income of citizens' was taxed progressively, with rates starting from 3% and climbing to the top marginal rate of 70%.

The most important category of net income were *personal incomes of workers*, comprising income of workers in social sector, workers employed in private sector as well as pensions. The vast majority of workers (always close to 100 per cent) were employed in the social sector, due to large legal restrictions placed on the private sector (e.g. maximum of 5 employees).<sup>67</sup> Schedular tax on personal incomes from work applied flat tax rate, which differed for economic branches in range from 1.2% to 3.5% (3.5% was applied to finance and insurance, banking and saving institutions; *Financijska politika općina za 1975*, p. 79)

The personal income from independent agricultural activities was determined as the cadastral net income (gross yield per m<sup>2</sup> reduced for operating costs; it comprised incomes from the crop production and the animal husbandry)<sup>68</sup>, or the actual income if it substantially

<sup>65</sup> personal income taxes consisted of the following schedular taxes (Jelčić 1983)

- from personal income of workers (*porez iz osobnog dohotka radnika*),
- personal income from independent agricultural activities
- personal income from independent non-agricultural activities (*porez iz osobnog dohotka od samostalnog obavljanja djelatnosti*)
- from authorship rights, patents and technical advancements (*porez iz osobnog dohotka od autorskih prava, патената i tehničkih unapređenja*)
- on income from property (*porez na prihod od imovine*) (porez na zgrade)
- on inheritance and gifts (*porez na nasljedstva i darove*)
- on gains from lottery (porez na dobitke od igara na sreću)
- on total income of citizens (*porez iz ukupnog prihoda građana*)

<sup>66</sup> until it was termed as contributions (doprinosi), since (Jelčić 1983)

<sup>67</sup> As noted above, the official terminology distinguished personal incomes from work from salaries and wages, since the workers' self-management in Yugoslavia implied that workers were not hired by enterprises, but acted instead as their managers/operators. Accordingly, their incomes were not treated as (fixed) operating costs (Bičanić 1963, p. 108; Lydall 1984, pp. 94-5)

<sup>68</sup> It did not matter whether the land was actually cultivated.

exceeds specified cadastral yields.<sup>69</sup> A revaluation of cadastral yields was implemented regularly, mainly in response to a rise in the agricultural prices and the production costs.<sup>70</sup>

Personal income from independent non-agricultural activities (the so-called «small economy» (*mala privreda*)) referred to incomes from crafts, hotel and restaurant activity, transport and other activity. It was determined either as a percentage on every income receipt of, as a lump sum amount, or according to actual income.

### Income tax statistics in Yugoslavia

The statistics of the tax on the total income of citizens for Croatia is found in the Croatian State Archives (*Hrvatski državni arhiv*) in Zagreb, Croatia:

- fund: **HR HDA 1692** *Republički sekretarijat za financije Socijalističke republike Hrvatske (serija: Opći poslovi)*

The corresponding statistics for Slovenia is found in the Archives of the Republic of Slovenia (*Arhiv Republike Slovenije*) in Ljubljana, Slovenia.

- fund: **SI AS 2104** *Republiški sekretariat za finance Socialistične republike Slovenije (serija O: poročila o odmeri davkov – prometnega davka, dohodnine, davka na dohodek od raznih dejavnosti)*

Income tax statistics for the socialist period come in the form of tabulations. The number of ranges in tabulations generally correspond to the number of tax rates in the progressive schedule. Income tax statistics shows in addition occupations of the taxpayers. It is reported only for all taxpayers (not reported for specific income ranges). (see Novokmet 2017, Table A3).

*Control for income and population total in Yugoslavia.* The total income control for Croatia and Slovenia is constructed as follows. We take 90 per cent of personal income in material and non-material social sector; plus 50 per cent of private income (referring mostly to agricultural income); plus social transfers (pensions (old-age and invalidity)). As the population total control, we take all adults above 18 years. The corresponding data is found in the

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<sup>69</sup> For example, if it stems from the cultivation of high-yielding crops which did not enter into the estimation of the average yield in the specific municipality the law determined levels of income above which a taxpayer was taxed according to actual income

<sup>70</sup> In the case of 'more permanent' cooperation (more than three years; where farmers joined their land, work and/or assets) with work organizations of associated labour (*organizacije udruženog rada* (OUR); the agricultural cooperatives), the taxpayer could opt between being taxed on the cadastral net income or taxed instead as a 'member' of OUR. However, the number of taxpayers that chose this option was negligible. For example, in 1984 only 33 farmers in Croatia established more permanent cooperation with OURs, while 1.206.175 had been subject to the tax according to cadastral net income (of which 797.491 actually paying tax) (Izveštajni podaci 1983/4, HR-HDA-1692/42-20/338/1985).

Statistical Yearbook of Yugoslavia, Statistical Yearbook of Croatia and Statistical Yearbook of Slovenia.

### A.3. Income tax data in Croatia and Slovenia

We use income tax data to construct top income shares in Croatia for the period from 1997 to 2013. Micro-data of all individual income tax returns were combined with individual files of high earners from the database of withholding tax of income from employment, in order to account for the fact that many (high-earning) employees do not in practice submit the tax return since the tax obligation settled by employers (and other tax-remitting institutions such as pension insurance for pensioners) is considered as final. Unless an employee obtains employment income from two or more employers or additional income for which there is an obligation to submit the tax return; or if an employee wants to claim allowances not allowed by the withholding tax. Note that in order to claim the basic personal allowance, individual is not required to submit the tax return.

Merging two datasets thus allows a detailed coverage of the top of income distribution.<sup>71</sup> In addition, for the years starting with 2006 we were also able to include other (non-employment) taxable income deducted at source, which does not need to be declared in the tax return.<sup>72</sup> This primarily allowed the inclusion of different types of income from the independent work (chiefly from the category of 'other income')<sup>73</sup> as well as capital income withheld at source.

We define income as 'gross income' before personal deductions and personal income taxes. Gross income includes income from employment (wages and salaries, plus pensions), self-employment income (including income of small unincorporated businesses (crafts businesses) and free-lance occupations), income from property and property right, capital income, insurance income and other income. Employment income is defined after social contributions paid by the employer but before social security contributions paid by the employee. Employers pay 15% of gross wage for health insurance, while employee pay 20% of gross wage for pension insurance.

However, several issues require further explanation. Only small unincorporated enterprises are in practice subject to personal income tax (acting as pass-through entities) while larger ones pay corporate income tax instead. Unincorporated enterprises can voluntarily apply to corporate income taxation, and generally had an incentive to switch as it implied more favourable tax treatment in practice.<sup>74</sup> The tax code in addition requires that large(r) unincorporated enterprises switch to corporate income taxation (those with more than 15 employees or with revenues/income above a certain level). But, from 2012 distributed profit

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<sup>71</sup> As individual files were only provided for high incomes subject to withholding tax on employment income.

<sup>72</sup> The corresponding database is available in the electronic form only from 2006.

<sup>73</sup> Such as compensations to management and supervisory board members, or to independent free-lance professions as journalists or artists.

<sup>74</sup> As the tax code allows them (as well as to other self-employed individuals) to choose to be taxed under the corporate income tax which was found to be more attractive due to flat corporate income tax rate (20%), as well as until 2012 exemption of distributed profit shares from personal income tax base.



of unincorporated businesses that switched to corporate income taxations system are present in the tax data as capital income (share in profit).

The coverage of capital income has undergone substantial changes in the last two decades. Distributed profits (dividends and profit shares) were taxed in the 2001-2005 period, and became a part of taxable income again in 2012. Unfortunately, as the database for the tax deducted at source (other than for employment) is available only from 2006, we cannot assess the importance of distributed profits for top incomes in the period 2001-2005.<sup>75</sup> Next, taxable interest income included only interests on given loans and credits, while interest on savings were exempt until 2014. Capital gains are only taxed from the sale of real estate if the holding period is less than 3 years. From 2016 capital gains from the disposal of financial assets became part of personal income tax base.

#### **A.4. Controls for total income and population**

Methodology used to construct top income shares was instigated by Kuznets (1953) who first connected tax statistics with the external population and income totals. Since Piketty's (2001) research on France, this methodological approach has been consistently applied across all studies (Atkinson and Piketty 2007, 2010), resulting in homogenous and long run series.

Our top groups are defined in relation to all potential tax units. Tax unit in Croatia and Slovenia is individual and we take all adults above 18 years as our control total for population. The corresponding data are published by the Central Statistical Office (as well as Eurostat).

Next, the total income control aims to approach the aggregate that corresponds to the concept of income defined by the tax law and reported consequently to tax authorities. We construct from National accounts the following measure of the total 'personal income': (i) wages and salaries, plus (ii) social benefits other than social transfers in kind, plus (iii) 50 per cent of profits of household unincorporated enterprises (taken as net operating surplus plus net mixed income of the household sector)<sup>76</sup>. The resulting series makes around 57% of GDP, or 90% of net household balance of primary incomes (according to SNA definition).

As an alternative measure for reference income, we start from the total income of filers as reported in the tax statistics and estimate as income of 'non-filers' 20% of average income of filers (e.g. see Piketty and Saez 2003). These series results in 90% of the 'total personal income' estimated from the National Accounts, indicating that our constructed 'total personal income' most likely overestimates our targeted reference total. Thus, as a reasonable guess we choose to take 90% of the constructed National Accounts 'total personal income' estimate as our reference income total (for example, the same approach is adopted by Roine and Waldenström (2010) for Sweden).

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<sup>75</sup> In the period from 2006-2012 only dividends and profit shares were taxed for profits obtained before 2005.

<sup>76</sup> We take only half of profits of household unincorporated enterprises because the national accounts figures are corrected for the concealed activity, which is in the same manner concealed from the tax authorities. Moreover, the scope of the non-observed economy was especially worrisome for Croatia and other transition economies (e.g. see Ott 2002).

### A.5. Top earning shares in Croatia and Slovenia

Further insights are obtained by comparing top earnings shares in Croatia and Slovenia. We construct top earnings shares in Croatia from 2000 until 2013. Comparable estimates for Slovenia based on the tax data have been constructed by Stanovnik and Verbič (2013) from 1991 up to 2012. Top earnings shares could be used to throw additional light on the development of top earnings in the early transition. It can be seen that in 2000, when estimates for Croatia become available, top percentile was one percentage point higher in Slovenia. Series then converged until 2005, after which we see rising divergence until 2009, with the Croatian top percentile overtaking the Slovenian.

	Slovenia		Croatia				
	Top 5%	Top 1%	Top 5%	Top 1%	Top 0.5%	Top 0.1%	Top 0.01%
1991	14,2	4,5					
1992	15,6	5,2					
1993	16,0	5,3					
1994	16,9	5,7					
1995	17,1	5,5					
1996	17,6	5,9					
1997	17,8	5,9					
1998	18,0	6,3					
1999	18,6	6,4					
2000	18,8	6,7	16,5	5,8	3,6	1,3	0,3
2001	17,9	6,1	17,5	6,4	4,1	1,5	0,4
2002	18,2	6,2	17,0	6,1	3,9	1,5	0,4
2003	18,0	6,3	17,2	6,4	4,2	1,6	0,4
2004	18,3	6,5	17,6	6,5	4,2	1,6	0,4
2005	18,1	6,4	17,5	6,4	4,1	1,5	0,4
2006	17,6	6,2	18,1	6,7	4,3	1,7	0,4
2007	17,5	6,0	18,4	6,7	4,4	1,7	0,5
2008	17,6	6,1	18,5	6,8	4,4	1,7	0,5
2009	17,3	5,9	18,6	6,8	4,4	1,7	0,4
2010	17,3	5,9	18,2	6,5	4,2	1,6	0,4
2011	16,6	5,5	18,1	6,5	4,2	1,6	0,4
2012	16,6	5,6	18,3	6,6	4,3	1,6	0,4
2013			18,0	6,5	4,2	1,6	0,4

Table A.3 : Top earnings shares in Croatia and Slovenia

Source: Slovenia: Stanovnik and Verbič (2014, Tab. 7); Croatia: authors' computation from the income tax data

## A.6. Employer survey in Slovenia and Croatia

The employer survey has been available since the 1960s and allows a longer-term perspective on earnings distribution. The Central Statistical Offices in Croatia and Slovenia have conducted the survey annually, which covered all employees working full-time in September (enterprises in the social sector before 1991; in Croatia after 1996 in March).

The results of employer survey in Slovenia started to be reported according to the gross concept after 1991. In Slovenia, enterprises and other organization (private enterprises with 3 or more employees) are surveyed covering both full-time and part-time workers. The army is covered from 1992 and the police from 1993. The exact earning concept used is the following: "Average monthly earnings are composed of income received by persons in paid employment. In addition to income earned for work actually done during regular working hours, all other income is counted, and is set out on the following basis: income from overtime, supplements for annual leave, sickness pay for up to 30 days, slowdown through no fault of their own of the persons in paid employment, public holidays, performing of national duties, paid leave and similar, awards, premiums, income for past work, incentive bonuses and bonuses after periodic and final balance sheets." (Statistical Yearbook of Slovenia, various eds.)

Croatia still uses net wage concept (gross earnings after social security contributions and PIT, or net take-home wage), which complicates the comparison between the series. For the wage analysis, the gross concept is generally preferred as it is more indicative of labour market outcomes, before the redistributive activity of the state is taken into account.<sup>77</sup> An additional drawback in relying only on the estimates for net income is limited comparability in the international context, as most countries have published reports on the distribution of gross earnings. This especially limits the historical analysis (for example, Lydall (1968, 1984) already pointed to this issue concerning the comparability of Yugoslav data on earnings distribution with other countries). The progressive structure of the Croatian tax system, with the largest income tax burden borne by high-earning individuals (Urban 2006), could have affected relative patterns of net earnings to gross earnings.

Figure A1 shows the evolution of the upper and the lower part of the net earnings distribution in Croatia since 1966 observed in the employer survey, with the upper tail portrayed by the evolution of the 90th percentile (P90) and the 95th percentile (P95), and the lower by the evolution of the 10th percentile (P10) (percentiles are expressed as a percentage of the median wage P50).

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<sup>77</sup> Of course, it is ideal to have an insight into both gross and net distribution.

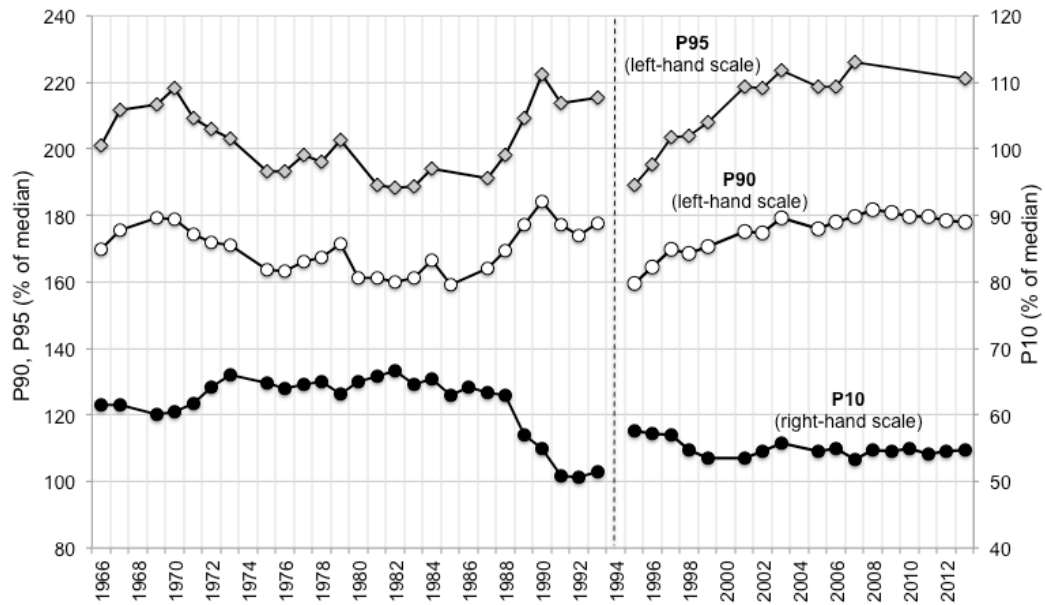


Figure A1: Percentiles of net earnings distribution from Employer Survey in Croatia  
 Source: author's computation (the intermittent line indicates a break with the introduction of the progressive income tax in 1994)

But Figure A2 suggests that Croatia and Slovenia exhibited quite similar trend in earnings dispersion in socialist Yugoslavia (with Croatia displaying slightly higher earnings concentration throughout the whole socialist period) and recent available estimates on net wage in Slovenia, as well as our calculation from EU-SILC indicate that countries display a similar dispersion of the upper tail.



Figure A2: The upper part of earnings distribution in Croatia and Slovenia  
 Source: own calculation from indicated sources

## Top income shares in Habsburg Monarchy

**Data.** Top income shares in Carniola (sl. Kranjska) and Dalmatia (hr. Dalmacija) are constructed from the income tax statistics for Imperial Austria. After the income tax was introduced in 1898, the fiscal administration had been publishing tabulations of income taxpayers in each province of Cisleithania. Income definition was quite broad allowing very few exemptions. Income below 1,200 crowns was tax exempt. It defined income from following sources: from land, from buildings, from business and self-employment, from capital and other sources. Capital gains were not taxed. Tax unit was a family with the total income of family members ascribed to the head of a family.

Data come from Statistical Yearbooks of Imperial Austria (Österreichisches Statistisches Handbuch für die im Reichsrathe vertretenen Königreiche und Länder) as well from Annual Report of Ministry of Finance (Mitteilungen des K. K. Finanzministeriums).

**Population Control.** The tax unit in Imperial Austria was household, defined as the married couple with dependants. The total number of households in Carniola and Dalmatia is estimated as the number of adults (above 18 years of age) minus the number of married female. The data come from censuses held in Austria-Hungary in 1890, 1900 and 1910 (*Die Ergebnisse der Volkszählung in den im Reichsrathe vertretenen Königreichen und Ländern*)

**Income Control** The control total for income for Carniola and Dalmatia during the Habsburg era was derived as follows. We take as our starting point Schulze's (2007) estimates of regional GDP in Austria-Hungary. Schulze provides estimates for 1870, 1880, 1890, 1900 and 1910, expressed in 1990 Geary-Khamis international dollars. In order to convert estimates into current Austrian-Hungarian crowns, we take the following steps. First, we convert these estimates to 1913 crowns by applying the exchange rate Schulze used (namely 3.36 GK dollars per crown; see Schulze 1997, p. 14). To obtain GDP for other years (for those between 1890, 1900 and 1910), we apply real growth rates of GDP for Carniola and Dalmatia, respectively taken from Ciccarelli and Missiaia (2014). Next, nominal values were obtained by using regional living cost indices in Austria-Hungary estimated by Cvrcek (2014). Finally, we take 60 per cent of nominal GDP as our total control income.

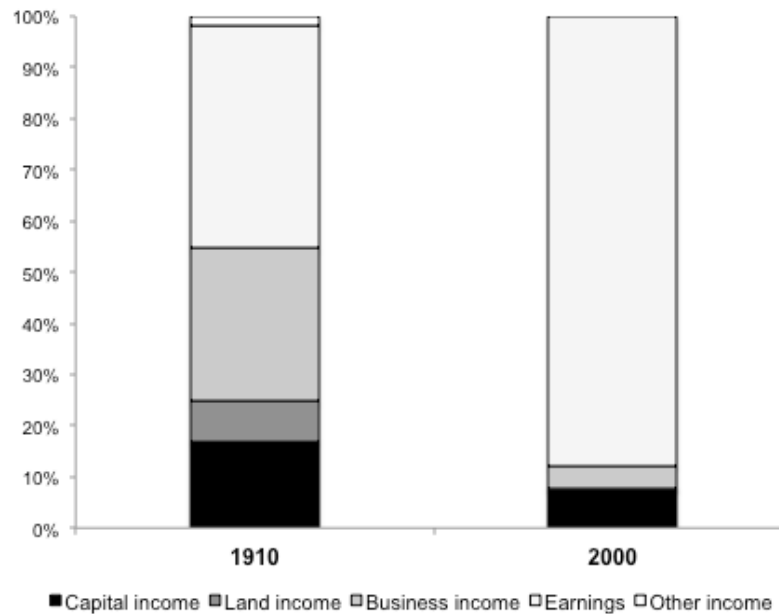


Figure A3: The income composition of the top 5 per cent in Slovenia in 1910 and 2000

Note: 1910 refers to the Habsburg province Carniola; capital income includes also rental income; in 2000 capital income is made from income from royalties 70%, while dividends and rental income the remaining 30%

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