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The Distribution of Wages and Employee Incomes in Slovenia, 1991–2009

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Abstract

This paper analyses the distribution of employee income in Slovenia in the period 1991–2009. The analysis is based on two different datasets, both derived from the personal income tax files. It was shown that income inequality of employees income has somewhat increased in this period, using the Gini coefficient as the indicator of income inequality. Though increases in income inequality were moderate according to this summary measure, rather largest changes did occur at the very top of the income distribution, i.e. top 5 per cent and top one per cent of employees. Income inequality of employees' net income (i.e. net of employee social contributions and personal income tax) remained fairly stable in this time period. In other words, the changes in personal income tax dampened to a large degree the effects of increasing inequality in the distribution of employee gross income. This was also established using the Kakwani index of progressivity. Increases in progressivity of the personal income tax came in leaps, mostly following the introduction of new income tax legislation.

Key words: income inequality, income distribution, wages, Slovenia.

JEL classification: J31, D31.

1. Introduction

The interest in income inequality is not waning. However, the focus of particular interest has been shifting, as researchers have in recent years devoted much attention to the analysis of the very top of the income distribution, also by extending the data series into the distant past. Though our analysis does not cover "the very long run of history" (Atkinson *et al*., 2011), it does cover a sufficiently long period of time. Slovenia gained independence in 1991 and introduced its – admittedly short lived – currency, the Slovenian tolar. In 2007, Slovenia joined the Euro zone and adopted the euro. In this sense, the 1991–2009 period has been quite eventful. However, any attempt to extend the analysis further back in time, to cover the pre-1991 period (when Slovenia was a constituent republic of the Yugoslavian federation), would entail insurmountable methodological difficulties. Namely, the socialist system did not recognize the concept of gross income, and there was no personal income tax in the modern sense of the word[1]. Thus, prior to 1991, only data on net wages are available.

Our analysis will deal with income inequality of the labour active population, more precisely, of employees. Thus, self-employed persons, persons active in agriculture and other active persons, who do not have employee status, will not be included. Furthermore, our analysis will take the individual as a statistical unit; we will not deal with household income. However, in spite of this "partiality" such an analysis also provides an indication of what was happening at the household level, as wages and salaries account for more than 60 per cent of disposable household income. Changes in the distribution of these incomes also provide a good indication of the trend in the distribution of household incomes. As for the "partiality" of our analysis, we can quote Binder (1993, p. 308), who wrote, referring to the USA data, that "if you want to understand the rise in income inequality in the 1980s, the place to start is with the rise in wage inequality". To which we might add Atkinson's' comment (1998, p. 19): "I agree, but one should not stop here". To which we might further add that Atkinson at times "did stop here" and analyzed the distribution of individual earnings in twenty country members of the OECD (*cf*. Atkinson, 2008).

We have already mentioned the strong research emphasis on the very top of the income distribution, doubtlessly necessitated by the large increases in the income shares accruing to these high-income earners. A recent research by Atkinson *et al*. (2011) has demonstrated a large increase in the share of income accruing to this top in a number of developed countries, but with more moderate increases in most central European countries (not including ex-socialist countries). A similar conclusion is also reached by OECD (2008). In this sense Slovenia appears to share some characteristics of developed countries of Central Europe, experiencing rather stable inequality, with moderate increases in the past twenty years.

The structure of our analysis is as follows. Section 2 will present both data sources used in our analysis. Section 3 will provide a comparison of some basic indicators, such as employment and average wages, from these data sources and from the official source – the Statistical Office of the Republic of Slovenia. In Section 4 we will present the

[1] Only certain types of income were taxed, i.e. income from contractual work.

structure of gross income: personal income tax (PIT), social security contributions and net income, net income being obtained by subtracting PIT and social security contributions from gross income. The distribution of gross income across income quintiles is presented, as well as the distribution of PIT. We show that the changes in the share of PIT paid, by income quintiles, can clearly be traced to changes in the PIT legislation. This legislation has – through the years – strongly emphasized the lowering of the tax burden for the low-income population. Section 5 is devoted to the analysis of income inequality and the role of the tax system in mitigating the effects of the rise in inequality of the distribution of gross income. Section 6 presents a brief analysis of the dynamics of PIT progressivity, using the Kakwani index as a measure. Section 7 offers some concluding remarks.

2. Data sources

Our analysis is based on two data sources. Both of these are not generally available to the public, but have been acquired (specifically for this research) from the Statistical Office of the Republic of Slovenia (SORS) and the Tax Administration of the Republic of Slovenia (TARS).

Data source A

This data source was obtained from SORS. Using the statistical registry of the labour active population (*Statistični register delovno aktivnega prebivalstva – SRDAP*) and tax file returns from TARS, a population of employees was extracted for each year, satisfying both of the following criteria: (a) employed full-time (meaning that the data in the registry indicate that the person is working at least 36 hours per week), and (b) employed at the same employer throughout the year. The data are delivered in tabular form with 14 income groups. There is differentiation according to the sector of employment (private, public) and gender (male, female), so that there are in effect four tables for each year. The tables include all (itemized) sources of income subject to tax, as well as withheld PIT and employee social security contributions. The tables cover the period from 1993 to 2008.

Data source B

This data source was obtained from TARS. These are actually large random samples extracted from the PIT files, i.e. covering all persons liable for PIT. Each of these annual samples includes about 60 thousand taxable persons, representing some 5 per cent of all persons liable for PIT. For the 2005–2009 period TARS provided an even larger random sample, covering some 10 per cent of persons liable for PIT. Data for each person include the following: age of birth, sex, gross income (for each income source subject to tax), employee social security contributions, withheld PIT and final PIT liability. This data source covers the period from 1991 to 2009.

Both data sources have their "strong" and "weak" selling points. In view of Atkinson's A/B/C classification (Atkinson, 2007; Atkinson, 2008), both sources could be classified in the A group, signifying high quality data. Data source A offers possibilities for comparisons between the public and private sector – something that data source B does

not provide. However, data source A starts with 1993, and thus does not cover the most dramatic early period of transition from a socialist to a market economy. In addition, to be noted is the fact that this data source contains only data on withheld PIT and not data on final PIT liability. In view of the described selection rules, data set A contains a fairly homogeneous population of employees.

As data source B represents a random sample of all persons liable for PIT, employees have to be extracted. Furthermore, there is no information on sector of employment. Additionally, there is no information on the period within the year, during which the income has been earned; source A solves this problem by including only employees who have worked during the whole year. Thus a person could have earned income only during two months and still be included in the PIT file[2]. Needless to say, the average monthly income of this person will be low, as his "annual" income (earned during two months) is low. However, the advantage of this data source is that it starts with 1991 and that it contains data on the final PIT liability. As these are sample data, the estimated values of various indicators are subject to sampling errors; due to large samples the estimated standard errors of estimates are rather small and shall not be presented here.

3. A comparison of indicators from the data sources and official statistics

In this section, we will provide a comparison of the values of several indicators. We start with the number of employees. Official data on the number of employees, published by the Statistical yearbook of the SORS, include all employees[3]. The number refers to annual average (obtained from monthly data). Data source A is somewhat more restrictive, in that it does not include: (a) persons working part-time, (b) persons who have not worked the whole year, and (c) persons who have changed their employer in a given year.

What about data source B? We first extracted employees according to the single criterion that wages and/or wage compensations received by the person in a given year must be positive. In our previous research (Stanovnik and Verbič, 2005a) we extracted employees according to two cumulative criteria: (a) value of wages and/or wage compensations is positive, (b) value of vacation allowance is positive. We have set the second criterion because the vacation allowance is a statutory element of the labour compensation package, with minimum amounts of these vacation allowances being the result of negotiations between the social partners and spelled out in collective agreements[4]. If the worker is employed part-time, he is entitled to receive an

[2] Of course, this person would be included in the PIT file only if gross annual incomes exceed the amount of the general personal allowance. This allowance is in the form of a deduction.
[3] From 2005 these data include owners of firms (actually, firms with one employee) and other persons not insured as self-employed persons. These persons actually pay wages to themselves.
[4] There are also strong inducements to disburse only minimum amounts of these vacation allowances. Namely, from 1994 onward amounts of vacation allowance greater than the stipulated minimum amount were subject to corporate income tax. From 1998 onward, values that surpassed the stipulated minimum amount were also subject to social contributions.

appropriate part of the annual vacation allowance[5]. Similarly, if a worker is employed by an employer e.g. for three months in a year, he is entitled to 3/12 of the minimum amount.

Regardless of these legal obligations, it appears that numerous employers are in breach of the law and do not disburse vacation allowances to their workers; our estimates indicate that some 10 per cent of all workers do not receive these allowances. Excluding this group of workers from our analysis does not seem warranted, in spite of the fact that their wages are quite low and that – in all likelihood – they are being employed part-time and/or for only several months during the year. On the other hand, their inclusion also results in lower estimates of average wages.

Table 1 presents a comparison of the (average) number of employees according to the Statistical Yearbook of the SORS, the number of employees according to data source A and estimated number of employees according to data source B. We reiterate that the estimates from data source B – unlike data from official statistical sources and data from data source A – do not refer to average annual data, but refer to the total number of persons who worked in a given year (and received wages and/or wage compensations) and were liable for PIT.

In times of rapid changes in the labour market – which Slovenia has been experiencing since 2009 – the number of employees according to data source B is not really informative, as it does not indicate a timely change in trend. In addition, unlike the official data and data from data source A, the number of employees from data source B is quite susceptible to changes in PIT legislation; an increase in the personal allowance (deduction) may result in a lower number of persons liable for PIT[6], and thus fall in "employment". This is clearly seen from Table 1, with the average number of employees according to official statistical sources registering a decrease in 2009 – from 790 thousand in 2008 to 752 thousand in 2009 – whereas according to data sources B, the total number of persons being employed in 2009 (and filing a PIT return) hardly changed (798 thousand) in comparison to 2008 (799 thousand).

What can we say about wages? Here we compare the values of the official average monthly wage, published in the Statistical Yearbook of the Republic of Slovenia, with the computed average monthly wage from data sources A and B. It must be noted that the official average wage is actually being computed on a subset of all employees. Thus, in 1991 employees in private enterprises and employed by the self-employed were not taken into account. The subset was enlarged in 1992, when employees in larger private enterprises (with at least three employees) were included. Since 2005, all employees in private enterprises are included in the official calculation of the average wage, so that the only excluded group are employees working for the self-employed[7]. As a rule, these

[5] Even some categories of part-time workers are entitled for a full vacation allowance. These are workers who are partially disabled and receive part of their wage compensation from the Institute for pension and disability insurance (*Zavod za pokojninsko in invalidsko zavarovanje – ZPIZ*).

[6] Persons whose income is lower than the personal allowance do not have to file a PIT return and are thus not included in the PIT database - neither in data source A nor in data source B.

[7] In computing the official average wage, all workers in the above stated subset are included. This means the inclusion of workers working part-time or full-time, workers on a permanent or temporary labour

workers have low registered wages, due to possibilities for payment in cash. Due to this excluded group of workers from the computation of the official average wage, it is not surprising that the official average wage is somewhat higher than the average wage computed from data source A, as seen from Table 2.

Table 1: The number of employees according to different statistical sources (in thousands), 1991–2009

Year	Statistical Yearbook	Data source A	Data source B
1991	746		762
1992	692		725
1993	666	525	741
1994	647	517	733
1995	642	533	743
1996	635	527	740
1997	651	528	736
1998	652	545	745
1999	671	563	747
2000	683	575	747
2001	695	584	755
2002	698	579	769
2003	699	570	763
2004	703	582	774
2005	732	596	764
2006	742	594	774
2007	766	606	779
2008	790	614	799
2009	752		798

Source: Statistical Yearbook of the Republic of Slovenia (SORS, 1992–2010); own computations from data sources A and B.

The lowest estimated values of the average wage are according to data source B. Here, the average monthly wage is computed by dividing the annual value of wages (as specified in the PIT tax form) by 12. Namely, we do not know how many months the person has actually been working, or whether he has been working full-time or part-time, so we simply assume that the person has been working full-time during the year.

In spite of these differences in the data sets, we can observe from Figure 1 a quite consistent trend for the average wage (in real terms) from all the three statistical sources. The average wage has been steadily increasing (in real terms) since 1992. Of course, the values of the average wage (in real terms) according to data source B are the lowest, as the average wage for every worker was computed assuming the worker was employed full time and throughout the year.

contract. A person who worked only two months would have his average wage computed on the basis of these two months.

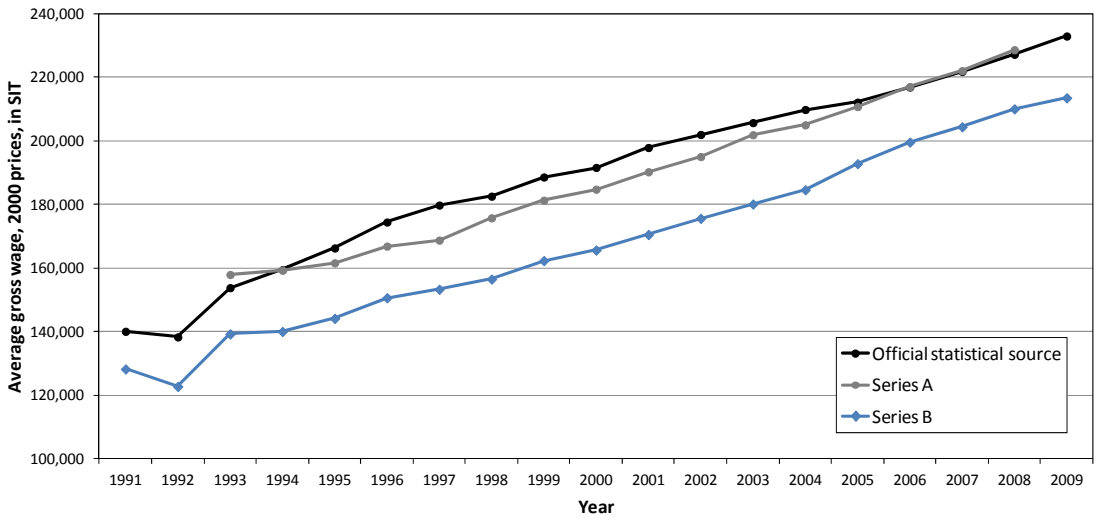
Table 2: The average monthly wage according to different data sources, 1991–2009

Year	Statistical Yearbook	Data source A	Data source B
1991	16.8		15.4
1992	51.0		45.3
1993	75.4	77.5	68.3
1994	94.6	94.6	83.1
1995	112.0	108.8	97.1
1996	129.1	123.5	111.5
1997	144.3	135.4	123.0
1998	158.1	152.2	135.5
1999	173.2	166.5	149.1
2000	191.7	184.8	165.7
2001	214.6	206.3	184.9
2002	235.4	227.3	204.7
2003	253.2	248.5	221.7
2004	267.6	261.4	235.4
2005	277.3	275.5	252.0
2006	290.6	290.7	267.4
2007	1,285	1,286	1,184
2008	1,391	1,400	1,286
2009	1,439		1,319

Note: For the period 1991–2006 nominal gross wages are in thousand SIT, while from 2007 onward the values are in thousand EUR.

Source: Statistical Yearbook of the Republic of Slovenia (SORS, 1992–2010); own computations from data sources A and B.

Figure 1: The average gross wage (in 2000 prices) in tolars, 1991–2009



Note: For the conversion of nominal gross wages to real gross wages we use the consumer price index (CPI). For the 2007–2009 period the conversion from EUR into SIT is performed using the exchange rate 239.64 SIT/EUR.

Source: Statistical Yearbook of the Republic of Slovenia (SORS, 1992–2010); own computations from data sources A and B.

4. The structure of gross income: PIT, employee social contributions and net income

In Section 3 we have established that the real average wage has been steadily increasing since 1992. This assertion is quite robust and holds regardless of the data source used. The increase in net income of the employees has been even more pronounced, as seen from Tables 3 and 4, which show an increasing share of net income in the gross income of employees[8]. As data source A does not contain data on final PIT, the actual net income could not be computed. That is why we refer to "net" income, obtained by subtracting withheld PIT and employee social contributions from gross income. This is seen in Table 3. Table 4 is based on data source B; here net income is obtained by subtracting actual PIT paid and employee social contributions from gross income.

Table 3: Withheld PIT, employee social contributions and "net" income as a share of gross income of employees, data source A

Year	Gross income	Withheld PIT	Employee social contributions	"Net" income
1993	1.000	0.140	0.218	0.642
1994	1.000	0.142	0.205	0.654
1995	1.000	0.143	0.200	0.658
1996	1.000	0.146	0.198	0.656
1997	1.000	0.145	0.198	0.657
1998	1.000	0.147	0.202	0.652
1999	1.000	0.148	0.202	0.649
2000	1.000	0.150	0.204	0.647
2001	1.000	0.150	0.204	0.646
2002	1.000	0.151	0.204	0.645
2003	1.000	0.152	0.204	0.644
2004	1.000	0.152	0.203	0.645
2005	1.000	0.142	0.201	0.657
2006	1.000	0.144	0.204	0.653
2007	1.000	0.131	0.204	0.665
2008	1.000	0.134	0.204	0.662

Note: "Net" income refers to gross income minus withheld PIT minus employee social contributions.

Source: Own computations from data source A.

As seen from Table 4, the share of PIT in the gross income of employees has decreased from 14.9 per cent in 1991 to 12.6 per cent in 2009, whereas the share of employee social contributions has decreased from 22.9 percent to 20.3 per cent of gross income in the same time period. Both decreasing shares are mostly due to legislative changes[9].

[8] Wages account for some 90 per cent of employees' gross income, with vacation allowance accounting for a further 5 per cent.

[9] In principle, the decreasing share of employee social contributions could also be due to changes in the income composition, say, with the increasing share of income from capital in gross income of employees. This income is not subject to social contributions. However, this was not the case.

Decreases in the share of PIT occurred in 1994, 2005 and 2007, i.e. the years when new PIT legislation was introduced. A decreasing share of employee social contributions is visible in the first years of transition, up to 1995, caused by the gradual decrease in the statutory employee contribution rate, from 24.79 per cent in 1992 to 22.10 in 1995.

Table 4: PIT, employee social contributions and net income as a share of gross income of employees, data source B

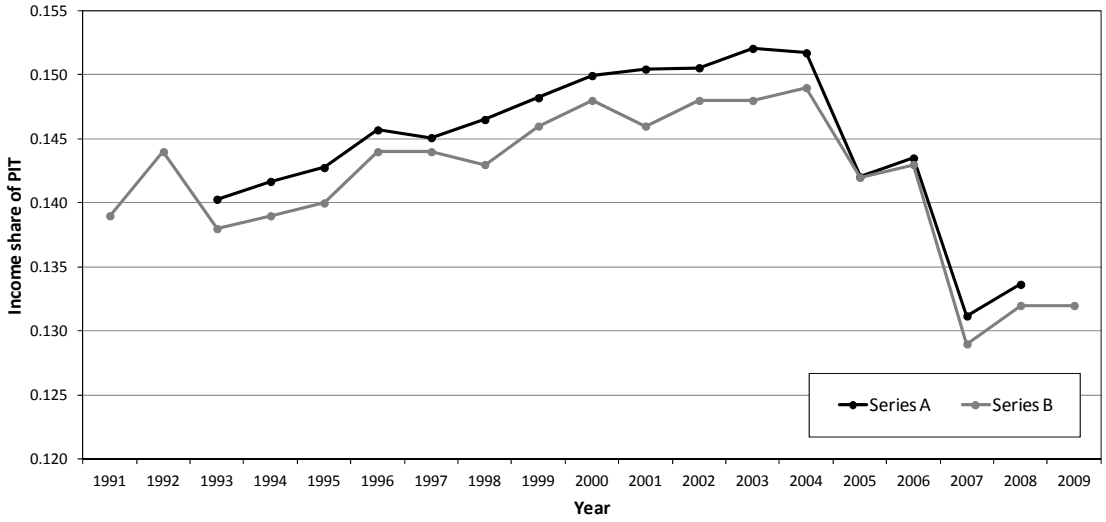
Year	Gross income	PIT	Employee social contributions	Net income
1991	1.000	0.149	0.229	0.623
1992	1.000	0.146	0.226	0.628
1993	1.000	0.147	0.217	0.636
1994	1.000	0.136	0.203	0.661
1995	1.000	0.139	0.197	0.664
1996	1.000	0.141	0.195	0.664
1997	1.000	0.140	0.195	0.664
1998	1.000	0.138	0.199	0.663
1999	1.000	0.139	0.200	0.661
2000	1.000	0.139	0.200	0.661
2001	1.000	0.138	0.202	0.660
2002	1.000	0.141	0.201	0.658
2003	1.000	0.141	0.201	0.658
2004	1.000	0.143	0.201	0.657
2005	1.000	0.133	0.199	0.668
2006	1.000	0.133	0.201	0.665
2007	1.000	0.126	0.201	0.673
2008	1.000	0.128	0.201	0.672
2009	1.000	0.126	0.203	0.671

Source: Own computations from data source B.

In order to provide a better basis for comparison, we also computed the share of withheld PIT in gross income of employees from data source B. A comparison with data source A is provided in Figure 2, which, again, shows remarkable congruence.

The period since 1991 witnessed not only large aggregate changes in the PIT burden and (in the initial years) changes in employee social contributions, but also changes in the PIT burden across income groups, as can be observed from Tables 5 and 6. The changes in the PIT burden are more pronounced in Table 6, which is based on data source B and thus includes all employees who were obliged to submit a PIT tax return. We recall that data source A (presented in Table 5) includes only employees working full time and for the same employer throughout the year. Both tables also show the share of paid PIT (as percentage of total paid PIT) for the upper 5 per cent and upper 1 per cent of employees.

Figure 2: The share of withheld PIT in gross income of employees, 1991–2009



Source: Own computations from data sources A and B.

Table 5: The structure of withheld PIT across income quintile groups, data source A

Year	Lowest 20 %	Quintile groups 2 to 4	Highest 20 %	Top 5 %	Top 1 %
1993	7.33	45.64	47.03	21.03	7.34
1994	5.56	41.36	53.08	26.00	9.58
1995	5.48	40.61	53.91	26.55	9.58
1996	5.55	40.15	54.30	26.87	9.76
1997	5.44	39.92	54.63	27.22	10.00
1998	5.47	39.36	55.17	27.70	10.64
1999	5.33	38.82	55.85	28.13	10.78
2000	5.34	39.19	55.47	27.81	10.72
2001	5.42	38.85	55.73	27.67	10.66
2002	5.51	39.22	55.27	27.12	10.59
2003	5.49	39.08	55.43	26.86	10.45
2004	5.69	39.12	55.18	26.48	10.34
2005	4.67	37.73	57.60	27.94	11.06
2006	4.65	38.45	56.91	27.11	10.59
2007	4.85	37.38	57.77	28.78	11.47
2008	4.33	38.00	57.66	28.35	10.92

Source: Own computations from data source A.

Changes in the PIT burden across income groups can occur through several channels: (a) legislative changes in the PIT, which include changes in tax brackets, tax rates and tax reliefs, (b) changes in the income distribution, and (c) changes in the indexation rules for tax brackets.

Table 6: The structure of paid PIT across income quintile groups, data source B

Year	Lowest 20 %	Quintile groups 2 to 4	Highest 20 %	Top 5 %	Top 1 %
1991	6.61	49.36	44.03	19.01	6.99
1992	5.60	47.54	46.86	21.62	8.28
1993	5.26	46.73	48.01	22.31	8.37
1994	2.31	39.67	58.02	29.48	11.70
1995	2.37	39.30	58.33	29.50	11.23
1996	2.43	38.15	59.42	30.51	12.03
1997	2.37	37.71	59.93	31.29	12.38
1998	2.43	37.34	60.23	31.66	13.18
1999	1.10	36.71	62.19	33.12	13.51
2000	1.01	36.49	62.49	33.54	14.29
2001	2.30	36.97	60.74	31.25	12.55
2002	2.28	36.46	61.26	31.75	12.89
2003	2.31	36.85	60.84	31.32	13.06
2004	2.34	36.58	61.08	31.91	13.49
2005	1.55	34.42	64.02	33.52	14.08
2006	1.74	35.19	63.07	32.50	13.70
2007	2.01	34.86	63.14	33.44	13.33
2008	0.86	35.01	64.13	33.95	13.63
2009	0.72	35.23	64.04	33.12	13.01

Source: Own computations from data source B.

Starting from the third possible cause for changes in the tax burden, i.e. indexation rules, we note that up to 2004, the tax brackets have been annually adjusted according to the growth of the average wage. The PIT Act, passed in May 2004 (ZDoh-1, Official Gazette of the Republic of Slovenia 54/2004) changed the indexation rule, so that tax brackets were uprated according to the consumer price index. Such indexation has also been retained by the PIT legislation, passed in 2006 (ZDoh-2, Official Gazette of the Republic of Slovenia 117/2006). If growth of wages is higher than increased in the consumer prices, this would cause a gradual drift of employees into higher tax brackets.

Changes in the income distribution can also cause changes in the relative tax burden. Thus, the rapid increase in income inequality in 1992 and 1993 resulted in a visible increase in the share of PIT paid by the highest quintile group.

However, there is no doubt that the largest changes in the shares of PIT paid across income groups were due to legislative changes. A "quantum leap" occurred in 1994, when the new PIT legislation entered into force (Zdoh, Official Gazette of the Republic of Slovenia 71/93). This PIT legislation introduced significant changes in the tax brackets and tax rates. However, of particular importance was the introduction of a personal allowance, amounting to 11 per cent of the average national annual wage. Thus, the tax burden of low-income groups decreased, whereas the burden for higher income groups increased.

A further large decrease in the relative tax burden of low-income groups occurred with the passage of the *Law on extraordinary decrease of tax liability* (ZIZDO), passed in

May 2000 (Official Gazette of the Republic of Slovenia 44/2000). This law had a retroactive effect for the PIT liability for the year 1999, and was also applied for the tax year 2000. It prescribed lower tax liabilities for low-income groups: this was a pre-election manoeuvre by the government of Dr. Janez Drnovšek. As this law was of limited duration, and as the elections were successfully won by the party of dr. Janez Drnovšek, there was no strong interest by the government to extend its validity. Thus, in 2001 the relative tax burden of the low-income group (bottom quintile group) returned to its pre-1999 value. Further changes occurred in 2005, when new PIT legislation (Zdoh-1) entered into force; this caused a sizeable increase in the personal allowance. The frenzy continued toward the end of 2005 with the introduction of cedular taxation of most income from capital (Official Gazette of the Republic of Slovenia 115/2005). Thus, interest income, dividends and capital gains were henceforth taxed with a final withholding tax amounting to 20 per cent. In other words, these incomes were now being excluded from the PIT tax form.

In 2007, a new PIT Act (ZDoh-2) entered into force (Official Gazette of the Republic of Slovenia, 117/2006). It simplified the system by reducing the number of tax brackets from five to three and reduced the top marginal rate from 50 to 41 per cent. Legislative changes continued, and in the beginning of 2008 (Official Gazette of the Republic of Slovenia 10/2008) important changes were introduced, with a differentiated personal allowance; the higher the income, the lower the personal allowance[10]. Quite possibly, the rationale for such a "bizarre" tax allowance, unknown in the fiscal doctrine, was the approaching parliamentary elections. Of course, the relative tax burden of the low-income group (bottom quintile group) further decreased (see also Majcen *et al*., 2009). To sum up, the shares of PIT paid by the low-income groups in Slovenia are now at a historic low.

5. Income inequality

Tables 7 and 8 present the distribution of income (of employees) across quintile groups, with Table 7 referring to data source A and Table 8 to data source B. In both tables, we further divide the top quintile group into the top 5% and top 1% of employees.

Both tables show that income inequality has increased in this long time period, as the shares accruing to the bottom income quintile group and income quintile groups 2 to 4 have somewhat decreased, whereas the share accruing to the top income quintile group has slightly increased. However, these assertions depend on the base year of comparison. If we discard the first three years of transition, i.e. the 1991–1993 period, the changes in the distribution of income are rather small. However, both data sources (A and B) show non-negligible changes at the very top of the income distribution. Thus, according to data source A, the share of total gross income accruing to the top income quintile group has increased by 2.38 percentage points in the 1993–2008 period. A large part of this increase accrued to the top one percent of employees, whose income share increased by 0.89 percentage points.

[10] Taxpayers with an annual gross income up to 6,800 EUR were entitled to a personal allowance (deduction) of 4,959.60 EUR. Taxpayers with an annual gross income from 6,801 to 9,000 were entitled to a personal allowance of 3,959.60 EUR, whereas taxpayers with an annual gross income greater than 9,001 were entitled to a personal allowance amounting to 2,959.60 EUR.

Table 7: The structure of gross income of employees, by income quintile groups, data source A

Year	Lowest 20 %	Quintile groups 2 to 4	Highest 20 %	Top 5 %	Top 1 %
1993	9.60	52.27	38.13	14.83	4.69
1994	9.66	51.65	38.69	15.76	5.09
1995	9.33	51.40	39.27	16.05	5.08
1996	9.34	51.00	39.66	16.37	5.27
1997	9.16	51.02	39.82	16.50	5.35
1998	9.21	50.58	40.21	16.82	5.66
1999	9.01	50.18	40.81	17.24	5.84
2000	9.06	50.27	40.67	17.05	5.76
2001	9.16	49.93	40.91	17.03	5.75
2002	9.25	40.12	40.63	16.73	5.69
2003	9.23	49.90	40.87	16.75	5.70
2004	9.42	49.73	40.85	16.69	5.72
2005	9.44	49.79	40.77	16.63	5.81
2006	9.48	50.15	40.37	16.13	5.43
2007	9.34	50.08	40.59	16.45	5.75
2008	9.21	50.27	40.51	16.35	5.58

Source: Own computations from data source A.

Table 8: The structure of gross income of employees by income quintile groups, data source B

Year	Lowest 20 %	Quintile groups 2 to 4	Highest 20 %	Top 5 %	Top 1 %
1991	8.36	54.07	37.57	14.23	4.52
1992	7.64	53.16	39.20	15.58	5.15
1993	7.20	52.79	40.01	16.04	5.25
1994	7.11	52.30	40.59	16.91	5.65
1995	7.20	51.83	40.97	17.09	5.53
1996	7.33	51.05	41.62	17.56	5.87
1997	7.37	50.86	41.77	17.82	5.94
1998	7.46	50.64	41.90	18.00	6.32
1999	7.26	49.99	42.74	18.62	6.41
2000	7.22	49.96	42.82	18.75	6.73
2001	7.51	50.17	42.32	17.90	6.08
2002	7.49	49.81	42.69	18.21	6.24
2003	7.52	49.99	42.49	17.99	6.29
2004	7.58	49.66	42.76	18.34	6.53
2005	7.64	49.84	42.52	18.06	6.35
2006	7.93	49.95	42.12	17.64	6.21
2007	8.14	50.05	41.81	17.45	6.04
2008	8.12	49.95	41.93	17.62	6.13
2009	8.03	50.03	41.93	17.28	5.93

Source: Own computations from data source B.

A similar conclusion can also be reached through the inspection of Table 8, which shows the distribution of income of employees according to data source B. Thus, according to this data source, in the 1993–2008 period the upper quintile group

increased its share by 1.92 percentage points (from 40.01 per cent to 41.93 per cent), with the lions' share of this increase accruing to the top one per cent, which increased its share by 0.88 percentage points (from 5.25 to 6.13 per cent).

Tables 9 and 10 provide some summary measures of income inequality, based on data source A and data source B, respectively. We observe that the Gini coefficient based on data source B is consistently higher than the Gini coefficient based on data source A (see also Figure 3). This is quite according to the expectations, as data source B contains a very heterogeneous group of employees, with a sizeable number having low computed average wages. The narrative of both tables is similar; the Gini coefficient peaked in the late 1990s, with a small decrease occurring in the early 2000s[11].

Table 9: The Gini coefficient for gross income and concentration coefficients for withheld PIT, employee social contributions and "net" income, data source A

Year	Gini coefficient for gross income	Concentration coefficient for withheld PIT	Concentration for employee social contributions	Concentration coefficient for "net" income
1993	0.282	0.389	0.279	0.259
1994	0.285	0.464	0.282	0.248
1995	0.295	0.472	0.293	0.257
1996	0.299	0.476	0.295	0.261
1997	0.302	0.480	0.297	0.265
1998	0.305	0.485	0.302	0.266
1999	0.313	0.492	0.309	0.273
2000	0.312	0.490	0.310	0.272
2001	0.314	0.491	0.312	0.273
2002	0.310	0.486	0.308	0.269
2003	0.311	0.486	0.309	0.270
2004	0.308	0.480	0.303	0.269
2005	0.308	0.514	0.304	0.264
2006	0.303	0.509	0.305	0.258
2007	0.307	0.510	0.307	0.266
2008	0.307	0.515	0.308	0.265

Source: Own computations from data source A.

What is the explanation for the large increase in the value of the Gini coefficient in the early 1990s? There is little doubt that wage compression and "egalitarianism" of the socialist and self-management period "broke loose" in these early years, resulting in a significant increase in wage dispersion. This increase can be ascribed also to the poorly regulated (or rather unregulated) institutional setting, so characteristic for the early transition period in many Central and Eastern European countries. Thus, Štoka-Debevec (1997, p. 176) shows that mechanisms for negotiations between social partners were introduced in 1994 – with the formation of the Economic and Social Council, a tripartite body comprising trade union organisations, employer organizations and the government[12]. An agreement on wage policy, duly signed by the social partners was

[11] It is interesting to observe that there is no clear explanation for the increase in income inequality in the late 1990s.

[12] Perhaps one could use the term "re-introduced", as the trade unions had a very important role in the socialist and self-managed period.

also passed in 1994. In 1995, the National Assembly of the Republic of Slovenia (*Državni zbor*) passed a law with a long-winded title, *The law on promulgation of the agreement on wage policy and other labour remuneration and the social compact for 1995 and the setting of minimum and maximum wage* (Official Gazette of the Republic of Slovenia 29/95). This marked the first regulation on the minimum wage. For the following year, 1996, the minimum wage was stipulated in the social compact and the law on the promulgation of the social compact. Starting from 1997, the minimum wage was set in a special law on the minimum wage. Overall, it seems that these mechanisms have prevented further significant increases in wage inequality.

Table 10: The Gini coefficient for gross income and concentration coefficients for paid PIT, employee social contributions and net income, data source B

Year	Gini coefficient for gross income	Concentration coefficient for paid PIT	Concentration coefficient for employee social contributions	Concentration coefficient for net income
1991	0.290	0.360	0.285	0.276
1992	0.313	0.395	0.309	0.296
1993	0.326	0.411	0.323	0.307
1994	0.330	0.523	0.330	0.291
1995	0.333	0.525	0.331	0.294
1996	0.339	0.535	0.335	0.298
1997	0.340	0.540	0.335	0.299
1998	0.341	0.541	0.338	0.299
1999	0.351	0.573	0.348	0.305
2000	0.352	0.576	0.350	0.306
2001	0.345	0.547	0.346	0.302
2002	0.348	0.553	0.349	0.304
2003	0.346	0.549	0.346	0.302
2004	0.347	0.552	0.346	0.303
2005	0.345	0.586	0.344	0.297
2006	0.337	0.576	0.342	0.289
2007	0.333	0.572	0.336	0.287
2008	0.334	0.596	0.336	0.284
2009	0.336	0.599	0.339	0.285

Source: Own computations from data source B.

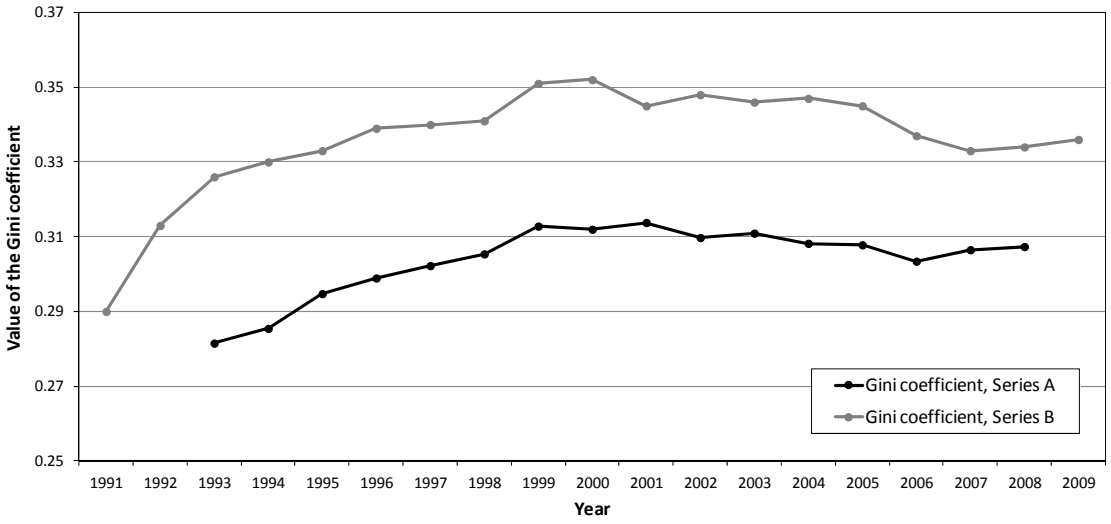
What is the role of PIT and its effect on after-tax income? As seen from Tables 9 and 10, the concentration coefficients for net income have shown a very modest increase since 1991. The data in Tables 9 and 10 also clearly indicate that the increasing inequality in the distribution of gross incomes has been – to a very large degree – neutralized by the PIT. Thus, the new PIT legislation applied in 1994 significantly increased the PIT progressivity. Again, the increase in the concentration coefficient for withheld PIT (data source A) in 1994 is much less pronounced than the corresponding increase for paid PIT (data source B).

The new 1994 PIT legislation obviously took everybody by surprise, so that the inequality in the distribution of net incomes of employees – as measured by the concentration coefficient for net incomes – actually decreased in that year; the concentration coefficient for "net" income (data source A) decreased from 0.259 in

1993 to 0.248 in 1994. The corresponding decrease for the concentration coefficient for net income (data source B) was from 0.307 in 1993 to 0.291 in 1994. A large increase in the concentration coefficient for paid PIT (series B) is registered in 1999. This is due to the aforementioned 2000 *Law on extraordinary decrease of tax liability*. The law reduced the tax liability of low-income groups for 2000 and (retroactively) for 1999. As the law expired in 2001, the concentration coefficient for paid PIT returned to its pre-1999 value. Due to its provisional character, this law did not require any adjustments in the withholding tax formula, so that there were virtually no changes in the concentration coefficient for withheld PIT (series A) – as seen from Table 9.

What can be said on the values of the concentration coefficients for employee social contributions? If all employee incomes would have been subject to social contributions, the concentration coefficient for employee social contributions would of course be equal to the Gini coefficient for gross income. However, some forms of labour-related remuneration are not subject to social contributions; the annual vacation allowance, which amounts to some 5 per cent of the total annual gross incomes of employees, being the more important. From 2000 onward, the minimum amounts of the annual vacation allowance are equal for all sectors. Furthermore, amounts that exceed the minimum amount set in the collective agreements are subject to social contributions, so that most employers refrain from disbursing amounts higher than the prescribed minimum. In other words, almost all employees are being paid the same amount of this labour-related remuneration[13]. This tax treatment of the annual vacation allowance would – by itself – result in the concentration coefficient of employee social contributions being higher than the Gini coefficient for gross income[14].

Figure 3: The Gini coefficient for gross income, 1991–2009



Source: Own computations from data sources A and B.

[13] However, we recall that not all employers are fulfilling their legal obligation, and that some 10 per cent of all employees are not receiving this allowance.

[14] In other words, the annual vacation allowance represents a larger share of gross income for low-income employees than high-income employees.

Some other income sources are also not subject to social contributions taxation: most forms of income from capital (dividends, interest income) and capital gains, as well as income from contractual work. These incomes are all strongly concentrated among the high-income groups, and this would result in the concentration coefficient for employee social contributions being lower than the Gini coefficient for gross income.

There is yet a third factor, which can influence the relative magnitude of the concentration coefficient for employee social contributions as compared to the Gini coefficient for gross income: the contribution base for social contributions. This base has a lower threshold (but no ceiling), so that the contribution base for pension and disability insurance cannot be lower than the minimum wage. This threshold is applied from 2000; for the previous years, a different threshold was applied[15]. The "minimum threshold rule" would – by itself – result in the concentration coefficient for employee social contributions being lower than the Gini coefficient for gross income.

Tables 9 and 10 show that, for the 1991–2005 period, the concentration coefficient for employee social contributions was somewhat lower than the Gini coefficient for gross income. Obviously, the second factor dominated, i.e. that capital income was not subject to social contributions[16]. This has changed from 2006 onward, as the concentration coefficient for employee social contributions has been somewhat higher than the Gini coefficient for gross income. What happened? Changes in PIT legislation enacted toward the end of 2005 introduced schedular taxation of most forms of capital income, in a clear departure from the comprehensive income tax approach. Thus, dividends, interest income and capital gains were not included in the tax forms, and this explains the changes in the relative positions of the concentration coefficient for employee social contributions and the Gini coefficient for gross income. The exclusion of most forms of capital income from the tax forms also provides a plausible explanation for the lower values of the Gini coefficient for gross income since 2006.

[15] The 1992 *Pension and Disability Insurance Act* stipulates that the minimum contribution base cannot be lower than the minimum pension assessment base, increased by the average PIT rate and social contribution rate (article 231).

[16] For more on the concentration of incomes from capital, see Stanovnik and Verbič (2005b).

6. The dynamics of tax progressivity

The personal income tax is a progressive tax, meaning that high-income persons pay relatively more than low-income persons. There are several widely used measures of tax progressivity, most of which rely on Lorenz-type curves and summary measures. Here, we will present only two of these measures. One such measure is the Reynolds and Smolensky (1977) index, defined as:

$$RS = G - G^*,$$

where G is the Gini coefficient for gross (pre-tax) income and G^* is the Gini coefficient for net (after-tax) income. Kakwani (1977) suggested the following measure:

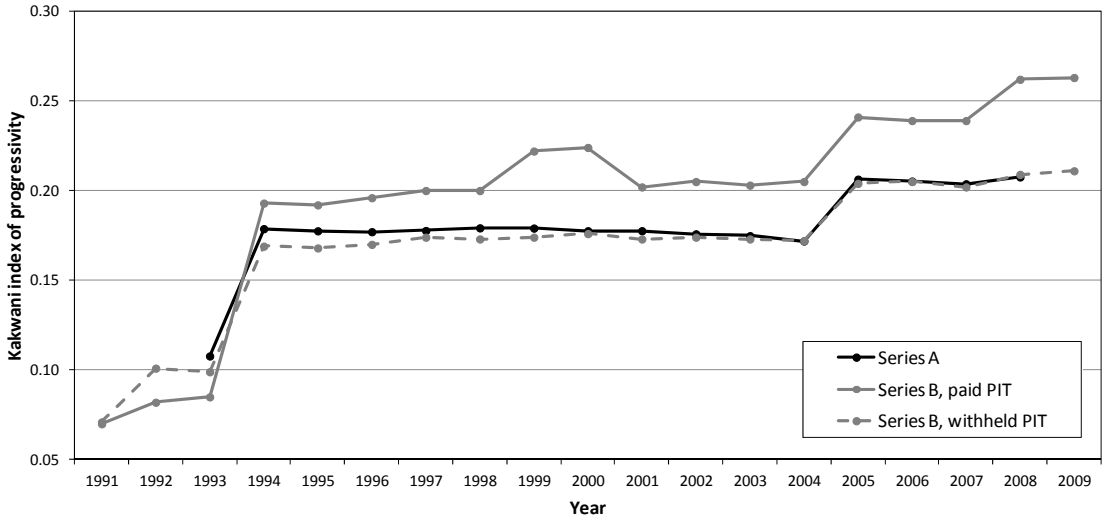
$$K = C_T - G,$$

where C_T is the concentration coefficient for taxes and G is the Gini coefficient for gross (pre-tax) income. The Kakwani index of progressivity has some desirable features (*cf*. Kakwani, 1977; Creedy, 1999). The Reynolds–Smolensky index measures the redistributive effect of the tax system, and this effect depends not only on the concentration of tax payments, but also on the average tax rate; the higher the tax rate, the more redistributive is the tax system. In contrast, the Kakwani index measures directly the concentration of tax payments and its value does not depend on the "size" of the tax system; due to this desirable property, we will be using this measure in presenting our results, depicted in Figure 4.

The Kakwani index of progressivity is computed using three different data sets. The value of the index based on data from data source A is computed using the withheld PIT, as no information on final PIT liability is available, whereas the value of the index based on data source B will be computed using (a) withheld PIT, and (b) final PIT liability.

Computation with option (a) will provide yet another opportunity to compare the values obtained from data sources A and B. As seen from Figure 4, the values of the Kakwani index for withheld PIT based on data sources A and B are quite comparable. Of course, the Kakwani index computed using paid PIT is consistently higher than the index computed using withheld PIT, as the data of the Tax Administration of the Republic of Slovenia show that tax refunds are strongly concentrated among low-income groups, and additional tax payments are, likewise, strongly concentrated in higher income groups.

Figure 4: Kakwani index of progressivity, 1991–2009



Note: Kakwani index of progressivity based on data source A is computed using only the concentration coefficient for withheld PIT. For data source B the index is computed using: (a) withheld PIT, and (b) paid PIT.

Source: Own computations from data sources A and B.

As seen from Figure 4, the Kakwani index increased by leaps; these leaps occurred in the years of introduction of new PIT legislation. Thus, the first big leap occurred in 1994, when the new PIT legislation (Zdoh) replaced the 1991 Personal Income Tax Act. The second leap in this index occurred in 1999, when the *Law on extraordinary decrease of tax liability* decreased the PIT tax liability for low-income groups. Upon expiration of this law, the Kakwani index fell "back into line". A further increase in this index occurred in 2005, when the new PIT Act (ZDoh-1) came into force.

It is quite interesting to observe that the PIT legislation which came into force in 2007 (Zdoh-2) did not have an impact on Kakwani index, in spite of the fact that the marginal tax rate was lowered from 50 per cent to 41 per cent. A more detailed comparison of the PIT burden according to the PIT parameters, valid in 2006, and new parameters applied in 2007 (Zdoh-2), shows that inframarginal rates have been reduced, whereas the marginal rates for the upper end of the income distribution have been increased. The net summary effect of these changes on the Kakwani index has been negligible. Finally, the introduction of a differentiated personal allowance in 2008 has – quite expectedly – resulted in increased tax progressivity.

7. Concluding remarks

Our analysis, based on primary incomes of employees, as reported in the personal income tax returns, has shown that income inequality in the distribution of primary incomes of employees in Slovenia has increased since Slovenia gained independence in 1991. However, most of this increase occurred in the first years of transition, i.e. early 1990s. Starting from 1994, when the institutional setting – the Economic and Social Council, collective agreements and legislation on minimum wages – were firmly established, the increases in inequality were quite modest. And not only that; the increases in the inequality of net incomes were virtually negligible, due to the strong mitigating effect of personal income tax legislation. In other words, the personal income tax system acted as an effective brake, preventing the increases in inequality of gross incomes to be transmitted to increases in inequality of net incomes.

Considering that primary incomes have been steadily increasing (in real terms) since 1992, and that inequalities in net incomes have remained stable, one can infer that there have been important welfare improvements. To put it simply: the distribution of incomes in recent years is, from the social point of view, more desirable than the distribution of incomes in the early years of transition[17]. However, these gains are not "cast in stone", and it will be important to monitor changes in the distribution of incomes during this protracted economic crisis and its mutations. Slovenia has long been criticized for its unwillingness to undertake more fundamental reforms – particularly reforms of the labour market and its social security system. More dramatic events might change this – almost idyllic – picture of stable income inequality.

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[17] This assertion is based on certain assumptions. Obviously, we have Lorenz dominance, i.e. the more recent generalised Lorenz curves (state 1) are strictly above the generalised Lorenz curves from the early transition years (state 2). Assuming the Bentham's social welfare function and individual utility functions having the usual desirable properties (strict concavity, i.e. $U'(x) > 0$, $U''(x) < 0$ for all x), then, applying Shorrocks theorem (Lambert, 1993), the social welfare in state 2 is greater than in state 1.

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