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Revenue equalization and personal income tax in Estonian municipalities

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1. Background: Estonian municipalities in general

Estonian local governments have passed a process of considerable democratization during the last decades. As a part of overwhelming transformations during the 90-ies, the municipalities' fiscal decentralization has increased considerably. Local governments have obtained bigger role in the society and discretionary power over their activities. Wider set of public sector functions has been transferred from central government to the local level. The shifting of different functions by central governments to the sub-national level has not often accompanied by adequate financial resources to implement those tasks. The mismatch between responsibilities and revenues still reduces the municipalities' ability to provide the necessary range of public goods.

Estonian municipalities' some indicators of fiscal decentralization are provided in Appendix Table 1. The local governments receive about one fourth of general government revenues, which is about 10% in comparison with GDP level. Some descriptive data about municipalities' fiscal position is provided in Appendix Table 2.

During the last decade problems with municipalities fiscal viability and administrative capacity has strengthened. Particularly, limitations in municipalities' budget stability became visible on the current economic crises and sharp decline of municipalities tax revenues.

The second serious problem of municipalities is related with growing disparities in budget revenues, which has led to wide differences in public provisions. Despite the fact, that there are existing instruments of revenue equalization, the revenue differences among municipalities remain significant and are even increasing.

Estonian local governments are rather diversified by their population size (Appendix Table 3). Estonia has one-tier sub-national government system – consisting 227 local government units (2010). Actually, the situation is twofold - along with functioning of many low populated municipalities, about 60% of the population actually live in jurisdictions of more than 10,000 inhabitants. Around 40% of residents are concentrated in larger urban areas with population

of more than 100,000. At the same time, more than 80% of all the municipalities have less than 5,000 inhabitants. Very many of municipalities are considered to be too small to provide efficiently public services (education, healthcare and other municipal services). Considering that, various local government reform plans have been under consideration. There are two major issues on the “list”. The first is optimization of municipalities’ population size through their amalgamation and therefore strengthening their fiscal and administrative capability. Until now, the reform of the sub-national government level has been focused on voluntary amalgamation of municipalities to bigger units. Another issue is strengthening municipalities’ revenue base and widening their tax autonomy.

2. Goals of modification of PIT sharing system

One of the major aspects of the strengthening municipalities’ budgets has been concern about their tax autonomy and discretionary power over taxes.

In the following will be analyzed the impact of the changes of personal income tax (PIT) system since 2004 for Estonian local governments. The PIT is centrally administered tax and the revenue receipts are eventually shared between central and local governments. During the period 1996-2003, the local municipalities received 56% of the PIT net amount (after deductions), collected from residents living in their jurisdictions.

The shared PIT system had one serious weakness – it did not take into consideration changes various deductions from taxable income, implemented by the central government. For example, if the central government increased level of tax deductions (*e.g* during the period 1996-2002), the result was automatic decline of the amount of PIT revenue base on local government level. Particularly severely were hit the municipalities with lower income levels, as drop of their PIT revenue was relatively higher.

To overcome this limitation, a new system of PIT allocation was implemented from 2004. Under the new arrangements, sub-national governments received 11.4% of gross personal incomes, declared by the residents of their jurisdictions. Any statutory deductions from the taxable income base (standard tax deductions and other), will lessen then only central government PIT revenue and leave municipalities income tax revenues untouched. Later on, that percentage was steadily increased (Table 3). Reverse trend to the system was given in 2009, and then during the middle of the year municipalities share was declined middle of the

year from 12.93 to 12.4% Detailed explanatory scheme of the new PIT sharing model is provided in Appendix Table 4.

The purposes of the change of the PIT sharing system were manifold.

First, the general purpose was to provide local municipalities wider tax revenue and therefore increase their tax autonomy. The new system should increase local governments “own” tax revenues and reduce their dependency from the central government equalization grants.

Second, as mentioned, rationale was to create a system in which municipalities’ budgets will be not interfered from PIT changes, implemented on the general government level, e.g. deductions particularly.

Third, to force competitive situation amongst municipalities and oblige them to implement policies, which will increase their tax revenues.

In following, the outcomes of the new PIT system will be considered. Still now, there is no such an analysis of PIT changes done yet.

3. Municipalities revenues and population

Estonian local governments receive about a half of their revenues from the taxes and PIT is a far biggest tax revenue source for the municipalities (Table 1)

Table 1. Estonian local governments revenue, million EEK				
	2003	%	2008	%
Taxes	5 435	46.5%	12 427	54.6%
..personal income tax	4 907	42.0%	11 487	50.5%
Sales of goods and services	980	8.4%	2 197	9.7%
Sale of property	376	3.2%	214	0.9%
Revenue from property	168	1.4%	458	2.0%
Grants	4 651	39.8%	7 353	32.3%
Other income	83	0.7%	100	0.4%
Total revenue	11 695	100.0%	22 752	100.0%
Source: Estonian Ministry of Finance and author’s calculations				

Therefore, any change in PIT rates and regulations will have a direct impact on local government revenues. Currently, due the modifications in PIT sharing system, the municipalities’ proportion in PIT revenues is reaching more than 80% in total general government PIT revenues (Appendix Table 1.)

Considering that, the paper analyzes outcomes in the re-arrangements in PIT sharing system. The center of attention is to study the impact of the new system to various municipalities groups. The groups are formed on the basis of PIT *size per capita* before the PIT modifications took place.

For the analyses, all Estonian municipalities, which exist within unchanged borders during the 2002-2009, were chosen for analyses (altogether 212 jurisdictions). Municipalities are ranked on the basis of average PIT *per capita* in the years 2002-2003 (afterwards named also as *initial* level) and distributed to the 7 equal groups¹ - from lower to higher average PIT *per capita* in the group. Two biggest towns – the capital city Tallinn (pop. 400,000) and the second largest town – Tartu (pop.100,000) - are presented separately. In following are analyzed the groups' fiscal position and various characteristics during the period after PIT change.

At first, we will have a look at the groups' size of population (Table 2).

Table 2. Average population by municipalities groups, persons								
	2003	2004	2005	2006	2007	2008	2009	Change 2009- 2003
I	1 476	1 461	1 448	1 435	1 421	1 409	1 397	-79
II	1 605	1 593	1 581	1 570	1 561	1 550	1 541	-64
III	1 954	1 941	1 927	1 915	1 904	1 891	1 881	-73
IV	6 886	6 842	6 808	6 776	6 743	6 711	6 681	-205
V	2 937	2 923	2 912	2 901	2 888	2 878	2 873	-65
VI	5 687	5 667	5 649	5 628	5 621	5 609	5 599	-88
VII	4 719	4 776	4 778	4 783	4 789	4 802	4 823	104
Tallinn	397 150	396 375	396 010	396 193	396 852	397 617	398 594	1 444
Tartu	101 190	101 297	101 483	101 740	101 965	102 414	102 817	1 627
Stand. Dev.	6 862	6 822	6 796	6 770	6 746	6 723	6 702	
Difference VII-I	3 243	3 316	3 329	3 347	3 369	3 393	3 426	183
Source: Estonian Ministry of Finance and author's calculations								

¹ Two small isolated island located municipalities' with extreme small number of population - Ruhnu (70 persons) and Piiressaare (98 persons) are excluded from the list.

There is no clear correlation detected in Estonia between the municipalities' size and PIT *per capita* level. The Table 1 presents, that the lowest income municipalities groups is lesser population, but the highest income municipalities are not having at the same time the biggest population. However, the highest income group of municipalities is the only one, which increased its population during the period. There are other factors, which determine municipalities' residents' income level – population professional activities structure and closeness to bigger centers - if just mention just the main ones. The residents of bigger urban regions with domination of modern occupational structure are receiving much higher incomes, if compared with regions, where agricultural activities are still present.

4. Outcomes of PIT system change

Intuitively, there are several immediate outcomes expected after change of PIT system and various effects, which became visible during the longer period.

What are those expected outcomes after the PIT system change?

First, in the lower income municipalities, the PIT level will increase relatively faster than in the higher income groups' PIT revenue. If the tax deductions do not have any influence on the municipalities' PIT revenue any more, the system favors in the short run more low income municipalities than higher income ones.

Second, the PIT revenue shares in municipalities' total revenues will increase. That was one of the purposes on PIT sharing system change – widening municipalities' tax autonomy!

Third, after the first effects after system change effect is over, the revenues will grow faster in municipalities with higher PIT revenue proportion in their total revenues. As municipalities PIT base differs significantly - higher income level municipalities will gain in long as they receive bigger proportion of income tax collected.

In following Table , the dynamics personal income tax revenues *per capita* by municipalities groups is presented (Table 3).

Table 3. PIT *per capita*, EEK

	2003	2004	2005	2006	2007	2008	2009	Change 2004- 2003, %	Change 2009- 2003, %
I	1 588	1 988	2 351	3 068	4 143	5 016	4 272	25.2%	143.8%
II	1 971	2 430	2 846	3 801	4 938	5 970	5 171	23.2%	162.3%
III	2 154	2 640	3 087	4 000	5 209	6 186	5 251	22.6%	143.8%
IV	2 510	3 024	3 430	4 515	5 808	6 861	5 926	20.5%	136.1%
V	2 848	3 313	3 875	4 903	6 258	7 376	6 243	16.3%	119.2%
VI	3 270	3 780	4 413	5 518	7 002	8 152	6 943	15.6%	112.3%
VII	5 277	5 089	5 824	7 457	9 501	11 94	9 967	-3.6%	88.9%
Tallinn	4 812	5 305	6 132	7 356	9 046	10 368	8 970	10.3%	86.4%
Tartu	3 729	4 269	4 918	5 998	7 723	8 540	7 449	14.5%	99.8%
Stand. Dev.	1 414	1 130	1 404	1 711	2 169	2 673	2 443		
Difference VII-I	3 688	3 100	3 473	4 389	5 357	6 378	5 695		
Municipalities PIT revenue of total revenues	56% *	11.4%	11.6%	11.8%	11.9%	11.9%	11.93%/ 11.4%**		

Source: Estonian Ministry of Finance and author's calculations

* Local municipalities received 55% of collected revenues after deductions

** middle of the year 2009 the PIT share proportions were changed

As the table presents, the municipalities' groups PIT revenues *per capita* varied significantly during the period. Also, the municipalities PIT revenue has grown during the period, but declined in 2009 as a consequence of severe economic crises and high unemployment level.

The income tax level *per capita* initially in higher income group of municipalities was about 3 times bigger than in lower income municipalities. The data supports the assumption, that immediate PIT revenue increase is faster in the lower income groups of municipalities. As in the lowest income group PIT revenue increased more than 25% just after the PIT system change, the highest income group revenues even declined. During the whole period, the PIT revenues increased in all groups, but relatively faster in the lower income groups.

However, an equalization of revenues was short term and later on, the disparities among the groups started to grow. By various reasons, increase of municipalities PIT proportion compared to central government does not support in long run PIT revenue equalization among them. Somehow that assumption is supported also by the differences decline in the groups in

2009 after decrease of PIT share. However, it is difficult to assess the impact of PIT share proportion change in 2009 due to overall sharp economic decline.

5. Changes in revenue structure

The new PIT system has had a clear impact on municipalities' revenue structure – tax revenues increased in all groups. Table 4 presents changes in the tax share in total taxes.

Table 4. Total tax revenue in total revenues, %							
	2003	2004	2005	2006	2007	2008	2009
I	28.4%	30.0%	30.1%	31.7%	33.5%	35.1%	36.1%
II	30.1%	33.7%	32.5%	34.1%	34.9%	36.7%	37.2%
III	34.1%	37.1%	35.0%	38.5%	41.7%	42.8%	43.4%
IV	35.7%	38.5%	38.6%	40.6%	44.0%	45.3%	43.0%
V	38.6%	40.6%	40.6%	41.5%	45.1%	47.0%	45.1%
VI	42.8%	43.6%	46.0%	46.8%	49.6%	50.6%	50.0%
VII	57.0%	54.9%	54.4%	53.9%	56.3%	59.5%	58.8%
Tallinn	56.8%	54.8%	56.3%	51.5%	63.7%	64.6%	63.6%
Tartu	50.2%	53.1%	50.0%	49.3%	54.4%	57.1%	53.4%
Stand. Dev.	12.2%	11.1%	11.7%	11.2%	11.7%	11.8%	12.7%
Difference VII-I	28.6%	25.0%	24.3%	22.1%	22.8%	24.4%	22.7%
Source: Estonian Ministry of Finance and author's calculations							

Redistribution of PIT revenues in favor of local governments increased logically tax revenue ratio in their total revenues, as also was predicted earlier.

All municipalities groups have increased the tax revenue share in their budgets and difference among the groups has declined. Proportion of tax revenues is considered as one of the main indicators of tax autonomy for sub-national governments. However, as local municipalities does not have any discretionary power on PIT base and rate in Estonia – therefore, it cannot be considered directly as full-scale fiscal autonomy indication.

As PIT share of municipalities' tax revenues has increased, their revenue from equalization grants has declined (Table 5).

Table 5. Equalization grants in total revenues							
	2003	2004	2005	2006	2007	2008	2009
I	26.4%	23.5%	20.5%	20.3%	19.9%	18.5%	19.2%
II	21.6%	19.5%	16.2%	17.5%	16.5%	15.0%	14.5%
III	22.3%	18.3%	16.1%	15.5%	15.5%	13.4%	12.7%
IV	20.9%	16.1%	14.2%	13.4%	13.7%	12.4%	11.6%
V	15.9%	11.9%	10.0%	9.9%	9.8%	8.4%	6.3%
VI	12.5%	10.0%	9.0%	6.9%	7.4%	6.1%	4.1%
VII	6.4%	5.9%	4.5%	4.5%	4.0%	4.0%	3.0%
Tallinn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tartu	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Stand. Dev.	9.7%	9.0%	8.2%	7.7%	7.2%	7.0%	8.0%
Difference VII-I	-20.0%	-17.6%	-16.1%	-15.8%	-15.9%	-14.5%	-16.2%
Source: Estonian Ministry of Finance and author's calculations							

Equalization grants (*in Estonian . toetusfond*) are general grants, which are transferred from central government to local level. Municipalities can use those funds unconditionally, but the meaning of the grants is to support poorer municipalities' revenue base and equalize them with average level of all municipalities. The municipalities receive equalization grants on the basis of specific formula, which include municipality's tax revenue level, demographic characteristics and infrastructure density. About 16% of municipalities above the average revenue level do not receive support from equalization fund (*e.g* Tallinn and Tartu).

As Table 5 presents, the municipalities' dependency from equalization grants have declined during the period. At the end of the period, poorer municipalities' revenue from grants has declined more than 7%. At the same time, revenue from the taxes (Table 4) has increased about 8 *per cent*. In the III group, the revenue from the equalization grants has declined 9.6% and revenue from the taxes has increased 9%. Therefore, one can say that after the PIT system change have taken place structural change in municipalities' revenues and tax revenues replaced significant amount of the grant revenues.

In following Table 6, the municipalities' total revenues per capita are presented. Differences among municipalities by total revenues *per capita* are significantly smaller than in PIT revenue differences. However, standard deviation shows a much wider scale of variations in total revenues *per capita* than variation in PIT *per capita* revenues.

Table 6. Municipalities total revenues <i>per capita</i>, EEK								
	2003	2004	2005	2006	2007	2008	2009	Change 2009- 2003, %
I	8 771	9 389	10 983	12 846	15 773	17 905	15 599	78%
II	9 538	9 853	11 764	14 375	17 673	19 897	17 892	88%
III	8 463	9 130	11 577	12 640	14 474	16 727	14 715	74%
IV	8 796	9 684	10 893	12 886	14 846	16 905	16 191	84%
V	9 132	9 771	11 193	13 538	15 614	17 570	15 931	74%
VI	9 041	10 254	11 006	13 546	15 757	17 900	15 763	74%
VII	10 356	10 453	12 003	15 265	18 777	20 235	18 236	76%
Tallinn	9 292	10 576	11 896	15 454	15 280	17 862	15 823	70%
Tartu	7 800	8 421	10 271	12 652	14 742	15 460	14 442	85%
Stand. Dev.	2 811	2 703	3 170	3 808	4 972	5 383	6 283	
Difference VII-I	1 585	1 064	1 020	2 420	3 003	2 330	2 636	
Source: Estonian Ministry of Finance and author's calculations								

The growth of municipalities' total revenues is rather equal among the groups, perhaps less than average income groups' total revenue has grown slightly faster. The difference among the groups is narrower because of equalization measures. Nevertheless, within the period total revenue disparities by the groups and revenues variance tend to increase.

In following Table 7 is presented difference between the PIT revenues and equalization grants *per capita*.

Table 7. Difference between PIT and equalization grants <i>per capita</i>, EEK							
	2003	2004	2005	2006	2007	2008	2009
I	-462	-21	298	690	1 294	2 029	1 658
II	116	670	1 116	1 493	2 271	3 247	2 900
III	347	1 020	1 338	2 103	2 992	3 977	3 445
IV	819	1 597	1 975	2 862	3 877	4 882	4 279
V	1 442	2 172	2 762	3 571	4 754	5 942	5 262
VI	2 166	2 786	3 466	4 622	5 859	7 109	6 347
VII	4 613	4 522	5 324	6 692	8 856	10 717	9 523
Stand. Dev.	1 856	1 635	1 858	2 327	2 814	3 363	3 065
Difference VII-I	5 075	4 542	5 026	6 002	7 561	8 688	7 865
Source: Estonian Ministry of Finance and author's calculations							

During the period, the PIT revenue became considerably more significant than the equalization grant revenues. As at the beginning of the period the lower income groups received more revenue from grants than from PIT, then at the end of the period the situation became rather different. In one hand, such an outcome provides evidence about wider tax autonomy gained by municipalities. However, it also means, that municipalities depend more on income tax base, which however, differs significantly across the municipalities.

6. Future predictions

As was presented, change of the personal income revenue sharing system increased lower income municipalities revenues faster than in richer population ones (Table 3). However, in absolute terms the equalization of PIT revenues was short-term and during the period the differences in PIT revenues tend to increase. The change of the system increased also tax revenues in the municipalities' budgets (Table 4) and declined the general grant transfers from the central budget. Such an outcome can be considered as strengthening the local governments tax autonomy; despite the municipalities' in practice don't have any discretionary power over the PIT arrangements.

Nevertheless, one can ask – what are the predictions for the future trends or what is the impact of PIT sharing system in the long run?

Above was provided the overview, how tax revenues has increased in total revenues. In following Table 8 presents particularly the PIT proportion in municipalities' total revenues.

Table 8. PIT in total revenues, %							
	2003	2004	2005	2006	2007	2008	2009
I	19.9%	22.5%	23.0%	25.5%	28.2%	30.3%	30.5%
II	22.5%	26.2%	25.9%	28.4%	30.2%	32.3%	32.1%
III	26.6%	30.0%	28.9%	32.8%	36.6%	38.1%	37.7%
IV	30.3%	33.3%	32.9%	36.3%	40.2%	41.8%	39.4%
V	32.4%	34.8%	35.2%	37.0%	41.1%	43.4%	41.3%
VI	37.2%	38.4%	41.5%	42.2%	45.4%	46.6%	45.4%
VII	52.0%	49.7%	49.6%	49.9%	52.4%	55.8%	54.7%
Tallinn	51.8%	50.2%	51.6%	47.6%	59.2%	58.0%	56.7%
Tartu	47.8%	50.7%	47.9%	47.4%	52.4%	55.2%	51.6%
Stand. Dev.	12.5%	11.0%	12.8%	10.9%	11.2%	11.6%	11.9%
Difference VII-I	32.1%	27.3%	26.6%	24.4%	24.2%	25.5%	24.2%
Source: Estonian Ministry of Finance and author's calculations							

As the Table 8 presents, the PIT importance has strengthened in all municipalities groups. Therefore, the municipalities' revenue capacity will more depend on their residents' personal income level. On the other hand, residents' income across Estonian municipalities varies very significantly. Eventually, the richer residents' municipalities will be in advantageous position and expectedly municipalities revenues will grow faster in those municipalities, there PIT proportion in total incomes are higher.

Following OLS regression (1) outcome provides a support for such an intuitive assumption, that municipalities' PIT in total revenues depend on municipalities' residents' income level:

$$\begin{aligned}
 (1) \quad \hat{Y}_i &= 0.14 + 0.05X_i \\
 &\quad (0.003) \\
 &\quad t = 16.30 \\
 N &= 210 \quad \bar{R}^2 = 0.56
 \end{aligned}$$

Where

\hat{Y}_i - PIT in total revenues, (%)

X_i - personal income tax (PIT) *per capita* during 2003-2009 (thousand EEK)

The regression outcome can be interpreted in a following way - then higher the municipalities PIT *per capita* and then higher will be also PIT proportion in revenues. Eventually, municipalities' revenue size will depend more and more on the jurisdictions' residents' income level.

In Estonia, the local governments' income differences are relatively wide and population spatial location is rather imbalanced. There are extensive studies available, which are analyzing reasons behind the personal income disparities across the country.

Personal income level in a jurisdiction is not related with municipalities' territorial extent or density of population. But some geographical factors are very essential. Municipalities which locate closely to bigger centers (to capital city particularly) are in more favorable situation by the PIT revenues. Oppositely, remote (land)borderline areas located municipalities have lower PIT level. The people in the bigger centre's move out from the towns for living in more pleasant areas nearby. In most of the cases, they continue working in the town areas. Therefore, the status of municipality (urban or rural municipality) became negatively correlated with the personal income level.

7. Conclusions

The purpose of the PIT modification in 2004 was to increase municipalities' tax revenues; widen municipalities' tax autonomy and local initiatives to increase their revenue base; also decrease municipalities' dependency from the central government grants.

1. As a positive outcome, Estonian municipalities' revenue flow from the PIT has increased significantly after the change in tax the sharing method. Also PIT revenue *per capita* has increased in all the municipalities groups. Particularly fast has been personal tax income revenue increase in the low personal income municipalities.

2. In addition, municipalities' revenue structure has changed more towards tax (PIT) revenues - local governments' budgets are less dependent from the transfers and grants from the central government. Difference among the municipalities groups by the tax revenues has declined - therefore, municipalities' tax autonomy has increased.

3. Nevertheless, PIT level differences *per capita* by the groups have not diminished in a long run. The new tax sharing method is not supporting long run PIT and total revenue equalization. The PIT base remains differentiated and initial faster growth of tax revenue in

the low income municipalities was not sustainable. After the initial equalization effect, the revenues will start grow faster in those municipalities, where PIT proportion in total incomes is higher. As municipalities PIT base differs significantly - higher income level municipalities will be at an advantage after receiving bigger proportion of income tax collected.

3. Currently the central government transfers to lower income municipalities are able in broad frames to equalize municipalities' total revenues. However, continuous shifting tax income revenue base towards sub-national governments eventually limits the central government abilities to provide subsidies to poorer municipalities. Therefore, there is a risk that extensive differences in local government PIT base fasten widening of municipalities' revenue disparities.

Data used

Ministry of Finance Homepage <http://www.finmin.ee>

Estonian Statistics www.stat.ee

Appendix Table 1. General indicators of Estonian local governments							
	2003	2004	2005	2006	2007	2008	2009
Number of municipalities	241	227	227	227	227	227	227
LG total revenue, in % of GDP	9.3%	9.1%	9.1%	9.2%	9.3%	10.4%	11.0%
LG revenues in general government revenues (consolidated)	25.6%	25.7%	25.9%	25.3%	24.8%	28.0%	25.3%
LG taxes in general government total taxes	12.9%	13.2%	13.1%	13.3%	13.5%	15.5%	14.0%
Tax revenues in LG total revenues	42.7%	44.1%	43.8%	44.4%	46.6%	47.5%	45.8%
LG share of total PIT	58.3%	65.4%	67.1%	67.3%	72.6%	80.4%	
PIT sharing scheme (municipalities share), %	56% *	11.4%	11.6%	11.8%	11.9%	11.9%	11.93%/11.4%* *
Source: Estonian Ministry of Finance and author's calculations							
*after deductions made from gross PIT base							
** middle of the year 2009 the PIT sharing proportions were changed							

Appendix Table 2. Population and tax revenues in Estonian Municipalities				
	Minimum	Maximum	Mean	Std. Deviation
Population, person 2003	64	397 150	5 619	26 888
Population, person 2009	72	398 594	5 905	27 773
Total revenue, thousand EEK, 2003	1 409	3 690 316	48 528	245 232
Total revenue, thousand EEK, 2009	1 282	6 307 109	89 039	432 693
Taxes in total revenues, %, 2003	4.5%	83.5%	38.3%	12.2%
Taxes in total revenues, %, 2009	11.3%	82.4%	44.9%	12.8%
PIT per capita, EEK 2003	672	12 140	2 811	1 374
PIT per capita, EEK 2009	1 870	23 175	6 290	2 453
Source: Estonian Ministry of Finance and author's calculations				

Appendix Table 3. Municipalities structure by population 2007		
Number of inhabitants	Proportion of municipalities by population size	Population proportion within population range
999 and less	15.9%	1.9%
1,000-1,999	38.3%	9.5%
2,000-4,999	26.0%	14.0%
5,000-9 999	13.2%	14.7%
10,000-49,999	5.3%	17.8%
50,000-99,999	0.4%	5.0%
100,000 and more	0.9%	37.2%
Average population in municipalities, rounded (without capital city)		5,900 (4,200)
Source: Estonian Statistics and author's calculations		

Appendix Table 4. System of PIT sharing (hypothetical example)			
	Until 2003	Since 2004	
Gross income per person annually	120,000	120,000	Gross income per person annually
Standard deductible allowance per person	24,000	24,000	Standard deductible allowance per person
Taxable income	96,000	96,000	Taxable income
PIT rate (flat tax rate)	20%	20%	PIT rate (flat tax rate)
PIT total	19,200		
PIT sharing			
Local government 56%	10,752	$120,000 \times (11.4\%) = 13,680$	Local government (11.4% of total declared tax base)
Central government 44%	8,448	$\frac{(120,000 - 24,000)}{96,000} (96,000 \times 20\%) - 13,680 = 5,520$	Central government (collected income minus transfers to the local governments)
		19,200	PIT total
		27.2%	Increase of local government tax revenues compared to earlier system