University of Tartu
Faculty of Economics and Business Administration

STRATEGIES IN THE FISCAL REFORM OF ESTONIAN GENERAL EDUCATION

Peter Friedrich, Janno Reiljan

Tartu 2010

ISSN-L 1406-5967
ISSN 1736-8995
ISBN 978-9985-4-0612-0
The University of Tartu FEBA
www.mtk.ut.ee/research/workingpapers

Strategies in the Fiscal Reform of Estonian General Education[1]

Peter Friedrich, Janno Reiljan[2]

Abstract

In order to develop the necessary Estonian measures and policies the prevailing distribution of expenditures for these purposes are presented. Although the share of GDP used for financing education in Estonia is somewhat above the EU average the nominal amount of per capita education funds is comparatively low due to a low level of economic development. Moreover, because of thin population per square km many small schools exist in Estonia without a sufficient number of pupils, which makes the education system more costly. We consider two different basic strategies to improve the situation.

The first strategy is an extension of a reform approach that was performed since January 2008 that refers mainly to the prevailing educational and spatial organization. We discuss the consequences and regional impacts of that policy. Criteria for a SWOT-analysis such as expenditure distribution, preserving regionally clear investment criteria, source of investment, etc. are used. The first strategy refers to improvements into the current system of financing schools that shows a state investment program for

[1] This article is written with the support of the Ministry of Education and research foundation project No TMJJV 0037 "The path dependent model of the innovation system: development and implementation in the casa of a small country".

[2] Peter Friedrich, Dr., Dr. h. c., Prof. of Public Finance, Janno Reiljan, PhD, DSc (econ), Prof. of International Economy, Faculty of Economics and Business Administration, University of Tartu. Narva Rd. 4, 51009 Tartu, Estonia. E-mails: Peter.Friedrich@mtk.ut.ee, Janno.Reiljan@mtk.ut.ee.

schools that considers the number of pupils per school and special educational needs. However, the performance of this policy is not based on a fair equal treatment of cases.

Therefore a second strategy of improvement is discussed. It is based on the idea of Functional Overlapping Competitive Jurisdictions (FOCJ). The municipalities form FOCJ that are operating schools. In this way municipalities may form a school jurisdiction that can negotiate with central government institutions for the loan and the school equipment etc. A municipality can act individually or the FOCJ negotiates for the municipal members in total. Theories of FOCJ-establishment, FOCJ-contribution determination and FOCJ-negotiations with central government are demonstrated. The FOCJ can supplement positively the first strategy of reform.

JEL Classification: H52, I22

Keywords: funding of education, central government budget policy, local governments finance

1. INTRODUCTION

In Estonia funding school education has become a complicated issue for the public sector economy (Aaronson 1999; Nechyba 2003) and for securing the financial sustainability of general education schools (Downes 2001; Murray *et al.* 1999) especially under conditions of reduction of population.

Therefore, this article deals with changes and adaptations of spending schedules for general education in the regions of Estonia. The following research questions are formulated:

- Which views prevail in Estonia about efficient school organization and finance?
- What are the actual conditions of school finance in Estonia?
- What reform approaches exist?
- May the introduction of FOCJ improve the reform results?

The article is based on the information of the Ministry of Education and Research about the educational funds. Funds for school operation get allocated proportionally to the number of pupils in particular schools (per capita funding, or the so-called capitation fee) between 2001 and 2007. Investment funds are provided through the State Investments program to municipal general education institutions between 1996 and 2004. Statistical data educational on expenditures of EUROSTAT are used as well.

The article consists of four parts. The first part analyses the theoretical views prevailing in Estonia. The second part views Estonia's current general education funding system. The third part analyses the starting points of the financial reform 2008. The fourth part presents the FOCJ model to organize financing of general education.

2. STRATEGIC ESTONIAN PROBLEMS OF FUNDING GENERAL EDUCATION

Basic problems concern equitable access to education (Berne *et al.* 1999), equal people's social starting positions on labor markets, social mobility, the formation of human capital, measurement of efficiency (Boyd, Hartman 1998)[3]. The provision of Estonian general school education is organized through the public sector, primary education is compulsory and is financed through state or municipal budgets.

Also in Estonia parents wish, to provide their children with education of the highest quality in the best study environment according to standards achieved in highly developed countries. This pushes educational demand over the limits of the economic possibilities of a transition country. However, the better-off part of the Estonian population does not often accept the dependence of their children's future on the level of public financed education, thereby creating a demand that favors establishment of elite and private schools.

The supply side of education is influenced in Estonia by the availability of properly qualified teachers, real estates and locations, – devoted finance, school organization, quality of work and study environment. The Estonian public school finance determines not only the operational expenses but also the school

[3] Estonian governments often focus on equalising the input oriented expenses as this is the easiest alternative which does not require a thorough analysis of the differences between study environments or achieved results (Boyd, Hartman 1998). The focus is usually on the differences between the expenditures per pupil. On more complex methods of analysing equality and resource use were employed while everything else concerning was left aside. During the last years the focus in analysing the funding of schools shifted from general data to the analysis of school-level data, which offers new possibilities to measure output oriented and in terms of goal achievement.

investments. Estonian budgetary educational expenditure is influenced by a complex set of factors, such as:

- a short-term fall of economy's competitiveness in response to taxation financed growing education expenses, as positive impacts on economic development occur in the long run;
- ideological views on family's own financial responsibility for education and the extent of public services and the role of fees-charging private schools
- assessment of the importance of teachers' job and their salaries in the society and the payment and evaluation schemes
- requirements concerning minimum)quality of schooling conditions with respect to health protection, aesthetic conditions, technical equipment, for sports, social activities;
- organizational problems (contradictions in determining the regulation and/or liberality of curricula, insufficient co-operation of different ministries and local municipalities in planning the development of schools network etc.
- regional school network, e.g. location distribution, commuting times, integration of school in the local community;
- methods applied to measure short-term and long-term efficiency of education expenditures;
- debates on centralized (central government) and decentralized municipal funding of schools and resulting internal migration.

These issues have not been analyzed sufficiently in Estonia, causing difficulties to general education planning and leading to indeterminacy of educational policy and education funding. Instable funding and the inadequate funding system have not allowed to work out municipal long-term development strategy. A radical reform of the general education funding system had been prepared in Estonia for 2005–2006 (EV haridusseaduse... 2005; Riigikogu... 2005), which, failed to gain sufficient political acceptance. As the first reform step, in 2005 changes concerning investments funding were made. In 2008 the funding reform of general education was implemented, but it resulted only in a redistribution of resources between municipalities, schools and education levels.

3. THE FISCAL SITUATION OF GENERAL EDUCATION IN ESTONIA

3.1. Development in comparison to other EU Countries

The Estonian relation of public education expenditures to GDP decreased during eight years by nearby 20% (from 6.05% of GDP in 1996 to 4.85% of GDP in 2007), in other countries it increased (EU-27 average increases from 4.86% of GDP in 1999 to 4.98% of GDP in 2007). According to this indicator Estonia achieves among the 27 EU-countries not even the average level. In 2007 the ratio of private education costs made in Estonia 0.32% of GDP, EU-27-countries average made 0.73%. Further, the low density of settlement and the extensive needs for modernization causes high education costs. High general education expenses in Estonia are due to the relatively low population density in rural areas, a small average number of pupils per school, high school building maintenance expenditure per pupil, and higher staff costs. Consequently the Estonian education system got not modernized, the capital stock devoted to education was partly used up and an achievement of a top position of Estonian high-tech industries seems an illusion. Estonia is far behind other innovative small EU-countries in 2007: Denmark 7.83%, Cyprus 6.93%, Sweden 6.69%, Finland 5.91% of GDP. Estonia should like Scandinavian countries allocate a larger percentage of the GDP to education in order to achieve the level of Hungary (5.20% of GDP), Slovenia (5.19%) or Latvia (5.00%). (Eurostat on-line database 22.06.2010)

Funding in general education is analogous to that of funding education as a whole (see table 1). A slightly larger part of the GDP was allocated to general education in Estonia than the EU-25 average, but the ratio Estonia to EU-25 average is decreasing.

Table 1. The share of general education funding (basic and secondary education) in the GDP (%) of Estonia and EU-25 average in 1999–2004

	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Estonia	4.5	4.2	4.0	4.0	4.0	3.8	3.6	3.5	3.4
EU 25	3.4	3.4	3.6	3.5	3.6	3.5	3.4	3.4	3.4

Source: Eurostat on-line database 2010, compiled by the authors.

Although Estonian education funding related to GDP is nearby the EU average level, the amount of education expenses per pupil/student in Estonia is considerably smaller than the EU average. Allocations per pupil made in Estonia formed 55.8% of the EU average on the primary school level, 58.1% on the secondary and 51.5% on the tertiary level1. Education funding on first and tertiary level per pupil in Estonia is relatively lower than the actual economic possibilities would enable, as the per capita GDP of Estonia on the basis of purchasing power parity was 56.9% of the EU average in 2004 and already 68.4% in 2006 (Eurostat 2008). In Estonia secondary education funding is slightly better than that of basic and tertiary education. However, one must take account that the less developed countries have to spend a relatively higher percentage of their GDP on education, because they have to use more costly modern study materials, techniques and technologies. Transitional countries face high expenditures due to a rapid and extensive alteration of the content of instruction and study literature.

3.2. Development and subsidization before the reform of operational expenses in Estonia

Local municipalities are obliged to cover the operational expenses from their budgets, while expenses related to investments and tuition are covered by target funding from the state budget. Table 2 shows that only in 1999 more general education money could be allocated for investments and teaching children than for maintenance of school buildings. During the following years, this ratio has improved steadily, creating possibilities for continuous improvement of teaching quality. The level of general education

funding as a ratio to the GDP in Estonia was unstable, balancing (3.4 and 3.9% of GDP) and decreasing during the last years to 2.6% of GDP.

A comparison of the increase rates of the GDP and general education funding shows that from year 2000 general education funding in Estonia increased at a remarkable slower pace than the GDP. In the period 1996–2008 in Estonia the GDP grows 4.42 times, but the funding of general education increases only 3.67 times. Many years the ratio of general education expenses have fluctuated near 9 percent mark, but in last years we see the rapid fall to 7% level. During years 1996–2005 the ratio of public budget expenses has fallen from 39.47% to 33.6%, but raises to 39.87% in 2008 of GDP.

The salary of teachers in Estonia does not correspond to the social significance of their work and job-related stress. As a result, there is no competition of properly qualified candidates for teaching positions in most schools, no sufficient differentiation of teachers' salaries in order to evoke motivation, and schools cannot adapt their program to pupils' individual capabilities and to help those falling behind. The average salary of education employees fluctuated below 90% of the national average. The salaries of municipal schoolteachers, social security tax, in-service training and procurement of textbooks depend on the capitation fee system established in 1994 (Vabariigi... 2000).

Since 1994, state budget financing municipalities' education expenses has been based on the number of pupils in a municipality and on the expenses distribution coefficients. Since 2000 municipalities were assigned to eight coefficient groups depending on the number of pupils – from 0.89 for cities with more than 5,000 pupils to 1.5 for rural municipalities with less than 120 pupils. Due to fixed costs, the educational expenses per pupil are higher in municipalities with a small population of pupils.

Table 2. Funding of Estonia's general education by the public sector in 1996–2008

	1996	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Total expenditures on general education /million kroons/	1933	3 056	3 446	3 926	4 296	4 609	4 913	5 507	6 137	7 097
Incl. from the national budget /including appropriations from the national budget for local municipalities' educational expenses/	940	1 752	1 899	2 201	2 499	2 823	3 136	3 795	4 161	4 504
Incl. resources of municipalities	944	1 305	1 547	1 725	1 797	1 786	1 777	1 712	2 306	2 593
GDP in current prices /million kroons/	56890	96380	109070	121672	136421	151541	174956	206995	244503	251492
Total expenditures of the public sector /million kroons/	22453.1	34814.5	37959.8	43520	47497.1	51499.6	58786.5	70382.7	85037.2	100270.3
Ratio of public sector expenditures to the GDP /in current prices %/	39.47	36.12	34.80	35.77	34.82	33.98	33.60	34.00	34.78	39.87
Ratio of the public expenditures on general education to the GDP in current prices /%/	3.40	3.17	3.16	3.23	3.15	3.04	2.81	2.66	2.51	2.82
Ratio of the public expenditures on general education to the total expenditures of public sector /in %/	8.61	8.78	9.08	9.02	9.05	8.95	8.36	7.82	7.22	7.08
Increase rate of the GDP in current prices to 1996 (coef)	1.00	1.69	1.92	2.14	2.40	2.66	3.08	3.64	4.30	4.42
Increase rate of public nominal expenditures on general education to 1996 (coef)	1.00	1.58	1.78	2.03	2.22	2.38	2.54	2.85	3.17	3.67

Source: On-line database of Estonian Statistical Department and data from Ministry of Education and Research June 2010, compiled by the authors.

The extra expenditure related to pupils with special needs is calculated additionally. Expenses incurred by organizing municipalities' school networks, preserving regionally important schools, and other organizational needs are covered from the resources of the reserve fund of educational expenses (forms on average 3 per cent of the educational expenses of cities and rural municipalities in a county).

In 2005 a reform took place that changed the funding of investments and the subsidization of school operations. State-funded education investments to municipalities were abolished. 240 million kroons were divided between municipalities on the basis of the number of pupils and capitation fee coefficients, as the so-called capitation fee investment component. Municipalities got the investment grant at free disposal, i.e. they may use the grant also for other purposes.

3.3. Development and subsidization of school investment funding in Estonia

In addition to current educational expenses of schools, investments must be made to cover depreciation and modernizing the study environment (see table 3).

With regard to public sector education investments the following regularities can be observed:

- The increase rate (2008 to 1996) of educational investments (4.79 times) was a little faster than grows rate of GDP (4.42 times);
- The increase rate (2008 to 1996) of investments into general education (5.76 times) was faster than grows rate of total educational investments (4.79 times);
- The ratio of educational investments (especially of investments into general education) to GDP has increased from 0.43% (0.24%) in 1996 to 0,46% (0.32%) in 2008, but the investments ratios to GDP fluctuate remarkable;
- The share of general education in the total education investments decreased from 60% in 1996 to below 50% in 2008;

Table 3. The level and structure of educational investments in Estonia, 1996–2008

	1996	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Total public educational investments /million kroons/	**241**	**358**	**461**	**595**	**739**	**838**	**862**	**1 336**	**1 789**	**1 155**
Increase rate of total public educational investments to 1996	**1.00**	**1.48**	**1.91**	**2.47**	**3.06**	**3.47**	**3.57**	**5.54**	**7.41**	**4.79**
Incl. Educational investments from central government budget /millions kroons/	148	268	266	323	383	518	692	1 147	1 567	701
Incl. Educational investments from budget of local municipalities /million kroons/	93	90	195	273	357	320	171	189	222	454
Ratio of public educational investments to GDP /%/	0.42	0.37	0.42	0.49	0.54	0.55	0.49	0.65	0.73	0.46
Incl. Investments from central government budget /%/	0.26	0.28	0.24	0.27	0.28	0.34	0.40	0.55	0.64	0.28
Incl. Investments from budget of local municipalities /%/	0.16	0.09	0.18	0.22	0.26	0.21	0.10	0.09	0.09	0.18
Total public investments into general education /million kroons/	**139**	**226**	**322**	**404**	**542**	**578**	**499**	**869**	**771**	**799**
Increase rate of public investments into general education to 1996	**1.00**	**1.63**	**2.32**	**2.91**	**3.91**	**4.17**	**3.60**	**6.27**	**5.56**	**5.76**
Incl. Investments from central government budget /million kroons/	55	159	159	173	213	349	419	795	745	561
Incl. Investments from budget of local municipalities /million kroons/	84	67	163	230	329	229	81	73	26	238
Ratio of public investments into general education to GDP /%/	0.24	0.23	0.30	0.33	0.40	0.38	0.29	0.42	0.32	0.32
Incl. investments from central government budget /%/	0.10	0.16	0.15	0.14	0.16	0.23	0.24	0.38	0.30	0.22
Incl. Investments from budget of local municipalities /%/	0.15	0.07	0.15	0.19	0.24	0.15	0.05	0.04	0.01	0.09

Source: Ministry of Education and Science and Estonian statistical Department on-line database June 2010, compiled by the authors.

- A higher share (on average 50–65%) of the investments into general education is funded by municipalities 1996–1998 and 2002–2003; during the financially difficult period of 1999–2000 the share of municipalities' investments in general education dropped to 1/3; 2004–2007 the funding of investments into general education from the central government budget has increased rapidly, simultaneously the funding from municipalities´ budget was going down dramatically.

Obviously there are remarkable regional differences in the distribution of educational investments, but a lag in research to identify reasons for these differences in financing education investments.

The wish and ability of municipalities to invest in schools has varied greatly and faded in the hope of free investments from state budgets. Thus there are hundreds of schools with outdated, unhealthy and unsatisfactory learning conditions. At the current level of investments, the deterioration of most schools' learning environment is likely to continue.

4. CRITICS OF THE REFORM OF THE INVESTMENT FUNDING IN GENERAL EDUCATION SYSTEM

Main characteristics of old and new systems of general education funding are described in table 4.

Until 2005 no financial means for investment have been allocated to budgets of municipalities. The municipalities receive certain target grants on basis of political decisions of central government, in need they had to borrow from banks increasing public sector budget deficit. Since 2005 municipalities receive from the central government budget the so called investment component for schools, depending on the number of classes and pupils. In 2005 the investment component accounted for 240 million kroons of the total funds allocated to general education schools and the annual investment per pupil was 1,270 kroons. In 2008 250.9 millions

kroons from the state budget was directed to the budgets of municipalities – 21 900 kroons per class and 438 kroons per pupil in school.

Table 4. Comparison of the old and new systems of general education funding

	Old system	**New system**
Distribution of educational expenses	The number of pupils per municipality and the distribution coefficient; the number of pupils per municipality and special education needs are taken into account.	No coefficients; per capita funding on equal grounds; the number of classes is taken into account; undersized classes below the set minimum level receive base money.
Preserving regionally important schools	Covered from the reserve capital for educational expenses	No funding of small schools (minimum 24 pupils)
Source of educational investments	State Investment Program, municipality budgets	RKAS; loans to municipalities and bank credits
Application for educational investments	Distribution principles unclear, random factors have great influence, lack of unity	Clear distribution principles, but due to the service fees of RKAS and the requirements of the state accounting committee unattainable by many municipalities
Allocations of educational investments to municipality budgets	Political decisions about distribution of state budget investments	Per capita investment component of educational funding
Liability of municipalities	Modest under the State Investment Program; high probability of inefficiency	Under the terms of the contract concluded with RKAS municipalities are responsible for purposeful use and efficiency of investments

Source: compiled by authors.

Despite new financing criteria, the new subsidization system fails to adequately consider the different population densities of municipalities and the special needs for regionally important small schools. Those sparsely densed municipalities that had several schools on their territories ran into a contradictory situation. To receive higher funding they should concentrate all pupils in one school, which, however, leads to time losses and expenses of families for commuting to school. Moreover, school closures usually lead to the gradual shrinking of rural settlements as teachers and families with children move to larger centres. Central

government mostly leaves the regional policy and expenditure issues to municipalities.

The allocation of financial resources to education should also take into account the quality of teaching. To overcome difficulties to find qualified teachers for small schools not offering a long-term professional perspective, teachers of small schools should obtain extra incentives to compensate for regional disparities. Since supplementary remuneration funds are not part of the state budget, the compensation for additional costs due to regional disparities is the task of municipalities. However, the owners of schools in less developed regions usually have a lower revenue level, which leaves quite limited options. As municipalities are mostly responsible for the regional distribution of schools, the financial reform of education investments is not integrated into a regionally balanced school network development plan. Investments are seized by financially more capable municipalities, whereby the regional imbalance of the schools network will be further aggravated.

Under the new rules for financing general education investments municipalities receive more competences in the planning of renovation and investment funding. Inefficient investments in terms of location and size should be avoided by introducing qualified RKAS specialists in funding and renovations[4] and municipalities' responsibility for paying back the invested amounts to RKAS. Municipalities will unlikely apply for excessive investment funds. The funds from the State Investment Program received until 2004 as "gifts" imposed on municipalities the petitioner role. Often they were incompetent in planning and managing large-scale renovation and construction works.

The costs of school buildings burdening municipalities' budgets can be considerably reduced[5]. As municipalities receive the funds for meeting their financial obligations related to school

[4] Large-scale activity could reduce the spending on design, wholesale purchase of construction materials, logistic service and performance of construction works.

[5] This should also be viewed as one of the financial obligations to RKAS.

investments from the state budget, then according to the Maastricht criteria, the funds cannot be taken into account in the calculation of the public sector's budget balance as additional municipal debts because it has already considered as central state debts. Municipalities and RKAS can be regarded as operators of the state investment program for schools, ensuring efficient use of funds by responding to the market situation in the best way. The savings will be retained by municipalities and RKAS.

However, there are threats involved in the program:

- Municipalities interested in renovation of school(s) face risks related to political decisions of central state on the investment component in the forthcoming decades. An annual central state amount of 240–250 million kroons for, the investment component is insufficient for most municipalities even considering the expected savings from the reduced costs of renovated school buildings.
- Moreover, the investment needs per pupil are considerably higher in schools with a smaller population of pupils.
- The investment component is allocated equally to schools in urgent need of renovation and to schools recently renovated. The municipalities with renovated schools can use the investment component for other purposes. The calculation of the special purpose grant does not take into account the differences in the financial capacity of municipalities. Municipalities with higher revenues are able to renovate schools quickly, whereas poorer municipalities will face difficulties.

Unfortunately, the political parties that launched the school investment program pursue different goals. Therefore, the conditions for successful school modernization have not yet been met and the implementation of the program has stalled. The state accounting committee has decided that the long term financial obligations (the so called financial lease) will have to remain within the credit limits of municipalities. Therefore, the cumulative loan burden of municipalities must not exceed 60% and the annual loan payments 15% of their annual budget net revenues. This decision made the school investment program automatically unattainable by many municipalities.

Instead to the investment contract with RKAS, municipalities will be offered an opportunity to conclude a service contract with the private real estate development firms, which would turn the financial lease into an operational lease. The financial obligations related to operational lease are said not to increase the loan burden of municipalities, but the average financial obligations of municipalities are doubled by comparison to financial lease[6].

Municipalities joining the program take risks of unpredictable growth of the interest rates of the bank loans taken by RKAS. The current EURIBOR – on which the interest rate is based – may increase, which would increase the financial obligations of municipalities. The state-allocated investment component of general education funding would not be sufficient to cover the obligations of most municipalities.

One of the main weaknesses of educational investments reform concerns the calculation of the investment component. It does not reflect different learning conditions in schools and the financial capacity of municipalities. Those municipalities that improved their school buildings, using funds of the State Investment Program receive the same investment component funds as those municipalities that never received "gift" from central state budget. The former are able to use the investment component money for raising the salaries of teachers or for improving the quality of teaching, while the latter need the funds to renovate the school buildings. Schools as providers of education services are still facing unfair competition, which does not encourage them to seek opportunities for improvement. Instead of resorting to a comprehensive national education policy, each municipality has to create its own policy. The fair treatment principle of both pupils and teachers is violated, affecting negatively the development of the whole general education system in the long run.

During the former school finance concept more financially capable municipalities were able to improve their schools with their own means and loans, while poorer municipalities had to apply for State

[6]The operational lease service contract has a 20% profit margin, to which the 18% value added tax is added.

Investment Program funds. The new system excludes poorer municipalities from investment support that fail to meet the investment terms set in operational leasing contracts by real estate firms. The reform deepens the gap between schools of different municipalities and regions. Further problems concern: regional competition of municipalities for pupils as well as for program funds, and the existence of private schools.

5. CRITICS OF THE REFORM OF THE FUNDING OF CURRENT EXPENSES FOR GENERAL EDUCATION

According to the new rules of funding schools' current educational expenses for 2008, the coefficients for the re-calculation of the funds reflecting pupils' numbers per municipality have been dropped. The per capita funds will be per class of equal amount. In order to take into account the needs of small schools, schools will be financed depending on the number of classes in them. If a school is recognized as regionally important, it is reckoned that teachers have to do their work regardless of the size of the classes. For schools with undersize classes, the so-called base fee (75% of the capitation fee) will be allocated for each pupil falling short of the set standard minimum class size.

An advantage of the new funding system concerns the switch from the municipality related scheme to a school-related scheme. Until now, municipalities with several regionally important schools were at a disadvantage compared to those with only one school on their administrative territory. The combination of per capita and base fee aims at finding a single applicable funding scheme for all schools that would consider the differences in the numbers of pupils and classes at different schools (Riigikogu kultuurikomisjon 2005). The regional effect of the transition to the new funding scheme is illustrated by figure 1 presenting the allocation of state funds to general education schools in different counties of Estonia in 2008.

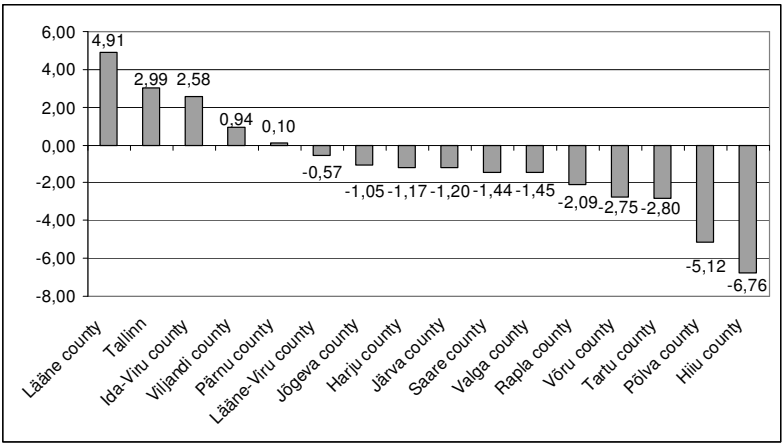

Figure 1. The impact of introducing new funding model on current educational expenses in the counties of Estonia in 2008 compared to old funding model (%). Source: Data from Ministry of Finance 2008, compiled by authors.

The proportions of the education funds offered to counties by the state change considerably. Such a change in funding of general education might be regionally justified on the basis of objective indicators, if it can be followed that the schools of e.g. Hiiu, Põlva, Tartu and Võru counties have been in a better situation than those of Lääne and Ida-Viru counties. Unfortunately, no such research has been done.

At average growth in funding sum nearby 13.7%, revenues in more than ten schools will increase by more than 40%, while in more than 40 schools the funds allocated for 2008 will decrease nominally. Even if there are sufficient arguments for introducing the changes, the transition should be organized smoothly.

The calculation takes into account the number of pupils and classes, but no other conditions causing discrepancies between the educational expenses of individual schools (such as different levels of exploitation costs). Unpredictable is the further development of the state current school funding. Either macro-economic or school-level criteria have been established in relation to the levels of funding. The existing organization will be unstable and may

undergo further adaptations. The characteristics of the reform are depicted in table 5.

Table 5. The advantages and disadvantages of the new general education funding system

Improvements	Weaknesses
• Cost-saving via the large-scale activity of RKAS • Financial empowerment of RKAS in the procurement of means • Avoiding state budget deficit • Increased authority of municipalities in deciding the location and volume of investments • Funding of educational expenses no longer local-government-, but school related • Funding per capita replaced by funding based on the number of classes and pupils in classes • Rapid increase in allocations for educational expenses in several schools	• Peculiarities of institutions and special needs of small schools are not given enough consideration • Service fees of RKAS too high • The principles of calculating school investments as part of the loan burden of municipalities are unclear • Allocation of the investment component fails to take into account the real investment need and the volume of investments already made • The criteria for assessing the sustainability of schools are unclear • The per capita investment component is insufficient and its development trends not regulated. • Sufficient funds for investment will be available only if the growth of the investment component is tied to GDP growth • Ignores the differences in the financial capacity of municipalities • Some schools will receive less money for educational expenses • Ignores differences in exploitation costs

Source: compiled by the authors.

The competences of municipalities and central government regarding school location and operation need more clarification. School financing should be integrated in regional development plan. Criteria, to determine the school locations and the need of existence of schools, and acceptable schooling conditions, have to be developed jointly between central state and municipalities. Specifications have to be made for the establishment of private schools. The funding scheme should comprise a rule to determine the total funds available to subsidize investment and current activities by the central state, e.g. percentage of all expenses for internal affairs, a percentage of tax receipts of the central state, a relation to growth of GDP. Moreover, there should be a stipulation determining the institution that has to finance investment. This can be the municipality through a loan from the central state, by debts in a framework of public private partnership, loans from the capital

market, the use of municipal or central state owned real estates or municipal finance from other sources. The central state may finance investment l by loans, tax receipts, profits or revenues from real estate management or public enterprises etc. In order to protect fiscal autonomy of municipalities they may come to a sharing of investment costs according to fixed percentages. In this framework present financial allocation rules to schools may be applied. Particular situations of municipalities in distressed areas, e.g. in border areas, may be considered in a special addition to general grants.

The 2005 reform may end up in a sophisticated planning system where the municipalities have to give up a considerable part of their organizational and fiscal autonomy. Therefore, we discuss whether through so-called Functional Overlapping Competing Jurisdictions some of the ramifications of the reform could be avoided.

6. FUNCTIONAL OVERLAPPING COMPETING JURISDICTIONS (FOCJ) TO IMPROVE THE REFORM

6.1. FOCJ: Definition and Integration into the Reform

The Reform might be totally or partially changed by introducing FOCJ. FOCJ are functional, overlapping, competing, jurisdictions, which are recommended to organize the production of special public services such as school services. The concept is not very new but Frey (Frey 1997; Frey and Eichenberger 1995, 1996, 2006; Eichenberger 1998, 2002; Spindler 1998; Detig, Feng, Friedrich 2002; Friedrich 2002, 2006; Dohse 2007; Bartholomae, Friedrich 2008) has initiated a discussion for application of this concept in the European Union.

FOCJ might be categorized according to their members to:
(1) FOCJ with citizens as members, e.g. school communities in Switzerland

(2) FOCJ with jurisdictions as members, e.g. Association of municipalities for school services
(3) FOCJ with jurisdictions, institutions of public and private law as members, e.g. communities, public schools, private schools
(4) FOCJ with citizens, and entities of private and public law as members, e.g. jurisdictions, associations, chambers of handicraft and commerce, firms, citizens interested in school activities).

All of them might be applicable in Estonia, but we concentrate on type (2) that is more close to the reform system described above. School-FOCJ compete for municipalities as members to organize the provision of school services. A municipality can choose to establish jointly with other municipalities a FOCJ or it may participate in an already existing FOCJ. A FOCJ is functional because it concentrates on a specified type of school services, e.g. elementary schooling, secondary schools, high schools. The FOCJ are overlapping because several of them may offer the same education services in a region. It does school investments and operates the schools.

The legal form may be that of a public association for special purposes. This form is often used in some countries (Detig, Feng, Friedrich 2002). A legal form of this type for cross border cooperation in the European Union has just been created (Regulation (EC) No 1082/2006).

If such a possibility exists: Which municipalities are going to form or participate in such a School-FOCJ? We tackle this question within a model (1). Apart from financing the establishment of the FOCJ, investments and operational activities of the schools possessed by the FOCJ must partly be financed by the members through capital participation (simple arrow, figure 2). To some extend they may use the reform grants mentioned. We discuss a model (2) (showing how the contributions of the municipal members are fixed if contributions are related to the number of pupils (dotted arrow, figure 2). The FOCJ will be the partner of central government representing their municipal members as a joint association. Therefore, they receive the Estonian special grants to renovate, extend, construct, etc. schools (symbolized by a thick arrow, figure 2). Thus we refer to a model (3) to specify the

negotiation solution on such grants. The FOCJ may be integrated into the reform system as shown in figure 2.

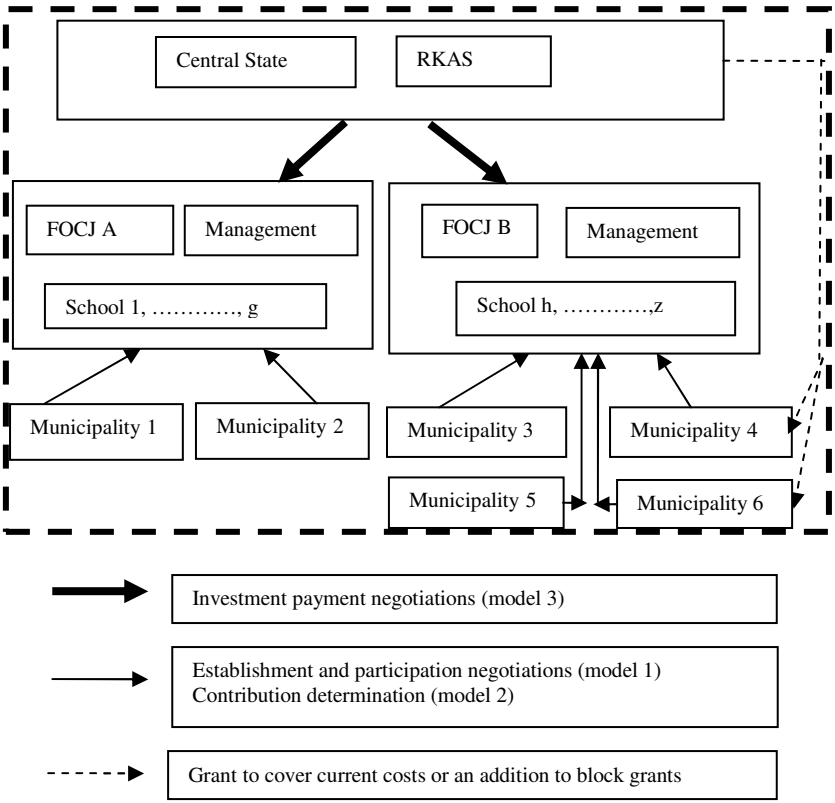

Figure 2. The Role of FOCJ Concerning the Funding Reform.

6.2. Establishment Model for School-FOCJ

The municipalities have to decide which resources should be dedicated to the FOCJ. Such resources might be expressed in monetary terms (financial means, real estates, existing schools, etc.) and named as x. x_i shows the resources brought in by town i and $\Sigma\, x_{j\ (j=1,..,n)}$ shows the total amount of resources X dedicated by municipalities to the FOCJ. X_R depicts the total resources of the FOCJ without that of the town i. The possible number of towns is indicated by n. The town i expects advantages from schooling the

pupils by the FOCJ and expects higher advantages from its engagement in the FOCJ if the share of its resources in the FOCJ increases[7]. These advantages are expressed by the parameter c_i. The dedication of resources by the town to the FOCJ shows also some negative effects[8] captured by the parameter b_i [9]. We obtain a utility function of town i (c.f. figure 3):

(1) $u_i = c_i \bullet (x_i / \Sigma x_j) - b_i \bullet x_i$;

(2) $X_R = X - x_i$;

(3) $u_i = c_i \bullet (x_i / (x_i + X_R)) - b_i \bullet x_i = c_i \bullet (1 - X_R/(x_i + X_R)) - b_i \bullet x_i$

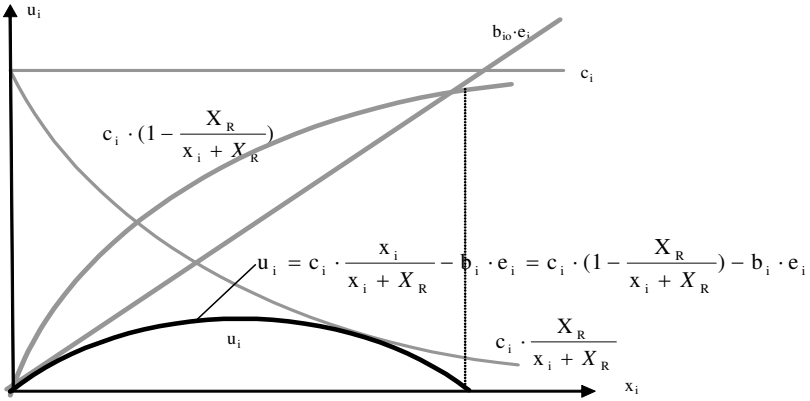

Figure 3. Utility development of town i.

In case of n candidates the uncertainty about the strategies chosen by other communities' increases. Therefore, we assume that the municipalities escape to a more simple autonomous strategy that means that one municipality maximizes utility under the assumption that the others do not react that means X_R the offers of

[7] There might be more pupils taught or the location of schools can be situated more in favor of citizens of the town, transportation times and costs may diminish. There might be broader educational program if pupils from different towns are educated jointly.

[8] such as opportunity costs, less centrality of the town if the schools are not located there, transportation times for pupils and other unfavorable effects on achievement of municipal goals.

[9] Other forms of bi can be treated as well (Friedrich 2002, pp. 248-250).

the other partners keep constant. The solution found refers to an approach of Cornes and Hartley (2001). The utility function (1), (3) becomes maximized[10]:

The optimum share of resources in FOCJ turns out (c.f. figure 4) to:

(8) $x_i / X = 1 - (b_i / c_i) \bullet X$

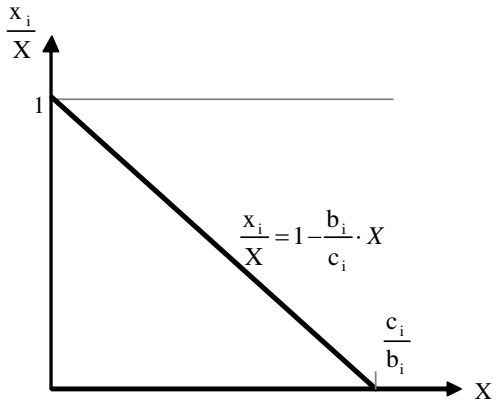

Figure 4. Best response of town I

The optimal solution that means the optimal number of communities and the adequate volume of X is determined where the sums of the values of the optimal shares add up to one (c.f. figure 5). To participate in a FOCJ the cost/benefit ratio must be smaller than the average of the sum of other members of the FOCJ.

[10] (4) $du_i / dx_i = c_i (x_i / (x_i + X_R)^2) - b_i = 0$;
(5) $x_i = \sqrt{(c_i / b_i)} \bullet X_R - X_R$;
(6) $x_i = \sqrt{(c_i / b_i)} \bullet (X - x_i) - (X - x_i)$;
(7) $X = (c_i / b_i) \bullet (1 - (x_i / X)$

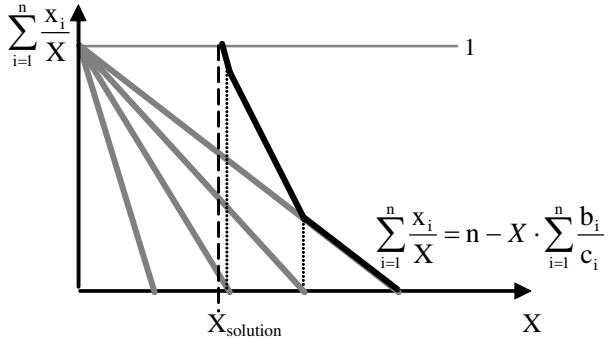

Figure 5. Solution of FOCJ formation

Many times favourable benefit/cost relations develop for neighbouring municipalities that are going to form a FOCJ and thus delegate part of their school competences to the FOCJ. Competition among existing FOCJ can be considered in extended models. Municipalities, which do not like to join an FOCJ, have low c parameters. They have a high preference for small schools and high opportunity costs.

6.2. A Model of Contribution to the Operating Costs by the FOCJ Members

The members of the FOCJ have to cover a share of the operating costs of the FOCJ[11]. For shake of simplicity we assume that a specified percentage of costs are to be covered by the members. The members have to pay a contribution that is equal, (e.g. per pupil, or related to resources dedicated to the FOCJ) to the costs per unit. The usage of the services of the FOCJ depends also on the contribution to be paid. If the costs are high less usage is made of the capacities of the FOCJ services. There might be still some uncomfortable substitution possibilities for the municipalities.[12] An added up demand curve of all members exist for the services of the

[11] Some costs, e.g. interest payments, normal amount of teacher services, etc. Might be paid by the central state.

[12] If the costs are high less usage is made of the capacities of the FOCJ services. There might be still some uncomfortable substitution possibilities for the municipalities.

FOCJ depending on the level of cost contribution per service unit the municipalities have to pay. The FOCJ possesses a management that shows a utility function related to the production and labor input of the FOCJ.

If the rule of cost coverage is stipulated and the management has the right to fix or to suggest the contribution rate on basis of costs the following results are obtained. The model comprises a modification of a fee determination model (Friedrich 1998; Friedrich, Kaltschütz, Nam 2004).

It comprises:

- A utility function U of the public firm's management depending on output X and labor input L.

(1) $U = U(X,L)$, $\partial U / \partial X = U'_X$, $\partial U / \partial L = U'_L$

- A restriction concerning the production function. There is one fixed factor A and there are two variable production factors, L = labor and C = materials.

$$\partial f / \partial L = f'_L > 0 \quad \partial f / \partial C = f'_C > 0$$

$X = f(L,C)$ $\partial f'_L / \partial L = f''_L \le 0$, $\partial f'_C / \partial C = f''_C \le 0$,

(2) $\partial f'_C / \partial L = f''_{CL} = f''_{LC} = \partial f'_L / \partial C > 0$

- A demand function showing the relationship between price P and volume X of output sold

(3) $P = P(X)$, $\partial P / \partial X = P' < 0$

- The cost function demonstrating fixed cost K_A and two types of variable cost. The factor price of labor is w and that of materials is i, hence

(4) $K = K_A + w\,L + i\,C$

- Under Estonian conditions the towns have to cover a percentage g of the variable costs K_v, they need not to pay for K_A

(5) $g \bullet K_v = g \bullet (w\,L + i\,C)$

- A restriction that contribution revenue is equal to total cost is introduced. We assume a self-financing FOCJ

(6) $P(X)\,X = g \bullet (w\,L + i\,C)$

- Utility maximization of management under the restrictions mentioned above leads to the following Lagrange equation

(7) $\Lambda = U(X;L) + \lambda(P(X)\,X - g \bullet (w\,L + i\,C))$, where $X = f(L,C)$

- The following first-order conditions for the utility maximization are delivered

(8) $\delta\Lambda/\delta\lambda = P(X)\,X - g\bullet(w\,L + i\,C) = 0$

$\delta\Lambda/\delta X = U_X' + \lambda(\delta P/\delta X \bullet X + p) = 0$

$\delta\Lambda/\delta L = U_X' \bullet f_L' + U_L' + \lambda\,(P' \bullet f_L' \bullet X + P \bullet f_L' - g \bullet w) = 0$

$\delta\Lambda/\delta C = U_X' \bullet f_C' + \lambda\,(P' \bullet f_C' \bullet X + P \bullet f_C' - g \bullet i) = 0$

Equations (8), (9) show two optimality conditions. One concerns the equivalence of the relation of marginal utilities of marginal factor-inputs to the proportion of respective marginal profits from contribution and the other refers to the contribution rate under the percentage of cost coverage. Consequently

$(U_X' \bullet f_L' + U_L')/\,U_X' \bullet f_C' = ((P' \bullet f_L' \bullet X + P \bullet f_L' - g \bullet w)/((P' \bullet f_C' \bullet X + P \bullet f_C' - g \bullet i)$ (8)

and $P = (g \bullet (w\,L + i\,C)/\,X)$ (9)

The optimal contribution rate from the point of view of FOCJ-Management is shown by figure 6 at point B. Here the management of the FOCJ has a high influence on the contribution and the towns are depending to high degree on the type of management that manages the FOCJ (c.f. figure 7). If it is only interested in X that means U(X) than it realizes cost minimization with a low contribution rate and no X-inefficiency according to Leibenstein. Several types of managers can be considered that evaluate pupils education and labour input positively (type I), are only interested in education (type II), or that want to maximise labor (type III) (c.f. figure 7). Type I and III are Leibenstein X-inefficient, but produce more than under profit maximization (hidden).

This approach opens an analytic framework for the analysis of school FOCJ-behaviour. Typical conditions can be considered as well. Restrictions result for the FOCJ management to produce to costly. Some municipalities do not use the FOCJ if the contribution rate becomes too high.

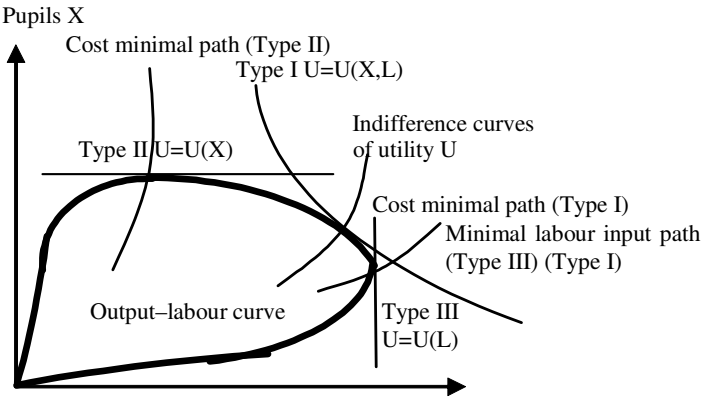

Figure 7. Types of managers of FOCJ.

Moreover, there might be a monitoring council of the municipalities and a negotiation process between the FOCJ management and the municipalities' representatives in the council. This can be considered in an extension of the model with utility functions of the management and a utility function of the council, e.g. the council $U_T(x)$ and the management $U_M(X, L)$. A utility combination results along the pupil-labor curve between the tangency point of type II (highest utility of the council) and tangency point of type I (highest utility of management). It shows a utility frontier concerning the two negotiators where a Nash solution can be identified. It shows a higher education volume than according to the wishes of the management. (c.f. Friedrich, Dehne, Nam 2009)

Moreover, if towns can leave the FOCJ maximum restrictions can be introduced that show a contribution rate and related a utility level at which the towns leave the FOCJ. There is a pressure in the direction of lowering costs involved.

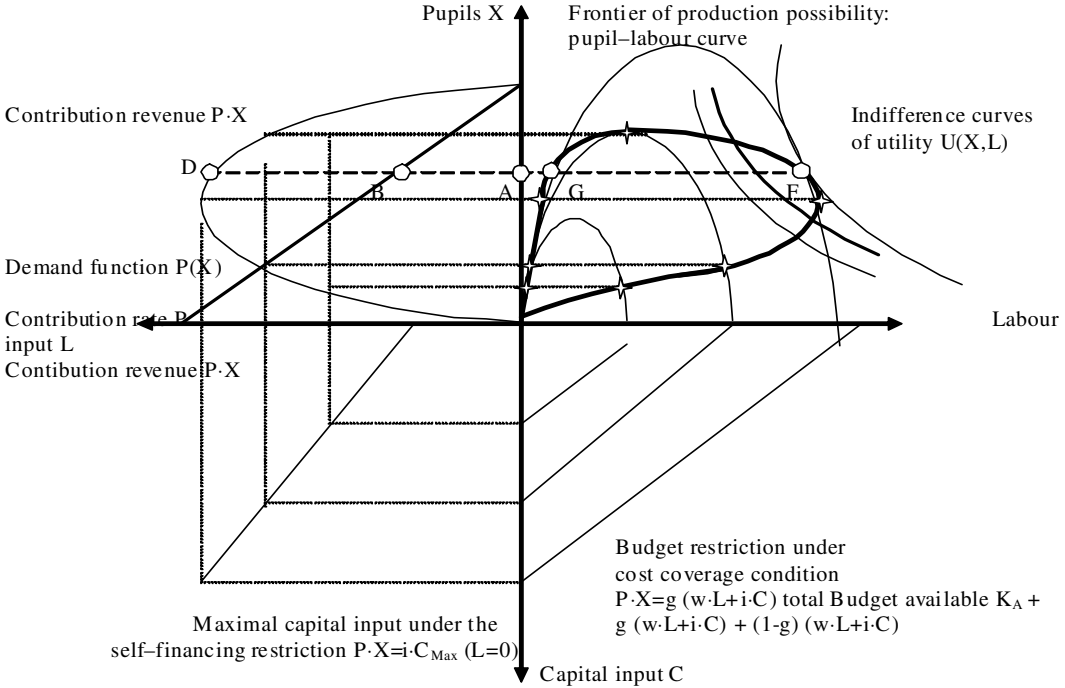

Figure 6. Determination of contribution rate for FOCJ.

Horizontal competition among school-FOCJ can be introduced if towns are allowed to send pupils to FOCJ where they are no members or if they are allowed to be member in several of them (similar Friedrich 2002).

6.4. Model Concerning Special Grants

Under Estonian institutional conditions the fixed costs are mostly covered by the central government. This concerns especially the construction and extension costs of schools. Therefore a FOCJ should apply for a credit from RKASor for a conditional grant. We turn at first the case of conditional grant, Negotiations between the FOCJ and a ministry or RKAS take place to specify the conditions for such a special grant. A similar problem was tackled by Friedrich, Gwiazda, Nam (2007).

The ministry (RKDA) evaluates a unit of investment for a pupil by g_{XL} and a unit of grant by g_{FL}. The resulting utility the ministry wants to maximise is:

(1) $U_L = g_{XL} \bullet X - g_{FL} \bullet F \quad \rightarrow \max$

The utility of the FOCJ is determined by evaluation of the educational services through the parameters a, b and by the evaluation of a unit of grant $g_{FG.}$ The utility function

(2) $U_G = (a-b \bullet X) \bullet X + g_{FG} \bullet F \quad \rightarrow \max$

is to be maximized by the FOCJ.

An indifference curve of the ministry shows the condition (c.f. figure 8):

(3) $dU_L = (\delta U_{L/} \delta X) \bullet dX + (\delta U_{L/} \delta F) \bullet dF = 0$

for that of the FOCJ we obtain:

(4) $dU_G = (\delta U_{G/} \delta X) \bullet dX + (\delta U_{G/} \delta F) \bullet dF = ((a-b \bullet X)\, dX + g_{FG} \bullet dF = 0$

The two equations deliver the solution:

(5) $dF/ dX = g_{XL}/ g_{FL} = - (a-2bX)/ g_{FG\ or}$

The ministry (RKDA) evaluates a unit of investment for a pupil by g_{XL} and a unit of grant by g_{FL}. The resulting utility the ministry wants to maximise is:

(1) $U_L = g_{XL} \bullet X - g_{FL} \bullet F \quad \rightarrow \max$

The utility of the FOCJ is determined by evaluation of the educational services through the parameters a, b and by the evaluation of a unit of grant $g_{FG.}$ The utility function

(2) $U_G = (a-b \bullet X) \bullet X + g_{FG} \bullet F \quad \rightarrow \max$

is to be maximized by the FOCJ.

An indifference curve of the ministry shows the condition (c.f. figure 8):

(3) $dU_L = (\delta U_L / \delta X) \bullet dX + (\delta U_L / \delta F) \bullet dF = 0$

for that of the FOCJ we obtain:

(4) $dU_G = (\delta U_G / \delta X) \bullet dX + (\delta U_G / \delta F) \bullet dF = ((a - b \bullet X)\, dX + g_{FG} \bullet dF = 0$

The two equations deliver the solution:

(5) $dF / dX = g_{XL} / g_{FL} = -(a - 2bX) / g_{FG}$ or

(6) $X_{Pareto} = (g_{XL} \bullet (g_{FG} / g_{FL}) + a) / 2b$

The utilities along the Pareto-solution are:

(7) $U_L = g_{XL} \bullet X_{Pareto} - g_{FL} \bullet F$

(8) $U_G = (a - b \bullet X_{Pareto}) \bullet X_{Pareto} + g_{FG} \bullet F$

(9) While $X_{Pareto} = (g_{XL} \bullet (g_{FG} / g_{FL}) + a) / 2b$ turns out constant (c.f. figure 8).

If we solve one equation for F and if we substitute F in the other one we receive:

(10) $U_L = -g_{FL} / g_{FG} \bullet U_G + (g_{XL} + g_{FL} / g_{FG} \bullet (a - b \bullet X_{Pareto})) \bullet X_{Pareto}$

$= -g_{FL} / g_{FG} \bullet U_G + g_{FL} / g_{FG} \bullet (g_{XL} \bullet (g_{FG} / g_{FL}) + a)^2 / 4b$

It demonstrates the utility frontier between the two negotiators (c.f. figure 8, 9). To derive the negotiation solution we maximize the Nash product (NP) considering minimum utilities that the ministry U_{LMin} and the FOCJ U_{GMin} want to achieve and the utility frontier (c.f figure 9). The expression:

(11) $\Lambda = (U_L - U_{LMin}) \bullet (U_G - U_{GMin}) + \lambda(-U_L - g_{FL} / g_{FG} \bullet U_G + g_{FL} / g_{FG} \bullet (g_{XL} \bullet (g_{FG} / g_{FL}) + a)^2 / 4b)$

(12) $\delta\Lambda / \delta\lambda = -U_L - g_{FL} / g_{FG} \bullet U_G + g_{FL} / g_{FG} \bullet (g_{XL} \bullet (g_{FG} / g_{FL}) + a)^2 / 4b$

(13) $\delta\Lambda / \delta U_L = U_G - U_{GMin} - \lambda = 0 \qquad \lambda = U_G - U_{GMin}$

(14) $\delta\Lambda / \delta U_G = U_L - U_{LMin} - \lambda\, g_{FL} / g_{FG} \qquad \lambda = g_{FG} / g_{FL} \bullet (U_L - U_{LMin})$

We obtain:

(15) $U_{LNash} = ((U_{LMin} - (g_{FL} / g_{FG}) \bullet U_{GMin} + g_{FL} / g_{FG} \bullet (g_{XL} \bullet (g_{FG} / g_{FL}) + a)^2 / 4b) / 2$

(16) $U_{GNash} = ((U_{GMin} - (g_{FG} / g_{FL}) \bullet U_{LMin} + g_{FG} / g_{FL} \bullet (g_{XL} \bullet (g_{FG} / g_{FL}) + a)^2 / 4b) / 2$

(17) $F_{Nash} = (U_{GMin} / 2\, g_{FG} - U_{LMin} / 2\, g_{FL} + (g_{XL} \bullet (g_{FG} / g_{FL}) + a) \bullet (3 g_{XL} \bullet (g_{FG} / g_{FL}) - a)) / 8b\, g_{FG}$

If the parameter b increases the grant F decreases. If a is smaller than $g_{XL} \bullet (g_{FG} / g_{FL})$ it increases as long as a is larger than $g_{XL} \bullet (g_{FG} / g_{FL})$. If FOCJ expands its education services the ministry or RKAS is willing to pay a higher conditional grant as long as the difference

g_{XL}•X - g_{FL}• F increases. If the evaluation of the FOCJ is high the grant keeps smaller. The model can be extended to the case where several FOCJ compete for the grant. The FOCJ that offers the highest utility to the ministry will win.

The ministry and the FOCJ show utility functions depending on the Volume of the grant F and the amount of school service X that lead to a mapping of the sets of utility curves shown in figure 8. Possible solutions reflect the points of tangency between the indifference curves at a volume X. A Nash solution gives us in figure 9 the result of the negotiation between the ministry and the FOCJ. If FOCJ expands its education services the ministry or RKASis willing to pay a higher conditional grant.

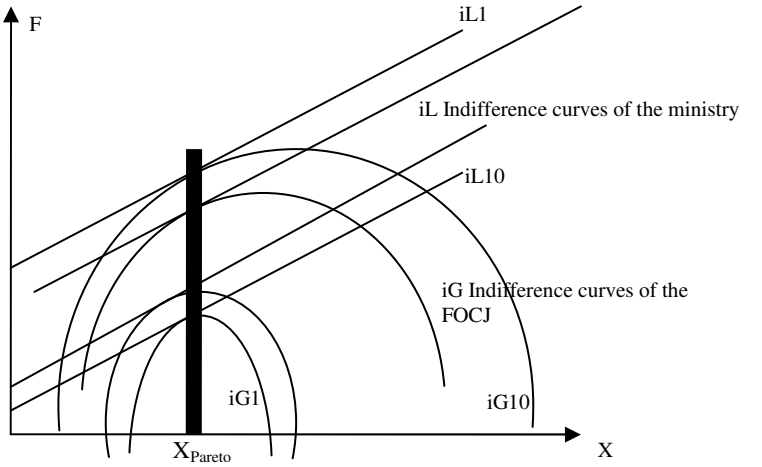

Figure 8. Negotiation situation between ministry and FOCJ. Indifference Curves and possible solutions.

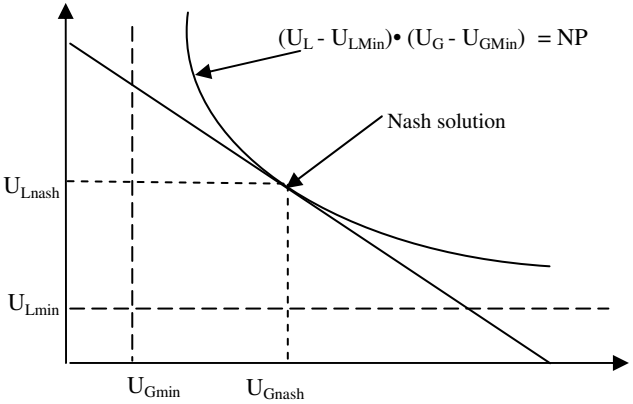

Figure 9. Nash solution of conditional grant.

The model can be extended to crediting as well. The RKAS has a similar utility function but it gives better conditions if the number of pupils the FOCJ is willing to teach increases. The FOCJ is considering the amortization as fixed costs and the model (2) can be integrated. Such an approach was used for a theory of real estate sale to firms by municipalities including and a federal real estate institution (Feng, Friedrich 1993).

6.5. FOCJ to extend the reform

The introduction of FOCJ improves the reform (see table 6). In this system the FOCJ or individual municipalities own schools. FOCJ possess budgets. Their revenues are from contributions of municipalities, debts, grants from central state, sale of unused school buildings. Their expenses are for school investment, school operation, and amortization. The new funding system can be considered within this FOCJ oriented framework. The FOCJ negotiates for his members the investment funds, school locations and teaching programs influenced also by the member municipalities. The operational state funding can be received by municipalities operating own schools or through the number of classes they fill up with their pupils within the FOCJ. For shake of simplicity this amount can be directly transferred to the FOCJ thus lowering the contributions of the respective municipalities. Detailed research concerning the legal possibilities to introduce school FOCJ in Estonia is welcomed.

Table 6. Improvements expected from FOCJ

- The system of planning gets stabilized as rules prevail that cannot be changed according to sudden changes of the power structure in Parliament and Central Government. Ministries, RKSA, FOCJ and municipalities have to keep to stable acceptable rules and solutions to keep the sector stable, e.g. longer term principles of subsidization.
- Participants are forced to agree on indicators used to subsidize, to plan schools etc. that are permanently in use and at least to a FOCJ and its members.
- The autonomy of municipalities is not totally lost. They can organize political influence through the FOCJ, organization, they co-ordinate and they have an agent that is acting in favor of them.
- The FOCJ takes care of more pupils thus representing more families, voters, party members.
- The FOCJ achieves better fiscal solutions with the central government as they can organize more classes.
- FOCJ representing several schools might be a better negotiation partner for banks. More times achievement of private profits, e.g. banks, real estate companies, consultants' expert ices can be avoided. The power of the central government and RKASis reduced, for they rely also on information and co-operation with FOCJ
- The FOCJ is able to have a higher skilled management that is able to negotiate with RKASor even consider European procurement laws and to organize a house keeping and facility management system.
- It can offer teachers more carrier chances to teachers and might broaden the teaching programs.
- Because of higher economic potential FOCJ can maintain small schools more easily on the other hand it can reduce the disadvantages of school closures.
- There is no centralized school planning by the central government necessary. There will be regional planning concepts by the FOCJ in such a way that the municipal autonomy is not totally lost. The municipalities as FOCJ members are incorporated through the decision making bodies of the FOCJ. School clusters are going to be established.
- The FOCJ also depend on the municipalities because towns can opt out or change to another FOCJ, e.g. if the contribution becomes high. The FOCJ compete with school services and low costs for the municipalities.
- The management that has to consider more low-cost productions (e.g. is of type 1).
- The school sector is not so influenced by day to day politics and political business.
- The municipalities get less exploited by private business through unfavorable Public Private Partnership, leasing and similar solutions.

7. SUMMARY

Estonian funding of general education has become a complicated issue. Various political viewpoints collide in the process of looking for solutions. The share of the GDP used for financing education in Estonia is roughly on the EU average level, but the nominal amount of Estonian per capita education funds turns out low. Estonia has many small schools with an insufficient number of pupils, which makes the education system costly. Higher education in Estonia is somewhat better funded.

The reform planned for 2005–2006 aimed at increasing the level of investments in the learning environment of schools and the funds for educational expenses, as well as at introducing higher transparency into the system. There are a number of problems hindering the implementation of the reform, increasing risks and questioning the need for several changes.

In the funding of educational investments, the central government wishes to be in the role of a long-term loan provider via RKAS. The investment component is allocated to municipalities from the state budget as part of the per capita funds for financing the necessary investments. But the development trends of the state-allocated investment component are not fixed. The growth of the investment component should be tied to GDP growth to enable the financing of long-term investment projects with the help of the savings from exploitation costs as a result of investment in school buildings. The implementation of the schools investment program in RKAS has stalled.

The reform comprises the transition from the per capita funding scheme of educational expenses to a school-related funding scheme based on the number of pupils in classes. The changes in the funding scheme are dramatic and vary to a great extent from school to school and also from county to county. A several years long transition period should be imposed for adaptation to the changes. The new system eliminates several bottlenecks, but it ignores the volume of investments made so far, differing needs in investment, and differences between the financial capacities of municipalities.

To reduce the weaknesses a more and more tight central planning system is debated that abolishes to a large extent municipal autonomy. A compromise would concern the establishment of so-called Functional Overlapping Competing Jurisdictions (FOCJ) for schools. The municipalities can be members there. The FOCJ is like a special purpose municipality. It takes care of the schools, negotiates with central government for financial support and has own revenues consisting of contributions of the member municipalities, grants from central government and sale of unused school real estates and own debts. The municipalities can participate in an FOCJ; they can leave a FOCJ, enter a competing FOCJ or operate schools themselves. A theory of FOCJ establishment, a theory of contribution formation for municipalities, and a theory of grant or loan negotiation is offered to estimate the behaviour of FOCJ.

The realization of the FOCJ concept would stop the shift of power to the central government in favor of keeping more municipal autonomy and enables regional specific solutions in Estonia.

REFERENCES

Aaronson, D. „The Effect of School Finance Reform on Population Heterogeneity“ *National Tax Journal*, 1999, pp. 5-29.

Bartholomae, F.; Friedrich, P. (eds) “FOCJ als Mittel regionaler Kooperation” *Lehrstuhl für Finanzwissenschaft, Universität der Bundeswehr München, Neubiberg.* Diskussionspapier Nr. 50, 2008.

Berne, R.; Moser, M.; Stiefel, L. “Social Policy: School Finance”, *Journal of Management History*, Vol. 5, No. 3, 1999, pp. 165-179.

Boyd, W. L.; Hartman, W. T. “Introduction and Overview”, in W. T. Hartman; W. L. Boyd (eds) *Resource Allocation and Productivity in Education* (Westport, Connecticut-London: Greenwood Press 1998) pp. VII-XV.

Cornes, R.; Hartley, R. “Joint Production and Share Functions” *Department of Economics, Keele University, Keele*. Working Paper, 2001.

Detig, S.; Feng, X.; Friedrich, P. “FOCJ als Grundlage für Förderungsinstitutionen, Aufbau-Ost und Bevölkerung-Ost”, in P. Friedrich (ed) “Öffentliche Unternehmen im Standortwettbewerb für den Aufbau Ost.” *Lehrstuhl für Finanzwissenschaft, Universität der Bundeswehr München, Neubiberg*. Diskussionspapier Nr. 41, 2002, pp. 82-115.

Dohse, D. “Cluster-Based Technology Policy – the German Experience”, *Industry and Innovation*, Vol. 14, 2007, pp. 69-94.

Downes, T. A.“ Evaluating the Impact of School Finance Reform on the Provision of Public Education: The California Case“ *National Tax Journal*, 2001, pp. 405–419.

Eichenberger R. “Zweckgemeinden statt Zweckverbände! Effiziente und demokratische Leistungserbringung durch FOCJ”, in Bruno Meier (ed) *Zukunft, Aargau, Der politische Raum, Beiträge zu Politik, Wirtschaft, Kultur und Gesellschaft* (Baden: Baden-Verlag 1998) pp. 39-51.

Eichenberger, R. “Starker Föderalismus: Drei Reformvorschläge für fruchtbaren politischen Wettbewerb”, in Uwe und Hans Rentsch (eds) *Der Preis des Föderalismus, hrsg. Von* (Zürich: Wagschal 2002) pp. 177-199.

Estonian Statistical Department on-line database June 2010.

Eurostat on-line database 2008, 2010.

EV haridusseaduse, valla- ja linnaeelarve seaduse, põhikooli- ja gümnaasiumiseaduse, erakooliseaduse, kutseõppeasutuse seaduse ning koolieelse lasteasutuse seaduse muutmise seadus. *Eelnõu 488 SEI.* 07.01.2005.

Feng, X.; Friedrich P. "Ansätze einer Theorie des Verkaufs von Treuhandvermögen an Kommunen" *Jahrbuch für Sozialwissenschaft*, Vol. 44, 1993, pp. 233-277.

Frey, B. S. "Ein neuer Föderalismus für Europa: Die Idee der FOCJ." (Tübingen: Mohr 1997)

Frey B. S.; Eichenberger R. "Competition among Jurisdictions: The Idea of FOCJ", in Lüdger Gerken (ed) *Competition among Institutions* (London: Macmillan 1995) pp. 209-229.

Frey B. S.; Eichenberger R. "FOCJ: Competitive Governments for Europe" *International Review of Law and Economics*, Vol. 16, 1996, pp. 315-327.

Frey B. S.; Eichenberger R. "Functional Overlapping and Competing Jurisdictions (FOCJ): a Component and Alternative to Today's Federalism", in Ahmal Etisham; Giorgio Brosios (eds) *Handbook of Fiscal Federalism* (Amsterdam: Elgar 2006) pp. 154-181.

Friedrich, P. "Gebührensteuerung mittels geeigneter Kostenrechnung – Ein Analyserahmen", in Helmut. Brede (ed) *Preise und Gebühren in der Entsorgungswirtschaft* (Baden-Baden: Nomos 1998) pp. 181-220.

Friedrich, P. "Functional, Overlapping, Competing, Jurisdictions – FOCJ – An Instrument of Regional Competition?", in Jouke van Dijk; Paul Elhorst; Jan Oosterhaven; Egbert Weve (eds) *Urban Regions. Governing interacting economic, housing, and transport systems* (Nedelandse Geografische Studies 303, Universiteit Utrecht 2002) pp. 237-263.

Friedrich, P. "Ein neuer Körperschaftstyp im Gesundheitswesen?", in Günter E. Braun; Frank Schultz-Nieswandt (eds) "Liberalisierung im Gesundheitswesen", in *Schriftenreihe der Gesellschaft für öffentliche Wirtschaft, Heft 13.* (Baden-Baden: Nomos 2006) pp. 133-154.

Friedrich, P.; Dehme, A.; Nam, C.W. „ Determination of Fees for Local Services under the Consideration of Public and Management Objectives" *Zeitschrift für öffentliche und*

gemeinwirtschaftliche Unternehmen (ZögU), Vol. 32(1), 2009, pp. 1-18.

Friedrich, P.; Gwiazda, J.; Nam, C. W. "Strengthening Municipal Fiscal Autonomy Through Intergovernmental Grants", in Roberta Capello; Peter Nijkamp (eds) *Urban Dynamics and Growth, Advances in Urban Economics* (Amstersdam: Elvisier 2004) pp. 693-728.

Friedrich, P.; Kaltschütz, A.; Nam, C. W. "Significance and determination of fees for municipal finance" *CESifo* Working Paper Nr. 1357, München, 2004.

Ministry of Education and Research on-line database June 2010.

Ministry of Finance 2008.

Murray, S. E.; Evans, W. N.; Schwab, R. M. „Education-Finance Reform and the Distribution of Education Resources" *The American Economic Review*, 1998, pp. 789-812.

Nechyba, T. „Public School Finance and Urban School Policy: General versus Partial Equilibrium Analysis" *Brookings-Wharton Papers on Urban Affairs*, 2003, pp. 139-183.

Regulation (EC) No 1082/2006 of the European Parliament and of the Council of Territorial Co-operation (EGTC), OJL 210, 5.7.2006, 19-24.

Riigikogu kultuurikomisjon 2005. Seletuskiri pearahamudeli tabelite juurde. From 07.01.2005.

Spindler, Jürg de. "FOCJ: Ein Konzept zur Neuordnung der Zusammenarbeit öffentlich-rechtlicher Gebietskörperschafte" (Bern Stuttgart Wien: Haupt 1998)

Vabariigi 2000. Valitsuse määrus nr 53 "Munitsipaalkooli pedagoogide palgavahendite arvestusliku kulu koefitsiendid valdadele ja linnadele, õppevormidele ja eriõppele", 15.02.2000.

KOKKUVÕTE

Eesti üldhariduse rahastamise reformi strateegiad

Eesti üldhariduse rahastamise poliitika ja mõõdikute väljatöötamiseks analüüsitakse kõigepealt haridusotstarbeliste kulude jaotust. Kuigi Eestis on üldhariduse rahastamiseks suunatud SKP osa veidi üle EL keskmise taseme, on madala majandusliku arengutaseme tõttu õpilase kohta eraldatav rahahulk arenenud riikidega võrreldes suhteliselt väike. Lisaks sellele on Eesti üldhariduse kuluvajadus keskmisest suurem, sest riigi hõreda asustustiheduse tõttu on maapiirkondades vajalik ülal pidada väikese õpilaste arvuga koole. Käesolevas artiklis käsitletakse olukorra parandamiseks kahte baasstrateegiat.

Esimesena käsitletakse Eestis alates 2008. aastast rakendatud üldhariduse rahastamise strateegiat, mis toetub senisele üldhariduse rahastamise ruumilisele organisatsioonile. Artiklis analüüsitakse selle poliitika reformi mõju regionaalseid tagajärgi. SWOT-analüüsis käsitletakse nii jooksvate hariduskulude jaotuse kriteeriume kui ka investeerimisressursi ja –kulude jaotuse aluseid. Esimene strateegia on suunatud olemasoleva süsteemi täiustamisele jooksvate kulude ja investeeringute jaotamisel, mis toetub peamiselt õpilaste arvule koolis ja hariduslike erivajaduste arvestamisele. Sellest hoolimata ei saavutata koolide võrdset kohtlemist nende rahastamisel.

Üldhariduse rahastamise alternatiivse võimalusena käsitletakse artiklis teist strateegiat, mis toetub uute funktsionaalsete omavahel kattuvate ja üksteisega konkureerivate haldusüksuste (piirkondlike kooliüksuste) loomisele. Piirkondlikud kooliüksused moodustatakse valdade poolt piirkonna koolivõrgu optimaalseks kujundamiseks ja efektiivseks haldamiseks. Kooliüksused kannavad valdade ees vastutust oma töö tulemuslikkuse osas ja on volitatud pidama läbirääkimisi keskvalitsuse asutustega liikmesvaldade koolivõrgu arengu ja rahastamise küsimustes. Teatud juhtudel moodustab omavalitsus üksi optimaalse ja efektiivselt toimiva koolipiirkonna ja võib seda ka ise esindada. Artiklis esitatakse koolipiirkondade moodustamise, osamaksete suuruse määramise ja kooliüksuste läbirääkimisstrateegia teoreetilised alused.