

РОССИЙСКАЯ ЭКОНОМИЧЕСКАЯ ШКОЛА

NEW ECONOMIC SCHOOL

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**The Distributional Impact of Reforms in the Housing and Communal
Sector in Russia**

Working Paper # BSP/01/050

This paper originally appeared as a Master Thesis at NES in 2001 as a part of the project "Evaluation of Tax Benefit Reforms", which was carried out within the program "Russian Economic and Political Institutions in Transitions" generously sponsored by Ford Foundation, National Training Foundation, World Bank, John D. and Catherine T. MacArthur Foundation. I am deeply indebted to the project Anthony Shorrocks (NES, UNU/WIDER) and Evsey Gurchich (Ministry of Finance of the RF, Economic Expert Group) for their great contribution to this research.

Москва
2001

Ponomareva E.V. The Distributional Impact of Reforms in the Housing and Communal Sector in Russia. Working Paper # BSP/01/050E. - Moscow, New Economic School, 2001,- 36p.(Engl.)

The aim of this work is to show that the current and proposed reforms of the structure of public expenditures in the housing and communal sectors in Russia should result in more targeted distribution. Two types of changes in financing this programme are considered: first, the elimination of direct subsidisation of households on payments for apartment maintenance and public utilities from the regional budgets; second, the elimination of cross subsidisation of such utilities as heating, electricity and gas. The microsimulation model of households' behaviour on the base of RLMS data set is introduced, which enables assessment of households' welfare changes. As the results of the proposed reforms some possible consequences are examined. The increase in communal payment due to cross subsidies elimination is balanced by price reduction for other goods. The extra money excluded from the programme of direct subsidisation are supposed to be partially redistributed by regional government as compensating transfers to poor families, and the other part can be used to decrease the regional sales tax.

Пономарева Е.В. Распределительный эффект экономических реформ в жилищно-коммунальном секторе в России. Препринт BSP/01/050E.- М., Российская экономическая школа, 2001.- 36 с.(Англ.)

Цель этой работы состоит в том, чтобы показать, что настоящие и предполагаемые реформы структуры государственных расходов в жилищно-коммунальном секторе должны привести к более адресному распределению ресурсов. Рассматривается изменение двух источников финансирования этой программы: во-первых, отмена прямых дотаций из региональных бюджетов для домашних хозяйств на плату за квартиру и коммунальные услуги; во вторых, отмена перекрестного субсидирования таких услуг как отопление, электричество и газ. Для оценки изменения благосостояния домашних хозяйств в результате реформ используется метод микромоделирования поведения домашних хозяйств на основе данных RLMS. Исследуются некоторые возможные следствия предложенных реформ. Увеличение коммунальных платежей в результате отмены перекрестных субсидий компенсируется уменьшением цен на другие товары. Также предполагается, что бюджетные средства, выведенные из программы прямого субсидирования, будут частично перераспределены региональными правительствами в качестве компенсаций нуждающимся семьям, а другая часть может использоваться для уменьшения регионального налога с продаж.

ISBN

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Introduction

This paper addresses some of the problems encountered in trying to estimate the distributional impact of public expenditures on the housing and communal services in Russia. The main questions which it tries to answer are whether public expenditure is redistributive (i.e. does it reduce the gap in income and living standards between rich and poor), and how the proposed programme of reforms can change this distribution. It is generally thought that social programmes target the less well off and hence promote greater equality. But on the basis of an accumulation of evidences from many countries, this belief has been challenged. What actually occurs is that the elaborate system for subsidising social services, such as housing, education and transportation, and supporting free of charge health care favours the better off and hence increases, rather than reduces, the gap in living standards. The main reason for this is that most of public services are not means-tested (means-tested means that only those with income below a certain level can receive the benefit concerned), and are instead granted to categories of people not based on their actual needs.

This paper aims to analyse the distribution of social benefits and subsidies in Russia in the housing and communal sector by population groups with different income levels. It will try to assess the extent to which this programme benefits the worst off, and how reforms in the tax-benefit structure can change the current situation.

The distributional effect of public expenditure is very important for Russia since traditionally the financing of social programmes accounts for the main part of government expenditures. For example, in 1998 expenditure on education comprises almost 30% of total public expenditures and health services account for 20%.¹ In comparison with most countries of Central and East Europe, where such spending is only about 13% and 11% of government expenditures respectively², these figures are large. In addition, different types of subsidies and benefits can be a significant part of the revenues of households with low income, although the share of total social transfers paid people in real need is very low. According to the estimate made by the International Labour Organisation, only 19% of aggregate social expenditures in Russia are given to families with income below the subsistence level, although in most developed countries this share can be as high as 50%.³

¹ *Source:* Goskomstat.

² *Source:* United Kingdom National Accounts, 1994 edition.

³ From Plan to Market (World Development Report 1996. The World Bank), Oxford, 1996.

The situation with housing subsidies has the following structure. There are two forms of financing the programme. First, households are subsidised on payment for apartment maintenance and public utilities. They do not pay for the whole expenses, but only for part, which is determined by social standards of consumption. The other part is provided from local budgets for enterprises that cater the communal services. In the following analysis this type of financing will be called direct subsidies in order to tell it from the other types of subsidisation. Second, there is a cross subsidisation of public utilities such as heating, electricity and gas, by which households pay lower prices for these services than enterprises. Currently about 20 billion roubles are covered at the expense of cross subsidisation. The distributional effect of cross subsidies has not been studied in detail, which makes the analysis of reforming the system very important.

The changes in the housing and communal sectors are really important, since during the last years the sum of unpaid bills has exceeded 100 billions roubles because local budgets often lack funds to fully pay for services provided at contractual prices. As a consequence, for last 6 years the level of an accident rate has grown in 10 times, deterioration of the infrastructure in the communal sector has reached 60% that is the basic source of constant emergency cases.

The maintenance of municipal services accounts for approximately 10 billion dollars per year. Now third of this sum is paid by the population, others 7 billions lie down on the budgets of all levels. Under the reforms of the tax-benefit structure that will be implemented in Russia during the next few years, most of the benefits and subsidies will be changed, reduced or fully eliminated. The programme of housing service support will be dramatically changed. The main objectives of the reforms are increased targeting of housing subsidies, so that only families in real need will get direct compensating transfers, and the elimination of cross-subsidies in tariffs. Since the final result is not clear, it is very important to evaluate the possible effects of such reforms.

Literature review

Tax-benefit analysis

There are many papers on the problem of the distributional effect of public expenditure, both theoretical and applied. Very interesting work in this area was done on the tax-benefit structure of the United Kingdom. O'Higgins and Ruggles (1981) present an analysis of the

distributional impact of public expenditures and taxes with respect to income class, household size, number of earners and housing tenure. The results of this empirical study, based on household level microdata from the Family Expenditure Survey, were compared with the official results provided by the Central Statistic Office (CSO). The CSO figures avoid allocating taxes and expenditure when methodological uncertainties exist about their incidence, whereas the O'Higgins-Ruggles analysis based on household survey data covered all taxes and expenditures. It was shown that the CSO results on the distributional impact of UK expenditures present a picture that is markedly more favourable to lower income deciles than that which emerges from a total analysis. The total allocations show expenditures to be approximately equally distributed among the decile groups, while the CSO allocation show expenditures be more pro-poor in their incidence. The analysis of "unallocable expenditures" was done according to three different methods of assigning benefits. But all approaches gave the same result that unallocable per capita expenditure is of least value to the bottom decile, rises steadily in absolute value until the middle of the distribution, and then rises more slowly thereafter.

Study of social programmes such as education, health and housing shows that each benefit is progressive with respect to income in that each consistently declines in relative value as average income increases, but the majority of them are of greater absolute value to households in higher income range.

Le Grand (1983) also studies public expenditure allocation in the UK, but he provides more detailed analysis of social services. He does not simply estimate the absolute value of benefits received by each decile group of households. For example, health services are actually equally distributed in the limited sense that the average poor person receives about as much as the average rich person. But this does not take into account the fact that the poor suffer more ill health than the rich do, so per ill person, they receive less. Conducting the analysis of efficiency for some social programmes, it was shown that almost all of them (health care, secondary education, transportation subsidies) are beneficial for the better off. The exception is public housing subsidies, which are pro-poor, since this social service is means-tested.

The next section of this paper discusses a common objection to the conclusion that expenditure on public services largely benefits the better off: that such an approach ignores taxation. It is argued that the redistributive effect of public spending cannot be assessed simply by looking at the share of the population that benefits from a public programme; it is also necessary to take into account who bears the cost. Theoretical models have sometimes been used to estimate these costs. One approach is to determine the proportion of government's total expenditure that

go to a particular programme and then to compare it with the proportion to the total taxes paid by the group and get the cost of the social project's incidence upon the group. But Hansen and Weisbrod (1971) point out that this approach is in fact arbitrary, and that the only correct way to determine the allocation of cost is "to ascertain who would have benefited if the government had not allocated funds to the programme"⁴. Thus, if the government would have cut the tax rate had it not funded the programme, the costs are imposed upon those who would have benefited from the tax reduction. But here arises the problem of determining "whose tax dollar finance a particular expenditure" and whether the government really uses the surplus money from eliminating some social programme to reduce taxes. The application of such theoretical methods to real empirical study is therefore rather problematic.

Attempts to evaluate the distributional impact of public expenditure were made for Russia too. Misikhina (1999) estimated the shares and total amounts of different types of social benefits and subsidies distributed to different income groups of households. The estimation was based on round VII of Russian Longitudinal Monitoring Survey (RLMS) conducted in 1996 and Goscomstat data. The analysis showed that only 25% of the total sum of estimated social transfers in Russia was paid to families with income below the subsistence level, while the percentage of the population with income lower than the subsistence level may reach 40%. It is asserted that the main cause of the low level of targeting of social services in Russia is the principle of benefit distribution by categories of people, which does not take into account the actual incomes of households.

Let us consider more thoroughly the allocation of the housing benefits, as documented in this paper. The estimation of the distributional impact of housing subsidies shows that in 1996 only 20.8% of expenditures were granted to the households with income below the subsistence level. But the only housing subsidies included in the analysis were the compensating payments for households, which they received according to the social norms. The problem of cross-subsidising of public utilities such as electricity, heating and gas is wider since the indirect cross-subsidies in the form of low tariffs for households and high tariffs for enterprises should be considered too. The analysis of public expenditure on housing programme including both direct

⁴ Hansen, W. and Weisbrod, B. (1971): "Who Pays for a Public Expenditure Program?", *National Tax Journal*, 24, December, p 515.

and indirect subsidies and the assessment of possible changes in the distribution of income resulting from the reforms of the tax-benefit structure in Russia is addressed below.

Misikhina's work showed the basic problems of the existing tax-benefit system. Measures to achieve more effective redistribution have been incorporated into the social and economic reforms described in "Strategy of Russia's Development in the years 2000-2010" (the so-called "Gref Plan"). The main issues of the proposed changes were discussed in Kosmarsky (2000). The common problem of public expenditure distribution is the lack of clear a division of power and responsibility between the federal, regional and local levels of government with respect to provision of social benefits. As a result, some individuals formally eligible to certain payments do not receive them. In addition, there is no adequate system of accounting for social subsidies and benefits provision. So, the first priority of the reforms is to provide an inventory of all social benefits and to account for the number of benefit recipients and the volume of payments. Further centralisation of financial resources allocation (e.g., elimination of off-budget social funds), and redistribution of the social-support burden between various levels of government, should produce more efficient social programmes. Another goal of the reforms is the replacement of social benefits provision based on categories of the population by provision based on means-testing. It is clear that a more precise definition of entitlements, reduction of their scope, and a change in the rules of distribution of benefits and subsidies will make certain groups poorer and increase overall poverty. Abrupt elimination of some social benefits without compensation would result in a considerable rise of resources needed to support the poorest households. But, given current budget constraints, such determined reallocation of resources might be unfeasible and bring about payment arrears. Clearly, the system of social payments and benefits should be reformed gradually in line with changes in income policy, and possible effects of each step of the reforms should be carefully predicted.

Microsimulation models

The effect of actual or proposed changes in the tax and social systems are usually assessed by consideration of some hypothetical, supposedly typical, family types. But as Callan and Nolan (1987) showed, such analysis is unable to capture the actual effects of changes because of the diversity of actual family types. They suggested to use a random sample of actual households to simulate the effects of a variety of changes in the tax-benefit system and combine the results for

all households in the survey in order to predict the impact of the tax and benefit changes for the whole population.

It is argued that no manageable range of hypothetical calculations can take into account the combination of possibilities representing substantial numbers in the population. It was demonstrated by the comparison of two studies provided to show the effects of taxes and benefits in the UK. The first study was based on eight different family types while the second used data of the UK Family Expenditure Survey. An assessment of representativeness of the theoretical types compared with the actual population showed that the range of hypothetical families failed to capture the circumstances of most actual families.

The advantages of microsimulation analysis were divided into two types. Simple modelling of the rules of the taxes and welfare systems and applying them to a sample of households are usually referred to as “cash gain” or “first-round” effects. A further advantage of the microsimulation approach is that it can take into consideration households’ behaviour responses to policy changes. Such calculations are referred to as “second-round” effects.

The microsimulation modelling is a powerful tool for assessment of the impact of reforms in the tax-benefit system, and was used for a broad number of studies. A good example of its implementation is CZ, a computer-based model of the Czech tax and benefit system described by Coulter, Heady, et. al. (1995). This model uses data on Czech households in order to forecast the impact of changes in the system of direct taxes, cash benefits, and indirect taxes (such as VAT) in the Czech Republic. The program is set up to allow the user to alter the tax and benefit rules to simulate the changes in the tax-benefit system. It produces three types of results:⁵

- an estimate, by type of tax or benefit, of the cost to the exchequer of any policy change;
- a variety of tables which summarise the redistributive impact among households of the policy change;
- the tax and benefit position of a selection of actual household.

No such model exists at present for the Russian tax-benefit system. In my master thesis I have made an attempt to develop an appropriate framework which would help to evaluate the distributional impact of recent and possible future reforms. Since the simulation of the changes for the whole range of tax and benefit programmes is a very complicated task, a simplified model which focuses more on the side of benefit changes has been developed.

⁵ Coulter, Heady, Lawson, Smith and Stark (1995): “*Microsimulation Modelling of Personal Taxation and Social Security Benefits in the Czech Republic*”, Working Paper W95/8, Institute for Fiscal Studies, p 7.

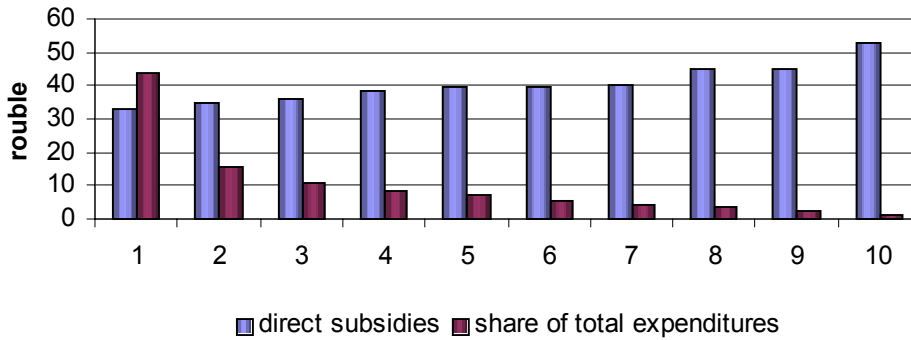
Description of current situation and proposed reforms

I have based the analysis of changes in the housing and communal sector on the situation in 1998 when the housing programme was only beginning. As it has been already mentioned, the distributional effect of existed system of allocation of housing subsidies favoured the better off rather than poor families. This situation was a result of the fact that all payments and benefits were not means-tested and were distributed to most of families living in big block houses. Two forms of financing the housing programme are considered below. First, all households were directly subsidised on payment for apartments and public utilities. They paid for them only partially, while other expenses were financed from the local budgets and provided to enterprises catering these services. This form of subsidisation was inherited from the Soviet period and led to the poor functioning of the communal services sector, since there were no effective ways for households to influence on enterprises providing these services. Second, there was a cross subsidisation of such utilities as heating, electricity and gas, and households paid for these services by lower tariffs than enterprises. Actually, households should pay higher prices for these public utilities, since it is more costly to provide electricity for final customers than to big units such as plants and factories.

The picture of direct subsidies distribution among different income groups of households shows how the system was inefficient and rich families received subsidies more than poor ones in per capita terms, while for low-income groups such payments are of greater absolute value.

Diagram 1

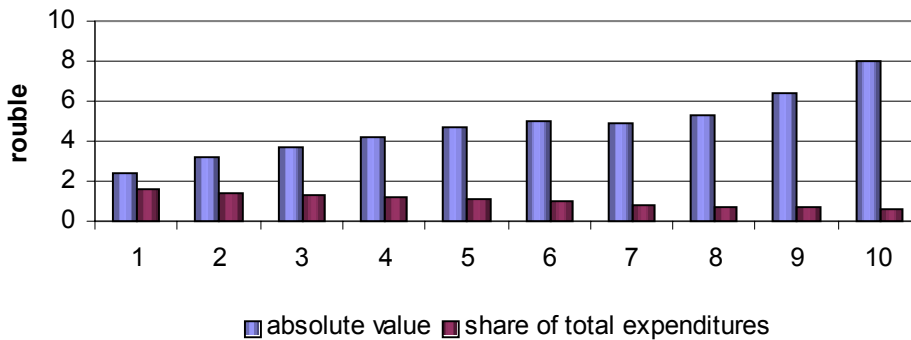
**Direct subsidies per capita distribution
by income groups
(1998)**



And situation with cross subsidies is the same. Payments for electricity are increasing with respect to income of a household, that is why rich households gain more from lower price on electricity than poor, while the share of these payments in total expenditures is almost negligible for them.

Diagram 2

**Payments for electricity per capita distribution
by income groups
(1998)**



The accepted programme of housing service reforming assumes dramatic changes in this scheme. The main objective of the reforms is the increased targeting of housing subsidies and the provision of social benefits on a means-tested basis, so that households will pay for their apartments in full base and only families in real need will get direct compensating transfers. It

assumes the full elimination of direct and cross subsidies, and replacement them by more efficient schemes of payments. But abrupt elimination of housing benefits would result in a considerable rise in overall poverty and resources needed to support the poorest households. So, the system of housing subsidies should be reformed gradually in line with changes in income policy, so that people could afford to pay for growing expenses on housing services.

Two main stages of changing direct budget payment for the housing and communal sector can be picked out:

First stage (1998 – 2000)

- increase the share of own payments of households for apartments and communal services up to 70% (in 1998 it was 50%);
- determine the maximal permissible share of own payments of households for apartments and communal services based on social standard of the inhabited area in total income of a household as 20% (in 1998 it was 18%);
- give housing transfers for needy families which compensate expenditures on payments for apartments and communal services higher than the maximum permissible share of own payments.

Second stage (2001-2003)

- increase the share of own payments of households for apartments and communal services up to 100% (fully eliminate direct subsidies);
- determine the maximal permissible share of own payments of households for apartments and communal services based on social standard of the inhabited area in total income of a household as 25%;
- give housing transfers for needy families which compensate expenditures on payments for apartments and communal services higher than the maximum permissible share of own payments.

So it is assumed that till 2003 all direct subsidies will be eliminated and substituted by transfers for poor families. This will be fulfilled by changing two parameter: first, the share of communal expenditures subsidised by the regional budgets will be decreased each year, and second, the possibility of receiving compensating transfers will be gradually reduced. Families eligible to receive such transfers are determined in the following way: if housing expenditures exceed the maximum permissible share of own expenditures, than a household is subsidised on the sum on which they exceed. In this case the own expenditures mean not actual expenditures of a household, but the expenditures based on the social standards of apartments' space and

consumption of public utilities. For example, the federal social standard for space of apartments is:

Table 1

Federal standards for total space of habitation

<i>type of a family</i>	<i>federal social standard (m²)</i>
<i>family of 1 member</i>	33
<i>family of 2 members</i>	42
<i>family of more than 2 members</i>	18*number of members

Cross subsidies are also planned to be fully eliminated and tariffs for households will increase gradually until they achieve the level of tariffs for enterprises, while at the same time the tariffs for enterprises will be decreased. In 1998 the price for electricity for enterprises was almost twice as big as for households.

Method of estimation

The analysis presented in master thesis was based on the RLMS data set for year 1998 (round VIII) and Goskomstat data. It is believed that the RLMS data set tends to underrepresent the upper-income part of the population. That is why poverty rates computed using RLMS data tend to be higher than those computed using other representative data sets (Goskomstat), and average income in RLMS is lower than that income in other data sets. Nevertheless, since we are mainly interested in relative changes in targeting, this is of no particular concern in this paper. But it was assumed that the reason for such difference in figures was underreporting of income by households and it was decided to use households' expenditures as a proxy for their real incomes.

Also the price and living standard differentiation across regions was taken into account while determining the income level of households (from this place under income we will understand the expenditures of households). On the base of Goskomstat data on subsistence level in 1998 the income variables were indexed so that to construct the equivalence scale. All the variables were deflated by the subsistence level in the region in question, and then normalised by

the Russian-average subsistence level. The simplest equivalence scheme was used: all the variables were in per capita terms.

All households were divided into 10 groups – deciles on income per capita (the first decile – households with the lowest income, the tenth decile – households with the highest income), where income was adjusted to the difference of subsistence levels among the regions. Each decile group consists of 360 households.

To calculate the distribution of direct subsidies among households the Goskomstat figures on total amount of such funding in each region were used. The total space of housing fund eligible to get this kind of financing for each region was taken into account, so that the amount of subsidies per square meter could be deduced. But consumption of communal services depends not only on the space of apartments but also on the number of family members living on this space, and the higher density of tenants, the more utilities they use. That is why it was assumed that direct subsidies received by each family should depend on the concentration of family members per square meter. Since it is clear that consumption of communal services is not linearly proportional to the concentration of tenants, but has decreasing marginal value, it was suggested to take this dependence in the form of square root. Finally, we have the following rule of calculating direct subsidies for families living in municipal apartments:

$$\text{direct subsidies} \sim \text{total space} * (\text{concentration})^{1/2}$$

The coefficient of proportionality can be found for each region from aggregated Goskomstat data on the total amount of subsidies and the fund of municipal and state spaces.

To estimate the impact of the elimination of cross subsidies also Goskomstat data have been used, since the RLMS data set does not have detailed enough information about expenditures on payments for each communal service. Goskomstat sources have been used to determine the share of expenditures on electricity, gas, and heating in total expenditures on apartments and communal services for each income group of population. Then implementing these figures in the RLMS sample we can approximate the amount of money paid by each household for these utilities and estimate the effect of reforming the cross subsidisation.

Since we need to assess the effect of the reforms for 2000 and 2003 years while we have data only for 1998, we need to simulate the changes in the distribution of income of households for these years. For this purpose the hypothesis was used that income is distributed according to the lognormal distribution. The parameters of this distribution for 1998 year have been estimated

using the RLMS sample by the maximum likelihood method. Then I have used the government forecast of real income growth and change of population to reestimate the mean of the distribution for years 2000 and 2003.

Table 2

***Growth of real disposable income for the whole country
(as % to the previous year)***

<i>years</i>	<i>% of growth</i>	<i>mean (roubles per capita per one month)</i>
<i>1999</i>	85.8%	709
<i>2000</i>	109.1%	778
<i>2001</i>	105.5%	824
<i>2002</i>	105.0%	870
<i>2003</i>	104.5%	914

Using the computed means and assuming that the variance of the distribution of logarithms does not change, we can predict new parameters of the lognormal function for 2000 and 2003 years (see Appendix 1). Applying the new distribution to the RLMS sample we can get the new allocation of households by income groups.

Since there is no forecast of income growth for each region separately, it can be assumed that each region has the same rate of growth as the whole country. So, the change of income distribution can be estimated for all of them and the accounting of region differentiation will be preserved.

Results

Direct subsidies

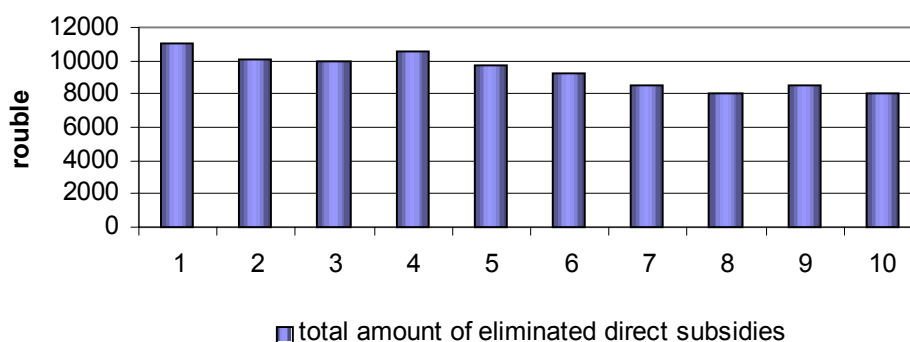
We will consider the results of elimination of direct subsidies by the stages described above.

First stage (1998-2000)

On this step the share of own expenditures of households on payments for apartments and communal services was increased up to 70% (before it was 50%) so that the total amount of direct subsidies was cut by 40%. And some part of these eliminated subsidies was used to compensate poor families whose housing expenditures based on social norms exceeded 20% of their income. Such scheme of public expenditures is much more targeting than the previous one. As we can see from the diagram, the eliminated part of direct subsidies was distributed almost equally across different income groups of the population.

Diagram 3

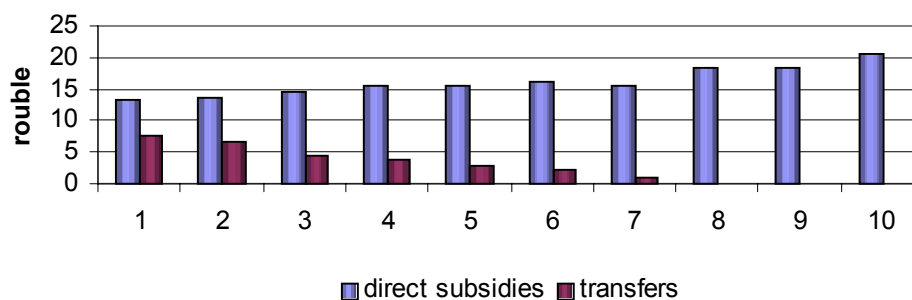
Distribution of the eliminated part of direct subsidies by income groups (2000)



But if we look at this distribution in per capita terms, we can see that the existed scheme of supporting households was even more favourable for rich households than for families from low-income groups. And the proposed model of transfers is more efficient and targets the less better off.

Diagram 4

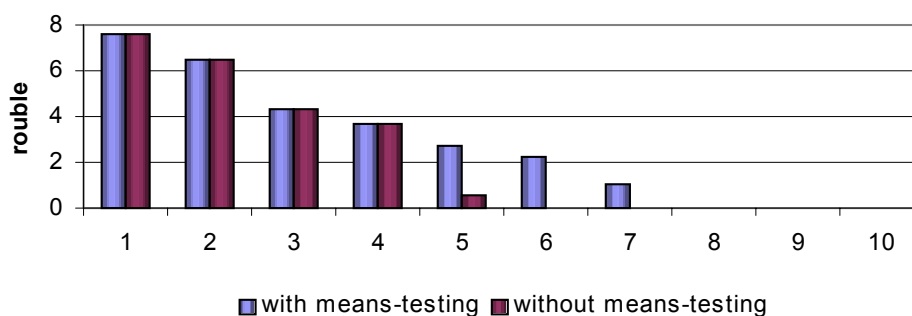
Per capita distribution of the eliminated direct subsidies (before reforming) and compensating transfers (after reforming) (2000)



. Due to the crises of August 1998 the financial situation of many of households deteriorated so that in 2000 there were still many of them under the poverty line. But according to the new programme of financing housing sector some amount of funding was received by rather wealthy families who could afford to pay for apartments and communal services by themselves (deciles 6-7) (totally 9% of the population was eligible to receive the compensating transfers). So, it would have been reasonable to limit the possibility of getting transfers by determining the families eligible to receive them only with income per capita lower than the subsistence level (for each region it would be different). In this case households from deciles 6-7 would not have received any compensation, and part of decile 5 would not either.

Diagram 5

Per capita distribution of compensating transfers with means-testing and without it (2000)



In this case some money would have been saved and could have been redistribute more effectively. It is clear that such uniform approach of flat scale for increasing the own expenditures on payments for apartments and communal services is not the best one, and it would be better to raise the payments proportionally to the income level of a household. This kind of program is currently being discussed in Moscow and it is suggested that some households already can pay for full expenses on apartments and communal services, while others still need support. I would suggest to have progressive scales both for the share of own expenditures and for the maximal permissible share of rent payments in total income, and introduce the following scheme of reforming for the first stage:

Table 3

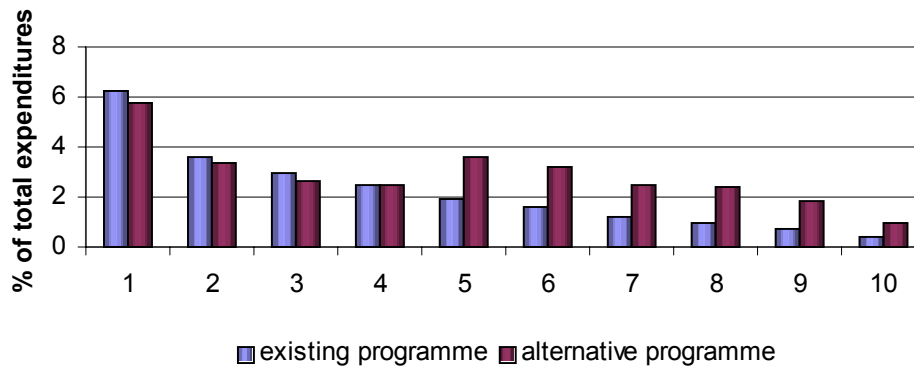
Alternative scheme for the housing and communal sector reforming on the first stage

<i>Type of household</i>	<i>Share of paid costs for apartments and communal services</i>	<i>Maximal permissible share of expenditures in total income</i>
<i>income per capita < 1/2 of subsistence level</i>	70%	18%
<i>income per capita < subsistence level</i>	70%	20%
<i>income per capita < 2 subsistence levels</i>	90%	30%
<i>income per capita > 2 subsistence levels</i>	100%	30%

Using this alternative programme we will get more uniform distribution of losses resulting from the elimination of direct subsidies among income groups in comparison with the existing one. The poor families would have been more compensated and their share of housing expenditures would have increased less; whereas rich families would have been more affected while still for them the impact of such changes would have been almost negligible and the share of expenditures on housing payments would have increased by less than 1% of total expenditures.

Diagram 6

**Final increase of housing payments per capita for
existing and alternative programmes
(2000)**



The alternative programme assumes that the same amount of funding would have been distributed among households but in more efficient way (see Appendix 2), and more sources will be excluded from the programme of direct subsidies.

Table 4

The total amount of sources excluded from direct subsidies and needed for compensation after the first stage of the reforms (thousand roubles)

	<i>eliminated direct subsidies</i>	<i>compensating transfers</i>
<i>existing programme</i>	93	23
<i>alternative programme</i>	156	25

If we compare the change of inequality for both programmes it also proves that alternative programme would have had a better effect:

Table 5

*Change of the Gini coefficient after existing and alternative programmes
on the first stage*

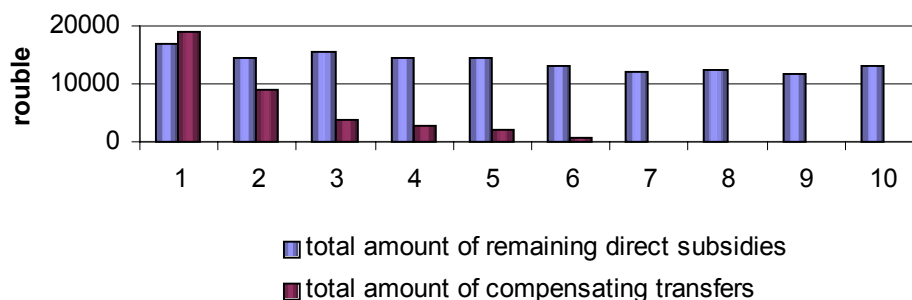
	<i>Without reforming</i>	<i>Existing programme</i>	<i>Alternative programme</i>
<i>Gini coefficient</i>	0.572	0.570	0.559
<i>% of change</i>	0%	-1%	-2.3%

Here the Gini coefficient was based on the distribution of people according to their expenditures on other goods and services except housing and communal services (since we assume that the quality of these services will not increase right after increasing of payments for them, but disposable income for other commodities will be less), taking into account the equivalence scale for region differentiation.

Second stage (2001-2003)

The second step of changes assumes the full elimination of direct subsidies for housing sector so that the share of own expenditures of households on payments for apartments and communal services will be 100%. The criteria for compensating poor families (the maximal share of payment for apartments and communal services based on social norms of consumption) will be raised too and constitute 25% of total income of a family, since it is assumed that real income of households will rise too. The following diagram shows the distribution of remaining after 2000 direct subsidies and the distribution of compensating transfers according to the second stage of the programme.

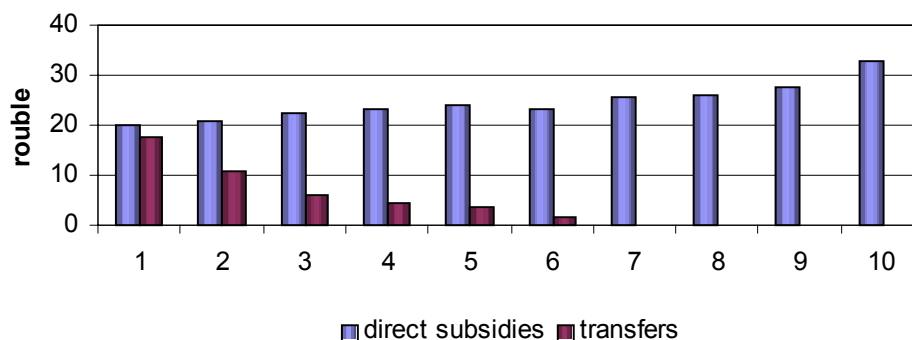
**Distribution of the remaining direct subsidies
(before the stage 2 of reforms) and compensating
transfers (after reforming)
(2003)**



So, again we see that the new scheme supposes more efficient distribution of financing of the housing programme, and now 13% of the population can receive the compensating transfers. The same diagram in per capita terms gives even clearer picture.

Diagram 8

**Per capita distribution of the remaining direct
subsidies and compensating transfers
(2003)**



Since the programme of reforming the housing and communal sectors was developed in 1997 and some events (such as August 1998 crisis) and circumstances could not be anticipated, straightforward implementation of it could be quite difficult and have hard consequences for rather big share of the population. There still will be broad enough layer of poor families for

whom such increase in payments for housing and communal services can be too hard even with compensation. Currently, the alternatives of proceeding the changes in the communal sector are widely discussed. One of the possibilities to reduce the impact of these changes on the low-income population is to introduce different changes in housing expenditure pattern for households with different income level. As we already have seen, it is possible to implement more optimal scheme with the same amount of funding for 2000 using a progressive scale of expenditure shares. And also since the income growth was not as rapid as it was expected (for different reasons), it would be rational not to eliminate direct subsidies for all population, but only for better off making this process for poor families more gradual. I would suggest the following scheme of changes:

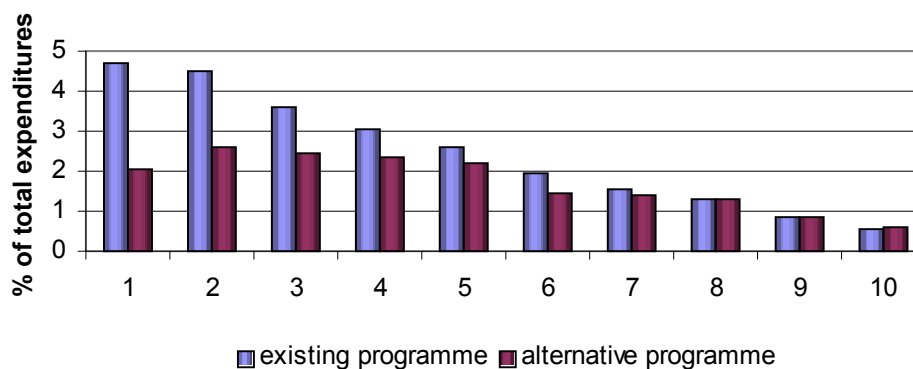
Table 6

*Alternative scheme for the housing and communal sector reforming
on the second stage*

<i>Type of household</i>	<i>Share of paid costs for apartments and communal services</i>	<i>Maximal permissible share of expenditures in total income</i>
<i>Income per capita < 1/2 of subsistence level</i>	90%	20%
<i>Income per capita < Subsistence level</i>	90%	25%
<i>Income per capita < 2 subsistence levels</i>	90%	30%
<i>Income per capita > 2 subsistence levels</i>	100%	30%

This alternative programme has softer impact on poor households and they will suffer smaller losses from the rent payments rise in comparison with the existing one.

**Final increase of housing payments per capita for
existing and alternative programmes
(2003)**



On the other hand, almost the same sources would be needed to distribute the compensation transfers (see Appendix 2), but greater amount of funding will remain in the inefficient programme of direct subsidising.

Table 7

The total amount of sources excluded from direct subsidies and needed for compensation after the second stage of the reforms (thousand roubles)

	<i>eliminated direct subsidies</i>	<i>compensating transfers</i>
<i>existing programme</i>	140	37
<i>alternative programme</i>	120	36

The remaining part of sources should be excluded from the scheme of direct subsidisation gradually in several 2-3 years. Although the alternative programme demands more time for the full elimination of direct subsidies, it could be more realistic since with predicted increase in payments for housing and communal services according to the existing programme many of poor families just would not be able to pay for them. So, the communal sector will sustain increasing arrears of payments from households which could not contribute to better functioning of it. That

is why the more gradual change of current situation with direct subsidies can give better effect and also the alternative program results in greater decrease of the inequality in the society.

Table 8

Change of the Gini coefficient after existing and alternative programmes on the second stage

	<i>Without reforming</i>	<i>Existing programme</i>	<i>Alternative programme</i>
<i>Gini coefficient</i>	0.517	0.516	0.501
<i>% of change</i>	0%	-0.2%	-2%

Tax change

As we have seen the changes in the housing sector financing should give progressive distribution of compensating transfers for poor households instead of direct subsidies. Moreover, the new system require much less resources to support this programme from the regional budgets, so that the extra money excluded from direct subsidisation can be used to finance some other items of regional budgets.

It is logic to assume that some part of this money will be used to modernise and repair the communal sector, since during the last years it has been financed poorly because regional budgets have not had enough sources, and many municipal services are almost destroyed. It is planned to provide funding for supporting the communal sector from the federal budget too, so the regional governments can apply some amount of extra source out of the housing sector.

In my master thesis I have made an assumption the 50% of money excluded from the direct subsidisation will be invested in the reconstruction of the housing sector, while the other part can be used to decrease the sales tax. This tax was chosen for several reasons. First, it is up to the regional government to set the rate of the sales tax (but not higher than 5%), so we can see how each region will be affected. Second, it is the most possible case of using this money, since this kind of tax should be eliminated soon (because it is imposed on the same taxation base as VAT) and the local governments need to substitute it by other sources. And third, it is easier to calculate the effect of changes in the sales tax.

According to the Russian legislation the sales tax is imposed on all products and services, except bread, milk, eggs, sugar, some vegetables, etc. (this list can be extended for each region),

and its maximal rate is 5% (each region also can choose to make it lower). The current situation demonstrates that the regional budgets prefer to set the maximal possible conditions to collect this tax. That is why in order to estimate the consequences of reducing the sales tax it was assumed that initially it was 5% for all regions.

As we have estimated the amount of direct subsidies which was distributed among households and the amount of transfers needed for compensation, the amount of extra sources excluded from the direct subsidisation can be calculated for each region. Half of this funding should be invested in modernisation of the communal sector, and using the other part we can estimate how the sales tax rate can decrease for both existing and alternative programmes. In the case of the alternative programme not all direct subsidies are eliminated, that is why there are fewer sources to reduce the sales tax having the same amount of money for the housing sector modernisation.

Table 9

*Decrease of sales tax for existing and alternative programmes
(2003)*

	<i>regions</i>	<i>existing programme</i>	<i>alternative programme</i>
1	<i>Moscow and St. Petersburg</i>	0.3%	1.1%
2	<i>Northern and North Western</i>	2.8%	3.3%
3	<i>Central and Central Black-Earth</i>	3.2%	3.4%
4	<i>Volgo-Vaytski and Volga Basin</i>	3.9%	4.1%
5	<i>North Caucasian</i>	4.9%	4.9%
6	<i>Ural</i>	3.2%	3.6%
7	<i>Western Siberia</i>	3.3%	3.5%
8	<i>Eastern Siberian and Far Eastern</i>	2.9%	3.5%

So, the final effect of the elimination of direct subsidies is not only increase in payments for apartments and communal services but also decrease of costs for other goods on which the sales tax is imposed.

Diagram 9

Increase of housing payments (after the elimination of direct subsidies) and decrease of other costs (after the reduction of the sales tax) for the existing programme (2003)

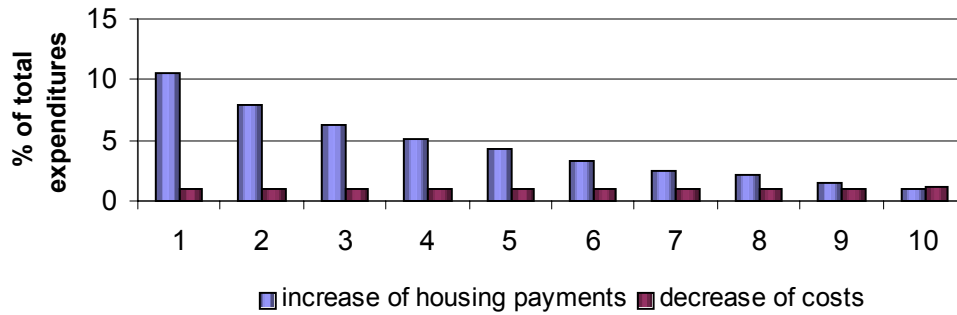
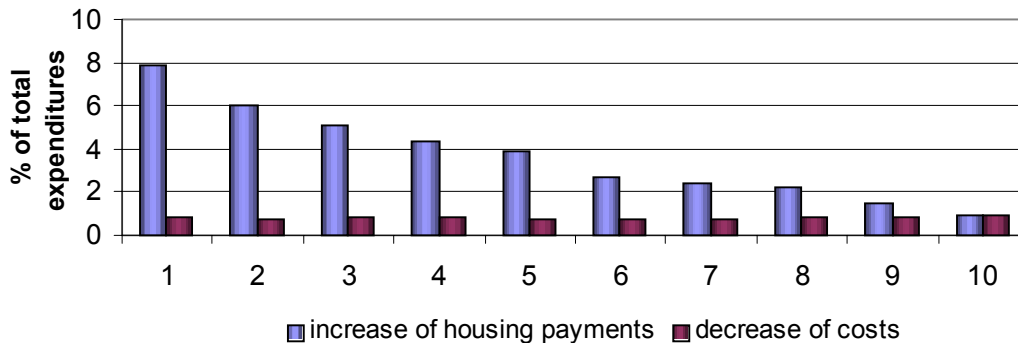


Diagram 10

Increase of housing payments (after the elimination of direct subsidies) and decrease of other costs (after the reduction of the sales tax) for the alternative programme (2003)



So we see that the final effect for the alternative programme would be a little bit more egalitarian, although still the effect of reduction in the sales tax is regressive, since low income households consume more necessities on which the sales tax is not imposed so its reduction favours rich households more. It tells that it would be more efficient to have another programme of using the extra money from the direct subsidies elimination.

Cross subsidies

Let's now consider the case of elimination of cross subsidies, i.e. different prices of such utilities as electricity, heating and gas for households and enterprises. As an example I have examined only the case of electricity tariffs, since for others utilities results will have the same quality.

In 1998 the situation was such that on average electricity tariffs for households were almost two times less than for enterprises. At the end of 2000 the ratio of industry tariffs to tariffs for households was already 1.8. So, the elimination of cross subsidising is also planned to be realised gradually with the growth of real income of the population. For simplicity I have estimated only the final effect of the full elimination of cross subsidies, assuming that it will finish by the end of 2003 year.

The main assumption which has been made for estimation is that the elimination of cross subsidies will result in decreasing of prices for other goods. After this reform households will have to pay for electricity at higher tariffs, but at the same time the tariffs for enterprises can fall. Such drop in prices of input will make the production process cheaper; so, it can be predicted that prices of final goods will decrease also.

To estimate the extent to which the prices of production will change for each industry we need to make some simplifying assumptions. I have based my calculations on the fact that elimination of cross subsidies will affect only prices of final goods so that other variables (such as wages, dividends, etc.) will stay the same. Also an assumption was made that volumes of public utilities consumed by households and enterprises are fixed.

The prices of final production will change so that the rate of profit for each industry will stay the same as before the elimination of cross subsidies. And since each industry has different demand for electricity and other services, the change of the production prices depends on the extent of using energy in production process for each of them. These changes can be assessed by using the input-output table for 20 industries, taking into account the fixed rate of profit.

Table 10

Percentage of price change in several industries after elimination of cross subsidising for electricity

	<i>Industries</i>	<i>Change of</i>
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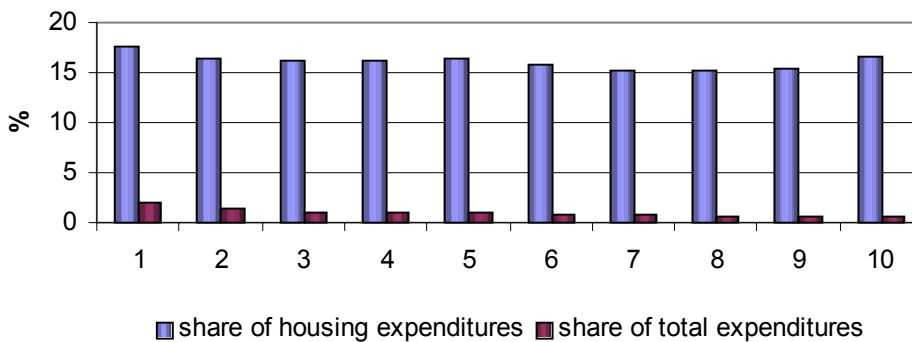
		<i>price</i>
1	Electric power industry	-10%
2	Fuel industry	-1.6%
9	Light industry	-1.4%
10	Food industry	-1.3%
13	Agriculture	-2.2%
14	Transports and communications	-2.6%

The full list of industries is given in Appendix 3. For households electricity tariffs will finally increase by 75%.

Now taking into account the new price levels we can assess the effect of cross subsidies elimination. Although the share of payments for electricity in total expenditures on apartments and communal services is almost the same for all deciles, but rent payments themselves have greater value in total expenditures of households with low income, so, the rise of electricity tariffs will have greater impact on them.

Diagram 11

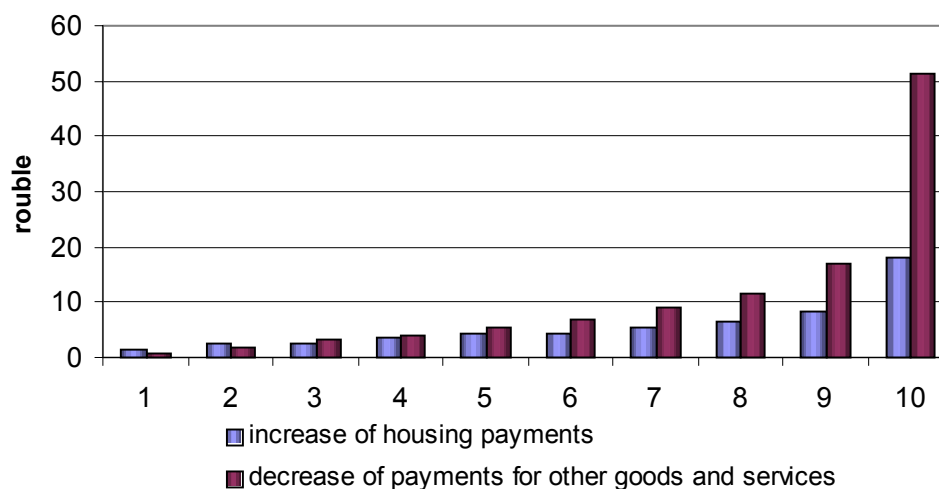
Payments for electricity as a share of housing expenditures and total expenditures of household (2003)



Finally, the decrease of prices for other goods will offset the impact of increase in electricity tariffs almost for all decile groups, and richer households will gain more.

Diagram 12

**Per capita increase of housing payments and
decrease of payments for other goods and services
(2003)**



But this is only partial effect of the elimination of cross subsidisation, since this reform is executed together with changes in direct subsidisation, and poor families should be partially compensated by targeting transfers. That is why finally the poor households can be better off too.

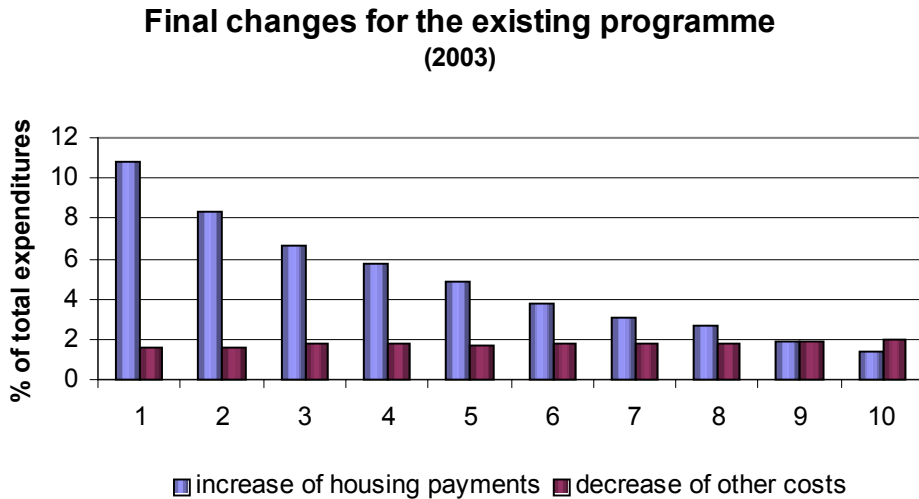
Summary

Finally I would like to summarise all results given above and consider the final effect of all proposed changes. The reforms assumes to sources of increasing payments for housing and communal services: first, because of elimination of direct subsidies, and, second, increase of tariffs for electricity. This increase in payments should be partially compensated by providing compensating transfers for poor families, decreasing of prices for other goods and services, and reducing the sales tax.

The final results of the reforms in 2003 are compared with the situation when there are no changes. Since the increase in electricity payment resulting from the elimination of cross subsidies is partially compensated by transfers, the final increase in housing payments for low income groups is less than if we have just added the separate effects of direction of the reforms. On the other hand, the final amount of funding needed for compensating transfers is bigger.

The reduction of other costs has two sources: first, the prices decrease after elimination of the cross subsidies, second, the reduction of the sales tax also reduces the costs. So, the final result for the proposed programme of changes is the following:

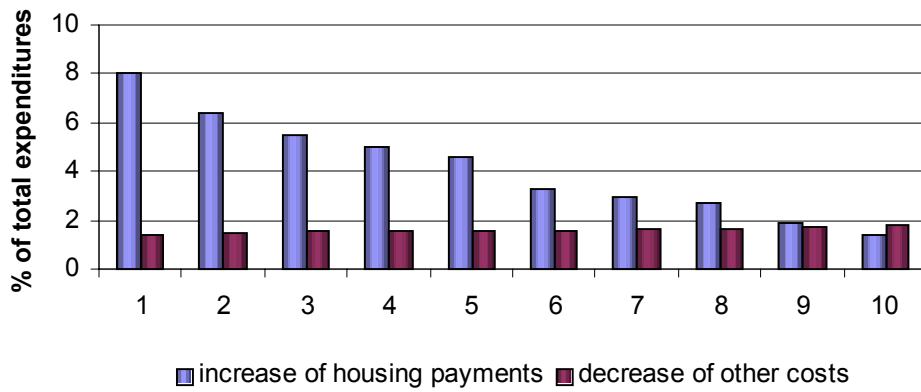
Diagram 13



So, the final effect for the highest income group (decile 10) is even positive and it will be better off after providing the reforms. The alternative programme helps to make the distribution of gains and loses less regressive. On the one hand, it represents softer changes of housing payment for low-income families. On the other hand, according to it less sources are collected from the direct subsidisation programme, that is why the sales tax rate can not be reduced as much as in the existing programme, and so households gain less decrease of costs.

Diagram 12

Final changes for the alternative programme (2003)



So, it can be concluded that the proposed scheme of reforming can be too fast and should be made more gradual for households with low income level. And also the ways of using the money excluded from the housing sector after reforming should be elaborated more carefully.

Conclusion

This paper provides an empirical study of the current and proposed reforms of the housing and communal sectors, and concentrates on the elimination of direct subsidies on housing expenditures provided by the regional budgets and cross subsidisation of communal services. It analyses the effect of gradual changes in this programme and assesses their impact on households with different income levels.

It was shown that elimination of direct subsidies results in much more targeting system of compensating transfers, since the distribution of these subsidies more favoured households which were better off. Such changes should exclude big amounts of sources from the direct subsidisation programme, which partially will be used to compensate poor families and reconstruct the communal services. On the other hand, the situation when all households fully pay for public utilities and apartments should result in better functioning of these services.

To estimate the elimination of cross subsidisation in electricity tariffs the assumption has been used that it would result in decreasing of prices for other goods since the production process would be cheaper. It was shown that finally such changes would be favourable for the bigger part of the population. Only the households with the lowest income will have losses as a result of these reforms. But this negative effect is partially offset by the provision of compensating transfers.

Although there are still some problems in implementation of these reforms, since they are rather hard for families with low income, and it might be reasonable to use more flexible schemes of changes. Otherwise, the existing situation can bring about sufficient arrears in payments for apartments and communal services. Also, it was shown that the employment of extra sources excluded from the programme of direct subsidies for the sales tax reduction gives progressive effect, so that some other ways of using them should be considered.

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Appendix 1

Parameters of distribution of income for the whole country in years 1998, 2000, and 2003

Lognormal distribution: $f(x, \mu, \sigma) = \frac{1}{x\sqrt{2\pi}\sigma} \exp\left(-\frac{(\ln x - \mu)^2}{2\sigma^2}\right)$

Mean: $m = \exp\left(\mu + \frac{\sigma^2}{2}\right)$

Variance: $d^2 = \exp(2\mu + \sigma^2)(\exp\sigma^2 - 1)$

Table 1

Change of the parameters of the lognormal distribution

	μ	σ^2	m
1998	6.13	1.14	822
2000	6.08	1.14	778
2003	6.24	1.14	914

Appendix 2.

Comparison of per capita compensation transfers for existing and alternative programmes.

Diagram 1

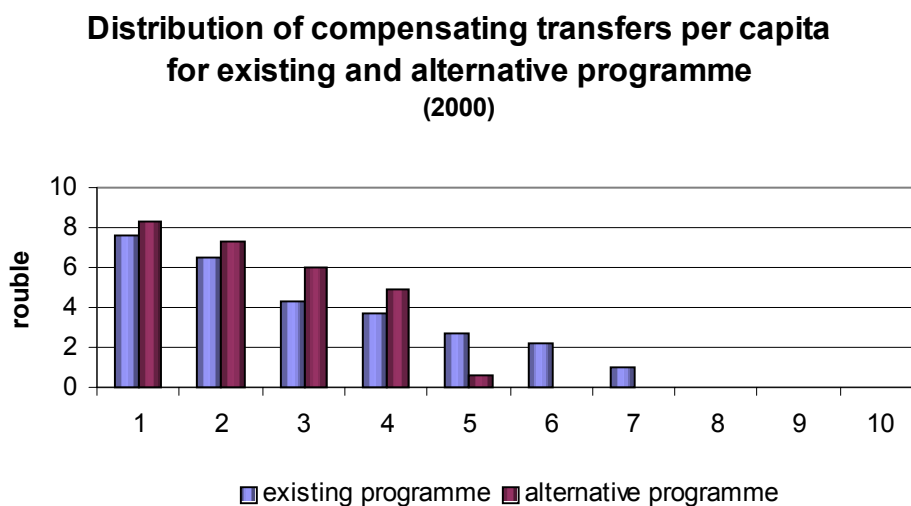
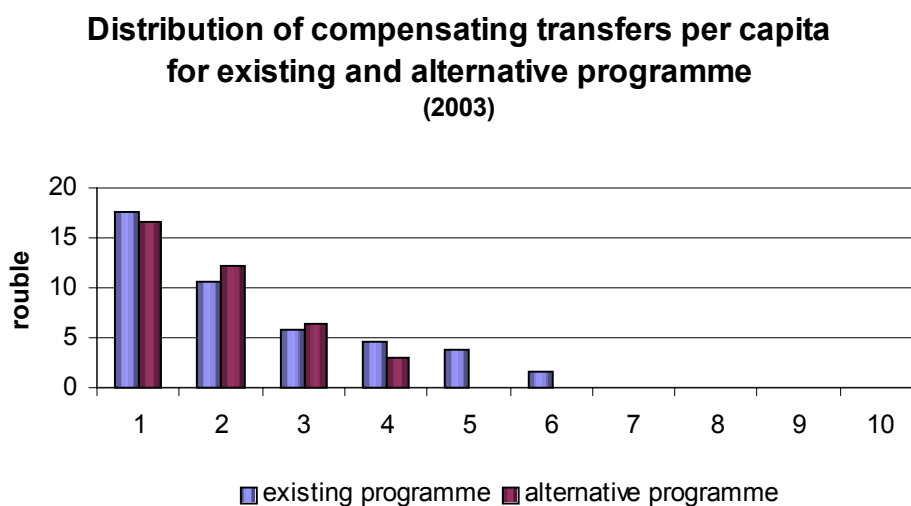


Diagram 2



Appendix 3.

Table 1

Percentage of price change in different industries after elimination of cross subsidising for electricity

	<i>Industries</i>	<i>Change of price</i>
1	Electric power industry	-10%
2	Fuel industry	-1.6%
3	Black metallurgy	-2.6%
4	Colour metallurgy	-3.1%
5	Chemical and petrochemical industry	-2.8%
6	Mechanical engineering and metal working	-2.3%
7	Wood manufacturing and cellulose industry	-2.4%
8	Industry of constructing materials (including glass and ceramic industry)	-2.7%
9	Light industry	-1.4%
10	Food industry	-1.3%
11	Other industries	-2.4%
12	Construction	-2.2%
13	Agriculture	-2.2%
14	Transports and communications	-2.6%
15	Sphere of the circulation, including commercial activity	-2.6%
16	Other kinds of activity in sphere of production	-2.1%
17	Education, public health services, culture and art	-3.2%
18	Municipal service and other household services	-5.6%
19	Management, finance, credit, insurance	-3%
20	Science and scientific service	-2.6%