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Health Insurance and Demography – The Russian Case

Stefan Fetzer
Christian Hagist
Nargiza Hahn

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INSTITUT FÜR FINANZWISSENSCHAFT
DER ALBERT-LUDWIGS-UNIVERSITÄT FREIBURG IM BREISGAU

Prof. Dr. A. Oberhauser
Waldackerweg 14
79194 Gundelfingen

Prof. Dr. B. Raffelhüschen
Bertoldstraße 17
79098 Freiburg i. Br.

Prof. Dr. W. Ehrlicher
Beethovenstrasse 23
79100 Freiburg i. Br.

Prof. Dr. H.-H. Francke
Bertoldstraße 17
79098 Freiburg i. Br.

Health Insurance and Demography – The Russian Case[*]

Stefan Fetzer

Centre for Inter-Generational Contracts, Albert-Ludwigs-Universität Freiburg

Christian Hagist

Centre for Inter-Generational Contracts, Albert-Ludwigs-Universität Freiburg

Nargiza Hahn

Centre for Inter-Generational Contracts, Albert-Ludwigs-Universität Freiburg

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Abstract

This paper assesses the long-term fiscal position of the Russian health insurance system using Generational Accounting, with particular attention to special factors of the health care sector. We find out that the demographic development of Russia causes a significant burden for future generations. Taking into account a form of cost pressure due to the medical-technical progress or a widen of the scope of benefits in the health care sector, we show that the burden is comparable to OECD-countries like Germany.

JEL Classification: H51, I11

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1. Introduction

During the next few decades the populations of most developed countries will grow older and older as a result of the low level of birth rates since the 1970s and the continuously increasing life expectancy. This so called "double ageing process" will lead to an extensive problem in the future financing of public health insurance systems. Although this problem is focused on in many publications, it is scarcely noticed that also in the emerging economy of Russia the demographic change will cause financing problems for the future provision of public goods, especially in the field of its public health insurance scheme. Compared to other emerging economies the average age of the Russian population is high, and due to the almost one century existing socialism the population is accustomed to generous provisions of public goods like health insurance. After the collapse of the Soviet Union a new Russian public health insurance system was established but up to now this system fails to provide even a basic supply of health care for the whole Russian population. Hence it seems understandable that future problems arising from the double ageing process are not paid much attention in debates on the Russian health system.

But already in a couple of years the Russian health care system will be stuck between the devil and the deep blue sea. On the one hand, the Russian population will demand more health care in form of a public good as the economy is growing and democracy will get more developed. On the other hand, the demographic problem of an ageing society gets even worse. In other words the Russian Sisyphus is just beginning his way up the hill.[1] As in developed economies, the allocation of resources for health expenditure will increase with a growing economy. This rise of per capita health expenditures will cause an augmentation of life expectancy which, again, increases health expenditures and the vicious circle starts as well in Russia.

In this paper we use a Generational Accounting approach to show the quantitative extent of the future problems of the Russian public health system which will appear due to the ageing population process. The paper is structured as follows: Chapter 2 provides an overview of the Russian health insurance system focusing the financing side and the problems discussed in the existent literature. Subsequently the method of Generational Accounting is explained in chapter 3. The structure of the Russian population, its future development and the data for the following analysis are discussed in chapter 4. In chapter 5 we provide the results of the

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[1] For the metaphor of Sisyphus and modern health care systems, see Zweifel and Ferrari (1992).

Generational Accounting analyses. For the interpretation we compare the results for Russia with calculations from Germany. The paper ends up with a conclusion in chapter 6.

2. The Russian Health Insurance System

Forms of public health insurance exist in Russia since the middle of the 19th century.[2] Till the collapse of the Soviet Republic the health insurance system was very akin to the Britain National Health Service (NHS). The current scheme was introduced in 1991. The abolition of the NHS styled scheme and its transformation into the current one is according to Shishkin (2000) mainly due for two reasons: Firstly, more market forces were expected to lay off by a separation between suppliers and insurance companies. Secondly, a new cash flow into the health insurance system was created with the introduced compulsory contributions from employers. Today, the Russian system is a mixture of a continental European health insurance system with premiums and the British NHS, financed by the tax payers.

In conformity with the Russian constitution, the Russian public health insurance is a paternalistic system[3] and almost the whole population of Russia is publicly insured.[4] The health care expenditures are administrated by public insurance companies or public funds and financed by two pillars, which are taxes and contributions/premiums from the employers (3,6 percent of the gross wage/income per worker or employee). The scope of services is different in every district and is based on negotiations between local authorities, insurance companies and provider agencies. The federal government guarantees only a minimum health level which can not be fallen short of.

In theory, the Russian system looks like any other European health care system. But actual, there exist a couple of major problems: Probably, the main dilemma of the current system is the discrepancy between the legal pretension of a fee-free health care and the actual reality. Several studies have shown that for inpatient as well as outpatient health care, ordinary citizens have to pay extra cash to get even ordinary drugs or treatments for minor cases.[5] This is due to two facts: First, while the amount of health care costs has risen owing to the technological progress, the resources allocated from the government have declined about 30 percent in real terms. Second, employees (especially nurses and doctors) in the health care

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[2] A kind of mandatory health insurance was first introduced in the mining sector in 1866. For an overview about the Russian health care system, see Rabočaâ gruppa presidiuma gosudarstvennogo soveta RF po voprosam razvitiâ medicinskogo strahovaniâ (2003).
[3] See Administraciâ Presidenta Rossijskoj Federacii (1997), Konstituciâ Rossijskoj Federacii (Constitution of the Russian Federation), Article 41, Clause 1.
[4] Except several special groups like the military about 94 percent of the population are insurants of one of the 360 public insurance companies, see Taranov (2003).
[5] For an overview about several studies addressing this problem, see Shishkin (2000).

sector gain only about 70 percent of the average wage. Hence, the extra cash from patients is taken to get their salaries up to a normal level. Especially in rural areas these payments are very familiar.[6] Therefore many households abstain from their prescribed drugs or do not consult a doctor, even if they need one. Surinov (2003) estimated estimates that the proportion of private payments is equal to the public health care budget (both are around 2,2 percent of GDP). As well, but not only because of this fact, the approval ratings of the Russian health care system are shrinking continuously.

Other problems are the non-developed markets in the system. Hospitals are still managed like in a central planned economy and the market for pharmaceuticals and drugs is actually nonexistent. This is a reason why a high amount of the health care resources is spent for drugs und pharmaceutical related goods. Many of them are imports from central and western Europe for a relatively high price compared to the price level in Russia.[7]

Due to these major problems reform proposals are heading mostly in the same direction. First of all, the basic health care basket guaranteed by the government has to be reduced to an affordable level. Secondly, the extra-payments of the population should be legalized and transformed into western style retentions. Thirdly, more market forces have to be introduced and strengthened at all levels, especially at the supply side. And last but not least new cash-flows for the financing of the system should be created by increasing the employees' contributions or health related taxes. But these reform proposals can only be a short-term solutions. The next chapters will show that the financing of the Russian public health insurance is not sustainable and therefore it exists an additional urgent need for reforms.

3. Method of Generational Accounting

To measure the sustainability of the Russian public health insurance we use the method of Generational Accounting which was developed by Auerbach, Gokhale and Kotlikoff (1991, 1992, 1994). In contrast to traditional budget indicators which are based on annual cash-flow budgets, Generational Accounting is founded on the intertemporal budget constraint and therefore the long-term implications of a current policy can be computed.[8]

Like stated above, the starting point of Generational Accounting is the intertemporal budget constraint of the public sector, expressed in present value terms of a base year t:

(1) $$B_t = \sum_{s=0}^{D} N_{t,t-s} + \sum_{s=1}^{\infty} N_{t,t+s}$$

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[6] For both arguments see Shishkin, Potapchik and Salakhutdinova (2001).
[7] See Gavrilov (2002).
[8] The further description of the method of Generational Accounting is mainly based on Raffelhüschen (1999).

Let D denote agents' maximum age and $N_{t,k}$ the present value of year t's net tax payments, i.e., taxes paid net of transfers received, made by all members of a generation born in year k over the remaining life-cycle. Then, the first right-hand term of equation (1) represents the aggregate net taxes of all generations alive in the base year t. The second term aggregates the net tax payments made by future generations born in year $t + 1$ or later.

On the left-hand side of equation (1), B_t stands for the net debt in year t. For our case of an isolated public health sector we define B_t to be equal to zero and equation (1) can be simplified to:

(1 a)
$$0 = \sum_{s=0}^{D} N_{t,t-s} + \sum_{s=1}^{\infty} N_{t,t+s}$$

Now, over an infinite time horizon the present value of all future net tax payments equals zero. That means if the sum of all living generations' net taxes, $\sum_{s=0}^{D} N_{t,t-s}$, is negative (i.e. if they receive a net transfer) the sum of future generations' net taxes has to be positive – or in other words: In a long-term perspective net transfers received by living generations have to be financed via net taxes paid by future generations.

To calculate generations' aggregate life-cycle net tax payments, the net payment terms in equation (1) are decomposed into

(2)
$$N_{t,k} = \sum_{s=\max\{t,k\}}^{k+D} T_{s,k} \, P_{s,k} \left(1+r\right)^{t-s}$$

In equation (2), $T_{s,k}$ denotes the average net tax paid in year s by a representative member of the generation born in year k, whereas $P_{s,k}$ stands for the number of members of a generation born in year k who survive until year s. Typically, generational accountants disaggregate equation (2) even further. To incorporate gender-specific differences in average tax payments and transfer receipts by age, separate aggregation of the average net taxes paid by male and female cohort members is required. The products aggregated in equation (2) represent the net taxes paid by all members of generation k in year s. For generations born prior to the base year the summation starts from year t, while for future born cohorts, the summation starts in year $k > t$. Irrespective of the year of birth, all payments are discounted back to year t by application of a real interest rate r.

To compute the remaining lifetime net payments of living generations, the future demographic structure is specified conducting long-term population forecasts. In addition, the development of age-specific net tax payments needs to be projected.

The age-specific net tax payment in year s of agents born in year k can be decomposed as

$$(3) \qquad T_{s,k} \;=\; \sum_i h_{s,k,i}$$

$h_{s,k,i}$ stands for the average tax or transfer of type i paid or received in year s by agents born in year k, thus of age s - k. In equation (3), $h > 0$ indicates a tax payment, whereas $h < 0$ defines a transfer.

In the method of Generational Accounting it is conventionally assumed that initial fiscal (health) policy and economic behaviour are constant over time. Under this condition, it is possible to project future average tax payments and transfer receipts per capita from the base year age profile of payments according to

$$(4) \qquad h_{s,k,i} \;=\; h_{t,t-(s-k),i} \; \left(1+g\right)^{s-t}$$

where g represents the annual rate of productivity growth. Equation (4) assigns to each agent of age s-k in year s the tax and transfer payment observed for agents of the same age in year t, uprated for gains in productivity. The base year cross section of age-specific tax and transfer payments per capita is generally determined in two steps. First, the relative position of age cohorts in the tax and transfer system is estimated from micro-data profiles. In a second step the relative age profiles are re-evaluated proportionally to fit the health expenditures and tax revenues.

For living generations, division of the aggregate remaining lifetime net tax payments by the number of cohort members alive in the base year defines the cohort generational account:

$$(5) \qquad GA_{t,k} \;=\; \frac{N_{t,k}}{P_{t,k}}$$

The generational accounts are constructed in a purely forward-looking manner, only the taxes paid and the transfers received in or after the base year are considered. As a consequence, generational accounts cannot be compared across living generations, because they incorporate effects of differential lifetime. One may compare, however, the generational accounts of base year and future born agents, who are observed over their entire life-cycle.

To illustrate the fiscal burden of current health policy we use five sustainability indicators:[9] The starting point for the first three indicators are the intertemporal public liabilities which can be computed by the assumption that the intertemporal budget constraint of the public health sector (1a) is violated:

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[9] For a discussion of different concepts of measuring sustainability and sustainability indicators, see Benz and Fetzer (2004).

$$(6) \qquad IPL_t \;=\; -\sum_{k=t-D}^{\infty} N_{t,k}$$

The amount of intertemporal public liabilities measures aggregate unfunded claims on future budgets, assuming that the present health policy will hold for the future. The first sustainability indicator, the *sustainability gap*, can be derived if the intertemporal public liabilities are set in relation to base year's GDP. This indicator is very akin to the debt quota but it addresses to the debt which will occur in the future and not in the past.

How the policy adjustment required to redeem intertemporal public liabilities will affect generations' fiscal burdens is uncertain. For illustrative purposes, Generational Accounting typically assigns the entire adjustment to future generations. If all tax payments made by members of future born cohorts are adjusted proportionally with help of a uniform scaling factor θ, set to ensure balance of the intertemporal public budget defined in equation (1)

$$(7) \qquad h_{s,k,i} \;=\; \theta \;\times\; h_{t,t-(s-k),i}\; \left(1+g\right)^{s-t}$$

for and instead of equation (4) when computing the average age-specific net taxes paid by representative future born agents, the burden for future generations can be illustrated as an absolute difference between the generational account of the base year agent and the generational account of the one year after base year born agent. This is our second sustainability indicator, the *future generations' burden* which we will compute in the next chapter.

The third indicator that illustrates the burden of current health policy is the *revenue gap*. In this case the scaling factor θ reflects the increase of revenues in percent for all generations that is necessary to close the intertemporal public budget constraint. In case of an isolated public health care system, this indicator can also be interpreted as the relation of all accumulated deficits to all accumulated and discounted revenues.

Instead of computing the intertemporal public liabilities one can assume that the Russian public health insurance is not allowed to make annual deficits. That means in all future years annual expenditures have to be financed via annual revenues. This assumption leads to our sustainability indicators number four and five: The *necessary enhancement of revenues* given the projected development of expenditures and *necessary reduction of expenditures* given the projected development of revenues.

4. Data and Assumptions

To generate generational accounts and calculate the stated indicators for the Russian health insurance system, we require a projection of the population for the Russian Federation, the expenditures and revenues of the public health insurance scheme in the base year, age-sex-profiles for the different expenditures and revenues types, and a growth as well as a discount rate. Because of the delay of statistics for Russia, we choose the year 2000 as our base year. Therefore all numbers and values are in present value terms of the year 2000.

4.1. Population projection for the Russian Federation

The statistics of the Russian population in 2000 stems from Goskomstat (2002a). In 2000 Russia had 145.6 million inhabitants of whom 68.2 were male and accordingly 77.4 female. There is nothing stated about how many of the 145.6 million are foreigners. However, because of the complexity of this problem, we treat foreign permanent residents like Russian citizens. The age and sex structure of migration in Russia which is reported in Goskomstat (2002a) is hold constant from the base year on.

For our population projection we require furthermore age and sex specific fertility and mortality rates which are also taken from Goskomstat (2002a). Under the assumptions of the United Nations Population Division's "Medium Variant" (i.e. a total fertility rate of 1.14 in 2000 which augments to 1.85 in 2050, a constant net immigration of 50,000 per year and an increasing life expectancy at birth of 73.1 (60.8) years for females (males) in 2000 to 77.4 (70.9) years in 2050) our projection leads to a total Russian population of 105.7 million in 2050. This comes close to the projection of the United Nations Population Division which is 101.5 million in 2050 in its "Medium Variant" [Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat 2004].

4.2. Health Contribution and Benefits

In order to obtain the base years $h_{s,k,i}$ of the type "Health Care Expenditure" we distribute an aggregate for health benefits given by Gerasimenko and Sajdal´ (2002) with 205.5 billion Rouble for the year 2000 with an age- and sex-specific profile derived from Chernets et al. (2003). The profile shows the typical pattern of health care expenditure profiles.

On the revenue side, we differentiate between two types of contributions. Firstly, we consider the contributions of the employers for their employees. The volume of these payments is given by Smirnov et al. (2002) with around 51.1 billion Rouble. The age- and

sex-specific profile for these payments is derived in several steps. Firstly, we state the assumption that for every male (female) adult between the age of 20 and 60 (20 and 55) contributions are paid in principle. In the second step we take an income distribution from Ivanova and Smirnova (2003) and apply it on the 20 to 60 years old men (respectively on the 20 to 55 years old women). This income distribution is then rescaled with an age-and sex-specific distribution of employees from Goskomstat (2001a) and in volume with the national income of 2000.

Secondly, we distribute the remaining amount of the contributions, i.e. the contributions for the unemployed, the payments of the federal government and the payments of the local governments, with a simple "zero-one"-profile due to missing appropriate data about specific tax payments. With this profile, every cohort between 20 and 100 pays the same amount. Cohorts under 20 years pay nothing. The profile is not sex-specific. The volume of these payments is around 154.4 billion Rouble.

4.3. Accounting for medical-technical progress

The so called Newhouse conjecture identifies the medical-technical progress as a major driver of rising health care expenditure beneath income (Newhouse 1992). The health economic literature has shown that the Newhouse conjecture is true for most of the OECD countries (Gelijns und Rosenberg (1994), Okunade and Murthy (2002)). Unfortunately there are as yet to our knowledge no studies analysing the Newhouse conjecture for emerging market economies. Due to this lack we consider two scenarios for our following analysis: The first one does not account for medical-technical progress or other reasons for higher growth of real per capita health expenditure. Instead, real per capita health expenditure develops with the same real growth rate as the economy's real GDP per capita. The second scenario assumes a one percentage point medium-term higher growth of per capita health expenditure than the real growth rate of the Russian economy. Thus, the second scenario accounts for possible rising costs in the health sector due to the medical-technical progress or to other reasons like wage bargains for doctors and nurses which are currently relatively underpaid compared to their colleagues in other countries (Shishkin (2000)). Furthermore, with a rising standard of living it is not unrealistic to expect that also the scope of benefits of the public health insurance will extend due to the fact that health could be seen as a "luxury good", i.e. the income elasticity of health goods is greater than one.[10]

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[10] For a discussion and an overview about several studies concerning income elasticities of health care expenditure, see Roberts (1999).

For reasons of simplification we choose a duration of 40 years and a volume of one percentage point.[11] In the following analyses SQ ("status quo") indicates always the basic scenario which does not consider any cost pressure in the health sector. CP ("cost pressure") indicates the scenario accounting for possible reasons of higher growth rates in the health sector.

4.4. Growth and Discount Rate

Due to the "youth" of the Russian Federation and the various financial and political instabilities in the 1990s, it is a rather complicated matter to come up with numbers for parameters such as a long-term growth or discount rate. For example, the average annual growth rate for GDP per capita of the last ten years actually is negative.

For our following analysis we choose a difference of 1.5 percentage points between real interest and real growth. We make this assumption for two reasons. First we compare our results with a Generational Accounting study for Germany in which the growth-interest-spread is also chosen by 1.5 percentage points, and second as Aaron (1966) has shown the quantitative level of the results are only affected by the difference between real growth and real interest and not by their level. Furthermore we make a sensitivity analysis which shows that the quality of our analysis holds even when other growth- interest-spans are assumed.

5. Results

As stated before, the benchmark or base year for our analysis is 2000. So, we regard 101 generations alive in the base year as "living" generations and classify cohorts by age. All generations or cohorts born later than 2000 are labeled as "future" generations. SQ indicates the scenario without, CP the scenario with cost pressure.

5.1. Generational Accounts

Figure 1 displays the generational accounts for selective cohorts for both scenarios. The SQ scenario shows that only the cohorts between 5 and 35 years pay more contributions than they receive benefits from the system over their remaining lifetime. All other cohorts are net transfer beneficiaries. The maximum net payment with 16,000 Rouble is done by the 20 years old representative individual whereas the 61 years old receives the maximum net benefit in the amount of 20,600 Rouble. The 61 years old cohort is the first cohort when both women and men have reached their retirement age and all contributions they paid in the past are

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[11] Breyer and Ulrich (1999) show for Germany that the expenditure growth of the public health care system is one percentage point higher than for the overall economy.

unconsidered since Generational Accounting is straight forward looking. One has to keep in mind that for this reason the generational accounts between living generations are not comparable.

Figure 1:Generational accounts of the Russian public health scheme

Base year 2000, Growth-interest-spread 1.5 percentage points
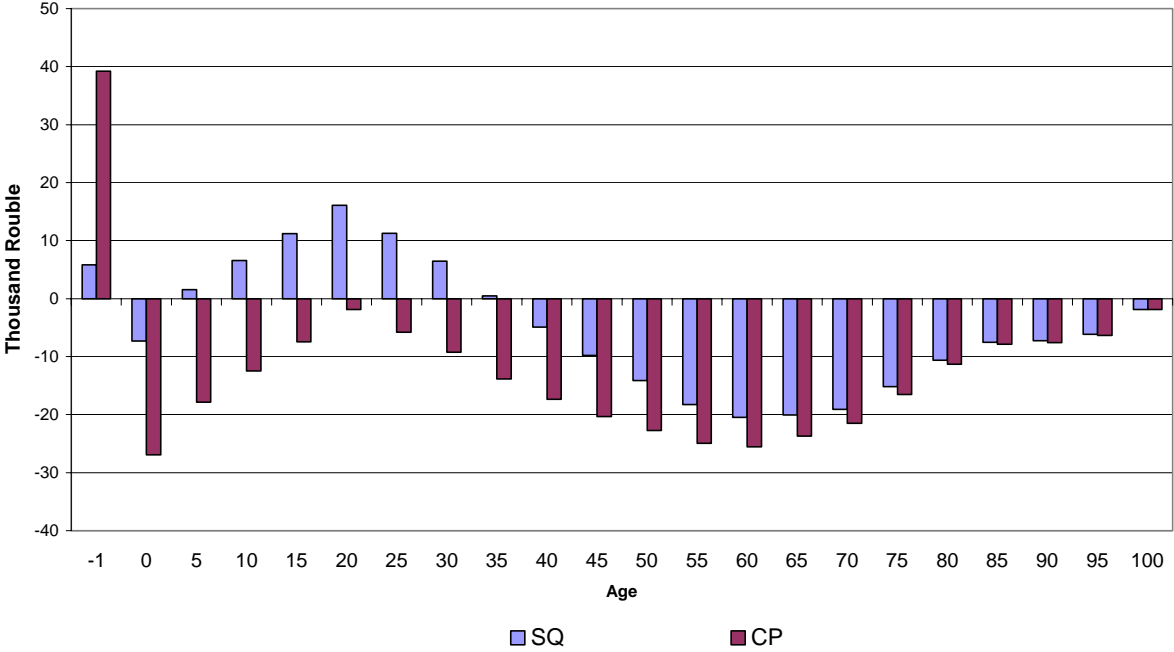
Regarding the CP scenario one can see that no generation makes a net transfer to the Russian public health scheme over their remaining lifetime, i.e. all generations are net beneficiaries. The maximum over-lifetime-benefit is now 25,530 Rouble. Even the 20 years old representative receives 1,900 Rouble.

5.2. Sustainability Indicators

Using equation (6) in chapter 3 one can see that the *intertemporal public liabilities* of the Russian health insurance scheme is nothing else than the negative present value of all future net taxes paid by all living and future generations. This present value can be derived by summing up the cohort's net transfers and payments weighted with the amount of people in the specific cohort for all living and future generations. It states the overall "implicit" deficit of a fiscal system, here the amount of money the Russian health insurance scheme would need to be inter-generational balanced. In the SQ scenario, the *intertemporal public liabilities* amount 910 billion Rouble. Dividing this value by the Russian base year GDP of 9040 billion Rouble yields the indicator *sustainability gap* which amounts to 10.1 percent of GDP. Considering the CP scenario it increases to 51.3 percent of GDP.

The second indicator we use is the *future generations' burden* which can be seen in figure 1 as the distance between the generational account for the base year born cohort and the generational account for the one year after the base year born cohort (the "-1" cohort). The quantitative values between our two scenarios differ highly. Whereas the *future generations' burden* in the SQ scenario amounts to 13,100 Rouble it increases to 66,200 Rouble in the CP scenario. Our third indicator, the *revenue gap,* shows the missing long-term financing of the Russian public health sector. To restore sustainability all revenues have to be risen by 44.6 (8.8) percent in the CP (SQ) scenario. As described in chapter 3 also the future development of revenues and expenditures can be computed with the method of Generational Accounting. Figure 2 illustrates these developments for the next 50 years:

Figure 2: Projected revenue and expenditure of the Russian public health insurance
Base year 2000
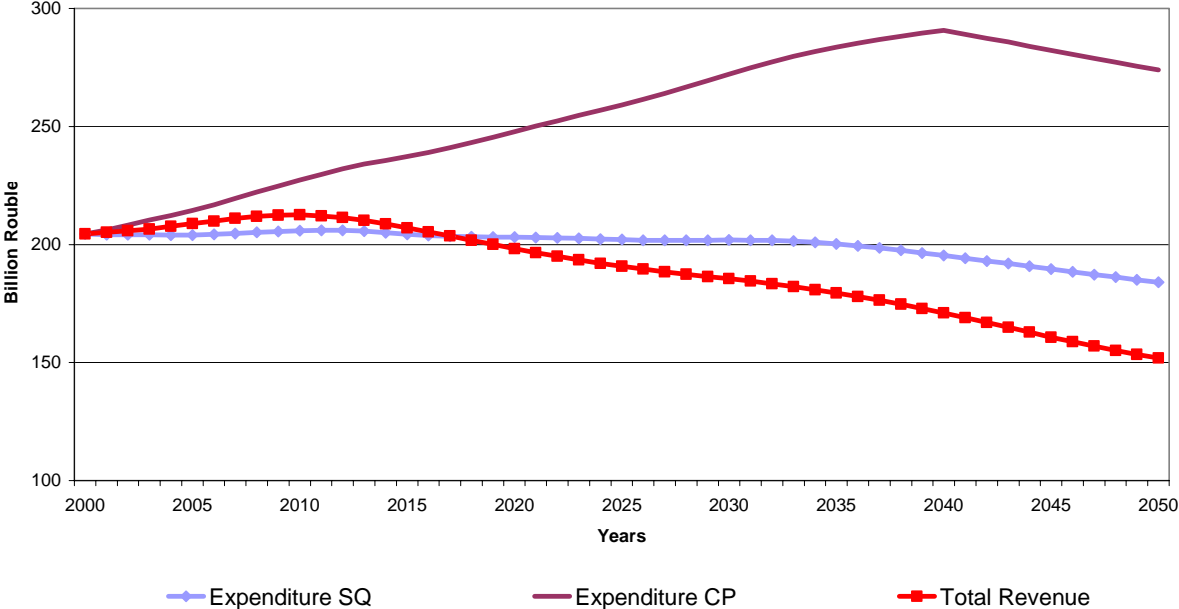
In the SQ scenario, the revenues per year exceed the expenditures until 2018. Thus, without any accounting for medical-technical progress or other cost-intensive factors, pressure for a reform of financing the Russian health insurance scheme would not be so high. This is completely different in the CP scenario where the Russian system generates deficits from the beginning on. So pressure for reform will increase with the years forthcoming than even after the 40 years the higher growth rate is considered for, the gap between revenues and expenditures is widening.

With the revenues and expenditures depicted in Figure 2 one can calculate our sustainability indicators number four and five. The *necessary enhancement of revenues* given the projected development of expenditures is pictured in Figure 3.

**Figure 3: Necessary enhancement of revenues of the
Russian public health insurance system**
Base year 2000
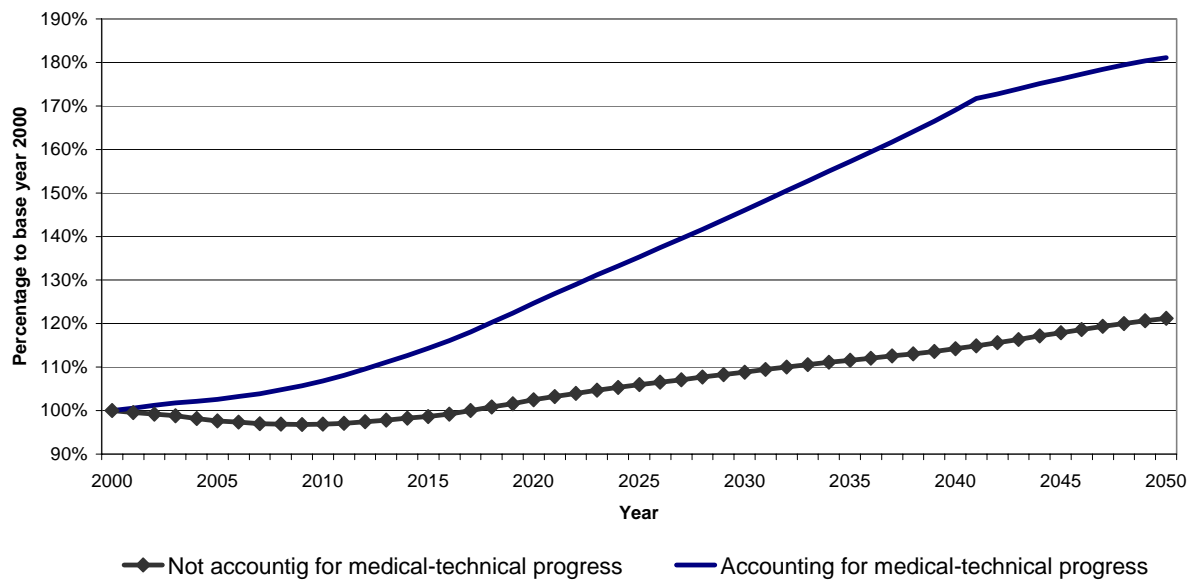
As one can see, in the long run premiums will have to rise to significant higher levels to even finance the current scope of benefits. For the SQ scenario revenues would have to rise over 20 percentage points in 2050 compared to the base year. If the Russian government wants to finance any form of medical-technical progress or enhancements of the scope of benefits with the present financing structure, premiums will have to rise four times as in the SQ scenario to over 180 percent of current revenues. Although premium rates are low today such an increase would put a significant burden on the Russian economy.

Another way to avoid annual deficits is given by the indicator *necessary reduction of expenditures* given the projected development of revenues (figure 4). This would imply that the Russian government (i.e. the public health insurance) will provide only a basic basket of health related goods in the future. The rest would then come from out-of-pocket money or private health insurance plans. Analog to figures 2 and 3, figure 4 shows the *necessary reduction of expenditures* over the next few decades. Given the demographic development, the Russian health insurance could widen its scope of benefits until 2018 in the SQ scenario. However, in the long term expenditures would have to decrease in real terms to around 82.5 percent of the projected level in 2050. In the CP scenario, the cost of most of the medical-technical progress would be shifted towards the private sector and the expenditure level would be nearly cut in half in the long run.[12]

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[12] Note that such an enormous reduction of the scope of benefits could possibly result in a change of our assumed parameters like the increase of the life expectancy. However, we did not account for such interactions between the health policy and our demographic framework.

Figure 4: Necessary reduction of expenditures of the Russian health insurance system

Base year 2000, Growth-interest-spread 1.5 percentage points

Legend: Not accountig for medical-technical progress — Accounting for medical-technical progress
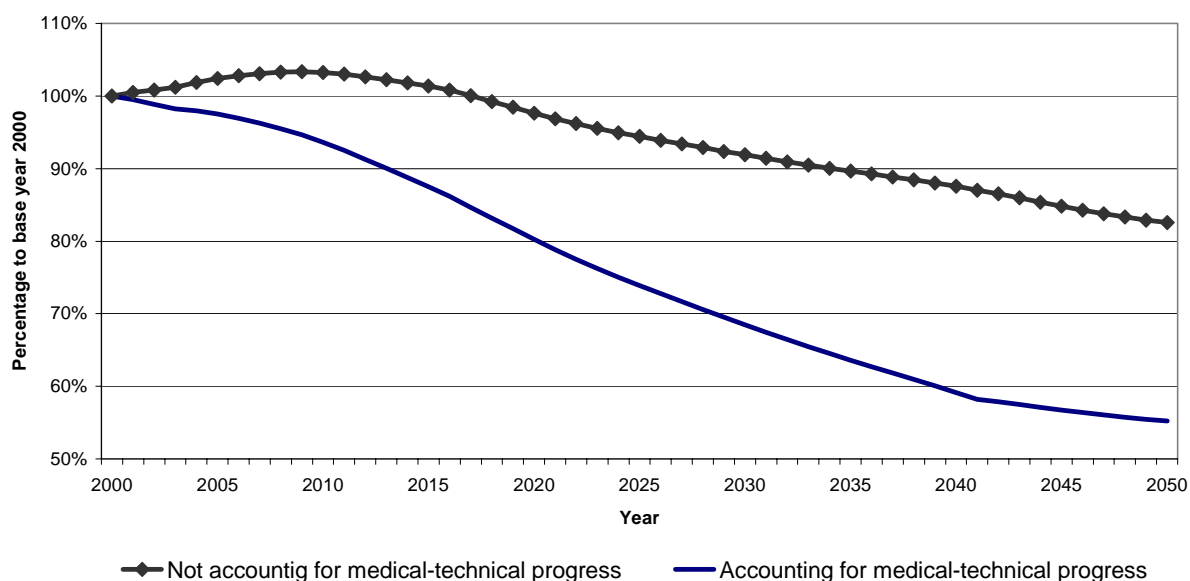
5.3. Sensitivity Analysis

To proof our result for the assumed parameters table 1 reports a sensitivity analyses under alternative assumptions about the growth rate of the Russian economy (g) and the discount rate (r) for our five indicators. As we stated before and Aaron (1966) has shown, only the spread of the two parameters growth and interest rate matters for our analysis. The alternative assumptions do not change the qualitative results given above, even though the absolute magnitudes of generational imbalance are substantially affected by changes in assumptions. This is especially true for the indicator *sustainability gap* which is more than four times higher when the spread of g and r is reduced from 2.5 to 0.5.[13] More robust are the indicators *future generations' burden* and *revenue gap*. A reduction of the *g-r*-spread from 2.5 to 0.5 percentage points leads to an increase of the *future generations' burden* of over 50 percent and to an one and a half times higher revenue gap. To proof the robustness of the indicators *necessary enhancement of revenues* and *necessary reduction of expenditures* we use exemplarily the year 2040. As one can see these indicators are totally robust since the reaction of expenditures and revenues to an increase of the *g-r*-spread is for every future year the same.[14]

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[13] The fact that the sustainability gap decreases when the spread is widen is due to the declining present value of future deficits under higher discount and lower growth rates.

[14] The small variations of the indicators *necessary enhancement of revenues* and *necessary reduction of expenditures* in the CP scenario are due to rounding in the calculation of the cost pressure.

Table 1: Sensitivity analysis of sustainability indicators

	Russian Federation							
	Spread 0.5 percentage points		Spread 1 percentage points		Spread 2 percentage points		Spread 2.5 percentage points	
	SQ	CP	SQ	CP	SQ	CP	SQ	CP
Sustainability Gap (percentage of GDP)	28.0	135.6	15.4	75.8	7.0	37.4	5.0	28.4
future generations' burden (Rouble)	15,400	74.100	14,500	71,000	11,500	61,000	10,000	56,000
Revenue Gap (percentage of accumulated revenues)	11.7	56.7	10.2	50.0	7.5	40.1	6.4	36.1
necessary enhancement of revenues (*2040*)	114.2%	168.5%	114.2%	168.8%	114.2%	169.4%	114.2%	169.8%
necessary reduction of expenditures (*2040*)	87.5%	59.4%	87.5%	59.3%	87.5%	59.0%	87.5%	58.9%

5.4. A comparison with Germany

To classify our results and to get a better intuition of the dimension of the sustainability problem of the Russian public health scheme we compare our result with a study of the German public health insurance scheme (table 2). In Germany, without referring to any medical-technical progress, the *sustainability gap* is before recent reforms 65,3 percent of GDP, and in the CP case 203,8 percent of GDP.[15] But a comparison of the German and the Russian health insurance via the *sustainability gap* is a rather unsure matter. First, the systems have a very different scope of benefits (the German one is much more wider), and second, the quality of health care differs significantly. For the same reasons a comparison of the *future generations' burden* is not appropriate.[16] In contrast the indicators *revenue gap, necessary enhancement of revenues* and *necessary reduction of expenditures* are much more applicable for an international comparison as they do not refer to any measure outside the analyzed health insurance systems (like GDP). Table 1 displays the indicators for both countries:

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[15] The values are derived with the same parameters, i.e. a growth and real interest difference of 1.5 percentage points and the base year 2000. See also Fetzer, Moog and Raffelhüschen (2003).
[16] For reasons of comparison between Russia and Germany the future generations' burden in table 2 is reported in percentage points of GDP per capita.

Table 2: Sustainability indicators in comparison

(growth-interest-spread 1.5 percentage points)

	Russian Federation		Germany	
	SQ	CP	SQ	CP
Indicators				
Sustainability Gap (percentage of GDP)	10.1	51.3	65.3	203.8
future generations' burden (percentage of GDP/capita)	0.2	1.1	1.1	3.4
Revenue Gap (percentage of accumulated revenues)	8.8	44.6	17.9	55.8
necessary enhancement of revenues (*2020*)	102.5%	125.0%	110.1%	132.5%
necessary enhancement of revenues (*2040*)	114.2%	169.1%	124.4%	179.6%
necessary reduction of expenditures (*2020*)	97.6%	80.2%	90.4%	75.5%
necessary reduction of expenditures (*2040*)	87.5%	59.1%	80.4%	55.7%

Source: Fetzer, Moog and Raffelhüschen (2003), own calculations

The comparison shows that the problem of both systems with their ageing societies is not so different that one could imagine comparing other measures like health expenditure per capita, for instance. In fact, taking into account some form of cost pressure (CP scenario), Russia would have to raise its premiums, taxes and contributions about 44.6 percent. And this, although the Russian system does not deliver the scope of benefits or quality of health insurance systems of OECD countries, as we have discussed in chapter 2. The figure of the German system which is functioning in terms of measurable quality[17] is only around 11 percentage points higher than the Russian one. So, to return to our picture of the Russian Sisyphus: As he is still submontane the stone gets heavier and heavier.

6. Conclusion

The effect of ageing societies for the social health insurance systems of developed countries is well known and topic of many reports and studies. Rather not so well known is the fact that also Russia as an economy in transition has problems with its ageing population in reference to its health insurance scheme.

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[17] For a discussion of the German system in an international comparison see Beske, Drabinski and Zöllner (2004).

Russia's health care system has many urgent current problems so that the long-term perspective of the system is easily lost. One of the biggest problems next to failing markets for pharmaceuticals and others are illegal out-of-pocket payments for medical personnel to get treatment at all. Already this shows that the Russian system is not financed in a sustainable way.

The paper assesses the long-term financial sustainability of the Russian health insurance scheme with the help of Generational Accounting. Due to its ageing society and the specialty of cost pressure in the health care sector, we show that the Russian public health insurance is not sustainable financed and that the long-term burden can indeed be compared to the similar problems of OECD-countries like Germany. Note, that it is not within the scope of Generational Accounting to uncover the distribution among living generations. More specifically, it is not possible to compare the generational accounts of living generations with one another or to compare these accounts with those of their descendants due to the prospective nature of generational accounts.

In our findings we point out that easy solutions like enhancements of payments or cuts in benefits have to come in such large volumes that they are politically hard to establish. So, the real solution is probably somewhere in between. Introducing more market forces and better management plus certain privatizations and more funding should not only get the Russian Sisyphos a lighter stone to carry but the Russian people a better quality of health care.

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