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Edited by

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Inequality of Health Finance,  
Resources, and Mortality in Russia:  
Potential Implications for Health  
and Medical Care Policy

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*Health, Health Care and Health Economics: Perspectives on Distribution.*  
Edited by Morris L. Barer, Thomas E. Getzen, and Greg L. Stoddart  
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## ABSTRACT

Soon after the breakup of the Soviet Union and the re-establishment of Russia as an independent federation in 1991, regional oblast- (state/province-) level authorities became responsible for their own health care administrations and budgets. This was a dramatic deviation from the former Soviet system in which management and financing responsibilities rested with the central authorities in Moscow. As a result of this shift in responsibilities, the regional distribution of *per capita* health expenditure across the Russian Federation started changing, during the study period 1990-1993, to resemble the distribution of the regional product or income *per capita*. This marked the beginning of a process which has been gradually offsetting the Soviet legacy of allocation of medical resources according to standardized mortality rates. At the same time, no correlation was observed during that period between regional variations in mortality levels, which rose, and the regional changes in levels of health financing. Cross-sectional data from the period 1989-90, before the breakup of the Soviet Union, indicate that there was no apparent effect on mortality of health finance and real medical resources in Russia even before the onset of the social and economic transition. In contrast, by the same data, there was a negative effect on mortality of education and "life-styles." These observations from the earlier and stable period can contribute to the explanation of the unobserved correlation between health finance and mortality across the Russia Federation during the period 1991-1993. Namely, within the observed data range, mortality is insensitive to variations in levels of health finance. This finding, taken together with the observations (a) that mortality in Russia is higher than in the West even considering its comparatively low levels of income (not education), and (b) that there is scope to improve life expectancy in Russia through medical intervention, has a major policy implication. It suggests that the levels of health financing and real medical resources might make a difference in Russia, especially if expended to change Russia's medical care approach and technology.

## INTRODUCTION

The objective of this paper is to assess the potential impact of recent changes in the administration and distribution of health care financing across the Russian Federation on the health of the Russian people. By implication, the paper draws

conclusions about the potential effect on health of the current medical care approach and technology in Russia. These objectives are accomplished through studying regional variations in health financing in Russia and their health and medical correlates.

## BACKGROUND

The Russian Federation comprises three levels of administration organized according to the following hierarchy: (a) The Russian Federation; (b) Republics, Krai, Oblasts, National Okrugs, and the cities of Moscow and St. Petersburg; and (c) Local entities. These local entities are divided into (1) rayons and cities, and (2) towns, villages, and rural settlements. A city, depending on its size, may be divided into several rayons or may form a rayon by itself.

Territories below the federal level — republics, krais, oblasts, okrugs, and the two main cities of Moscow and St. Petersburg — are called territories of "oblast-level" which are analogous to states or provinces in Western federations (*e.g.*, Australia, Canada, and the United States of America). The oblasts comprise the Russian Federation. Under the Soviet Union in 1990, the Russian Republic comprised 73 oblast-level administrative territories, including 15 republics, six krais, 50 oblasts, and the two cities. Today, following administrative changes in Russia since 1991 and the 1993 constitution, the federation is comprised of 89 oblast- (state-) level subjects: 21 republics, six krais, 49 oblasts, one autonomous oblast, two cities and 10 autonomous okrugs. All are of equal status.<sup>1</sup>

Until the late 1980s with the unfolding of "Perestroika," financing and management of the Soviet health care system was completely centralized. The Soviet Federal Ministry of Health (SFMOH) regulated management and resource allocation of the entire system through each republic's ministry, including the Russian Federal Ministry of Health (RFMOH) which was then part of the Soviet Union. Other ministries managed their medical systems, accounting for about 10%

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<sup>1</sup> Russian statistics often aggregate the Russian Federation into 12 economic regions, grouping together geographically and economically close oblasts. This aggregation has no administrative significance but is often used for presentation of data. It is used here as well for summary of data. At the same time, all statistics and calculations reported in this paper are based on individual oblast-level data. About the administrative organization of the health system, see Chernichovsky and Potapchik 1996a.

of total medical resources, independently but similarly (Rowland and Telyukov, 1991; Chernichovsky, Barnum, and Potapchik, 1996; Chernichovsky and Potapchik, 1996).

Centralized management had several key manifestations. Heads of the oblast-level health authorities and of major medical institutions were appointed only after SFMOH confirmation. Although financed through territorial budgets, mandatory resource allocation criteria were established and enforced by the Soviet Federal Ministry of Finance and the SFMOH. Those two ministries approved both current and capital expenditures throughout the system. Periodically, the SFMOH conducted surveys that established development needs dealing with investment in, and upgrading of, medical facilities, notably hospitals (beds) and community polyclinics. Need was based on demographic characteristics as discussed below. The last survey of this kind was conducted in 1988. Subsequently, operating budgets for hospitals and polyclinics were established and decreed according to expenditure coefficients assigned correspondingly to hospital beds and to patient-visit capacity in polyclinics. Some adjustment was made for differences in wages of medical personnel in remote areas (Chernichovsky, Barnum, and Potapchik, 1996).

With the breakup of the Soviet Union and the re-establishment of Russia as an independent federation in 1991, oblast-level territories still had to confirm their health budgets with the Russian federal MOH (RFMOH) and have their budgets approved by the Russian Federal Ministry of Finance. However, these procedures have become increasingly declaratory, especially since 1991-92 when the decentralization process in the Russian health system was overtaken by broader changes in the general administration and budgetary systems, giving almost complete budgetary freedom to oblast-level authorities. According to the pertinent legislation, oblast- and local-level administrations (cities and rayons) manage their own medical services (Supreme Soviet of the Russian Federation, 1991a, 1991b, 1991c; Wallich, 1992; Chernichovsky and Potapchik, 1996). Contrary to the Soviet legacy, those administrations now appoint new heads of territorial health authorities and the heads of appropriate medical facilities without the RFMOH's approval. In addition, they are almost exclusively responsible for health budgets.<sup>2</sup>

The 1993 Russian health insurance legislation stipulated the creation of

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<sup>2</sup> A notable exception is the State Committee for Sanitary and Epidemiological Surveillance which has remained a federal organ responsible mainly for prevention of the spread of infectious diseases. See Chernichovsky and Potapchik, 1996.

regional and federal health insurance funds financed through a 3.6% tax on the (local) wage bill. Of this tax, 0.2% is allocated to the Federal Fund for regional equalization purposes. However, the legislation did not provide appropriate funds for the equalization role; neither does the Fund have the needed financial mechanisms to perform this role (Supreme Soviet of the Russian Federation, 1993; Chernichovsky, Barnum and Potapchik, 1996; Chernichovsky and Potapchik, 1997).

## GROWING INEQUALITY IN HEALTH CARE FINANCING

Although in 1993 national health system revenues recovered, after declines in 1991-92, to the 1990 level (Table 1), the disparities among regions have been growing; some regions have gained in health financing (*e.g.*, Northern, Urals, Far East), while others have fallen behind (*e.g.*, Northern Caucasus, Kaliningradskaya oblast and Volgo-vyatsky).

Table 1 *Per capita* health expenditure by economic regions.  
Russia, 1990 and 1993 (in 1990 Prices)

Region	1990	1993	Deviation, %
Russia	95.52	95.30	0.88%
Northern region	116.76	127.67	9.35%
North-western region	99.02	89.76	-9.36%
Central region	92.64	96.54	4.21%
Volgo-vyatsky region	84.937	2.36	-14.80%
Central-chernozemny region	84.16	75.01	-10.88%
Povolzhsky region	3.57	88.24	5.59%
Northern Caucasus region	77.20	57.70	-25.27%
Urals region	91.06	106.30	16.74%
Western Siberia region	105.76	113.65	7.46%
Eastern-Siberia region	103.01	97.97	-4.89%
Far East region	138.28	152.39	10.20%
Kaliningradskaya obl	86.49	73.14	-15.44%
Weighted Standard Deviation	21.31	35.04	

Notes: (a) 1993 health funds comprise health expenditures through local health budgets plus revenues of Territorial Health Insurance Funds. (b) 1993/90 GDP price index is used. (c) Weighted statistics are based on oblast populations.

Sources: Goskomstat 1994, pp. 9, 12, 441-443; Ministry of Health working tables.

Based on a re-aggregation (for comparative purposes) of Russia's original 72 oblast-level entities, the Lorenz curves (Figure 1) display the rising inequality in health financing, and its regression to the inequalities existing among local economies as estimated by the local *per capita* incomes or products.<sup>3</sup> Through these curves and the underlying inequality indexes or Gini coefficients, health expenditure distributions for 1990 and 1992 are compared with a hypothetical

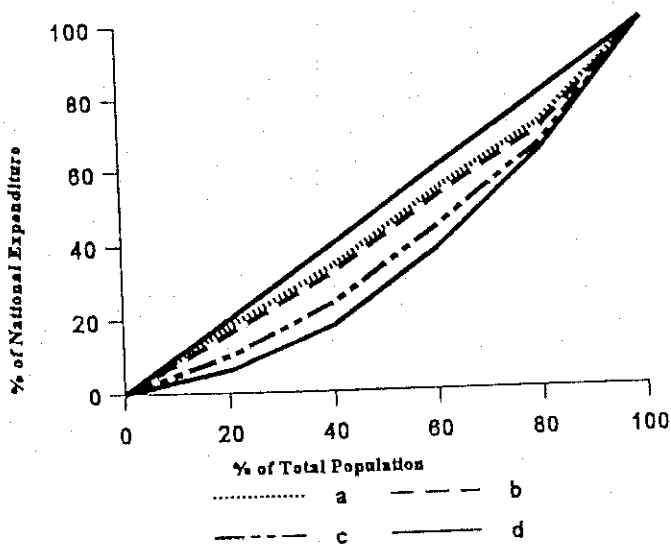


Figure 1 Lorenz Curves -- health expenditure and estimated gross product across the Russian Federation

a - simulated "need-based" local health expenditures, 1992; b - local health expenditures, 1990;  
c - local health expenditures 1992; d - GDP estimate, 1992

<sup>3</sup>The Chechnya and Ingushetia Republics are not included in the calculations because (a) since 1991 Chechnya has not submitted its statistics to the Russian Federal authorities, and (b) there is no clear split between Chechnya and Ingushetia in available statistical sources. In 1993 Russia comprised 89 oblast-level territories as opposed to 73 in 1990 covering the same territories. Consequently for comparative purposes, 1993 data are re-aggregated according to the 1990 administrative units.

"need-based" health expenditure distribution for 1992 (curve "a," Figure 1) and with the estimated *per capita* GDP distribution for 1992 (curve "d").<sup>4</sup> The Gini Coefficient is 0.052 for the 1990 actual distribution (Table 2). This coefficient is close to the coefficient, 0.038, for the "need-based" distribution. In 1992 the coefficient, measuring inequality, rose to 0.102, and is 0.096 in 1993. For 1992, the year for which both Gross Domestic Product (GDP) and health financing data are available, the coefficient for health care expenditure, 0.102, was approaching the coefficient, 0.120, for the GDP distribution. Namely, the distribution of health care expenditure regresses to the distribution of the estimated regional GDP as demonstrated by curve "c" approaching curve "d" in Figure 1.

Table 2 Inequality indexes or Gini Coefficients - domestic product and health.  
Russia, 1990, 1992, and 1993

Indicator	1990	1992	1993
Net Material Product (NMP)	0.081		
Estimate of Gross Domestic Product (GDP)		0.120	
Local health expend.	0.052	0.102	0.096
"Need-based" health expend		0.038	

Note: To construct the Lorenz Curves and establish the Gini Coefficients, oblasts were ranked by their health expenditure *per capita*.

Sources: see Table 1.

Simultaneously, during the same period there was a rise in mortality rates across the Russian Federation (Table 3). Evidently, the observed deterioration in health status, as measured by crude mortality rates (CMR), is also coupled with a slightly worsening distribution in these rates, showed by the Standard Deviation statistic. Statistically speaking, however, there is no correlation between the aforementioned changes in health finance and the change in crude mortality rates; based on the 72 oblast-level observations (making up today 87 of Russia's 89

<sup>4</sup>"Need-based" health expenditures are calculated by re-allocating regional health expenditures according to the British capitation formula, but with Russian SMR, age-and-gender, as well as regional cost coefficients. Regional GDPs were estimated as the sum of gross industrial product, gross agricultural product and volume of paid services.

territories), this (first order) correlation is  $-0.090$ .<sup>5</sup>

Table 3 Crude Mortality Rates per 1,000 Population and Rate of Increase by Region. Russia. 1990 and 1993.

Regions	1990	1993	Increase %
RUSSIA (total)	11.2	14.5	29.46%
Northern	9.1	13.3	46.15%
North-Western	12.7	17.9	40.94%
Central	13.0	16.6	27.69%
Volgo-Vyatsky	11.9	14.6	22.69%
Central-Chernozemny	13.7	16.3	18.98%
Povolzhsky	11.0	13.4	21.82%
Northern Caucasus	11.1	13.6	22.52%
Uralsky	10.4	13.8	32.69%
Western Siberia	9.6	13.0	35.42%
Eastern Siberia	9.5	13.0	36.84%
Far Eastern	8.2	11.8	43.90%
Kaliningradsk. obl.	9.8	13.5	37.76%
Weighted Standard Deviation	2.00	2.26	

Source: Goskomstat 1994b, Tab.2.2, pp.40-50.

This lack of correlation between regional changes in mortality patterns and changes in regional allocations to health care may reflect particular realities. Real medical resources, namely personnel and facilities, remained in place in spite of variations in financing; changes in levels of financing manifested themselves in a fall in real salaries of medical personnel, reduced levels of supplies, and a deteriorating state of medical facilities (Chernichovsky *et al.*, 1996). These realities, plus the shortness of the study's observation period, can contribute to the lack of a statistical correlation between variation in health finance and mortality.

At the same time, this lack of correlation may also lead to a cardinal hypothesis about the efficacy of the Soviet and current Russian health care approach and medical technology. It may be that the "tight" organization of life under the Soviet regime, *e.g.*, guaranteed work, income, etc., maintained mortality levels below the

<sup>5</sup>Crude mortality rates are used here for comparative purposes, as the age structure within regions is unlikely to have changed during the period.

point where they would otherwise be, given the general standards of living, environment, public health, nutrition and medical services. With the changes in the economy and society, mortality levels may be reaching their "more natural levels," given the other factors, mainly life styles, which may have little to do with variations in spending on medical care (in the observation range).<sup>6</sup>

Moreover, the situation may also suggest the "lack of relevance" of current health care approach in Russia *vis a vis* major causes of mortality in that nation: trauma, malignancies, and other degenerative disorders. The latter two have been traditionally higher in Russia than in the West and have been aggravated, along with trauma, during the transition period. These diseases relate to risk factors associated with life styles: diet, stress, smoking, alcoholism, accidents, and violence. These risk factors have been deteriorating during the transition period. There is evidence that the Russian health care system has been ill equipped to deal with these medically-related public health situations (Chernichovsky *et al.*, 1996).

That is, while particular medical practices and interventions are beneficial to health, aggregate crude mortality levels appear insensitive, on the average, to a fall or even a rise of up to the observed 30% in health financing or medical resources in Russia. Investigation of this particular hypothesis, which has important policy implications, is the subject of the following empirical discussion in which we try to assess, from the period prior to the breakup of the Soviet Union when the situation was stable, the potential correlation between medical resources and mortality in Russia.

## HEALTH CARE FINANCING AND HEALTH: BASIC CONCEPTUAL AND STATISTICAL CONSIDERATIONS

With the available cross-sectional data, summarized in Table 4, statistical estimation of the potential long term impact of the growing regional inequalities in health care financing on health as measured by mortality, is based on correlating regional variations in these two and other related variables. This is done within a framework that attempts to capture the pertinent behavioral and policy aspects of

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<sup>6</sup>It should be emphasized that while infant mortality rates are higher in Russia than in almost all OECD nations, those rates are below levels of developing nations. Russia's life expectancy is severely affected by high mortality rates in ages 15-45 mainly due to trauma and cardiovascular problems (see Chernichovsky *et al.* 1996).

Table 4 Data Used for Regression Estimates

Weighted Parameter	Variable description	Year	Mean	S.Deviation
E	Local health expenditures <i>per capita</i> , rbs.	1990	96.02	21.77
H	Standardized Mortality Rate (SMR), percent	1989	100.16	7.90
G	Age and gender structure of the population is not used; accounted in SMR			
SE				
	Population age 15 and over with primary education or incomplete secondary education per 1,000 of the population age 15 and over	1989	195.75	4.91
	Population age 15 and over with secondary or incomplete higher education per 1,000 of the population age 15 and over	1989	481.61	46.03
	Population age 15 and over with higher education per 1,000 population age 15 and over	1989	111.73	47.24
	Percent of urban population	1990	64.59	22.97
EN				
	Air pollution, tons <i>per capita</i>	1990	0.23	0.22
	Percent of treated compounds in air pollution, percent	1990	67.81	17.55
	Ratio of up-to-standard treated sewage, percent	1990	16.10	22.79
R				
	Annual consumption of bread, kg <i>per capita</i>	1990	119.39	14.71
	Annual consumption of meat, kg <i>per capita</i>	1990	75.25	11.78
	Annual consumption of milk, kg <i>per capita</i>	1990	386.77	38.85
	Annual consumption of sugar, kg <i>per capita</i>	1990	47.28	4.20
	Annual consumption of eggs, units <i>per capita</i>	1990	298.11	39.08
	State sale of alcohol, liters <i>per capita</i>	1990	5.47	1.27
B	Hospital beds per 10,000 population	1990	137.67	9.97
Y	Net Material Product (NMP) <i>per capita</i> , Rbs.	1990	2982.96	1146.21

the former Soviet and now Russian system. For such correlations, a system of structural equations is estimated employing available cross-sectional regional pre-1991 data pertaining to the averages of 73 entities comprising the Russian Federation at the time. This system is as follows:

$$\begin{aligned} \text{a.} \quad & H^* = h(E^*, SE, EN, R) \\ \text{b.} \quad & E^* = e(H^*, Y, B^*) \\ \text{c.} \quad & B^* = b(H^*, Y)^7 \end{aligned}$$

where:

H=Health status of the population measured by standardized mortality rates (SMR),<sup>8</sup>

E=Health expenditure *per capita*,

SE=Socioeconomic status measured by education level

EN=Environmental conditions measured by air and water pollution

R=Health behavior measured through food sales/consumption

B=Hospital beds *per capita*,

Y=Income *per capita*, and

\* = Endogenous variable.

The first equation stands for the "health production function." It includes variables which are hypothesized to affect health either directly through genetics, behavior and environment, or indirectly through socioeconomic status indicating availability of resources to the population and how efficiently they are used.<sup>9</sup> This function is assumed to be identical for all regions. This assumption is fairly realistic given the uniformity of the Soviet centrally planned system.<sup>10</sup>

The last two equations delineate the commonly hypothesized short- and long-term aspects of resource allocation to health care in Russia under the former Soviet Union. In the short-term, as depicted by the second equation, budgeting (E) was (and by-and-large still is) based on number of beds (B), with some modification

<sup>7</sup> A graphical presentation of this system is provided in Appendix A.

<sup>8</sup> As such, this variable measures also "genetic" effects approximated by age and gender.

<sup>9</sup> The potential effect of socioeconomic status (*e.g.*, education) on behavior (*e.g.*, nutrition) is disregarded.

<sup>10</sup> The cities of Moscow, St. Petersburg and possibly other centers in particular localities serving the nomenclature, may have benefitted from superior technology and services.

according to local health (H) and economic circumstances (Y). In turn, as described by the third equation, the number of beds (B) was based, in the long-term, on health status (H) and local economic circumstances (Y).<sup>11</sup>

This basic system of equations, where H, E, and B are simultaneously or co-determined, attempts to capture the relation between medical resources and mortality before the breakup of the Soviet Union when the situation was still stable. This is the situation Russia inherited, and can help explain the longer term relationship between variations in finance and changes in mortality in Russia today.<sup>12</sup>

### The Health Production Function

The reported estimates, representing those with the best statistical fit and most explanatory power, at least for the health production function, are linear (Table 5). The measured effect of "health expenditure" on SMR is statistically insignificant. This suggests that, on the average and within the relevant data range, levels of health care expenditure across the Russian Federation (before the breakup of the Soviet Union) did not affect mortality.<sup>13</sup> This situation may also persist now, within the observed range.

The health behavior aspects of the health production function are estimated through consumption and education. Higher levels of bread consumption (per kilo of meat) are associated, although with limited statistical significance, with lower SMR.<sup>14</sup> These estimates support the hypothesized negative effect on health of risk

<sup>11</sup> The last two structural equations can be combined into a single reduced form equation which does not separate between long- and short-term allocation decisions mechanisms.

<sup>12</sup> Clearly, unless under severe conditions, as often happens in particular cases during the current transition period, E may not affect contemporary H. For estimation purposes, it is assumed, however, that there was a serial auto-correlation in each variable, [ $\text{cov}(x_t, x_{t-1}) > 0$ , where t indicates time], and that the data (Table 4) depict a reality that has been established over the years with the appropriate lags between dependent and independent variables.

<sup>13</sup> Some variables have been retained in the equation in spite of their statistical insignificance (e.g., "treated air" for pollution) because they contributed to the fit of the estimated equations.

<sup>14</sup> Because *per capita* levels of consumption or sales of commodities are highly correlated, all commodities are expressed in terms of "per kilo of meat." High correlations still persist nonetheless among levels of consumption. The ratio of kilos of bread (per kilo of meat) is highly correlated with the ratios of fruit (0.48), milk (0.62), and sugar (0.67). These items can be considered the comparatively "good diet." At the same time, the ratio of kilos of eggs to meat is highly correlated with sales of liters of alcohol (0.60). These items and meat can be considered the comparatively "bad diet." Indeed, the first group has a negative effect on mortality. The effects of diet are more

factors such as animal-fat and energy-rich diets.

At the same time, levels of air pollution do not have the negative estimated effect on SMR. This finding may be related to better medical services in more densely urban centers. Still, the "urbanization" variable *per se* has no measurable effect on mortality.

Table 5 Two-stage least squares -  
SMR, health expenditure *per capita* and beds as endogenous variables

Dependent variable	Standard Mortality Rate (SMR)		Health Expenditure		Beds	
	Coefficient	t Stat.	Coefficient	t Stat.	Coefficient	t Stat.
	(eq.1)		(eq.2)		(eq.3)	
<b>Endogenous Variables</b>						
Hlt. Exp.	-.1914145	-0.492				
SMR	.0963554	0.149	.7527026	3.384		
Beds	.7754963	1.510				
<b>Exogenous Variables</b>						
N.M.Prod.			.0062928	2.454	-.0003475	-0.317
R. Eggs	1.129818	0.309				
R. Bread	-11.56957	-1.842				
Air Pol.	-12.5536	-1.613				
Prim. Ed.	-.2314875	-2.146				
Seco. Ed.	-.0948689	-1.156				
High Ed.	-.2813658	-2.548				
Treat.Air	.0357348	0.307				
% Urban	-.1581657	-0.859				
nca_reg	-8.977406	-1.521				
wes_reg	8.371794	1.738				
eas_reg	11.79001	1.768				
Constant	266.8839	3.272	-36.71578	-0.583	66.5356	2.936
Number of obs.	73		73		73	
F	2.11		3.17		5.78	
Adj R-square	0.1566		0.0829		0.1173	

pronounced in OLS estimates which are not reported here but available on request from the authors.

Education has the expected positive effect on health. Areas with more educated populations experience lower SMR, *ceteris paribus*. Education affects health positively in many ways, usually associated with better health behavior. It is noteworthy that, when the regional variables are removed from the equation, the education coefficients become more significant statistically, suggesting that part of the regional differences in SMR may be associated with regional differences in educational levels.

Even when controlling other variables including education that are hypothesized effects on SMR, some regional variations in SMR persist across regions, as measured by the coefficients on regional "dummy variables." Although with limited statistical significance, the eastern (*eas\_reg*) and western regions (*wes\_reg*) fare worse while the north Caucasus (*nca\_reg*) fares better than the rest of the Federation.

The findings lend support to the argument about the apparently dominant effect of life-styles rather than of medical resources on mortality in Russia.

### The Regional Resource Allocation Policy

The estimates reflecting medical resource allocation policy and mechanism (equations 2 and 3, Table 5) as "solidified" over the years by the Soviet regime, confirm the common hypotheses regarding allocation of health care resources in the former Soviet Union. Health care expenditures have been influenced, in the short term (equation 2), by the number of beds and by the state of the local economy, but not by SMR. In addition, while the effect of the "beds" is of limited statistical significance, the impact on health expenditure of the state of the local economy, as measured by the Net Material Product (NMP), is statistically robust. In terms of actual impact, the estimates, at the mean values of the relevant variables, suggest however that, on the average, a 10% higher number of beds (per 10,000 population) was associated with an 11% higher health budget, while a 10% higher NMP *per capita* was followed by a 2% higher health budget. That is, the health budget was particularly sensitive to the number of beds, as decreed by the Soviet authorities.

Simultaneously, in the longer term (equation 3), the number of beds was indeed determined, on the average, mainly by SMR, and not by the local income *per capita*. This lends support to the equalitarian approach of the Soviet authorities who, at least by this statistical account, invested in beds (whether effective or not)

by SMR rather than by local income. Combining the results of the last two equations by substituting the third into the second equation, yields:

$$\text{Health exp.} = 15.3 + 1.55 \text{ SMR} + 0.0057 \text{ NMP.}$$

This particular reduced form presentation of the results suggests that, on the average, a 10% higher SMR induced a 22% higher allocation to health through the number of beds, compared with a 1.7% higher allocation for a 10% rise in the local product.

These combined estimates suggest a long term equalitarian allocation policy of health finance and resources by the Soviet authorities. "Beds" and local income levels influenced levels of health care expenditure in the short term. At the same time, "beds" were influenced by SMR, and not by local income. The findings shows a dominant effect of SMR and not local income on number of beds and level of health finance in a region.<sup>15</sup>

To sum up, at the end of the day, the system, while equalitarian, was ineffective and inefficient. Health finance and medical resources have not influenced mortality levels, while all other elements remained constant.

## CONCLUSION

The statistical estimates discussed here capture mainly the Soviet legacy during the period before the break-up of the Soviet Union. Contrary to the currently unfolding state of affairs of growing inter-regional inequalities in health financing, the data suggest an equalitarian Soviet resource allocation policy to health. This policy appears to have been responsive to SMR and, by implication, to basic demographic variables, rather than to the state of the local economy. At the same time, within their range of data variation, the (cross sectional) data also suggest an ineffective system: levels of health care expenditures and medical resources did not influence SMR, although the potential to do so was there. This assertion is supported by long term data. Between 1965 and 1992 the number of beds per

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<sup>15</sup> Capital expenditure norms for facilities, such as beds per population, were last approved in 1987. The most recent survey of medical facilities to determine their condition and general reconstruction needs was carried out in 1989. Thus the system was clearly left without federal norms and equalization mechanisms (Strusov, 1990).

1,000 increased in Russia from 9.8 to 13.1, a rise of 33.7%. Life expectancy at birth hardly changed over the period, and it remained at about 62.0 years for men and 74.0 for women. Crude mortality rates increased from 77 per 10,000 to 12.2 during the same period (Chernichovsky *et al.*, 1996). By comparison, in the United Kingdom, for example, the number of beds fell from 9.9 to 6.3 (1965-1990) during a comparable period, life expectancy for males rose from 67.9 to 72.8 (1961-1989), and for females from 73.8 to 78.2, with a change in crude mortality rates from 11.5 to 11.2 (Health Financing Review, 1992).

Hence, the data appear to suggest that, on the average, with Russian current medical technology and approach, health care financing -- within the 30% range of variation of the data -- may not influence health outcomes. That is, to raise life expectancy Russia needs to adopt new medical approaches, including health promotion, to combat the major causes of preventable morbidity and mortality (Chernichovsky *et al.*, 1996; Tulchinsky and Varavikova, 1996).

As for the future, even with the current Russian medical approaches and technology, it can be expected that the growing regression of health financing will resemble the state of each local economy, will eventually manifest itself beyond reduced supplies, deterioration of physical state of medical facilities, and lower real wages of medical personnel. Eventually, medical personnel, which has generally remained stable since 1991, will start migrating to wealthier areas. While this may lead to some gains in efficiency, in the regions falling behind, real resources may deteriorate to levels not yet captured by data that will inevitably adversely affect the already compromised health status of the population. This will also suppress developing new medical technology and approaches in those regions.

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