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The Influence of Initial Conditions on the Features and Problems of the Health Sector in the Russian Transition Economy

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1. INTRODUCTION

Russia inherited a situation of rising illness and mortality and a malfunctioning medical system. At the start of transition there was universal recognition that urgent reforms were needed to improve the health situation. But the solutions proposed varied in accordance with ideologies.[1] Over the initial decade of transition the health reform strategy has been determined largely by neoliberal ideas and has included an abrupt shift from state budget financing of medical care to compulsory medical insurance, privatization, price liberalization and open marketization of relationships in the health sector. Ambitious plans have been adopted, typified by the "Health Conception" adopted in Autumn 1997 and there have been recurrent expressions of optimism about prospects for success in health reform.

However, reforms have been introduced in the health sector in a time of radical changes in the political and economic systems, social shocks, and sustained economic recession. In the initial years of transition most forms of morbidity increased substantially, reforms failed to improve the effectiveness and efficiency of the medical system and life expectancy dropped. In the golden years of the mid-1990s the health situation improved. But morbidity and mortality rose again after the 1998 economic crisis. It is evident that ten years after transition commenced in Russia many phenomena (e.g. shortages, barter) and problems (e.g. low quality medical care, high death rates) exist in the health sector that appear to be similar to those that were characteristic of the command era.

This paper attempts to answer several questions about health in Russia that have general relevance to the transition process. Has there been continuity and inertia in the evolution of the health sector and its performance problems? Or have there been distinct phases in its development marked by discontinuities? Are shortages and non-price processes in the health sector in 2001 fundamentally similar to those of 1991, or only superficially alike? Have health reforms failed because of design flaws, incompetent implementation of correct policies, or effective resistance by

conservative forces in a largely unchanged system? How significant have the initial conditions in the Russian health sector been in determining it economic transition path?

This paper begins by discussing the nature of economic systems, institutional behavior in economic system, priorities, and health production. It then examines the features and problems of the health sector in the Soviet shortage economy. Section 4 evaluates the evolution of the Russian politico-economic system and the issues of whether there have been continuities in the health sector with respect to its priority status, the behavior of its institutions, its performance problems and the causes of the failures of reforms. Continuing problems in health reforms discussed. Finally, some conclusions made about importance of initial conditions and institutional inertia in the Russian economy.

2. GENERAL FEATURES OF HEALTH PRODUCTION IN THE SOVIET AND RUSSIAN POLITICO-ECONOMIC SYSTEMS

a. Economic Systems, Institutional Behavior, Priority and Transition

The Soviet and Russian health sectors have functioned in economic systems that can be defined according to four criteria: decision making structure (centralized or decentralized); mechanisms for information and coordination (plan or market); property rights (state or private); and incentives (conducive or detrimental to effective corporate governance) (Gregory and Stuart 1995, Davis 1999). Economic outcomes (growth, efficiency, income distribution, stability, viability) are generated by the interaction of the economic system, environmental factors, and state policies. The behavior of health institutions is largely determined by the nature of the economic system and its performance. The priorities of the state concerning programs and sectors also exert substantial influence on them. Economic transition involves a revolutionary transformation of the characteristics of an economic system, changes in economic policies and environments, and alternation in performance standards of an economy.

Any viable economic system has to solve fundamental informational problems (Stiglitz 1999). Even in a capitalist market economy not all information is conveyed by prices. The price

system must be supplemented by implicit or explicit social contracts. Economies require an effective legal infrastructure and transactions inevitably are based on social trust and civil norms, as well as market or plan signals. Any economic system has an intricate institutional fabric and relies on social and organizational capital that takes time to produce. Effective governments are of crucial importance in ensuring the proper functioning of an economic system, although the scale of state intervention can vary considerably.

b. Health Production in Economic Systems

Health production is a multivariate process that determines the population's health status (see Diagram 1).[2] It involves the operations of numerous economic institutions in the health sector that produce health-related outputs (e.g. medical services and medicines) and trade them in markets, while consuming inputs of labour, capital and intermediate goods.[3]

Individuals (consumers) possess a "stock" of health, which is influenced by demography (age, sex), genetic factors and past experiences. Changes in the stock may be viewed in terms of a household health production function, which relates inputs of goods (food, medicines), services (education, medical) and household time to outputs measured by indicators of health and illness (degenerative, infectious, nutritional, and accidents) (Grossman 1972; Zweifel and Breyer 1997, ch. 3). The national morbidity pattern is an aggregation of individual illnesses.

In all countries, some illness that could be treated is not presented to the medical system. One reason is that people do not recognize the symptoms of illness and therefore do not perceive a need for medical care. However, consumer demand can also be suppressed by monetary and time costs. As a result, a "morbidity iceberg" exists, with reported illness above the waterline and unreported, untreated illness as the submerged component. Even in countries with no price barriers to medical care, such as the USSR or UK, the scale of unreported illness can be large. All else being equal, the introduction of money prices for medical services, increases in costs of

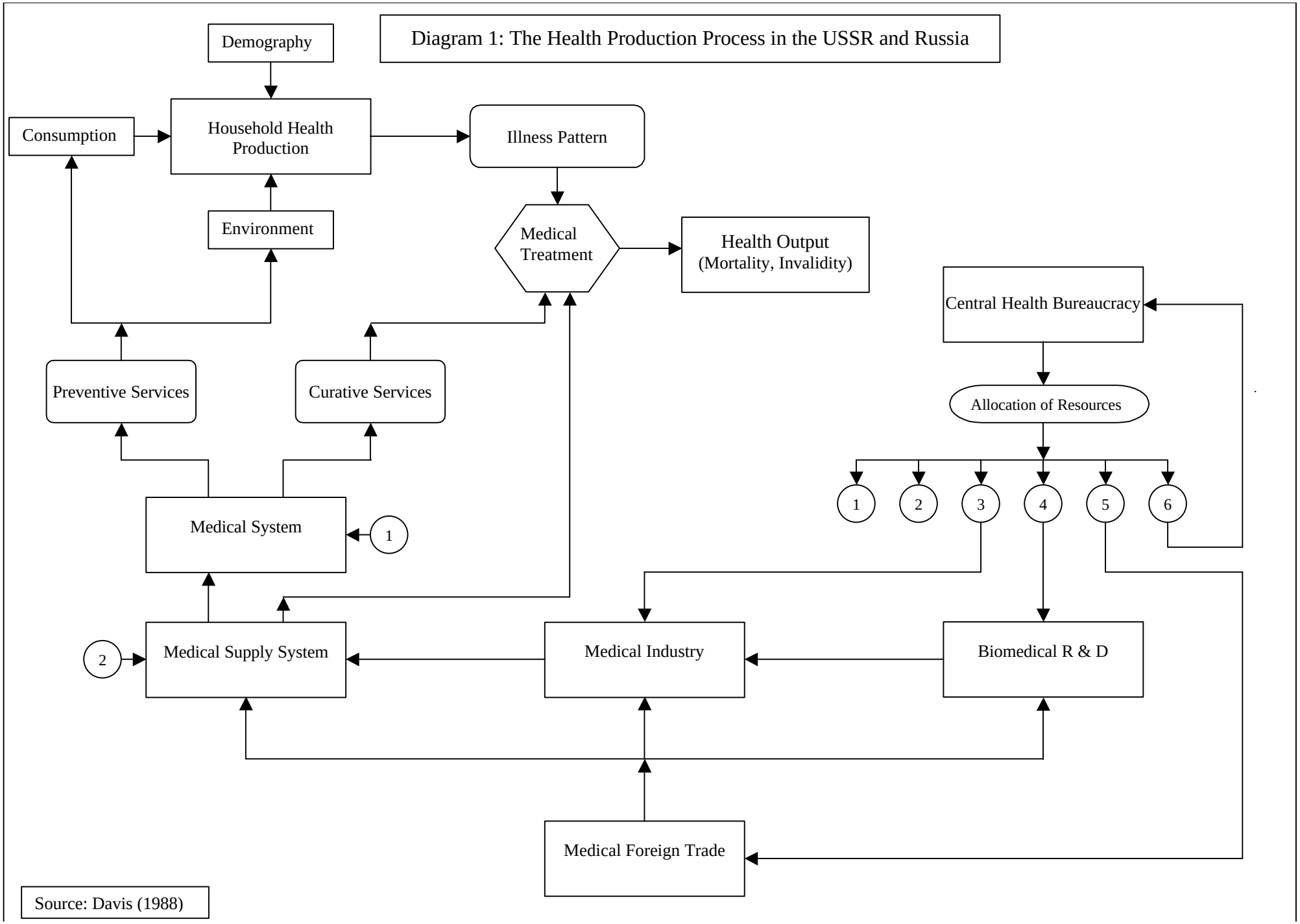


Diagram 1: The Health Production Process in the USSR and Russia
Demography
Consumption
Household Health Production
Illness Pattern
Environment
Medical Treatment
Health Output (Mortality, Invalidity)
Central Health Bureaucracy
Preventive Services
Curative Services
Allocation of Resources
1
2
3
4
5
6
Medical System
1
2
Medical Supply System
Medical Industry
Biomedical R & D
Medical Foreign Trade
Source: Davis (1988)

prescribed medicines, and the removal of transportation subsidies would inhibit demand and shift illness below the waterline.

The medical system plays a central role in the health production process. Hospitals and polyclinics produce preventive services that can diminish the incidence of illness, and curative services that can minimize periods of sickness, invalidity and mortality (Folland et. al. 1997).[4] The volume and quality of services are determined by the organization, management and financing of the medical system, as well as by the medicines, medical equipment and other inputs received from the supply network (e.g. pharmacies). Most of these medical goods are obtained from the domestic medical industry, which bases its technological innovation on the work of the biomedical R & D system. Additional inputs are obtained from medical foreign trade organizations.

Since health production involves all the institutions shown in Diagram 1, performance problems in one of them can disrupt the process and adversely affect health output indicators. Even investigations of a specific issue (such as rising mortality) focusing on a single institution (such as households) or factor (such as alcohol consumption) should take into account developments elsewhere in the production chain. Furthermore, governments introducing reform programs should consider in a comprehensive manner the problems and inter-connections of the various health institutions in order to avoid inconsistencies in policies and unanticipated outcomes.

3. THE LOW PRIORITY HEALTH SECTOR IN THE SOVIET SHORTAGE ECONOMY

a. The Soviet Politico-Economic System

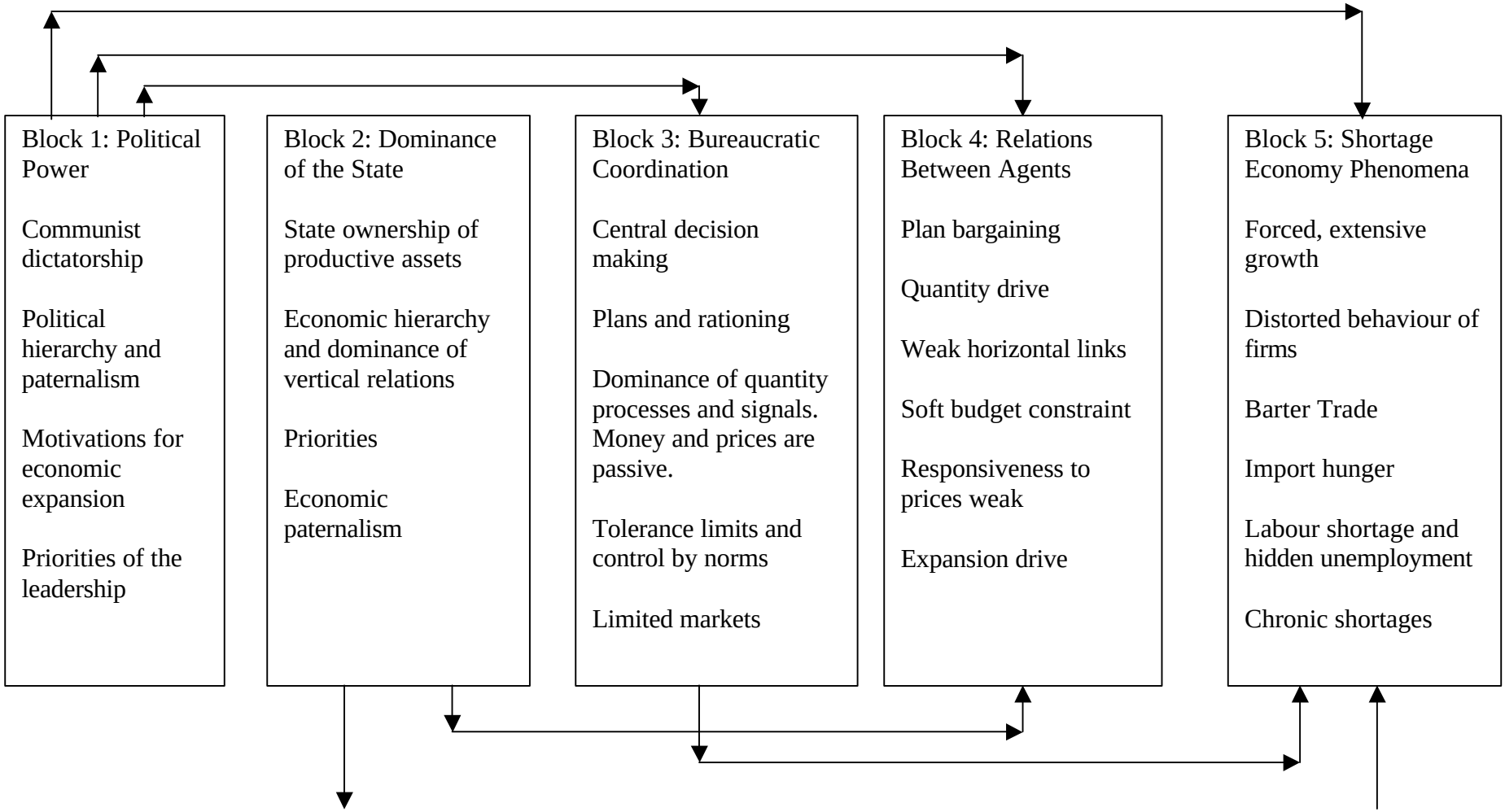
The USSR had a dictatorial and hierarchical political system and a command economy that was characterized by state ownership of all productive assets, centralized decision

making, hierarchical organization of productive units, mandatory plans, and a state monopoly of foreign trade.[5]

The political and economic systems were closely inter-connected. Diagram 2, derived from Kornai (1992), provides one interpretation of the main linkages between the five blocks in the Soviet politico-economic system: 1 Political Power; 2 Dominance of the State; 3 Bureaucratic Co-ordination; 4 Relations Between Agents; and 5 Shortage Economy Phenomena. For example, the economic paternalism in Block 1 facilitates the soft budget constraint in Block 4 which contributes to shortages of inputs in Block 5. Kornai (1992) argues that this type of politico-economic system spawned the shortage economy and maintained it throughout the command period.[6] It had considerable stability and was resistant to attempts by the communist leadership to reform its functioning.

The Soviet command economy had legal and illegal private markets that sold goods and services at flexible prices or traded them through barter (Davis 1988b). Often the inputs used in the production of second economy commodities were acquired illegally from the first economy since there were no free wholesale markets, foreign trade was controlled by the state, and governments allocated resources to state institutions in accordance with plans (Ericson 1984). In order to sustain the second economy it was necessary for participants to bribe those who controlled resources or could threaten them with legal sanctions. These included suppliers, police, accountants, bankers, and party officials. As a result, there always was corruption at lower levels of the economic and political hierarchy that varied in intensity across countries and regions and over time.

Diagram 2: Main Blocks and Causality in the Soviet Politico-Economic System



b. The Low Priority of Health in the Soviet Economy

The centralized plans and rationing schemes of the Soviet government were influenced by its sectoral priorities. Special protection mechanisms ensured that the highest priority sectors, notably defense, achieved their objectives irrespective of general economic conditions (Davis 2000). The health sector received a low priority for both pragmatic and ideological reasons. With respect to the latter, Marxist-Leninist political economy held that national income was generated by the productive branches of the economy, primarily industry and agriculture, and consumed by the non-productive sphere, which included all welfare institutions (Pravdin 1976).[7] A side-effect of this tenet was neglect of the economics of the non-productive sphere, including health economics.[8]

The low priority status of health-care was reflected in both plan formulation and implementation (Davis 1989) (see Table 1). Health received a low weight in the planners' preference functions, resource allocations were unresponsive to visible problems, relative wages were low, and financial norms beggarly. Central plans invariably were inconsistent and had to be revised as imbalances were revealed. The ensuing redistribution of resources was a zero-sum game that caused a tightening of constraints and made original health plans more difficult, indeed often impossible, to fulfil.

Table 1: Indicators of the Priority Status of Health Institutions in Command and Transitional Economies		
Priority Indicator	Command Economy	Transitional Economy
During Plan Formulation		
Weight in Planner's Objective Function	Low Weight/Lexicographic Ordering	Low Weight/ Marginalist Behaviour
Resource Allocation Responsiveness to Tolerance Limit Violations	Unresponsive	Unresponsive
Wage Rates	Relatively Low	Relatively Low
Adequacy of Financial Norms	Stingy	Stingy
During Plan Implementation		
Output Plans	No Commitment to Overfulfilment	No State Plans, Minimal Help in Maintaining Output
Budget Constraints	Relatively Hard	Hard
Supply Plans	No Commitment to Fulfilment	Tolerance of Disruptions
Investment Plans	Constrained, No Commitment to Fulfilment	Little Investment and Indifference to Fulfilment
Inventories of Inputs	Relatively Small Input Inventories	Depleting Input Inventories
Reserve Production Capacity	Limited Extra Capacity	Limited Extra Capacity
Shortage Intensity	High	High

Sources: Concepts from Ericson (1987), Davis (1989). Entries based upon analysis of the economics of health in the USSR and Russian Federation by author.

c. Economic Behavior of Soviet Health Institutions

The Soviet Union developed the prototype of the shortage economy described by Kornai (1980, 1992) and maintained it throughout the command period. Its features exacerbated the usual problems encountered in a situation where medical services are available "free at the point of use", namely that the demands of the population exceed the supply capacities of the medical system. To cope with excess demand, the government made extensive use of rationing in accordance with socio-economic criteria through six subsystems of medical care: elite, departmental, large city, medium city, industrial and rural district (Davis 1988). Queuing was another instrument used to regulate demand.[9]

The legal markets connecting health institutions as buyers and sellers outlined in endnote 5 existed, but were highly constrained by the state. Demand and supply forces did not directly affect prices or production decisions. Despite the distortions, these markets involved "transaction processes based on direct horizontal relations between supplier and recipient of the goods, even if price and money play little or no role" (Kornai 1980, pg. 127). Transactions in legal markets were invariably dominated by sellers, whether they involved a medical facility interacting with a patient or the medical industry selling to the medical supply network (Davis 1989). There was also significant informal (black market) activity by institutions and their agents in the medical field.

The pressure on managers to meet the apparently insatiable demands of their customers resulted in continuous efforts to expand production (Kornai's "quantity drive") (see Table 2). Although quality standards of medical care, drugs and equipment improved over time, they did not keep pace with Western developments due to sluggish technological innovation, which was characteristic of the closed, uncompetitive markets in the USSR.

Table 2: Output, Production and Input Characteristics of Health Insitutions in Shortage and Transitional Economies		
Behavioral Indicator	Command Economy	Transitional Economy
Output Side of Health Institutions		
Market for Outputs	Sellers' Market	Gradual Shift to Buyers' Market
Attitude Toward the Quantity of Output	Quantity Drive	Initial Inertia Maintains Quantity Drive But Gradual Shift to Revenue Maximization
Attitude Toward the Quality of Output	Neglect of Quality	Greater Awareness of Quality Issues but Insufficient Investment to Upgrade Quality of Products
Stocks of Finished Goods	Minimal Ouput Stocks or Available Services	Growth of Unsaleable Stocks of Outputs or Services
Production within Health Institutions		
Managerial Attitude Toward Risk	Risk Aversion of Managers	Uncertainties of Transition Period Reinforce Risk Aversion of Many Managers
Technological Innovation	Sluggish Technological Innovation	Negligible Technological Innovation
Technological Level	Low Technological Level	Technological Gaps between Russia and the Developed Countries Increase
Stability of Production Function	Forced Substitution and Production Bottlenecks	Less Pressure for Storming, but Intensification of Production Bottlenecks
Inventories of Inputs	Hoarding of Inputs/Small Inventories	Hoarding of Inputs/Small Inventories
Production Capacity	Limited Mobilization Capacity	Reduction of Mobilization Capacity
Input Side of Health Institutions		
Budget Constraint	Relatively Hard Budget Constraint	Shift to Harder Budget Constraints
Investment Behaviour	Investment Hunger	Less Intense Drive to Start New Investment Projects/ Contingent on Subsidised Credits
Conditions in the Market for Inputs	Intense Shortages of Inputs	Acute Shortages of Inputs
Sources: The basic concepts were derived from Kornai (1980, 1992). The summaries of the shortage related features of health institutions n command and transitional economies are based upon empirical analyses of the Soviet and Russian health sectors reported in Davis (1983, 1987, 1989, 1993).		

d. Performance Problems in the Soviet Health Sector

The Soviet Union developed a large state-owned health sector that was successful in improving national health status indicators for much of the post-Stalin period.[10] However, the performance of health institutions was adversely affected by deficiencies in their organization and management and by their disadvantageous position in a flawed economic system. Although health institutions were governed by plans, central control over them was imperfect, in part due to the multiplicity of administrative bodies that managed them: Ministry of Health, Main Pharmacy Administration, Ministry of Medical Industry, Academy of Medical Sciences, and Ministry of Foreign Trade (Davis 1988). The health sector did not have a supra-ministerial body that coordinated activity between different ministries, such as the USSR Military-Industrial Commission in the defense sector. So decision making tended to be fragmented and often inconsistent.

In order to furnish a necessary baseline against which developments in Russia's transition period should be assessed, Table 3 presents data on health conditions, illness patterns, performance of health institutions, and mortality rates in the USSR and RSFSR. The Soviet population increased from 230 million in 1965 to 290 million in 1991.[11] Although the birth rate declined over time, it still generated four million births per year. There were increases in the shares of the elderly in the population to 10 per cent, of males to 47 per cent and of urban residents to 66 per cent. Cohorts that experienced World War II, and were supposed to have greater susceptibility to degenerative diseases than previous generations, entered old age.

Table 3: Health Production in the USSR and RSFSR, 1965-91

	Country	Health Indicator	Units	1965	1970	1975	1980	1985	1990	1991
			Demography, Health Conditions and Morbidity							
1	USSR	Population	Millions (Beginning of Year)	229.6	241.7	253.3	264.5	276.3	288.6	290.1
2	RSFSR	Population	Millions (Beginning of Year)	126.3	130.1	133.8	138.3	142.8	148.9	148.5
3	USSR	Birth Rate	Births per 1000	18.4	17.4	18.1	18.3	19.4	16.8	16.2
4	RSFSR	Birth Rate	Births per 1000	15.7	14.6	15.7	15.9	16.6	13.4	12.1
5	USSR	Abortions	Per 100 Births	190.0	170.0	154.7	144.2	130.7	134.2	133.0
6	RSFSR	Abortions	Per 100 Births	NA	253.4	221.0	204.4	187.4	205.9	200.7
7	USSR	Share of Males	%	45.7	46.1	46.4	46.7	46.9	47.2	47.3
8	USSR	Share of Elderly	% 65 years and older	6.8	7.8	8.8	9.6	9.1	9.5	9.7
9	USSR	Alcohol Consumption	Liters Pure Alcohol Per Adult	10.6	12.8	13.8	14.7	12.1	10.6	10.8
10	USSR	Typhoid	New Cases per 100000	11.1	9.3	10.3	6.4	6.3	3.0	2.0
11	USSR	Measles	New Cases per 100000	927.1	195.1	143.6	134.5	98.0	16.0	17.8
12	USSR	Viral Hepatitis	New Cases per 100000	204.0	167.0	276.0	302.0	337.0	317.0	268.1
13	USSR	Cancer Morbidity	New Cases per 100000	NA	177.0	NA	205.0	223.0	237.0	241.7
14	RSFSR	Cancer Morbidity	New Cases per 100000	NA	198.0	218.0	232.0	248.1	264.5	266.0
15	USSR	Tuberculosis	New Cases per 100000	NA	NA	NA	50.2	45.7	36.9	36.0
16	RSFSR	Tuberculosis	New Cases per 100000	NA	72.4	58.6	47.4	45.2	34.2	34.0
			Medical System and Health Finance							
17	USSR	Doctors	Per 1000 Population	2.4	2.7	3.3	3.8	4.2	4.4	4.2
18	RSFSR	Doctors	Per 1000 Population	2.5	2.9	3.5	4.0	4.5	4.7	4.4
19	USSR	Medical Wages	% of All Economy Average	81.9	75.4	70.2	75.1	69.9	68.0	66.0
20	USSR	Outpatient Visits to Doctors	Annual Per Capita	6.8	8.0	9.0	10.4	11.4	9.9	9.8
21	USSR	Hospital Beds	Per 1000 Population	9.6	10.9	11.8	12.5	13.0	13.3	13.1
22	RSFSR	Hospital Beds	Per 1000 Population	9.8	11.3	12.3	13.0	13.5	13.8	13.5
23	USSR	Hospitalizations	Per 100 Population	20.6	21.5	22.7	23.7	25.1	22.5	20.4
24	USSR	Length of Stay in Hospital	Bed Days per Patient	14.9	15.9	16.8	17.0	16.7	17.2	18.6
25	USSR	Real Health Expenditure Index (1985 rubles)	1970 = 100	66.7	100.0	123.8	160.6	192.3	240.2	206.0
26	USSR	Health Share of State Budget	%	6.5	6.0	5.3	5.0	4.6	5.6	5.4
27	USSR	Health Share of GDP	%	3.0	3.0	2.9	3.0	2.9	3.6	3.5

		Other Health Institutions							
28	USSR	Pharmacies	Thousands	19.9	22.9	25.3	26.6	29.2	30.5	30.6
29	USSR	Pharmacists	Per 10000 Population	1.6	2.0	2.4	2.8	3.3	4.1	4.2
30	USSR	Medicine Sales	Rubles Per Capita	3.8	5.8	7.5	8.7	12.5	17.6	18.3
31	USSR	Output of Medical Industry	Millions Rubles	662.0	1244.0	2089.0	3302.0	4623.0	6559.7	9977.3
32	USSR	Output of Medical Industry	Rubles Per Capita	2.9	5.1	8.2	12.5	16.7	22.7	34.4
33	USSR	Imports of Medicine	Millions Rubles	NA	166.0	289.7	542.7	1160.9	2273.2	1295.7
34	USSR	Imports of Medicine	Rubles Per Capita	NA	0.7	1.1	2.1	4.2	7.9	4.5
			Mortality							
35	USSR	Crude Death Rate	Deaths per 1000	7.3	8.2	9.3	10.3	10.6	10.3	10.6
36	RSFSR	Crude Death Rate	Deaths per 1000	7.6	8.7	9.8	11.0	11.3	11.2	11.4
37	USSR	Cancer Mortality	Deaths per 100000	123.4	127.3	134.7	140.3	155.3	166.6	NA
38	USSR	Circulatory Mortality	Deaths per 100000	312.8	385.1	459.1	543.7	544.2	547.7	NA
39	USSR	Maternal Mortality	Deaths per 100000 Births	NA	NA	NA	61.5	47.7	42.4	46.9
40	RSFSR	Maternal Mortality	Deaths per 100000 Births	NA	105.6	85.7	68.0	54.0	47.4	52.4
41	USSR	Infant Mortality	Deaths per 1000 Births	27.4	24.4	30.6	27.3	26.0	21.8	22.3
42	RSFSR	Infant Mortality	Deaths per 1000 Births	26.6	23.0	23.7	22.1	20.7	17.4	17.8
43	USSR	Population Life Expectancy	Years	70.4	69.4	68.8	67.7	68.4	69.3	69.1
44	RSFSR	Population Life Expectancy	Years	69.5	68.9	68.1	67.6	69.3	69.2	69.0
45	USSR	Male Life Expectancy	Years	66.1	64.5	63.7	62.2	63.3	64.3	64.0
46	RSFSR	Male Life Expectancy	Years	64.3	63.2	62.3	61.5	63.8	63.8	63.5

Notes: NA = Not Available. Not all statistical series on health in the USSR are complete. Comprehensive publication of data only commenced in the *perestroika* period as a result of the Gorbachev regime's *glasnost* policy.

Sources: Detailed discussions of sources are presented in Davis and Feshbach (1980) and Davis (1983b, 1987, 1993ab, 1998, 2000). The main documents used for the USSR were: TsSU and GKS SSSR (various years) Narodnoe Khozyaistvo; GKS SSSR (1989) Narodnoe Obrazovanie; GKS SSSR (1990) Okhrana Zdorov'vya; GKS SSSR (1990) Demograficheskii; and GKS SSSR (1990) Sotsial'noe Razvitie. For the RSFSR the main sources were: GKRFS (1995a) Meditsinskoe; GKRFS (1995b) Rossiiskii Statisticheskii; GKRFS (1995c) Zdravookhranenie; GKRFS (1996a) Demograficheskii; GKRFS (1996b) Zdravookhranenie; Chelleraj et. al. (1998); WHO HFA (2000); and WHO WHSA (various years).

The Soviet economy expanded at decelerating rates until 1988 and thereafter contracted. Improvements in income distribution, housing and nutrition exerted positive influences on the disease pattern. Adverse developments included increases in cigarette smoking, alcohol consumption and environmental pollution (Feshbach and Friendly 1992). However, the anti-alcohol campaign of the *perestroika* era (1985-88) resulted in a reduction in alcohol abuse (Meslé and Shkolnikov 1995).

Preventive medical services were effective in controlling many of the traditional threats to health. Most forms of infectious and social disease diminished, although Soviet rates remained significantly higher than those in the industrialized West and in leading East European countries (Feshbach 1983). The combination of an ageing population, stress and unhealthy living generated growth in degenerative diseases (Table 3, lines 13-14). Accidents and poisonings also rose. These developments in morbidity posed new challenges to the national health service.

The Soviet medical system provided curative services free of charge on a universal basis through a large network of polyclinics, hospitals and other facilities (Field 1967; Kaser 1976; Ryan 1978, 1990). However, the government was committed to containing the costs of health, and the medical system remained subject to tight financial constraints (Davis 1983b, 1987). Although health outlays increased, their share of the government budget declined from 6.5 per cent in 1965 to a low of 4.3 per cent in 1986. The health share of GDP remained in the 3.0 – 3.5 per cent range.

The medical system adopted an “extensive” development strategy: growing outputs of medical services of relatively low quality were produced using increasing quantities of inputs such as doctors and hospital beds (Davis 1987) (Table 3, lines 17-23). Efficient use of these inputs was hampered by the forces of the shortage economy and the general lack of incentives to economize. For example, the average length of stay in Soviet hospitals remained high by

international standards: 15.9 days in 1970, 17.0 in 1980 and 17.2 in 1990. As Appendix A shows, visits to Western hospitals were shorter and declined significantly over time. Medical wages were well below average for the economy, labour productivity was low, and it was difficult to entice doctors to work in the countryside. The overwhelming majority of the medical labour force was female. Inadequate investment meant that many medical facilities lacked basic amenities, such as central heating and water, were not properly maintained and were overcrowded. As economic difficulties mounted in the 1980s, shortages intensified and the performance of the medical system deteriorated (Davis 1993a).

Despite the free access to state-provided medical services in the USSR, various factors acted to suppress demand, such as the time and travel costs of treatment, informal charges, disutility of waiting and deficiencies in the quality of care. Soviet studies of morbidity, reviewed in Popov (1976) and Davis (1988), estimated that one-third of illnesses in cities and two-thirds in rural areas were not reported to doctors.

Substantial problems existed in the operations of supporting health institutions (Davis 1987, 1993b). The medical supply network had inadequate storage facilities, made errors in planning the distribution of supplies through wholesale and retail outlets and was plagued by illegal practices. The production of medical equipment and medicines by Soviet industry was insufficient to satisfy the needs of the population and the medical system. Biomedical R & D generated few important pharmaceutical discoveries. The main foreign trade organisation, *Medeksport*, was subjected to tight budget constraints and imported insufficient quantities of foreign medical goods.

The performance of the health sector varied by sub-period. In 1965-85 the national disease pattern in the USSR became more complicated and challenging. Health spending went up and most quantitative, distributive and qualitative indicators of the medical system improved. But the medical system was not able to offset the negative impact of growing illness

due to the problems and constraints discussed above. Virtually all adult age-specific death rates rose. The infant mortality rate increased from 22.9 deaths per 1000 live births in 1971 to 31.1 in 1976 (Davis and Feshbach 1980).[12] The crude death rate went up from 7.3 deaths per 1000 in 1965 to 10.6 in 1985, while total population life expectancy at birth declined from 70.4 years to 67.7 years (Table 3, lines 35-46). Thus, the medical system was relatively ineffective in these years.[13]

In the early *perestroika* period (1985-88) morbidity stabilized, with growth in degenerative diseases being offset by the beneficial impacts of the anti-alcohol campaign and other programmes. Medical service provision improved in most respects. All death rates fell through 1988 and life expectancy reached an historic peak of 69.8 years in 1987. However, during 1989-91 health conditions worsened, illness rates rose and the shortage-related performance problems of the medical system intensified. Adult age-specific and the crude death rates increased again, while life expectancy declined.

e. Health Reforms in the Soviet Period

The Soviet government made repeated attempts to reform the planning, management, supply and behavior of health institutions.[14] They included decentralization of the management of medical facilities to republics and regions, attempts to introduce output-oriented health planning, economic experiments that devolved responsibility for the budget of medical facilities to their managers, and establishment of quasi-market relations between medical facilities by making polyclinics fund-holders. Almost without exception, health reform experiments in the command period were successful on a local level. But problems always arose when reforms were attempted on a wider scale, because it was impossible to provide all participants with preferential treatment. In general, health reforms suffered from the same flaws as economic ones in the Soviet era, namely that they were technocratic, failed to address

the systemic deficiencies of the shortage economy and were undermined by the bureaucracy (Schroeder 1979).

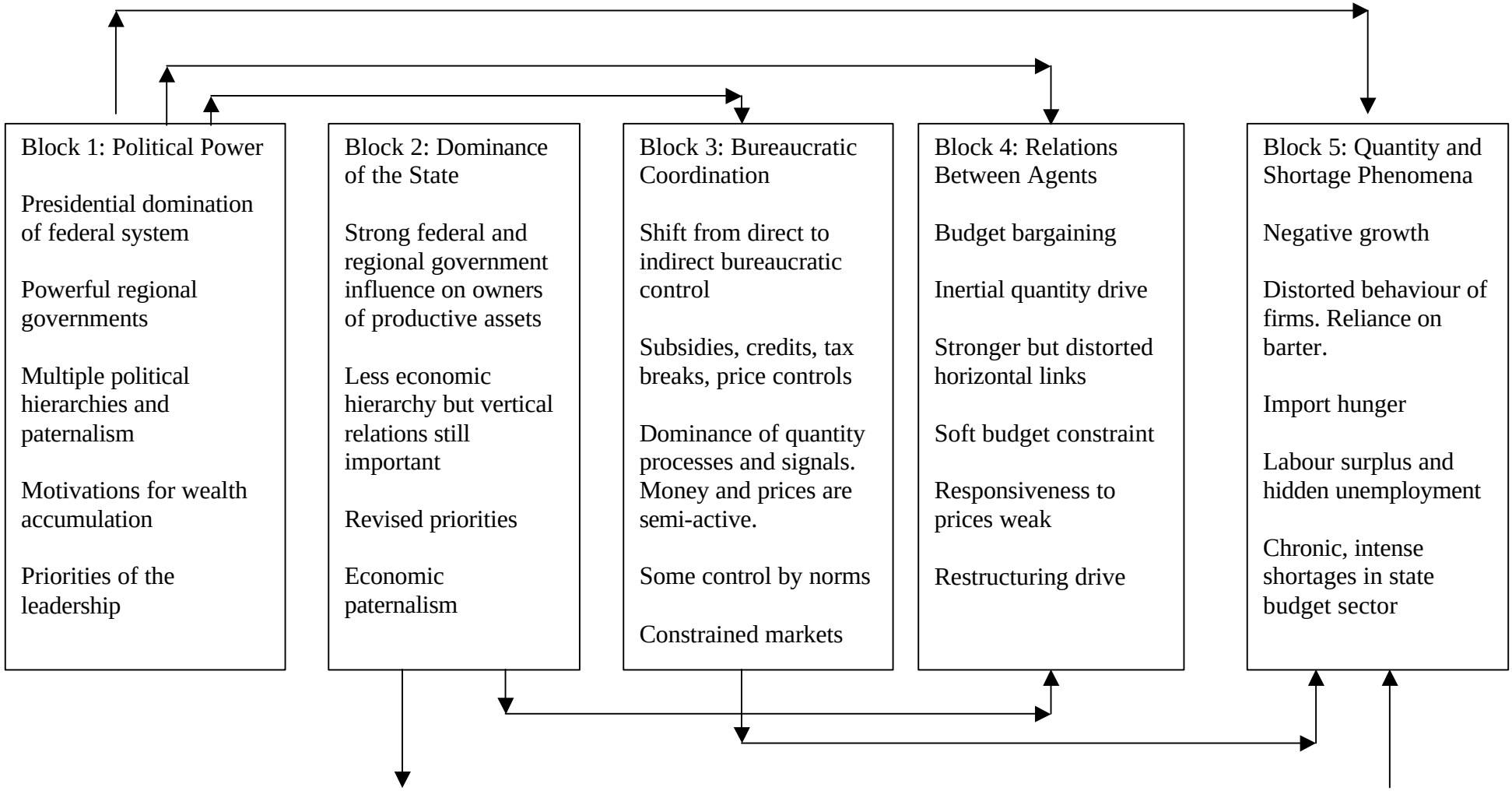
4. HEALTH PRODUCTION IN THE RUSSIAN TRANSITION ECONOMY, 1992-2001

a. The Russian Politico-Economic System

The shift from a communist dictatorship to a more democratic government made Russia's rulers aware that they should be responsive to the preferences of citizens. However, the political system has been unstable and there have been recurrent conflicts between the main centres of power: Presidential apparatus, parliament (Duma and Federation Council), ministries and regions. The weakening of central government has led to the problem of "state desertion" and deterioration in civic order, manifested by rising crime rates (Ellman 1995; World Bank 1997; Field et. al. 1999). The Russian government has attempted to introduce simultaneously radical, democratic and market-oriented reforms in all institutions, thereby diffusing scarce administrative and material resources. The inter-state and civil wars on the territory of the FSU have caused additional illnesses and deaths, damaged health sector assets and generated growing numbers of refugees.

Developments in the health sector in Russia have been determined primarily by changes in and the performance of the political and economic systems, and only marginally by attempted health reforms. Over the past decade a new political system has evolved in Russia. Some of its main features are shown Diagram 3, which contains the same five blocks as Diagram 2. The shift from a communist dictatorship to a more democratic government (Block 1) has made Russia's rulers aware that they should be responsive to the preferences of citizens. However, the priorities given to health institutions have remained low.

Diagram 3: Main Blocks and Causality in the Russian Politico-Economic System



Although the Russian government has made repeated, energetic attempts to introduce market-oriented reforms, institutional change has been slow and uneven, in part due to inter-related difficulties. For example, the government has announced many remedial measures that are dependent on adopted budgets, but has been unable to implement them because of its failure to collect sufficient tax revenue.

In the transition period Russia has experienced a prolonged “transformational recession” (Kornai 1994), in which output decline is caused by inertial forces, systemic changes, new policies and depressed demand. This has given its economic system the features shown in the other blocks of Diagram 3. As is evident, many phenomena are similar to those associated with the past, such as economic paternalism, bureaucratic control, soft budget constraints, reliance on barter (non-price exchange) and chronic shortages in state budget sectors.

In the transition era the policies of price and trade liberalization and privatization of firms were supposed to transform markets so that transactions would be determined by prices reflecting demand and supply forces. Shortages and inefficient economic practices such as barter were supposed to disappear. In the advanced transition countries this has happened. In others, notably Russia, the monetization of the economy has occurred more slowly and unevenly, and multiple forms of money have co-existed: rubles, coupon currencies and foreign currency (dollars) (Sutela 1998). Firms have remained insensitive to prices and budgets and made have extensive use of barter. In 1997 50 % of inter-industry trade was in barter and this share rose to 70 % for the largest firms (Commander and Mumssen 1998). The poor performance of the economy in the 1990s undermined health conditions and seriously disrupted the work of all health institutions.

As mentioned, in the transition period the power of the Russian central government has weakened, legal controls have loosened, demand for prohibited goods has remained, and

valuable state assets have become available for private appropriation through the “insider” oriented voucher mass privatization program (Sutela 1994). Corruption of the state apparatus has intensified, has become institutionalised and has penetrated the highest levels of government (Handelman 1996). Several analysts have argued that corruption in the East has permeated the politico-economic system to such an extent that a new form of capitalism has evolved that both has particular features and is resistant to reform. The names used to characterize this new system vary: “bandit capitalism”, “crony capitalism” and “anarcho-capitalism” (Gray 1998, Hedlund 1999). A different but related concept that has been used by Gaddy and Ickes (1998) to interpret the Russian politico-economic system is the “virtual economy”. They have given it this name because they believe that most economic variables (prices, sales, wages, taxes, budgets) are distorted to create the illusion that the Russian economy is larger than it actually is. They argue that the main objective of the economic system is to sustain the negative value added manufacturing branches of industry.[15] The government is the referee of the system and its key role is to re-distribute value. This value redistribution is inextricably tied in with other processes mentioned above, such as demonetization of economic processes and corruption

b. The Low Priority of Health in the Russian Economy

Hierarchical relations have become less important in capitalist Russia with the abolition of central planning and rationing, but low-level units, whether hospitals or pharmaceutical factories (most of them privatized) have remained dependent upon high-level state bodies for budget allocations, tax breaks, subsidies and cheap bank credits. The current incentive system has changed to one based almost entirely on material rewards and market-driven sanctions. Health sector markets that existed in embryo or were severely constrained in the command era have become legal and active. In them, prices and production decisions are influenced, if only imperfectly, by demand and supply forces.

As in the command period, financial stringency and the existence of more important economic objectives (reducing inflation and the budget deficit, promoting rapid privatization) have prevented the new Russian government from allocating to health programmes the resources needed to solve existing, sometimes acute, problems (Korchagin 1997). The low priority status of the health sector has been reflected in real expenditure cuts and unresponsiveness of state budget allocations to the mounting problems in it. The index of real health spending (1990=100) declined to 82 in 1992, recovered in 1993-94, and then dropped to 67 in 1999 (Table 4, line 37).

c. Continuity of Economic Behavior of Russian Health Institutions

The behavior of health institutions in the Russian transition economy has been somewhat different from that associated with the shortage economy. In markets for outputs, power has gradually shifted in favour of buyers; but the severe budgetary constraints imposed on the medical system, pharmacies and biomedical R & D facilities have kept them in the position of supplicants relative to their suppliers, so sellers' markets have not yet disappeared. Many medical facilities have continued to neglect the quality of output and maintain quantity drives for the same reasons as in the past, namely excess demand for services at low or zero money prices and institutional inertia.

The medical system has remained financially disadvantaged. Official wage rates and benefits of state medical employees have remained low relative to other branches of the economy, despite their high educational qualifications. The work of medical facilities has been disrupted by payment arrears resulting from the government's practice of budget sequestration (holding back approved funds) in order to achieve stabilization targets (Sapir 1996, 1999). The inadequate and erratic funding has resulted not only in mass resignations of nurses, but also in chronic shortages of current supplies (medicines, food) and insufficient capital inputs (equipment, spare parts, construction services). Moreover, it has proved difficult to obtain

many traditional products at market prices because downstream supply networks have been adversely affected by the prolonged recession and the dissolutions of the CMEA and USSR. Medical system input indicators (e.g. middle medical personnel, hospital beds) have diminished, albeit from high levels.

Most medical managers have recognized the need to upgrade the quality of medical services and products, but have remained risk averse with respect to technological innovation due to the uncertainties concerning laws, health reforms, property rights and incentives. In the early phase of transition there has been insignificant investment in health and negligible progress have been achieved in improving the capital stock. In 1995 32 per cent of hospitals required major capital repairs, 39 per cent had no hot water, and 19 per cent had no running water (Terekhov 1997, pg. 55). Since medical facilities in the West have continued to modernize in the 1990s, it is likely that technological gaps between them and their Russian equivalents have widened.

The transformation of the other institutions in the health sector can be reviewed only briefly here. At the start of the transition period, pharmacies were state-owned, often based in old, inefficient facilities and financially insolvent due to a combination of rising costs and controls on sales prices (Davis 1993b). They were encouraged to become truly self-financing and their marketization proceeded rapidly. Changes in ownership were slower. By the end of 1995 34 per cent of retail pharmacies had become independent juridical entities, but only 16 per cent were private (Kokorina and Serebryakova 1997, p. 12). In wholesale trade, a number of large private companies emerged, chiefly importing foreign medicines to compete with the state firms that grew out of the Soviet-era *Farmatsiya* monopoly (Boston Consulting 1997). Pharmacy sales contracted to the equivalent of $1.5 billion in 1993, but then rebounded to $2.7 billion in 1995 (Vnutrennyy 1997, p. 8).

Medical industry enterprises were converted into joint-stock companies and mostly were privatized (Davis 1993b). As in other sectors, this was done on an insider basis, so only weak mechanisms existed to ensure proper corporate governance (see Blasi et. al. 1998 and other chapters of this volume). Demand for domestically produced pharmaceuticals and medical equipment was depressed by the tight budgets of the medical system, the destitution of much of the population, and the preference of the affluent minority for foreign medicines. By 1995 Russian firms supplied only 33 per cent of goods purchased in pharmaceutical markets (Vnutrennyy 1997, p. 8). Additional financial problems were that enterprises were not paid regularly by customers, especially if they were state medical facilities, and that prices of many medicines were controlled while the costs of most inputs, such as energy, rose substantially. Supplies of inputs from firms in Russia and in other FSU states and Eastern Europe were disrupted. Investment in the pharmaceutical industry plummeted from 483 billion (constant 1996) rubles in 1994 to a negligible 39 billion rubles in 1996 ("Indeksy rynka: Osnovnye" 1997, p. 5). The index of real pharmaceutical output (1990 = 100) dropped to 58 in 1996 and then recovered to 68 in 1998. The physical output of most medicines and medical equipment declined in the range of 30-70 per cent (Table 4, lines 39-43).

State budget allocations to medical science were severely cut. The ratio of the approved to the requested budget of the Russian Academy of Medical Sciences fell from 78 per cent in 1991 to 15 per cent in 1995, while the ratio of actual to approved expenditure declined from 100 per cent to 88 per cent (Pokrovskii 1997, p. 26). This meant that actual expenditure in 1995 was only 13 per cent of the amount requested, and 14 per cent of that fraction was received late. Supplemental funding was difficult to obtain because there was insignificant demand for R & D services by enterprises in the phamaceutical and medical equipment industries, many of which were technically bankrupt. In consequence, most scientific institutions were acutely under-funded and could not pay the low wages of staff with

any regularity. Although the numbers of researchers remained high, many of the best young scientists departed for more lucrative employment in the commercial sector. Capital investment declined to near zero, despite the fact that 70 per cent of equipment was more than ten years old in 1995. The quality of medical research deteriorated from Soviet-era standards.

The state monopoly of medical foreign trade was abolished in 1992 and replaced by a mixture of state and private firms (Davis 1993b). Flows of goods from traditional suppliers in Eastern Europe, other Soviet successor states, Finland and India were severely disrupted. Imports of medicines plummeted in 1993 to $299 million, climbed to a peak of $1,538 million in 1997 and then dropped in the crisis year of 1999 to $761 million (Table 17.5, line 44). However, this was a small volume of purchases relative either to global trade in pharmaceuticals or to Russia's need for medicines. The demand for foreign products grew rapidly and by 1995 50 per cent of medicines sold in Russia came from EE and CIS countries and 17 per cent from OECD nations (Vnutrennyy 1997, p. 8).

d. Health Reforms in the Transition Period

Of all the FSU successor states, the Russian Federation obtained the most complete set of health institutions (Davis 1993bc). However, numerous problems inherited from the past required correction through comprehensive reforms of the Russian health sector's organization, economic mechanisms and institutions. Remedial measures would have been difficult to implement successfully, even if the politico-economic environment had not been in considerable flux and if resource constraints had not been so binding, because of three different, but related, challenges: to coordinate general economic and health sector reform policies; to coordinate policies affecting different institutions within the health sector; and to coordinate domestic policies with foreign technical and financial assistance programmes.

During 1990-2001 Russia has announced many health reforms and has implemented successfully a sub-set of them (Davis 2001). Some reforms are similar to those that were

introduced in the command period. Other reforms have been unique to the transition period. These usually have involved reliance on market mechanisms, privatization or movement away from collectivist principles.

One reform with a long pedigree is cost containment (Davis 1990). In the old days, the communist elite asked the population to accept constraints on the provision of medical care while the perfect socialist system was constructed. Since transition commenced the new capitalist elite has been asking the masses to make similar sacrifices in order to construct a perfect future of democracy and market mechanisms. The Russian government has attempted to hold down the growth of health expenditures as part of its macroeconomic stabilization programmes. It has introduced specific measures to restrain spending growth both in institutions financed by the state budget and those receiving their funding through insurance reimbursement.

Management and finance have been decentralized to regional and local governments with the goals of relieving pressure on the federal budget and giving local authorities direct responsibility for medical establishments on their territory. Many health facilities formerly under the control of industrial enterprises have been transferred to local governments, and all of them are supposed to be in the public sector by 2001. Attempts have been made to give managers of health facilities full financial responsibility, hard budget constraints and new incentives to stimulate efficient behavior. District health budgets are being reallocated to primary care institutions (e.g. polyclinics), which then buy diagnostic and curative services from other facilities (e.g. hospitals). State facilities have been granted new rights to charge fees for diagnostic and curative medical services and have been directed to generate revenue to supplement reduced budget allocations. Charges have been introduced or increased for dental treatment and prescription medicines related to outpatient treatment. Private practice by health professionals has been legalized. This has brought into the open some of the

transactions previously conducted in the shadow economy. Technocratic reforms have included measures to improve information provision to health sector managers, to cut hospital bed stocks and increase patient throughput, to introduce quality assurance systems, and to raise the number of nurses in the medical system and enhance their professional capabilities.

Among measures unique to the transition period, an ideologically controversial proposal is to alter the coverage of the national medical system from universal to targeted. Efforts are being made to re-define state guarantees concerning health provision to exclude certain services (e.g. cosmetic surgery, treatment in health resorts). The government has authorised the creation of private, fee-for-service medical subsystems to treat foreigners and national elites. These can be viewed as market-based equivalents of the former Communist Party medical facilities run by the Fourth Main Administration of the Ministry of Health USSR. Indeed, some of these well-endowed elite polyclinics and hospitals are in the forefront of entrepreneurial medicine in the transition period. A major effort has been made to shift the financing of health services from the state budget to compulsory medical insurance (see the discussion in the next section). Reforms within medical institutions include the introduction of insurance-linked reimbursement based on capitation for outpatient care or on norms derived from Diagnostic Related Groups for inpatient treatment.

Privatization of health sector institutions is a revolutionary component of the new reforms. Although there has been discussion of the merits of transforming selected state hospitals and polyclinics into private commercial or non-profit units, none have been denationalized to date. In contrast, there has been privatization of pharmacies and pharmaceutical and medical equipment industrial enterprises (Ackerman and Smerkis 1997, Kokorina and Serbryakova 1997). In conjunction with this, prices of medical commodities have been liberalized and many reforms have been made of state procurement of medicines, of

management of wholesale distribution remaining in state hands, and of state agencies regulating pharmaceutical trade.

Many of the health reforms outlined above have been sensible in principle, but have been undermined by lack of material resources, resistance of interest groups, conflicts with economic policies and insufficient political and administrative support. An important example has been the attempt to shift the financing of the national health service from the state budget to compulsory medical insurance with employees' premia financed by payroll taxes.[16] This reform had serious flaws in its initial design and was introduced without adequate preparation at a time of acute recession and financial squeeze on enterprises.[17] Unsurprisingly, its implementation has been chaotic and institutional developments have varied widely across Russia's 89 regions (Shishkin 2000). It is likely that this reform contributed little positive to the actual management of the medical system during 1992-2000. Furthermore, it has added to health costs; 6-8 per cent of compulsory insurance funding has been spent on the programme's proliferating bureaucracy.[18]

It is true that some health reform pilot projects and experiments have produced encouraging results. However, these experiments usually have been carried out with above average support from national governments or Western agencies. This situation is similar to that of the Soviet period discussed in section 2. It can be predicted with certainty that identical difficulties to those encountered in the past will emerge in capitalist Russia when the sponsors of health reform pilot projects attempt to generalize their "successes".

Wide-ranging debates over the merits of existing health reforms, especially insurance financing, took place in 1996-97. Powerful groups within the Duma and Federation Council argued for a return to state budget financing of health. However, in November 1997 the government of Viktor Chernomyrdin issued a major decree on health designed to promote the compulsory insurance system and market-oriented reforms, entitled "About measures for the

stabilization and development of health services and medical science in the Russian Federation" ("O merakh" 1997). According to it and a linked document, "Concepts for the development of the health service and medical science in the Russian Federation" ("Kontseptsiya" 1997), current reforms and structural changes were to be consolidated during 1998-2000 and then more radical reforms, such as developing the private medical sector, were to be introduced during 2000-2005. A related decree devoted to reform of the medical industry was issued in June 1998 ("Federalnaya" 1998).

The 1997 programme of reforms had minimal positive impact on the health sector due to acute political and economic problems in subsequent years. The post of Prime Minister shifted unexpectedly from Viktor Chernomyrdin to Sergei Kiriyenko (March 1998) to Yevgenii Primakov (August 1998) to Sergei Stepashin (April 1999) to Vladimir Putin (August 1999). Furthermore, Boris Yeltsin resigned as President in December 1999 and his interim successor, Vladimir Putin, was elected to the post in March 2000. These abrupt changes affected personnel, decision-making and resource allocation patterns in all sectors of the economy. In the case of health, the Minister of Health was replaced in this period.

A second factor undermining the health reforms was the economic crisis of August 1998. The budgetary situation of the Ministry of Health deteriorated throughout the year, although its situation became extremely difficult in the Autumn. Most health insurance organizations were hit badly by the inter-related collapses of the GKO market (they had been forced to purchase bonds by the government) and the banking system. In 1999 the resources allocated to health were lower than anticipated and few of the "Kontseptsiya" reforms could be financed. Although real health spending recovered in 2000, the medical system still has not received all the funds projected in the optimistic year of 1997.

The government of President Putin has demonstrated and awareness of the nation's health problems and a determination to correct them. In August 2000 its health strategy was

outlined in the “Conception of the Safeguarding of the Health of the Population of the Russian Federation in the Period up to 2005” (Kontseptsiya 2000). In contrast to the 1997 “Kontseptsiya”, the new one bases its solution to current health problems on “the formation in the population of an appreciation of a healthy life style, the increase in the level of sanitary-hygienic culture, that does not demand significant financial expenditures, but may generate significant socio-economic results”. The approved health promotion programme contains measures directed at improving health education of ordinary people to get them to reduce unhealthy habits (smoking, alcoholism, drug abuse) and to increase physical activity, reducing pollution, improving diet and immunization programmes, and re-orienting the work of the medical system. The latter will involve restructuring curative health care to give greater prominence to outpatient care, developing family doctors, and making sanitary-epidemiological work more effective. Priority attention will be given to certain population groups (e.g. pregnant women and infants) and diseases (e.g. hypertension). This inter-ministerial programme is being supplemented by specific ones developed by the Ministry of Health, which are outlined in a March 2000 document entitled “Objectives of the Health Sector and Medical Science from 2000-2004 and through 2010”.

e. Health Production in the Russian Transition Economy, 1992-2000

Most health-related demographic variables worsened in early transition (1992-95) (Table 4, lines 1-6). Birth rates fell sharply, while those of abortions-to-births and divorces rose. Diets worsened for the majority of the population. Alcohol consumption rose, whereas that of tobacco declined. Although the flows of pollutants into the atmosphere and water supply declined because of the drop in industrial activity, Russia remained heavily polluted. According to Minister of Health Dmitrieva (1997), only 15 percent of the urban population

Table 4: Health Production in the Russian Federation, 1990-99

	Indicator	Units	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
		Demography, Health Conditions and Morbidity										
1	Population	Millions (Beginning of Year)	148.0	148.5	148.7	148.7	148.4	148.3	148.0	147.5	147.1	146.7
2	Birth Rate	Births/1000	13.4	12.1	10.7	9.4	9.6	9.3	8.9	8.6	8.8	8.3
3	Abortions	Abortions/100 Births	206.3	201.0	216.4	235.2	217.3	202.6	203.0	201.6	182.6	179.4
4	Male Share of Population	%	46.8	46.9	46.9	46.9	46.9	47.0	46.7	46.7	46.9	46.9
5	Elderly Share of Population	% 65 years and older	10.0	10.4	10.8	11.3	11.7	12.1	12.2	12.3	12.4	12.5
6	Refugees Arriving in Russia	Thousands	0.0	0.0	160.3	287.6	254.5	282	172.9	131.1	118.2	79.1
7	Industrial Pollutants in Atmosphere	Millions Tons	37.1	31.8	28.2	24.8	21.9	21.3	20.3	19.3	18.7	18.5
8	Pollutants in Water Supplies	Billions Cubic Metres	75.2	73.2	70.6	68.2	60.2	59.9	58.9	59.3	55.7	54.8
9	Alcohol Sales	Litres per Capita	5.6	5.6	5.0	5.9	6.8	9.3	7.2	7.5	7.3	NA
10	Cancer	New Cases per 100000	264.5	266.0	271.8	276.3	280.2	279.1	288.1	294.7	302.4	304.1
11	Tuberculosis	New Cases per 100000	34.2	34.0	35.8	42.9	48.2	57.9	67.6	74.1	76.1	85.4
12	Gonorrhea	New Cases per 100000	128.0	190.7	169.6	230.1	203.8	173.7	139.2	114.2	103.0	120.2
13	Syphillis	New Cases per 100000	5.3	7.2	13.4	33.8	85.5	177.0	264.6	277.3	234.8	187.2
14	Accidents at Work	Cases per 1000 Workers	6.6	6.5	6.2	6.3	5.9	5.5	5.6	5.6	5.4	NA
15	Salmonellosis	Registered Cases per 100000	70.4	74.2	80.1	68.3	70.2	58.2	44.3	41.0	40.7	42.2
16	Diphtheria	Registered Cases per 100000	0.8	1.3	2.6	10.3	27.1	24.1	9.3	2.7	1.0	0.6
17	Whooping Cough	Registered Cases per 100000	16.9	20.8	16.2	26.6	33.1	14.0	9.4	18.6	19.3	15.3
18	Measles	Registered Cases per 100000	12.4	13.8	12.5	50.3	19.4	4.5	5.6	2.0	4.2	5.1
19	Scabies	Registered Cases per 100000	28.6	43.0	99.3	237.4	389.7	395.0	315.0	229.0	182.2	NA
		Medical System										
20	Doctors	Per 1000 Population	4.7	4.4	4.5	4.5	4.6	4.5	4.6	4.6	4.7	4.7
21	Middle Medical Personnel	Per 1000 Population	12.3	11.4	11.4	11.1	10.9	11.1	11.3	11.2	11.1	11.1
22	Polyclinic Capacity	Visits per Shift per 10000	217.4	220.6	223.9	220.7	233.2	235.6	237.1	238.1	239.0	241.4
23	Outpatient Doctor Visits Per Year	Per Person	9.5	9.3	9.0	9.2	9.2	9.1	9.1	9.1	9.1	NA
24	Hospital Beds	Per 1000 Population	13.8	13.5	13.1	12.9	12.7	12.6	12.4	12.1	11.8	11.6
25	Hospitalization Rate	Hospital Stays Per 100	22.8	21.8	21.0	21.6	21.6	21.2	20.7	20.5	20.4	NA
26	Length of Stay in Hospital	Bed Days per Patient	16.6	16.7	17.0	16.8	16.8	16.8	16.9	16.6	16.7	NA
27	Operations in Hospitals Rate	Per 1000 Population	62.4	58.6	57.7	56.6	57.6	56.7	56.7	56.6	56.5	NA

		Health Finance									
28	State Budget Health Expenditure	Billion Current Rubles	0.00	0.03	0.47	5.4	19.7	41.0	56.2	77.1	64.4	103.0
29	National Health Insurance Exp.	Billion Current Rubles	0.00	0.00	0.00	1.0	4.2	9.0	13.9	18.3	20.0	33.1
30	Private Expenditure (Low Estimate)	Billion Current Rubles	0.00	0.00	0.04	0.5	1.8	7.8	10.6	15.1	16.3	31.8
31	Private Expend. (High Estimate)	Billion Current Rubles	0.00	0.02	0.30	1.9	7.4	39.1	53.1	52.8	70.8	81.7
32	Total Health Expenditure (Low)	Billion Current Rubles	0.01	0.03	0.51	6.9	25.7	57.8	80.7	110.5	100.7	167.9
33	Total Health Expenditure (High)	Billion Current Rubles	0.01	0.05	0.81	8.3	31.3	89.1	123.2	148.1	155.2	217.8
34	SB + NIH Exp Share of GDP	%	2.4	2.4	2.5	3.7	3.9	3.2	3.3	3.8	3.1	3.0
35	Total HE Share of GDP (Low)	%	2.6	2.6	2.7	4.0	4.2	3.7	3.8	4.4	3.7	3.7
36	Total HE Share of GDP (High)	%	3.4	3.8	4.3	4.8	5.1	5.7	5.8	5.9	5.7	5.8
37	Real SB + NIH HExp Index	1990 = 100	100	101	82	109	100	75	73	85	68	67
		Other Health Institutions										
38	Pharmacies	Thousands	14.8	14.9	14.5	14.0	13.7	NA	NA	NA	NA	NA
39	Index of Real Output of Medicines	1990 = 100	100.0	105.0	88.2	66.2	62.8	59.7	57.9	71.2	67.7	NA
40	Output of Antibiotics	Tons	4672	4524	3577	1898	1556	1582	1468	1038	NA	NA
41	Output of Vitamins	Tons	4327	4257	3651	3149	2746	1552	945	1074	NA	NA
42	Output of Anti-Tubercular Products	Million Ampules	93.1	85.0	80.4	73.4	47.5	54.8	42.8	28.3	9.6	27.1
43	Electrocardiographs	Thousands	23.0	31.9	29.2	12.5	5.0	2.7	2.6	3.5	2.5	2.8
44	Imports of Medicines	Millions U.S. $	NA	NA	1008	299	1184	965	1180	1674	1281	761

		Mortality and Invalidity									
45	Invalidity Rate	First Diagnoses per 10000	51.7	61.5	75.7	77.7	76.5	91.1	79.9	77.7	77.2	72.3
46	Crude Death Rate	Deaths per 1000	11.2	11.4	12.2	14.5	15.7	15.0	14.2	13.8	13.6	14.7
47	Male Working Age Death Rate	Deaths per 1000	7.6	7.8	9.1	11.6	13.2	12.5	11.2	9.9	9.6	10.6
48	Male 40-44 Years Death Rate	Deaths per 1000	7.6	8.0	9.8	13.3	15.2	14.1	12.2	10.6	10.2	11.5
49	Male Death Rate from Murder	Deaths per 100000	23.2	24.9	37.6	49.5	52.6	49.5	42.2	37.5	35.9	NA
50	Working Age Male Alcohol Related Deaths Rate	Deaths per 100000	29.1	30.2	46.9	81.0	103.3	86.5	66.5	50.5	46.2	NA
51	Cancer Death Rate	Deaths per 100000	191.8	195.5	199.7	204.6	204.5	200.8	198.3	199.9	200.7	205.0
52	Circulatory Disease Death Rate	Deaths per 100000	617.4	620.0	646.0	768.9	837.3	790.1	758.3	751.1	748.8	815.7
53	Maternal Mortality	Deaths per 100000 Births	47.4	52.4	50.8	51.6	52.3	53.3	48.9	50.2	44.0	44.2
54	Infant Mortality	Deaths per 1000 Live Births	17.4	17.8	18.0	19.9	18.6	18.1	17.4	17.2	16.5	16.9
55	Life Expectancy at Birth	Years	69.4	69.0	67.9	65.1	64.0	64.6	65.9	66.6	67.0	65.9
56	Male Life Expectancy at Birth	Years	63.8	63.5	62.0	58.9	57.6	58.3	59.8	60.8	61.3	59.9

Sources: Davis (1993b, 1998, 2000); GKRFS (1995a) Meditsinskoe; GKRFS (1995b) Zdravookhranenie; GKRFS (1996) Zdravookhranenie; GKRFS (1998a) Finansy; GKRFS (1998b) Promyshlennost'; GKRFS (1999a) Demograficheskii; GKRFS (1999b) Rossiiskii Statisticheskii; GKRFS (1999c) Sotsial'noe; GKRFS (2000a) "Demograficheskaya"; GKRFS (2000b) Rossiya v Tsifrakh; GKRFS (2000c) Informatsiya; MZRF (1996, 1999) O Sostoyanii; Terekhov (1997); WHO HFA (2000); WHO WHSA (various years); and Shishkin (2000).

lived in cities with pollution within hygienic norms. Lack of investment and weakening state controls resulted in the deterioration of the quality of water and hygiene standards in food production and distribution. One-half of the population had access to drinking water that met state standards.

Cardiovascular and cancer morbidity rose throughout the 1990s, as did illnesses related to social conditions, such as tuberculosis and venereal disease. According to official statistics, just in the year 1995 morbidity of infants climbed by 6.2 per cent, teenagers by 7.6 per cent and adults by 2.6 per cent (Terekhov 1997, p. 17). The incidence of many infectious diseases increased substantially during 1990-94, but then declined or remained stable (Table 17.5, lines 15-19). Russia's disease rates have remained substantially higher than those of Eastern European and OECD countries.

Trends in health output in Russia (see Table 4, lines 45-56) have been determined by the dynamics of morbidity and the performance of health sector institutions, discussed in section 4.c. As a general rule, health indicators deteriorated during 1990-94 and improved over the next several years. Trends following the 1998 economic crisis are more varied. The invalidity rate rose from 51.7 registrations per 10,000 population to 91.1 in 1995 and then dropped to 72.3 in 1999. The infant mortality rate increased to 19.9 deaths per 1000 live births in 1993 but then declined to 15.8 in 2000. Almost all adult age-specific death rates rose to peaks in 1994 and declined though 1998. For example, the rate for men aged 40-44 went up from 7.6 deaths per 1000 in 1990 to a high of 15.2 in 1994 and then decreased to 10.2 in 1998. However, a number of male age-specific mortality rates went up again in 1999-2000. Maternal mortality increased from 47.4 deaths per 100,000 births in 1990 to 53.3 in 1995, and then decreased to a still high 44.0 in 1998. The crude mortality rate went up from 11.2 deaths per 1000 in 1990 to a peak of 15.7 in 1994, declined to 13.6 in 1998, and then rose to 15.3 in 2000. Life expectancies at birth for the total population and for males have exhibited similar

patterns of deterioration, improvement and reversal. Male life expectancy dropped from 63.8 years in 1990 to a low of 57.6 years in 1994, recovered to 61.3 years in 1998, and then fell back to 59.9 years in 1999.

With respect to medical system effectiveness, the experience of Russia during the initial years of transition (increasing illness, deterioration in medical care, rising mortality) was similar to the pattern in the USSR during 1989-91 but different to that of 1965-85, when there were improvements in medical care. Given that the increased incidences of many diseases in 1992-95 were large and abrupt, it is likely that the medical system would have been overwhelmed even it if had maintained past standards and levels of financing. In this hypothetical case, the medical system would have been relatively ineffective in health-status terms. In reality, its worsening performance during 1992-94 made it ineffective in an absolute sense. In the words of a Federation Council report, one consequence was that “patients suffering from many forms of chronic pathologies lived 8-10 years less than in countries of Western Europe” (Terekhov 1997, p. 17).

In 1996-98, health production in Russia remained problematic, but positive trends were evident. Although demographic, living standard and environmental conditions continued to be unfavourable by OECD norms, most improved relative to previous years. The morbidity situation became more variable. Better health conditions and modest advances in preventive medical programmes helped to reduce the rates of most infectious diseases. Nevertheless, incidences of cancer, cardiovascular illness and tuberculosis increased. Due to the continuing poor performance of the economy and recurrent fiscal crises, the financing of health care through the state budget remained inadequate. Most enterprises were unable to contribute anticipated funds to the compulsory medical insurance system. Nevertheless, the medical system expanded some elements of its capacity and continued to provide high levels of services (Table 4, lines 20-27). The consumption of medicines by the population increased.

Overall, trends in health output, measured by indicators of invalidity and mortality, turned positive. This suggests that the effectiveness of the medical system years,improved somewhat during 1995-98, despite all the problems in this institution.

The 1998 economic crisis had a detrimental effect on both health conditions and the performance of medical institutions. In consequence, medical system effectiveness deteriorated in an absolute terms, as in the initial phase of transition.

5. CONCLUSIONS

The study has found considerable continuity in the features and problems of Russia's health institutions over the past several decades due to economic factors and government policies. Health conditions for the majority of the population have remained poor, a uniquely challenging illness pattern (high incidences of infectious, social and degenerative diseases) has been maintained, medical system performance has been inferior to that in the OECD region and mortality rates have been high and have risen on several occasions.

Although the economic system in Russia has changed profoundly from that of the USSR, behavioral patterns of health institutions with respect to outputs, production and inputs in command and transition economies are surprisingly similar. For example, sellers' markets and chronic shortages have survived as phenomena despite the shift to the market. This is largely due to the fact that health has remained a state sector with low priority status.

The government has introduced numerous health reforms, ranging from technocratic ones affecting specific processes within facilities to systemic ones such as the shift to compulsory medical insurance. However, Russian leaders in the transition have resembled Soviet predecessors in their general neglect of the health sector, ignorance of the inter-relationships between health institutions and tolerance of departmentalism. The government has not been effective either in coordinating economic and health reform policies or in developing consistent and feasible reforms for the health sector. The failures of the Russian

government in the health policy field were partially responsible for the rises in mortality in that country. It seems clear that reductions in health spending and deterioration in medical care in the face of rising illness in late *perestroika* (1989-91), early transition (1992-95) and the aftermath of the 1998 economic crisis facilitated the increases in mortality rates.

An evaluation of Russian health developments in the future must take into account the inter-connections between economic and health processes and uncertainties surrounding both health production and the economy. In an optimistic scenario, the current economic crisis will be quickly resolved, the economy will grow at the high rates during 2001-05, health conditions will improve, morbidity rates will decline, and institutional reforms in the health sector will be consolidated. The health sector will expand rapidly in the Russian economy, the performance of health institutions will converge towards the standards established by their equivalents in OECD countries, and health output indicators, such as mortality rates, will improve considerably. In a more probable scenario, economic recovery will be slow and conditions within the health sector will remain strained for several years before slowly improving. In this case, the Russian population's health will continue to be poor during the initial five years of 21st century and only modest progress will achieved in reforming the financing and performance of medical institutions.

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[1] The Russian Communist Party and other groups on the hard left have argued that the welfare situation in the USSR was good and had been improving until late *perestroika* and that the main causes of the current problems were the disorganization generated by the move away from central planning and the malfunctioning of a primitive capitalist economy. They have argued for a retention of the state owned and controlled welfare system and for greater governmental intervention to correct growing social problems.

[2] The concept of the health production process is derived partly from ideas presented in Fuchs (1966) and Auster, Levenson and Sarachek (1972). Health production can be expressed by the function H = f (T, M), which relates health output indicators (H) to medical tasks determined by illnesses (T) and the supply of medical services (M). The shape of H is determined by two relationships: (1) for a given level of medical services health output diminishes as tasks become more complex ($\partial H/\partial T < 0$), and (2) for given tasks the health output improves as medical services are increased ($\partial H/\partial M > 0$). Health production in command and transition economies is discussed in Davis (1987, 1988, 1993a, 1997).

[3] According to research of this author, the seven institutions in the health sector are involved in 27 markets. Households sell their labour in general labour markets, as well as six in the health sector. They obtain inputs from the general retail market, medical services market (MSM), and medical goods retail market (PRM). Each of the other six health institutions obtains inputs from labour, intermediate goods and capital goods markets. The medical system supplies services in MSM and obtains supplies from the medical goods wholesale market (PWM). The medical supply network sells goods in PRM and PWM and buys products in the medical industry wholesale market (MIWM) and foreign trade domestic market (FTDM). Medical industry sells goods for domestic consumption in MIWM and for export in FTDM. It buys imported technology in FTDM and domestic patents and processes in the biomedical R & D wholesale market (RDWM). Biomedical R & D sells in RDWM and FTDM and purchases imports in FTDM. Medical foreign trade sells imports and purchases goods for exports in FTDM and sells goods abroad in the foreign trade world market. The specific features of these markets depend upon the type of economic system within which they are embedded.

[4] This author recognizes that medical services and medicines cannot fully compensate for health-reducing behavior, such as smoking or heavy drinking. So not all credit or blame for morbidity and mortality outcomes should be attributed to medical system performance. In fact, empirical studies by Auster et. al. (1972) and others (see Zweifel and Breyer 1997, Chapter 4) have found that in Western countries medical services exert only a modest influence on developments in the health status of the population (i.e. $\partial H/\partial M$ is near zero).

[5] A comparative economic systems interpretation of the Soviet command and Russian transition economies is presented in Davis (1999). For each economic system the chapter describes their features (decision making, methods of co-ordination, ownership pattern, system of incentives), economic policies, economic environment, and economic performance.

[6] The shortage economy model is presented in Kornai (1980, 1992) and Davis and Charemza (1989). Its basic propositions are that the socialist economies that existed in the USSR and Eastern Europe were characterized by quantity (non-price) control mechanisms, such as central planning and rationing, pervasive shortages in retail and wholesale markets and rational, habitual responses by consumers and producers to shortage phenomena. Budget constraints on firms were soft, so there were weak financial restrictions on their demand for inputs. Firms

operated in sellers' markets and produced goods and services of low quality and obsolete technical standards. On the input side, institutions experienced chronic difficulties in obtaining supplies and tried to maintain large inventories to minimize production disruptions caused by shortages of planned inputs. At lower levels, barter was widely used in informal trades between firms and consumers. Bilateral foreign trade between socialist countries and with others such as Finland and India also was conducted on the basis of barter.

[7] Ironically, the armed forces belonged to the non-productive sphere, but strategic considerations determined that the military-industrial complex had a high priority standing.

[8] To some extent Western economists have mirrored Soviet/Russian attitudes towards the "non-productive sphere". In the command era only a few scholars, such as Alastair McAuley, studied the economics of welfare in the USSR and Eastern Europe. In the early 1990s most Western economists who analyzed economies in transition and participated in economic policy debates neglected welfare (social safety net) issues because they perceived other topics to be of greater importance. Exceptions to this rule included Barr (1994), Ellman (1994), and Shapiro (1995). The same was true for most multinational institutions (IMF, World Bank, EBRD, OECD, EU). The UNICEF International Child Development Centre was one of the few Western international organisations to devote attention to these problems at an early stage (UNICEF 1994). More recently there has been a substantial improvement in the coverage and analyses of health and welfare issues by Western institutions, notably the World Bank.

[9] Aaron and Schwartz (1984) analyse the causes of shortages and the use of rationing in the British national health service. Their study confirms that these phenomena are not found only in the medical systems in command economies.

[10] Although World Bank analysts and transitionologists working on Russian health topics appear to be unaware of any scholarly work on the Soviet health sector written prior to 1990, there is in fact a substantial, informative literature. Among English language books are Field (1967), Kaser (1976), Ryan (1978, 1990) and Knaus (1981). Thousands of Russian language books and articles have been published (see bibliographies in Davis (1988, 1993a). Among those dealing with health planning and economics are Popov (1976) and Burenkov et. al. (1979).

[11] Among the informative sources on health conditions, illness patterns and mortality in the USSR are Dutton (1979), Davis and Feshbach (1980), Feshbach (1983, 1993), Ellman (1994) and Mesle and Shkolnikov (1995).

[12] Numerous other scholars subsequently investigated the infant mortality situation and reached differing conclusions concerning the reality of the phenomenon. A review of the debate is provided in Field (1986). The current opinion of this author is that one-half of the increase was due to improved statistical reporting and demographic shifts and one-half to deterioration in conditions affecting the health of pregnant women and infants.

[13] Davis (1990) compared the performances of similar national health services in different politico-economic systems: Britain (democratic society with a market economy) and USSR (dictatorship with a command economy). During 1970-90 the British NHS improved its technological capabilities and the quality of its medical services, maintained high standards in staff-patient relations, expanded the volume of services, and contributed to the lowering of morbidity and mortality rates while absorbing a low share of GDP by OECD standards (see Appendix A). In the same period, the Soviet NHS also increased the quantity of its outputs and

served the whole population without direct charge. In contrast, it achieved minimal technological progress, produced low quality medical services, had poor staff-patient relations, and failed to ensure that either morbidity or mortality rates were consistently reduced. This differing experience suggests that a national health service financed by the state budget can be an efficient and effective way of organising medical care in the appropriate political and economic system.

[14] Health sector reforms in the Soviet period are described and evaluated in Popov (1976, pp. 320-26), Ryan (1978, 1990), Burenkov et. al. (1979, pp. 212-31), Korchagin (1980), Davis (1983b, 1987, 1993a), Sheiman (1991), and Schepin and Semenov (1992). Key Soviet government documents outlining proposed reforms are "O merakh" (1977), "O dopolnitel'nykh merakh" (1982), and "Osnovnye napravlenie" (1987).

[15] The issue of negative value added in industries of the transition economies has been discussed throughout the nineties. McKinnon (1991) argued that protectionism and distorted domestic relative prices in the command economies were likely to produce a situation in which much of manufacturing would exhibit negative value-added at world market prices. Hughes and Hare (1992) made empirical estimates of the scale of negative value added in a variety of transition countries and demonstrated that it was a real and significant problem. However, it was assumed that this phenomenon would disappear as transition progressed due to the hardening of budget constraints and restructuring of industry. As with barter, though, this has not happened everywhere. In Russia negative value added has survived as an important feature of industry.

[16] See the references listed in endnote 2 as well as Meditsinskoe (1993), Kuznetsov and Chelidze (1997) and O Meditsinskom (1997).

[17] One critic of the shift to compulsory medical insurance, Korepanov (1992), argued that "in conditions of widespread shortages of finance and material resources, no leaders of state enterprises, collective farms, state farms, joint-stock companies or private organizations will make significant payments to meet the needs of hospitals and polyclinics. Therefore, in my view, it would be highly dangerous to change suddenly and completely from state insurance."

[18] Not all contemporary analysts of Russian health financing debates are aware that the USSR had an insurance-financed health system in the New Economic Policy period (1921-28). Davis (1983a) showed that it resulted in pronounced inequalities in health spending and medical provision across regions and social groups. For example, in 1927/28 health spending per capita for the urban insured (trade union members) and their families (14 per cent of the population) was 19.8 rubles, whereas it was only 0.7 rubles for uninsured residents in the countryside, who made up 80 per cent of the population.