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Trends in Health Status, Services, and Finance

*The Transition in Central and
Eastern Europe*

Volume I



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WORLD BANK TECHNICAL PAPER NO. 341
Social Challenges of Transition Series

Trends in Health Status, Services, and Finance

*The Transition in Central and
Eastern Europe*

Volume I

*Ellen Goldstein
Alexander S. Preker
Olusoji Adeyi
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*The World Bank
Washington, D.C.*

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1818 H Street, N.W.
Washington, D.C. 20433, U.S.A.

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First printing October 1996

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The complete backlist of publications from the World Bank is shown in the annual *Index of Publications*, which contains an alphabetical title list (with full ordering information) and indexes of subjects, authors, and countries and regions. The latest edition is available free of charge from the Distribution Unit, Office of the Publisher, The World Bank, 1818 H Street, N.W., Washington, D.C. 20433, U.S.A., or from Publications, The World Bank, 66, avenue d'Iéna, 75116 Paris, France.

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ISSN: 0253-7494

Cover montage by Joyce C. Petruzzelli
Photos by Nelson Ryland.

Library of Congress Cataloging-in-Publication Data

Trends in health status, services, and finance : the transition in
Central and Eastern Europe / Ellen Goldstein . . . [et al.].

p. cm. — (World Bank technical paper, ISSN 0253-7494 ; no. 341, Vol. 1)
ISBN 0-8213-3751-3

1. Medical care—Europe, Eastern. 2. Medical care—Europe,
Central. 3. Health status indicators—Europe, Eastern. 4. Health
status indicators—Europe, Central. 5. Medical care—Europe,
Eastern—Finance. 6. Medical care—Europe, Central—Finance.

I. Goldstein, Ellen, 1960— . II. Series.

RA407.5.E852T74 1996

362.1'0943—dc20

96-40968

CIP

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Foreword

Transition from central planning in Central and Eastern Europe has led to dramatic and rapid changes in the lives of millions of people. Democratic liberalization has empowered citizens through the provision of basic rights and freedoms and the development of civil society, while economic liberalization has brought the promise of improved living standards, and granted individuals increased choice in consumption, education, health and employment.

Despite remarkable expansion of opportunity, transformation has not come without great pain. Poverty has risen throughout the region, real incomes have declined, and crude death rates have climbed in many countries. Equality among households has suffered as a result of increasing income disparity and the erosion of access to basic social services. While the widening income gap is an expected side effect of transition, accompanying the liberalization of prices and wages, heightened social dissatisfaction threatens political stability and the success of economic reforms.

On the most basic level, economic recovery and growth in transition depend upon the capacity of individuals to respond and adapt to the changing requirements of market society. The socialist economies embarked upon reform with strong legacies of state commitment to the development of human capital. However, rigidities of central planning and bureaucratic control limited the quality and efficiency of social services. Transition has exacerbated these trends, as unprecedented collapses in output and consequent fiscal crises have undermined the abilities of governments to sustain pre-transition levels of access to social programs and services. At the same time, the introduction of market forces has opened up an array of opportunities for innovation in the provision and financing of health, education and social insurance, and for addressing increases in poverty and unemployment.

This paper is one in a series of reports based upon the *Social Challenges of Transition (SCT)* database. Developed by the Human Resources Operations Division of the Central and Southern Europe Departments of the World Bank, *SCT* was initiated in order to document empirically the evolving effects of transition on individuals and families. The project examines the social risks facing people and the policy responses taken by governments since 1989, by monitoring indicators of health, earnings, education, labor markets, pensions, social assistance and poverty. The findings contained in this initial set of thematic cross-country papers make a valuable contribution to our understanding of social developments in Central and Eastern Europe five years into the transition. They provide a basis for further improvements in the content and quality of our support to the countries in the region.

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Abstract

The cross-national study which is presented in this World Bank Technical Paper provides empirical evidence of some of the trends in health status, health services and health care financing which have occurred in countries undergoing transition to a market economy in Central and Eastern Europe during the 1990s. It validates and expands on many of the early hypotheses formulated by Alexander S. Preker and Richard G. A. Feachem in "Health Care," Nicholas Barr ed., *Labor Markets and Social Policy in Central and Eastern Europe: The Transition and Beyond*, New York: Oxford University Press, 1994.

The decline in life-expectancy alongside increasing income levels observed across Central and Eastern Europe (CEE) is inconsistent with the usual positive correlation between these two variables. Although this appears to be an inherited trait from the former socialist era, this cross-national study considers an empirical exploration of a variety of such trends in health status that have significant implications for policy makers in the transition economies (emerging patterns in crude death rates, infant mortality rates, immunization rates, standardized death rates, lifestyle patterns such as smoking, and alcohol consumption).

In many countries, economic transition has led to a significant reduction in real resources devoted to the health sector (a drop in recurrent expenditure on salaries, drugs and other consumables as well as a drop in capital investments). Yet, few countries have successfully downsized their health sectors or reallocated health spending in line with their diminished financial resources. Even in countries which increased health care expenditure from five to seven percent of GDP through the introduction of payroll-based labor taxes, existing data do not indicate that the additional resources have been used in an efficient way, or that they have led to improved quality in care.

The study revealed significant new information about health status and the health sector which could not have been obtained without a proper cross-national study. However, the sample size was too small and the selection of countries too biased for regression analyses and identification of the determinants of the observed changes and trends in health status and health services. In order to strengthen the objective criteria for influencing policies and implementing changes in the World Bank's client countries, there is an urgent need for a more systematic approach to data collection and operational research in these countries, supported by the World Bank and the various international agencies.

Acknowledgments

The material reported in this paper was prepared as a part of a larger, multi-sectoral study on the Social Challenges of the Transition in Central and Eastern Europe, undertaken by the World Bank's Human Resources Operations Division, Central and Southern Europe Departments (EC1/2HR) under the direction of Ralph W. Harbison, Division Chief. The authors are grateful for his continued support and leadership of this project.

Much of this study would not have been possible without the close collaboration of the European Office of the World Health Organization in Copenhagen and its Health For All (HFA) monitoring network throughout Central and Eastern Europe. The authors are particularly indebted to Mr. Nanda Arun (European Regional Office of the World Health Organization in Copenhagen) and Dr. Jean-Pierre Poullier (OECD) for their early contributions to the methodological design of the study. Invaluable contributions were also received from the Ministries of Health, Ministries of Finance, Central Statistical Offices and other counterpart agencies throughout Central and Eastern Europe.

The authors would also like to thank Mr. Kemal Dervis (Vice President, MNA Region) and Mr. Andrew Rogerson (Director of Africa 3 Department) for their continued enthusiasm and support during the early phases of the study. Peer reviewers, Mr. George Schieber and Dr. Prabhat Jha (Human Development Department), Dr. Jose-Luis Bobadilla (Principal Health Specialist, Inter-American Development Bank), Dr. David Peters (West Central Africa Department) and Dr. Martin McKee (Senior Lecturer, London School of Hygiene and Tropical Medicine) provided valuable comments during the final revision of the document. Ms. Dena Ringold (Research Assistant) and Mr. Brandon Cline (Staff Assistant) made substantial editorial improvements to the text. Technical support for the SCT data collection exercise was provided by Mr. Jan Rutkowski and Ms. Dorota Holzer (Consultants, World Bank Resident Mission Warsaw) and Mr. Ross Pavis (World Bank Staff Assistant, EC1/2HR).

I. Introduction

At the beginning of the twentieth century, the countries of Central and Eastern Europe (CEE) enjoyed income levels and health status on par with those of Western Europe. During the post-War era, all socialist countries of Central and Eastern Europe developed health systems which -- despite some variations -- were publicly funded through general tax revenues, with public provision of health services and an abundance of relatively well-trained staff. These health systems offered universal access to care and broad coverage, while minimizing financial risk to the individual. They also provided strong public health measures, such as compulsory childhood immunization.

As real incomes rose in the post-war era, these systems contributed to long-run progress in epidemiological transformation, with rapid declines in mortality and morbidity due to infectious diseases. As a result, life expectancy rose and infant mortality rates fell rapidly in the 1960s and early 1970s. However, health systems in socialist countries suffered from a number of structural weaknesses which ultimately limited their effectiveness. Among these weaknesses were a lack of incentives for efficiency, quality of care and responsiveness to patients, a lack of patient choice, as well as limited managerial autonomy and management skills, and narrowly-trained health personnel. Excess physical capacity, an overemphasis on curative and hospital-based care, unsuccessful health education and promotion efforts, and insufficient attention to environmental and occupational risks were further weaknesses common to socialist health systems.

Slower economic growth and less effective health services most probably contributed to a widening gap in health status relative to the West. The long-term trend toward improvement in health status slowed, stagnated and even reversed in many CEE countries during the late 1970s and 1980s. The gap in health status was due largely to rapid increases in premature death, mostly from chronic diseases which tend to be associated with, among other factors, unhealthy lifestyles and unclean environments. Inadequate primary and secondary disease prevention: coupled with outmoded curative techniques reduced the quality and efficiency of health services, contributing to stagnation and even a decline in life expectancies. This was in marked contrast with global trends of increasing life expectancy.

Since the late 1980s, the CEE countries have undertaken a transition away from central planning toward market-based economies. Just as the transition to a market economy is driven by a desire to achieve income and consumption levels on par with Western Europe, so the transition unleashed an unprecedented wave of health system reform which seeks to introduce Western models of health care financing and reimbursement, as well as organization and management of health services. While the nature and pace of reforms have differed considerably from country to country, the general direction is towards the introduction of payroll-tax financed health insurance systems, establishment of new provider payment mechanisms, decentralization and/or privatization of public sector services, recognition of patient choice and introduction of out-of-pocket user charges.

In some countries, health system reforms have taken on a great urgency because of the extreme economic and fiscal distress associated with the early phase of transition. Even in the best of cases, transition economies have suffered real declines in income which equal or exceed the decline experienced by the United States during the Great Depression. National income -- and fiscal revenues -- in CEE countries have contracted by anywhere from 20 to 60 percent in real terms during the early transition period. Thus, the need to do more with less has dominated the debate over health system reform.

The objective of the study, which is described in this technical paper, was to examine empirically the impact of economic transition and associated health system reform on health status, health services

and health finance in Central and Eastern European countries during the 1990s. Following this introduction, Chapter II identifies the hypotheses which were examined, and summarizes study design and data issues. Chapter III presents findings with respect to health status, services and finance. Chapter IV concludes with the implications of study findings for policy makers in Central and Eastern Europe.

The data set compiled for this study is available in the Statistical Annex, published separately as Volume II.

II. Hypotheses, Study Design and Data Issues

Hypotheses

The hypotheses examined in this study sought to examine derive from both a theoretical framework for health system reform in transition economies (Barr, 1994), and four years of operational work by the World Bank in the health systems of Central and Eastern Europe. The hypotheses are grouped with respect to: i) health status (evolution in the health of the population); ii) health services (the effectiveness, efficiency and equity of health care); and iii) health finance (sources and uses of funds in the health sector).

Health status

In the long run. The transition to a market economy and the adoption of democratic forms of government should ultimately lead to improvements in health status through long-run increases in real income, more effective approaches to disease prevention, healthier lifestyles, improved regulation of environmental and occupational risks and incentives for higher quality health care. Eventually, Central and Eastern Europe would be expected to close the gap with Western Europe in terms of health status.

In the short run. During the initial phase of political, economic and social transition, one could expect that health status would deteriorate as a result of the following factors:

- a. Reduction in real income and widening income disparities. Most countries in transition have suffered initial economic and fiscal contractions, as well as a broadening of income differentials in line with market-oriented economies. This has resulted in lower living standards for large segments of the population and increased poverty. Since socio-economic factors are the most powerful determinants of health status, measurable deterioration in a range of health indicators might be detected.
- b. Stress and stress-related behavior. Lower living standards, rising unemployment and other types of social dislocation could be expected to produce stress and induce increases in unhealthy behavior (e.g. consumption of alcohol and tobacco, unsafe driving habits). As the second most significant determinant of health status, these lifestyle factors could contribute to deterioration of health status through increases in injury and chronic diseases.
- c. Lax regulation of environmental and occupational risks. Breakdown of centralized modes of enforcing industrial and environmental safety -- inadequate even during the socialist era -- could be expected to contribute to a further deterioration in health status during the transition. This is particularly likely as industries face unprecedented financial difficulties which prevent appropriate maintenance and investment in safer technologies.
- d. Breakdown in basic health services. Reductions in real public spending for health, unaccompanied by reforms to ensure more effective allocation of resources, could be expected to undermine the quality of basic health services and public health measures available to the public, contributing to declining health status. This trend would be exacerbated by increased real prices for pharmaceuticals and other consumables that are sensitive to exchange rate fluctuation and/or subject to price liberalization.

Health services

In the long run. The introduction of market-oriented mechanisms into health systems in Central and Eastern Europe could be expected to result in long-run improvements in the effectiveness, efficiency and quality of health care. Patient choice, competition within the private sector and between the public and private sectors, introduction of performance-based financial incentives, clear ownership and managerial autonomy, increased managerial skill and strengthened regulatory capacity would all contribute to increased effectiveness, efficiency and quality of care.

In the short run. During the initial phase of the transition, equity in health care could be expected to decline without reaping the benefits of increased efficiency and quality of care. One could expect to see:

- a. *Less equitable access to care.* The collapse of community-based primary health care and basic hospital services (due to fiscal contraction and/or poorly-planned decentralization), as well as the introduction of out-of-pocket payments, could be expected to reduce access to care among poor and/or rural populations.
- b. *Deterioration in public sector services.* Reductions in real public spending for health without changes in resource allocation or restructuring of the public sector network could be expected to undermine the quality and efficiency of public sector health services. Deep cuts in recurrent spending for drugs, medical supplies, utilities, etc., while supporting a network of underutilized facilities and protecting wages and employment, would exacerbate long-standing resource misallocation, thereby underfunding the most cost-effective public health interventions and basic health services.
- c. *Diversification in the supply of health services and drugs.* The market would grow to include private sector health care providers, as well as pharmaceutical importers, manufacturers and distributors. Where government failure had been egregious in the past, entry of private sector entrepreneurs into the market could be expected to be associated with increased efficiency and quality of services. However, potential gains would be partially offset due to market failure, left uncorrected through weaknesses in regulatory capacity.

Health finance

In the long run. Payroll contributions as the dominant source of funding for national health insurance systems would eventually become a more efficient revenue base than has been the case in the early phase of transition. This would result from both economic recovery and strengthened tax administration to reduce the gap between potential and effective yields. Countries could be expected to follow the Western pattern of blended financing for national health insurance, relying on payroll contributions, general tax revenues, other earmarked taxes and out-of-pocket fees. Eventually, it could be expected that new provider reimbursement schemes and contractual arrangements would become tools for introducing more cost-effective interventions and containing costs. It would be possible to measure their impact on efficiency and the quality of care through development of appropriate information systems and analytic capacity.

In the short run. During the initial period of transition, the countries of Central and Eastern Europe could be expected to adopt national health insurance systems financed predominantly through earmarked payroll contributions, replacing general tax revenues as the dominant source of funding for health services. Equity could also be compromised through the

introduction of out-of-pocket fees and enforcement of insurance contribution compliance -- although relative to past practices of clandestine payments and bribes, the long-run implications for equity is unclear. These trends could be expected to produce the following short-term results:

- a. Reduced efficiency in public sector resource mobilization. The shift from general tax revenues to payroll contributions is associated with more complex administrative requirements and is vulnerable to a shrinking contribution base during the early transition period. Economic contraction, rising unemployment, a shrinking state-owned enterprise sector and evasion by the emerging private sector would lead to a smaller resource base than anticipated, and less efficient mobilization of public resources for health than in the past.
- b. Explicit shift in cost burden to active population. Reliance on payroll contributions as the dominant source of public revenues for health would explicitly shift the cost burden for health care to the active population, away from the broader tax base provided by general tax financing. Depending on the structure and incidence of general taxation, this would likely place a greater burden for financing health care on middle income working populations.
- c. Incomplete introduction of financial incentives. New incentive structures would be established through the introduction of new provider reimbursement mechanisms (e.g. capitation payment systems, diagnosis-related groups, points systems, user fees, etc.). However, introduction would be incomplete, and underdeveloped in terms of administrative capacity and associated information systems, resulting in little measurable efficiency gain or quality improvement at the aggregate level during the early years of the transition.

Through examination of readily available cross-national, longitudinal data on health status, services and financing for the period 1987-94, the study sought to examine empirically the short run hypotheses postulated above, associated with the early phase of economic and political transition. Limitations in the research methodology and, particularly, the availability of comparative cross-national data prevented meaningful examination of some of these hypotheses, as discussed below.

Study Design

The study looked at trends across ten Central and Eastern European countries, rather than delving deeply into one or two case studies. The decision to take this approach was based on a number of considerations, both general and specific. In general, studies of "why, how and to what effect different countries pursue a particular course of action or inaction" are the basic analytical tool used to examine public policy (Heidenheimer *et al.*, 1993). Furthermore, "cross national research is needed and conducted because it is the closest approximation to the controlled laboratory experiment of the natural scientists which is available to social scientists..."(Lisle, 1987). While controlled experiments are rarely feasible in the social sciences -- particularly in the political economy vein -- it is important to infuse field studies in the social sciences with a certain scientific rigor, including clear objectives, well-defined hypotheses, comparative data, empirical testing and representative samples. However, the selection of the ten countries included in the study sample, namely Albania, Bulgaria, Croatia, the Czech Republic, Former Yugoslav Republic of Macedonia (FYR Macedonia), Hungary, Poland,

Romania, Slovakia and Slovenia was not random, leading to a considerable degree of selection bias and precluding generalizations of the findings beyond the study sample. The selected countries belong to the group of formerly socialist countries of Central and Eastern Europe, to which the authors had ready access in their operational work.¹ Although the group of countries selected encompass a relatively broad range of socioeconomic development and cultural history, and are at differing points in the transition process, extension of the study to the countries of the former Soviet Union and the Baltics would have provided a broader view of the impact of transition on health systems. In a few cases where comparable data were readily available, examples from the latter group of countries were included in the study.

The study examined longitudinal data for the period 1987-94. For certain analyses -- particularly public expenditures for health -- the most complete data set for all ten countries was available only for a subset of this period, 1990-93. Cross-national comparisons of trends in real spending over time are presented largely for this shorter period. In all cases, trends for each country were examined over the full time series, and important findings for earlier or later years are noted in the text. For static cross-national comparisons, the most recent year with complete data, (which was usually 1993 at the time when data collection was carried out) is presented unless previous years show markedly different results.

A study of this type, relying on cross-national trend analysis, has certain inherent advantages and disadvantages. The greatest advantage is that it identifies the commonalities of the transition process, analysis of which can then serve to enlighten future policy-making. This is particularly important in a region tending to view each decision within a unique cultural and social context to which other experiences cannot apply, and from which no broader lessons can be drawn. Emerging from regimes buttressed by rigid control of information, many of these countries have few channels for sharing information with neighboring countries which would allow them to identify common problems and define solutions with broad applicability.

The disadvantage of this approach lies in a certain reductionism resulting from reliance on internationally comparable statistical aggregates. In looking solely at comparable data across ten countries, one loses much of the richness and complexity of policy issues which can be explored only through detailed case study. Administrative and financial constraints on the sample size also restricted the types of statistical analysis which could be meaningfully applied. Thus, empirical testing in this context consists merely of examining statistical trends and simple correlations to determine if they conform to the expectations expressed in the initial hypotheses.

Data Sources and Limitations

A standardized template was prepared to collect data on health status, services and finance from primary and secondary sources. The health status module included well-known indicators of life expectancy, mortality, morbidity, natality and fertility, as well as data on nutrition, sanitation and lifestyle behaviors. The health services module focused on health personnel, infrastructure, utilization rates, quality of care, public health activities, privatization and private sector development. These two sets of indicators were based on standard definitions, used internationally by the World Health Organization (WHO). The health finance module outlined sources of funds (e.g. central budget, national health insurance, households) from both the public and private sectors. Uses of funds were examined according to broad expenditure

¹ For security reasons, neither Bosnia-Herzegovina nor the rump Yugoslav Federation were included in the sample.

categories (e.g. personnel expenditures, drug expenditures, utilities) and level of health care. The latter module also sought information on average salaries for health personnel. In designing the health finance module, the authors referred to the Organization for Economic Cooperation and Development's (OECD) Resource Accounting System, which includes a standardized health finance and expenditure database for the 24 OECD member countries. Efforts were made to ensure consistency in definitions and comparability of data with the OECD database, although the disaggregated data set was much more limited.

Much of the data on health status and a portion of the data on health services was obtained from the WHO Health for All (HFA) database for the European region, which includes Western Europe as well as Central and Eastern Europe and the countries of the former Soviet Union. The HFA database, consisting of approximately 270 health indicators in the European Region, was initiated in 1985 to track international progress in meeting the targets of Health for All by the Year 2000. For countries in arrears on their reporting, or for those with no past reporting to WHO (e.g. the independent countries of the former Yugoslav federation), the authors worked with ministries of health and national statistical offices in the field to gather the data needed to complete the time series, according to standard WHO definitions. More recent data on life expectancy and age-standardized death rates were obtained from the World Health Statistics Annual for 1993 and 1994.

Collecting data on sources and uses of funds and average wages for the health finance module required extensive field work, often involving laborious reclassification and/or aggregation of data to ensure cross-national comparability. Most data were collected directly from ministries of finance and or national health insurance offices. Financial data were collected in nominal local currency units. Macroeconomic data needed for trend analysis (e.g. GDP, public expenditure) are those contained in World Bank economic reports. Real trends in revenues and expenditures were derived by deflating nominal time series data with GDP deflators. In addition to the health finance data obtained in the field, up-to-date information on privatization, private sector development, utilization of health services and quality of care was only available -- if it was available at all --through field work.

Certain hypotheses could not be adequately tested due to a lack of data. The following constraints were common to many or all countries studied (the Statistical Annex, contained in a separate volume, details the specific data and limitations for each country):

- a. Occupational and environmental impacts on health status. Data on occupational and environmental risks, as well as mortality and injury associated with these risks were usually not available for more than one year of the study period, thus preventing any assessment of transitional effects.
- b. Public/private mix of health services. Health statistics offices which previously were charged with monitoring health inputs in an entirely public sector system have had difficulty keeping tabs on health personnel, infrastructure and utilization patterns in increasingly mixed, public/private systems. It is often difficult to ascertain whether reported statistics represent country-wide aggregates, or purely public sector data. Thus, the distinction is blurred between overall trends in health service provision and switching from public to private sector provision.
- c. Effectiveness and efficiency of health services. Data on the utilization of health services, treatment outcomes and costs of care were sketchy. The lack of cost accounting systems, and of integrated information systems to link medical to financial data, precludes any assessment of the efficiency and effectiveness of care, even at the

most basic level. This is a serious lacuna, not merely for this study, but for the general task of assessing the impact of health sector reform during the transition. Appropriate information systems are being piloted in most countries, and a detailed analysis of preliminary data at the micro-level could provide a clue to more general trends. However, at the aggregate level, this study did not permit an assessment of efficiency or quality of care beyond linking overall health spending levels to broad indicators of health status.

- d. Private resources for health. Information on private spending for health comes largely from household income and expenditure surveys. However, existing surveys have at most one or two questions related to health spending, and were not designed to assess utilization of health services or the composition of health expenditures. Information on health spending by household income or expenditure group was not readily available, making it difficult to assess the impact of recent reforms, such as introducing user fees, on equity and access to care.
- e. Public expenditures for health. While public expenditure data were available, it was quite difficult to classify spending by comparable expenditure categories. With effort, basic categories such as personnel, drugs, public health activities and capital investment were isolated, but other important categories such as maintenance and utilities could not be isolated in comparable ways. Classifying public expenditures by level of care (i.e. primary, secondary and tertiary) was not possible. In some countries, one could distinguish between central and peripheral (district or municipal) spending. In others, it was possible to approximate levels of care by separating hospital from non-hospital spending, and -- in a few cases -- hospital outpatient care from hospital inpatient care.

These constraints limited the ability to test the following hypotheses: i) the negative impact on health status of deteriorating environmental and occupational regulation; ii) reductions in access to care due to the financial collapse of community-based primary care and basic hospital services, as well as the introduction of user fees; and iii) the impact of new provider payment mechanisms and other financial incentives on the efficiency and quality of health services.

III. Findings

Health Status

Analysis focused on the examination of changes in selected demographic and health indicators within each country between 1989 and 1993, and on cross-country comparisons of selected indicators in a specified year. In addition to the ten countries of Central and Eastern Europe, a small number of countries from the former Soviet Union and the Baltics were included in the review of health status, based on the availability of data. Key findings relating to health status are described in the following sections.

Table 1 (next page) presents an overview of the demographic and epidemiological characteristics of the countries in the period between 1989 and 1994. Fertility declined or stagnated in the former socialist economies (FSEs), as indicated by the crude birth rates (except FYR Macedonia) and the total fertility rates¹ (except Turkmenistan). With the exceptions of Albania and Turkmenistan, the total fertility rates for all the countries were below replacement levels in 1994. The infant mortality rates declined in all the countries, with the exceptions of Albania, Bulgaria, Lithuania and Ukraine, which recorded increases. The IMR in Lithuania doubled during this period. The infant mortality rate data should be interpreted with caution, as recorded rates may have been influenced by changes in definition². Maternal mortality ratios³ declined or stagnated in all countries, with the exceptions of Bulgaria, Poland and Russia.

The crude death rates increased in most of the countries, with the exceptions of Albania, Croatia, the Czech Republic and Slovakia. Life expectancies at birth declined in Bulgaria, Hungary, Romania, Russia, Turkmenistan and Ukraine, stagnated in Lithuania, and increased in Albania, Croatia, the Czech Republic and Slovakia. The experiences of males and females differed during this period:

Four of the ten FSEs for which data were available -- Hungary, Bulgaria, Russia and the Ukraine -- have experienced marked declines in life expectancy for males during the early phase of transition, while life expectancy for females has stagnated. The magnitude of changes in male life expectancy is not related to the magnitude of overall economic contraction.

Average life expectancy at birth for males declined markedly between 1989 and 1993 in Hungary, Bulgaria, Russia and Ukraine, while life expectancy for females stagnated. The most dramatic declines were in Russia (from 64.2 years in 1989 to 58.9 years in 1993) and Ukraine (from 66 years in 1989 to 62.6 years in 1993), as shown in Figure 1. These rates of decline (as much as 1.3 years per annum in Russia) represent accelerations of the trend during the socialist era, when life expectancy declined by 0.03-0.15 years per annum in FSEs for males, and rose moderately for women (UNICEF, 1994). However, declines in life expectancy are not universal during the early transition -- contrary to

¹ The total fertility rate is a synthetic measure of the number of children a woman would have if she passed through her childbearing years and experienced the current age-specific fertility rates.

² For example, a new WHO-recommended measure of live births and infant deaths was introduced in Poland in 1994. 1993 data recalculated according to the new concept demonstrated that the former measure of live births excluded about 4-5% of infant deaths (UNICEF, 1995).

³ Maternal mortality ratio = (total deaths of women during delivery or due to pregnancy-related disorders/total live births)*100,000.

Table 1: Selected Demographic and Health Characteristics, 1989 and 1994

	Crude Birth Rate (births per 1,000 persons)	Crude Death Rate (deaths per 1,000 persons)	Total Fertility Rate ^c	Infant Mortality Rate (deaths in the first year, per 1,000 births)	Maternal Mortality Ratio ^d	Life Expectancy
1989						
Albania	24.6	5.4	3.1a	30.9	45.6	72.1
Bulgaria	12.5	11.9	1.9	14.4	18.7	71.3
Croatia	11.9	11.3	1.7 ^a	11.7	12.4	72.2
Czech Republic	12.4	12.3	--	10.0	13.0	71.8
FYR Macedonia	17.0	6.9	--	36.7	8.3	--
Hungary	11.7	13.7	1.8 ^a	15.7	15.4	69.6
Lithuania	15.1	10.3	2.0 ^a	10.7	28.7	68.7
Poland	14.8	10.0	2.1 ^a	16.0	10.7	71.1
Romania	16.0	10.7	2.1	26.9	169.4	69.6
Russia	14.7	10.7	2.0	18.1	49.0	69.6
Slovakia	15.3	10.2	2.1	13.5	15.0	71.1
Slovenia	11.8	9.3	1.5	8.1	4.2	72.8
Turkmenistan	35.0	7.7	3.6	54.7	55.2	65.1
Ukraine	13.4	11.7	1.9	13.0	32.7	70.9
1994						
Albania	22.3	5.25 ^b	2.6	35.7	22.6 ^b	73.7 ^b
Bulgaria	9.4	13.2	1.4	16.3	20.1 ^b	70.9
Croatia	10.2	10.4	--	10.2	10.3	73.1
Czech Republic ^b	11.8	11.4	1.7	8.5	12.0	72.9
FYR Macedonia	17.2	8.1	--	27.3 ^b	6.2 ^b	--
Hungary	11.3	14.3	1.7	11.6	10.4	69.4
Lithuania	11.5	12.5	1.8	16.5	16.3	68.7
Poland	12.8	10.2 ^b	1.8	13.3 ^b	11.7 ^b	71.7 ^b
Romania	10.9	11.7	1.4	23.9	60.4	69.5 ^b
Russia	9.5	15.6	1.4 ^b	18.6	52.3	64.1
Slovakia	12.5	9.6	1.9 ^b	11.2	6.0	--
Slovenia	9.8	9.7	1.3 ^b	6.5	5.1 ^b	74.1
Turkmenistan	34.8	7.9	3.9 ^b	42.9	42.7	63.9
Ukraine	10.1	14.7	1.5	14.3	32.8 ^b	68.4
CEE Average ^b	12.4	11.4	--	14.4	20.9	71.1
FSU Average	13.3	13.1	--	23.5	41.0	66.1
EU Average ^b	11.4	10.1	--	6.79	6.73	76.9
Percent Change, 1989-1994						
Albania	-9.3	-2.8	-16.1	15.5	-50.4	2.2
Bulgaria	-24.8	10.9	-26.3	13.2	7.5	-0.6
Croatia	-14.4	-7.9	--	-12.9	-16.7	1.2
Czech Republic	-4.8	-7.3	--	-15.0	-7.7	1.5
FYR Macedonia	1.2	17.4	--	-25.5	-25.3	--
Hungary	-3.7	4.5	-5.6	-26.4	-32.6	-0.3
Lithuania	-23.8	21.3	-10.0	54.2	-43.1	0.0
Poland	-13.6	2.0	-14.3	-16.9	9.3	0.8
Russia	-35.1	45.3	-30.7	2.8	6.8	-7.9
Romania	-31.9	9.3	-33.3	-11.2	-64.3	-0.1
Slovakia	-18.0	-6.0	-8.7	-17.0	-60.0	--
Slovenia	-17.0	4.6	-13.8	-20.1	20.7	1.8
Turkmenistan	-0.7	3.0	8.3	-21.5	-22.7	-1.8
Ukraine	-24.9	26.1	-21.1	10.0	0.3	-3.5

Sources: WHO Health for All, UNICEF/ICDC TransMONEE Database

a) data are for 1990

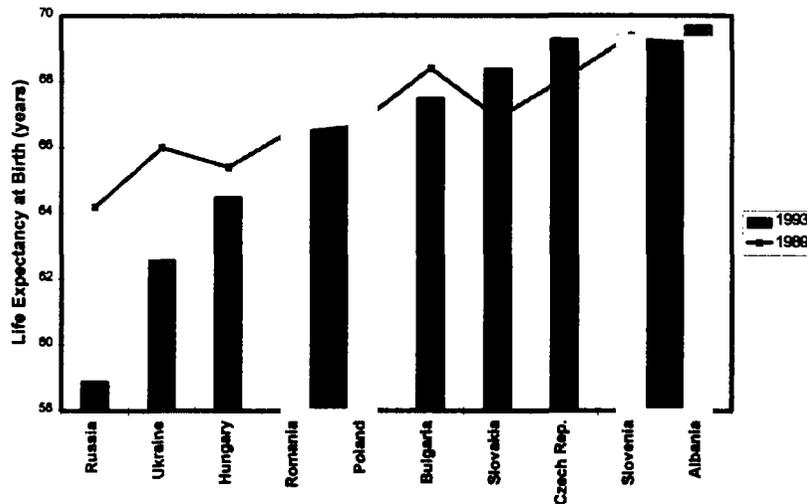
b) data are for 1993

c) The total fertility rate is a synthetic measure of the number of children a woman would have if she passed through her childbearing years at the current age-specific fertility rates.

d) Per 100,000 live births

what is frequently assumed -- and the magnitude of changes is apparently not associated with the magnitude of overall socioeconomic decline. Albania, Romania and Slovenia have seen little change in male life expectancy, while the Czech Republic, Poland and Slovakia have seen modest improvement. All of these countries -- with the exception of the Czech Republic -- have suffered greater declines in real income during the transition than has Hungary. Among the countries with marked declines in life expectancy for males, Russia, the Ukraine and Bulgaria also experienced higher IMRs in 1993 than in 1989. Hungary, on the other hand, recorded a decline in IMR during this period (see Table 1).

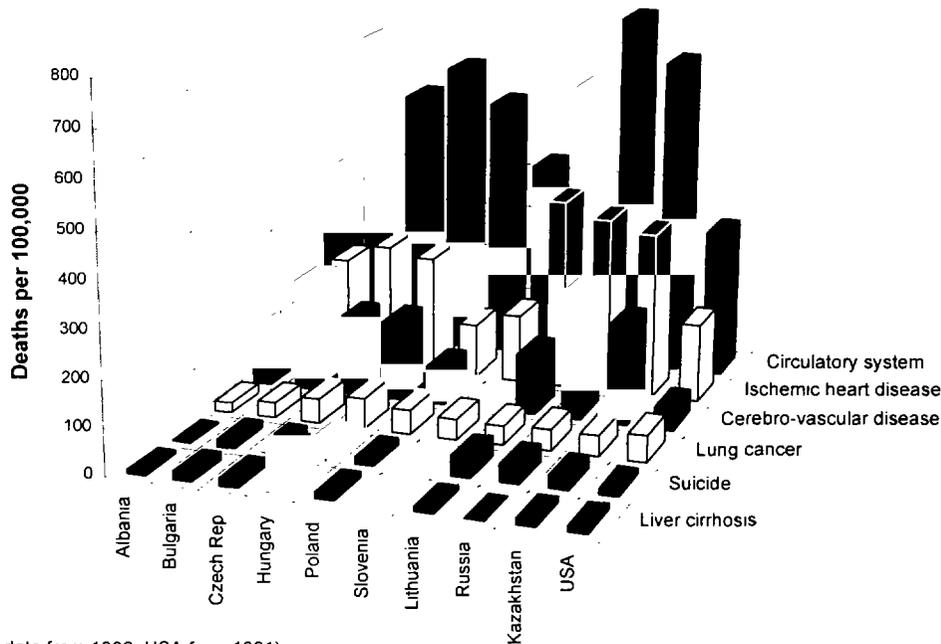
Figure 1: Life Expectancy at Birth by Country, 1989 and 1993 (males)



UNICEF's Monitoring Reports on the social impact of the transition identified three patterns of mortality dynamics in the region. While crude mortality rates edged upward in the first phase of the reforms in almost all countries in transition, this blip was swiftly and fully reabsorbed in the Czech Republic (1991) and later on, in Slovakia (1992), Poland and Slovenia (1994). In the former two countries, the downward trend in mortality persisted in 1994. The second pattern, which is typical of Hungary, Bulgaria and Romania, entails initial, moderate increases in the crude death rate, which stabilized in the following years above the pre-transition level. In the third pattern, the countries that registered the steepest increases in mortality after 1989, the countries of the former Soviet Union, experienced accelerations of death rates in the second and third years of the transition. Overall, contrary to expectations, the high "transition mortality" of 1989-94 has not struck hardest at groups which are generally considered the most vulnerable for biological or social reasons -- children, pregnant women and the elderly. In contrast, increases in adult male mortality are mainly responsible for the overall deterioration in crude death rates and life expectancy at birth (UNICEF, 1995).

Cross-national data on death rates for 1993 illustrate these patterns and differences among the FSEs clearly. Age-standardized death rates (SDRs) are particularly useful for comparisons among countries because the effects of differences in the age distribution of populations are eliminated (see Figure 2). With respect to mortality from infectious and parasitic diseases, the observed pattern of SDRs among countries is consistent with the association of this group of diseases with lower income levels, although the association appears far stronger in the countries of the former Soviet Union (e.g. Tajikistan, Uzbekistan and Kazakhstan) than in the countries of Central and Eastern Europe.

Figure 2: Age-Standardized Death Rates by Selected Causes in 1993
(European standard population)



(Albania data from 1992, USA from 1991)

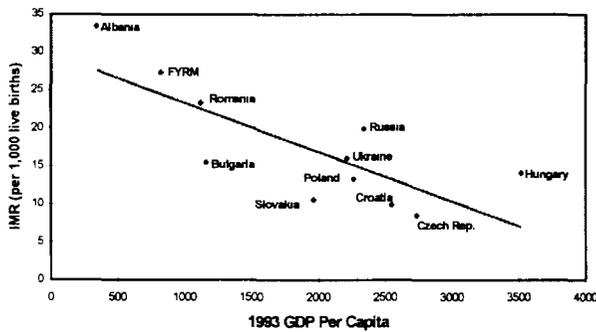
Causes of death in the former socialist economies (FSEs) are consistent with global trends of the epidemiological transition: higher death rates due to infectious and parasitic diseases in poorer countries, and higher death rates due to chronic diseases in wealthier countries. However, age-standardized death rates for chronic diseases generally associated with unhealthy lifestyles are extremely high when compared with wealthier established market economies (EMEs).

Death rates for certain chronic diseases are extremely high among the wealthier FSEs, far exceeding rates in EMEs at much higher income levels. In particular, the SDRs for circulatory diseases and ischemic heart disease in Hungarian and Russian males are double that of Albanian males, and nearly double the rates found in the United States. SDRs due to cerebrovascular disease (stroke) are also much higher in FSEs than in EMEs. The wealthier FSEs are experiencing SDRs for lung cancer and liver disease on par with EMEs (Hungary is an exception, with very high rates of chronic liver diseases).

Infant mortality rates in former socialist countries follow the global trend, declining as per capita income rises across countries. However, the rates are lower than would be predicted given their income levels.

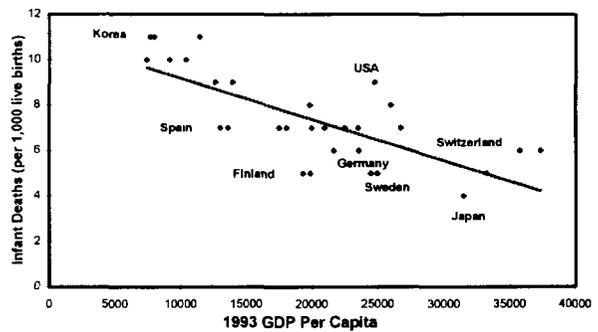
Within Central and Eastern Europe, as well as the countries of the former Soviet Union (FSU) and Baltics examined here, the infant mortality rate is negatively correlated with GDP per capita, as shown in Figure 3. This is consistent with both the global pattern and that seen in the EMEs, as seen in Figure 4. The infant mortality rate is a composite measure of the risk of neonatal death, which decreases with the availability of clinical neonatal care, and the risk of post-neonatal death, which decreases with maternal educational attainment, improved sanitation and nutrition, higher immunization coverage and more effective treatment of respiratory infections. Among the countries examined, Albania, FYR Macedonia and Hungary have IMRs above the trend line. This is also true of Russia, Uzbekistan, Kazakhstan and Estonia. Bulgaria, Croatia, the Czech Republic, Poland, Slovakia and Slovenia have IMRs below the trend line.

Figure 3: Infant Mortality Rate (IMR) by GDP Per Capita for FSEs in 1993



N = 25, Spearman $r = -0.74$, $p < 0.001$

Figure 4: Infant Mortality Rates (IMR) by GDP Per Capita for EMEs in 1993



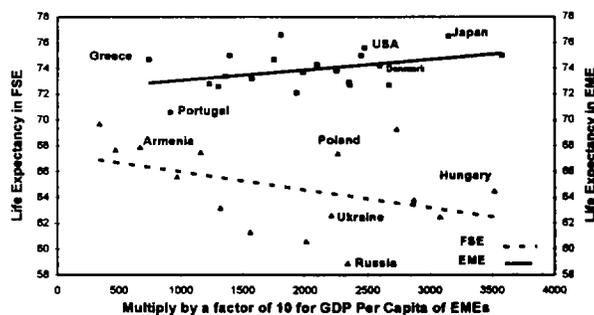
N = 31, Spearman $r = -0.71$, $p < 0.001$

On a global scale, however, the former socialist countries examined here had IMRs well below what would be predicted given their per capita income levels (ranging from US\$ 300 to US\$ 6,000 per capita in 1993). Most striking are the poorest countries. For example, Albania had a GDP per capita of around US\$ 340 and an IMR of only 34 per 1,000 live births in 1993. This was far superior to developing countries at similar income levels, such as Benin (IMR of 110 per 1,000 live births) and Pakistan (IMR of 95 per 1,000 live births). This favorable health outcome is largely attributable to superior achievements in primary school enrollment among females, childhood immunization coverage (both generally exceeding 90 percent of age group) and environmental sanitation in former socialist countries. In some of the transition countries which have been hardest hit by economic decline, IMRs have deteriorated during the early 1990s.

Despite declining infant mortality across countries, decreasing male life expectancy at birth in the former socialist economies is associated with increasing per capita income across countries, in marked contrast to global trends. This is probably because rising income level is associated with greater probability of death between the ages of 15 and 65: the wealthier the society, the less healthy its population -- particularly for its males.

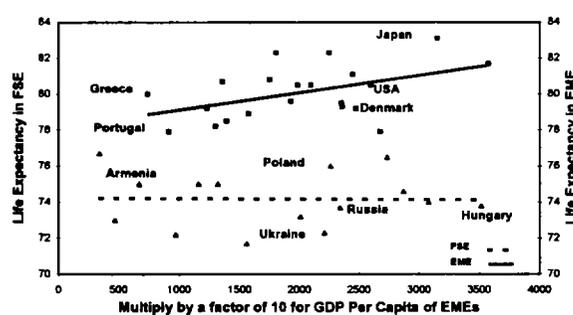
Within the observed range of income in the former socialist economies, the male populations in wealthier countries appear less healthy than those in poorer countries, as indicated by average life expectancy at birth, which declines moderately as per capita income rises across countries (see Figures 5 and 6). This is in contrast to global trends (World Bank, 1993), and to the pattern seen -- albeit weakly -- in the established market economies, in which life expectancy at birth increases moderately with rising per capita GDP.

Figure 5: Life Expectancy by GDP Per Capita for Males in FSEs and EMEs in the Early 1990's



FSE: N=15, Spearman $r = -0.42$, $p = 0.12$
 EME: N=21, Spearman $r = 0.34$, $p = 0.13$

Figure 6: Life Expectancy by GDP Per Capita for Females in FSEs and EMEs in the Early 1990's

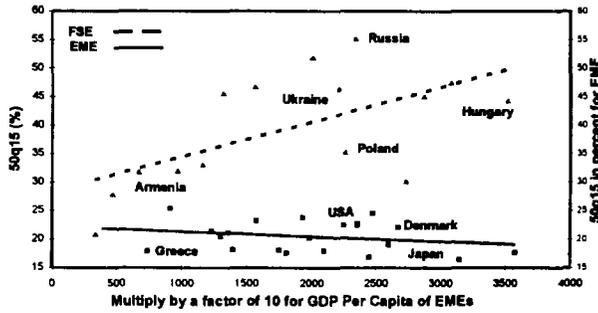


FSE: N=15, Spearman $r = 0.02$, $p = 0.93$
 EME: N=21, Spearman $r = 0.39$, $p = 0.07$

Although the infant mortality rate is lower at higher national income levels, the probability of dying between ages 15 and 65 increases in the FSEs, more sharply for men than for women (Figures 7 and 8)⁴. The results for the FSEs indicate that over the lifetime of a hypothetical cohort exposed to the current age-specific death rates, the cumulative effects of exposure to the risks of death would outweigh the cumulative benefits of increased wealth across countries. Adult males at the age of 15 in Hungary, one of the wealthiest countries, would have more than twice the chance of dying within the next 50 years compared with their counterparts in Albania, the poorest of FSEs. Adult male mortality risk in Albania (21 percent between ages 15 and 65) is on par with the average for EMEs (20 percent). The FSU countries of Russia (55 percent) and Ukraine (46 percent) and the Baltic Republics of Latvia (52 percent), Lithuania (46 percent) and Estonia (47 percent) have particularly high adult male mortality risks, considerably higher than those found in Central and Eastern Europe.

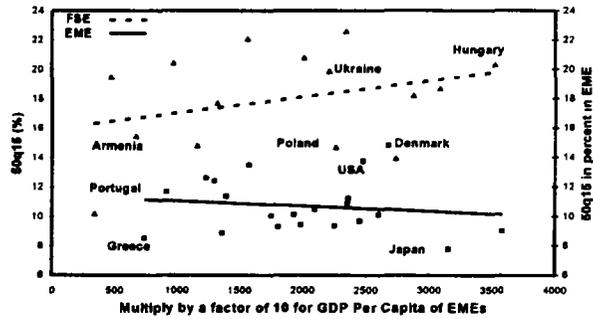
⁴ This is shown by the notation 50q15. The 50q15 function is the numerical answer to the question: among persons who reach the exact age of 15, what proportion will die before their 65th birthday i.e. within 50 years? It is based on period/cross-sectional life tables, a mathematical model of the life history of a hypothetical cohort. For further details, see Palmore, J.A., Gardner, R. W. Measuring Mortality, Fertility and Natural Increase. East-West Population Institute Center, 1993.

Figure 7: 50q15 by GDP Per Capita for Males in FSEs and EMEs in the Early 1990's



FSE: N=15, Spearman $r = 0.52$, $p = 0.04$
 EME: N=21, Spearman $r = -0.14$, $p = 0.42$

Figure 8: 50q15 by GDP Per Capita for Females in FSEs and EMEs in the Early 1990's



FSE: N=15, Spearman $r = 0.20$, $p = 0.47$
 EME: N=21, Spearman $r = -0.10$, $p = 0.66$

The probability of death between ages 15 and 65 for females in FSEs is roughly half that for males, and rises less steeply as per capita income rises. The differential mortality risks indicated by these results are consistent with previous reports (UNICEF, 1994). It appears that the impact of premature adult mortality is less determinant of life expectancy at birth for women.

As shown in Figure 9, there is poor correlation between 50q15 and IMR in the FSEs. Three clusters of countries can be identified on the chart. The first, with low-to-moderate IMR and high 50q15, includes Russia, Latvia, Estonia, Lithuania, Ukraine, Belarus and Hungary -- constituting the "northern" cluster of countries in the region. The second, with low IMR and low 50q15, includes Bulgaria, Armenia and the Czech Republic -- the "southern" cluster of countries in the region, with Poland, a "northern" country, being an exception in this cluster. The third cluster, with high IMR and low 50q15, includes Uzbekistan and Tajikistan, the Central Asian Republics, and Albania, a "southern" country. Kazakhstan falls into none of the three clusters. These findings are largely consistent with an earlier report by Murray and Bobadilla (1995), which noted that the FSEs are not an epidemiologically homogenous group. The causes of the unusual male mortality levels in the northern FSEs remain poorly explained. Hypothesized causes include alcohol, smoking, cohort effect, diet, pollution, occupational exposures, organization of the health system, communism (Murray and Bobadilla, 1995), and income differentials among countries.

Figure 9: 50q15 and Infant Mortality Rate (IMR) in FSEs and EMEs in the Early 1990's

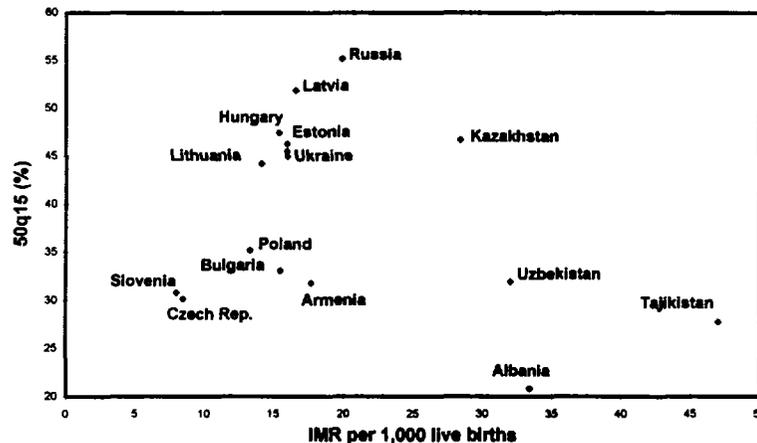
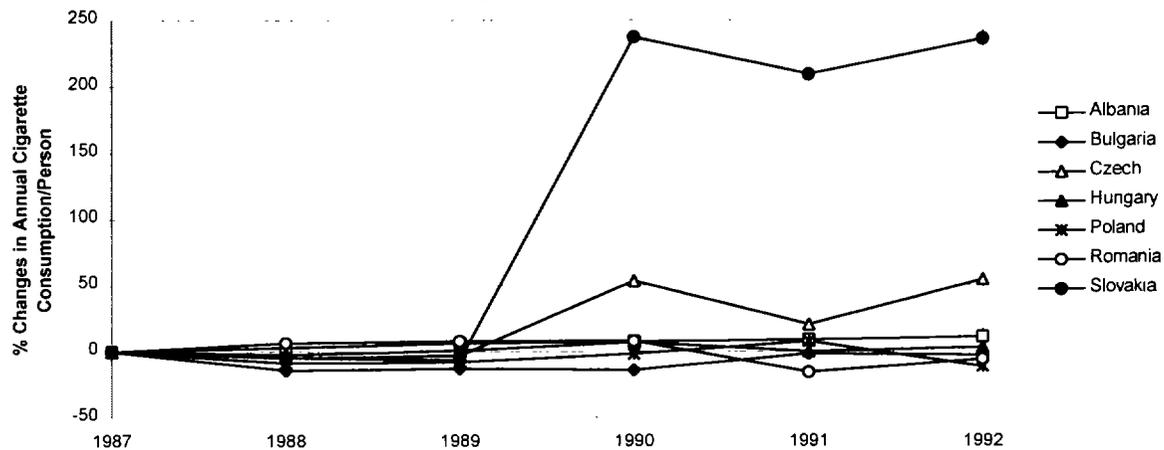


Figure 10: Percentage Change in Annual Cigarette Consumption/Person by Country, 1987 - 1992



Aggregate data on changes in lifestyle behaviors during the early transition are scant. Some evidence exists that cigarette consumption -- which was high by global standards prior to the transition -- has increased. No common trends are evident in terms of diet and alcohol consumption.

Cigarette consumption increased in all but two of the countries from 1987 to 1992 (see Figure 10). Slovakia recorded an extraordinary increase of 235 percent in cigarette consumption per person per year during this period -- one of the highest rates of consumption per person. Cigarette consumption data should, however, be treated with some caution because clandestine exports may have been falsely classified as local consumption in the exporting country. The findings of high and increasing cigarette consumption rates are consistent with data from Poland and Hungary presented in a previous report by UNICEF (UNICEF, 1994). Increasing cigarette consumption will increase risks of cardiovascular diseases, lung cancer and other chronic diseases, which are the main causes of premature adult mortality.

No striking trends are evident in the consumption of alcohol per person by country, and few data are available to assess changes over time. (See Statistical Annex on Health Status for Alcohol Consumption by Country). Slovenia, Slovakia and Hungary had the highest rates of alcohol consumption within the region, with 1991 rates in Hungary and Slovenia exceeding the OECD average of 9.6 liters per person aged 15 years or older (Scheiber *et al.*, 1994). Although it is inappropriate to make causal attributions on the basis of the limited data in this study, these findings make it reasonable on the basis of known proximate determinants of chronic diseases and the effects on health of smoking (Center for Disease Control, 1989) and heavy consumption of alcohol (Shaper, 1993; Stampfer *et al.*, 1993), to advocate public health policy focusing strongly on reduced smoking, reduced alcohol consumption (i.e. avoid binges and chronic excesses), healthier dietary practices and exercise.

Health Services

The study examined trends in inputs and utilization, including staffing patterns, medical training, inpatient and outpatient capacity, admissions rates, lengths of stay, capacity utilization, public health coverage and the public/private mix of services. Data in these areas should provide coverage of both the public and private sectors, and distinguish between the two. However, current information systems generally provide reliable coverage of only the public sector. Thus, the aggregate data presented for each country tell more about trends in the public sector health network than in the health system as a whole. Data on privatization and private sector development were not consistently available across countries. Nor was it possible to link public sector service data to public expenditure data in a consistent way, in order to examine the unit costs of care through time. As mentioned earlier, data currently available on the national level did not permit an assessment of changes in the efficiency and quality of health services. While micro-level data could provide some indication of such trends, it will remain difficult to assess broadly the impact of reforms until medical and financial information systems are upgraded. Nonetheless, it was possible in a few discrete areas to show that good health policies contribute to good health outcomes, while poor policies produce poor results.

Although data are weak, they indicate little significant restructuring of public sector health networks in most CEE countries -- even where real spending for health has contracted severely during the transition.

There appears to have been little change in medical staffing and in-patient capacity in public sector health networks during the transition, even in countries where real public spending for health has contracted by anywhere from 20 to 50 percent. (See Table 2, next page, and the Statistical Annex). Very little downsizing or restructuring has occurred. Hungary, which has largely maintained real public spending for health, embarked in 1995 on a three-year program to eliminate or convert to chronic care about 20 percent of acute care beds. This will not be accompanied by reduction in public sector health personnel, although voluntary privatization of staff could occur (see below). Croatia, which had a 40 percent real reduction in public spending for health, has also experienced some downsizing. Voluntary privatization and/or emigration of medical personnel to Western Europe contributed to a 9 percent decline in physicians and 14 percent decline in nurses in the public sector in the 1990-93 period. This was accompanied by a 20 percent reduction in acute hospital beds, through planned closings as well as destruction and abandonment of facilities. Romania also had a 6-7 percent reduction in public sector physicians and nurses, and an 11 percent reduction in beds. The remaining countries for which data were available show marginal changes in medical staffing and beds since 1987.

Time series data on hospital utilization were available for only half the countries studied, but suggest little change in hospital admission rates (Croatia again being an exception of what happened). The average length of hospital stay declined by 10-15 percent since 1987 in the Czech Republic, Slovakia and Poland. This may be an initial indication of increasing efficiency in treatment, although largely unaccompanied by restructuring of public services.

Table 2: Availability and Use of Services 1989-1994					
	1990	1991	1992	1993	1994
Albania					
Physicians per 1,000 population	1.4	1.4	--	1.4	1.3
Hospital beds per 1,000 population*	4.0	4.0	4.0	3.6	3.0
Average length of stay (days)	13.4	13.7	12.7	9.0	9.0
Bulgaria					
Physicians per 1,000 population	3.2	3.0	3.2	3.4	3.3
Hospital beds per 1,000 population	9.8	9.8	10.2	10.5	10.2
Average length of stay (days)	13.7	13.9	13.8	13.8	13.6
Croatia					
Physicians per 1,000 population	2.1	2.0	2.0	1.9	2.0
Hospital beds per 1,000 population	7.4	6.5	6.3	6.1	5.9
Average length of stay (days)	15.4	14.4	15.2	14.5	13.8
Czech Republic					
Physicians per 1,000 population	2.7	--	--	3.2	2.9
Hospital beds per 1,000 population	10.9	--	--	12.2	9.8
Average length of stay (days)	12.0	11.9	11.6	11.2	13.5
FYR Macedonia					
Physicians per 1,000 population	2.2	2.2	2.2	2.2	--
Hospital beds per 1,000 population	--	5.3	--	--	--
Average length of stay (days)	--	--	--	--	--
Hungary					
Physicians per 1,000 population	3.3	3.3	3.3	3.1	3.4
Hospital beds per 1,000 population	9.8	10.0	9.8	9.8	9.9
Average length of stay (days)	12.6	12.4	12.0	11.8	11.3
Lithuania					
Physicians per 1,000 population	4.0	3.9	3.9	3.9	4.0
Hospital beds per 1,000 population	12.4	12.7	11.9	11.8	11.1
Average length of stay (days)	17.9	17.6	17.1	16.7	16.0
Poland					
Physicians per 1,000 population	2.1	2.2	2.2	2.2	--
Hospital beds per 1,000 population	8.2	--	--	--	--
Average length of stay (days)	12.5	12.3	11.8	11.4	--
Romania					
Physicians per 1,000 population	1.8	1.8	1.9	1.8	1.8
Hospital beds per 1,000 population	8.9	8.9	7.9	7.9	7.7
Average length of stay (days)	11.4	11.7	11.7	11.6	10.3
Slovakia					
Physicians per 1,000 population	3.3	3.3	3.2	3.1	3.0
Hospital beds per 1,000 population	7.4	7.6	7.6	7.8	7.1
Average length of stay (days)	13.7	12.9	13.4	12.7	11.4
Slovenia					
Physicians per 1,000 population	2.1	2.1	2.1	2.0	2.2
Hospital beds per 1,000 population	6.0	6.0	5.9	5.8	5.8
Average length of stay (days)	11.4	11.1	10.9	10.9	10.6
Turkmenistan					
Physicians per 1,000 population	3.6	3.7	3.6	3.6	3.5
Hospital beds per 1,000 population	11.5	11.6	11.4	11.7	11.5
Average length of stay (days)	15.6	15.2	14.7	14.9	15.1
CEE Average					
Physicians per 1,000 population	2.3	2.3	2.4	2.4	2.4
Hospital beds per 1,000 population	8.5	8.8	8.6	8.6	8.4
FSU Average					
Physicians per 1,000 population	4.0	4.0	3.9	3.9	3.8
Hospital beds per 1,000 population	13.3	12.6	12.2	11.9	11.6
OECD Average					
Physicians per 1,000 population	--	2.2	--	--	--
Hospital beds per 1,000 population	--	8.4	--	--	--
Average length of stay (days)	--	14.4	--	--	--

* In-patient care

Sources: WHO Health for All, Scheiber, et al., 1994.

Privatization of health services in transitional economies has been voluntary, and has proceeded most rapidly in the pharmaceutical and dentistry areas, where a larger share of costs has been shifted onto households. Private sector development has been slower for other ambulatory services, and negligible for hospital care -- areas where both costs and reimbursement mechanisms have thus far remained largely within the public sector.

Most FSEs have adopted legislation authorizing private sector production, trade and distribution of drugs, medical equipment and supplies. Legislation authorizing private sector health services has also been adopted in most countries, limited in some cases to ambulatory care. Virtually all privatization has been voluntary -- no mass privatization of public sector health assets has occurred. Social assets (e.g. workers' clinics) in privatizing enterprises have been largely taken over by the state, for possible future privatization.

Data on privatization and private sector development are not consistently available across countries. However, what evidence there is indicates that private sector development and privatization are proceeding most rapidly in pharmaceuticals and dentistry, with slower movement for physicians and diagnostic services, and little to no privatization of hospital services. In Bulgaria, nearly 50 percent of pharmacists left the public sector between 1990 and 1993, compared to only about 5 percent of physicians. In Poland, 90 percent of pharmacies were in the private sector by 1993, while the total number of pharmacies (5,700) had risen by more than 40 percent relative to 1990. Overall, Poland had 18,000 new private health-related businesses by 1993, as well as 30,000 physicians and 9,000 dentists in the private sector. In Hungary, the Czech Republic, Croatia and Russia, new mechanisms are being established to allow private physicians to act as independent contractors to health financing agencies. In general, though, privatization has occurred most rapidly in those areas where risk pooling is less critical and a larger share of costs can be shifted to the private sector. Substantial out-of-pocket payments are now the norm for pharmaceutical expenditures and dental treatment in many countries. Many of these countries are now struggling to introduce appropriate public reimbursement mechanisms for private sector health services. The lack of reimbursement mechanisms has slowed private sector development of ambulatory physicians and diagnostic services, and particularly of expensive services, such as hospital care. However, this same lack of mechanisms has helped control overall costs, which may have increased had such mechanisms been put in place earlier.

Hospitals and other forms of expensive care, although marketable in principle, have undergone privatization only in isolated cases. However, in countries such as Hungary, the Czech Republic and Bulgaria, public hospitals have been divested from central government to local government, as part of a broader trend toward decentralization. Public health activities with considerable externalities, such as sanitation services and vector control, have remained in the public sector, as have research and development and professional education.

Granting health care consumers the right to choose, and linking payment of providers to demand for their services, are expected to improve the quality and efficiency of care -- but data are not yet available to assess the impact of these reforms.

Most transition countries have granted health care consumers the right to choose their health care providers. A growing number, including Croatia, Hungary and Slovakia, have adopted payment mechanisms -- such as capitation payments for general practitioners -- which remunerate providers on the basis of demand for their services. This is expected to provide a powerful incentive to improve the quality and efficiency of services, but data are not yet available to make such judgments. Consumers and policymakers in transition countries are also beginning to understand how imperfections in the health care market limit the ability of consumers to make optimal choices, implying an important regulatory role for government.

Policies and procedures which alter the effectiveness of health services have had a demonstrable impact on health status during the early phase of transition. This impact has been mixed. Where the transition has resulted in more rational policies -- such as increased availability of contraceptives and safe abortions in Romania -- the effect on health outcomes has been positive and dramatic. Where systemic constraints and poor resource allocation have prevented effective service delivery -- such as childhood immunization in FYR Macedonia -- the effect on health outcomes has been negative and equally marked.

The ability of health policies to influence health outcomes -- even in the short-term -- can be examined empirically, as in the following examples. In Romania, maternal mortality increased sharply when abortions were banned in 1966, and fell by two-thirds following the legalization of abortion and the liberalization of the contraceptive market in 1989-90. The maternal mortality ratio fell from 170 deaths per 100,000 live births in 1989 to 53 in 1990, and has remained at the lower level since (see Figure 11).

Figure 11: Changes in Abortions and Maternal Deaths in Romania, 1987 - 1993

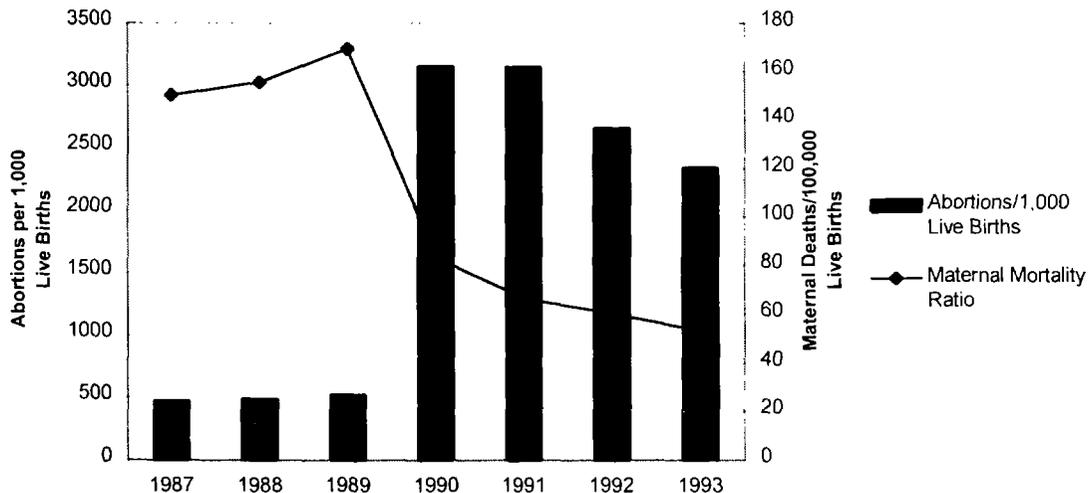
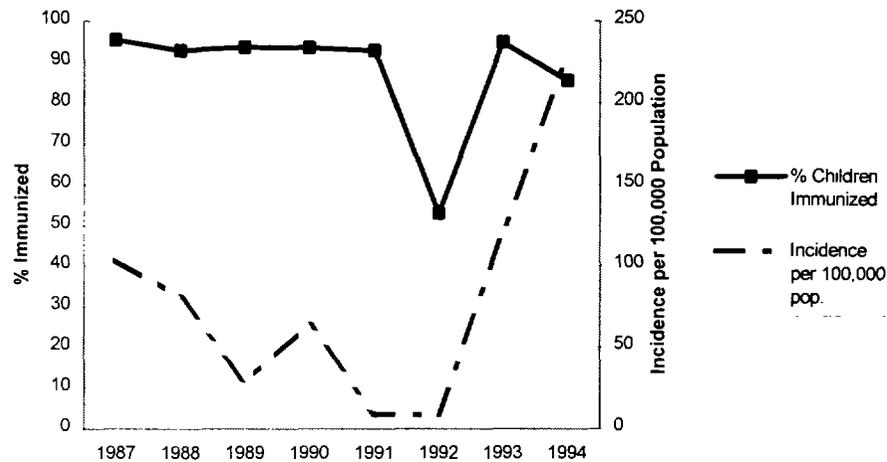


Figure 12: Immunization Coverage and Incidence of Measles in FYR Macedonia, 1987 - 1994



In other CEE countries for which data are available, maternal mortality ratios have continued their long-term downward trend in recent years, apparently undisturbed by the transition. (See Statistical Annex for health status data for Maternal Mortality Ratios by Country).

In contrast to the positive health outcome in Romania, a fall in measles immunization coverage in FYR Macedonia, from around 90 percent in 1991 to only about 60 percent in 1992, was followed by sharp increases in the incidence of measles, from 8 per 100,000 in 1992 to 120 in 1993 and 229 in 1994 (see Figure 12). At the same time, increased measles incidence rates in Bulgaria (1991, 1992), Hungary (1989), Poland (1990) and Romania (1993) were relatively modest, and did not follow on significant declines in immunization coverage rates. (See Statistical Annex on Health Services Data for Immunization Coverage Rates and Incidence of Measles by Country). These increased incidence rates may have been due to reduced vaccine effectiveness, changes in the reporting system, or both.

Health Finance

The health systems of the socialist economies were -- with few exceptions -- financed out of general revenues and offered universal coverage with a comprehensive benefits package (i.e. preventive, curative, chronic, rehabilitative and cosmetic care). In several important ways, these countries have not broken with the past during the economic transition. They have all maintained universal coverage with broad risk-pooling, choosing not to "dis-insure" segments of the population. All countries have continued to offer a comprehensive benefits package, often provided solely through the public sector. However, fiscal pressures have prompted most countries to look for ways to limit public sector financial liability by limiting benefits. Initial exclusions have focused on relatively uncontroversial, nonessential services, such as cosmetic surgery and some prosthetic devices (e.g. Croatia, FYR Macedonia) or health sanatoria (e.g. Poland, the Czech Republic, Slovakia). Continued economic contraction and/or unanticipated cost escalation in health services are now leading most countries to consider more profound reform of benefits. FYR Macedonia, for example, will be defining a guaranteed basic package of benefits more in line with available resources. Indeed, political, economic and fiscal pressures have provoked changes in both the sources and uses of funds in the health sector in most former socialist countries -- and greater change lies ahead.

This section of the study examines empirically the changes in sources and uses of funds in the health sector since the advent of the transition. It is based on public revenue and expenditure data obtained from ministries of finance, ministries of health and national health insurance funds. Information on private health expenditures was also collected, largely from household income and expenditure surveys, but proved scant and was not comparable across countries. Real trends in public expenditures were derived by deflating nominal time series data with GDP deflators. Although data were collected for the 1987-1994 period, the most complete set of data for the ten CEE countries was available for 1990-93. Cross-country comparisons of trends in real spending are presented largely for this period (see Table 3, next page). In all cases, trends for each country were examined over the full time series, and significant findings for earlier or later years are noted in the text. Data from two other former socialist countries -- Lithuania and Turkmenistan -- were also available, and have been included to highlight similarities and differences between CEE countries and the countries of the former Soviet Union (FSU) and Baltics. Since the transition has not been associated with significant demographic changes (other than a flux in refugee population in FYR), expected trends were not followed on a per capita basis. Limited utilization data precluded an examination of volume effects on expenditure trends.

Following the pattern of Western industrialized countries, the CEE countries have opted to retain predominantly publicly-funded health systems, with varying degrees of public and private service provision.

Prior to the transition, the CEE countries relied on publicly-financed and publicly-provided health services, funded from general tax revenues. Private expenditures were made, although not well documented, for "under the table" payments to public providers or for black market trade in pharmaceuticals. Today, privatization of service provision is proceeding at varying paces in most transition countries, as indicated above. However, no movement toward large-scale private funding of health services (i.e. the American model) has been observed other than in Russia and Georgia. Rather, the CEE countries have followed the pattern of most Western industrialized countries, where public funding accounts for an average 70 percent of health expenditures (OECD, 1994).

Table 3: Health Financing Indicators, 1990-1994

	1990	1991	1992	1993	1994
Albania					
Health to GDP ratio	3.4	4.4	3.3	3.0	2.8
Real health spending as % of 1990	100.0	94.8	78.5	39.6	41.9
Real per capita health spending as % of 1990	100.0	93.0	75.5	37.7	39.3
Bulgaria					
Health to GDP ratio	4.1	4.5	5.4	5.2	4.0
Real health spending as % of 1990	100.0	98.1	106.9	86.8	98.0
Real per capita health spending as % of 1990	100.0	98.4	107.8	88.0	99.9
Croatia					
Health to GDP ratio	9.7	9.8	7.7	7.5	8.7
Real health spending as % of 1990	100.0	81.6	61.7	57.8	55.1
Real per capita health spending as % of 1990	100.0	81.3	61.6	57.7	55.1
Czech Republic					
Health to GDP ratio	5.5	6.5	6.9	7.6	7.8
Real health spending as % of 1990	100.0	102.1	102.0	110.8	114.6
Real per capita health spending as % of 1990	100.0	102.0	110.4	116.3	118.2
FYR Macedonia					
Health to GDP ratio	8.0	11.4	7.9	7.7	--
Real health spending as % of 1990	100.0	130.0	78.2	67.3	--
Real per capita health spending as % of 1990	100.0	129.3	77.1	50.9	--
Hungary					
Health to GDP ratio	5.7	7.1	6.7	6.9	6.9
Real health spending as % of 1990	100.0	103.4	98.9	99.4	101.9
Real per capita health spending as % of 1990	100.0	104.1	107.3	101.4	105.2
Lithuania					
Health to GDP ratio	2.9	3.8	3.8	3.9	4.9
Real health spending as % of 1990	100.0	86.2	61.9	45.4	55.4
Real per capita health spending as % of 1990	100.0	85.2	61.6	44.9	56.2
Poland					
Health to GDP ratio	4.4	5.1	5.3	4.9	--
Real health spending as % of 1990	100.0	93.5	93.6	89.5	--
Real per capita health spending as % of 1990	100.0	93.2	93.0	88.7	--
Romania					
Health to GDP ratio	2.8	3.3	3.5	3.1	3.6
Real health spending as % of 1990	100.0	100.4	95.8	86.2	101.9
Real per capita health spending as % of 1990	100.0	100.5	97.5	87.9	104.1
Slovakia					
Health to GDP ratio	5.4	5.0	5.1	6.4	7.1
Real health spending as % of 1990	100.0	79.2	74.6	91.3	105.6
Real per capita health spending as % of 1990	100.0	79.8	73.9	90.0	103.7
Slovenia					
Health to GDP ratio	5.6	5.2	7.4	7.7	7.9
Real health spending as % of 1990	100.0	65.7	89.2	98.4	100.0
Real per capita health spending as % of 1990	100.0	65.7	89.0	98.2	99.8
Turkmenistan					
Health to GDP ratio	--	3.2	1.8	1.7	0.8
Real health spending as % of 1990	--	100.0	52.6	46.6	20.3
Real per capita health spending as % of 1990	--	100.0	50.6	42.2	17.5

Source: SCT Database

Note: Turkmenistan's base year is 1991 as no 1990 data were available at the time the report was written.

Data on private health expenditures in the former socialist countries are scant, but recent household surveys in several countries suggests that out-of-pocket expenditures range from 2 to 30 percent of total health expenditures. While the surveys were not designed to permit analysis of these expenditures, it is widely believed that much of this spending is for drugs in the burgeoning private pharmaceutical market. A growing number of countries (e.g. Bulgaria, Croatia, FYR Macedonia) have also introduced copayments and other out-of-pocket user fees for publicly-funded health services -- or intend to do so in the near future (e.g. Hungary and Croatia). Copayments ranging from 5 to 50 percent of total costs are common. Revenues from this source, however, are usually less than five percent of total health revenues, due to the limited scope or low rates of copayments, and/or the broad exemptions allowed.

Due to the paucity of information on private spending, the remainder of the analysis focuses only on public sector health expenditures. Thus, it is important to bear in mind that although public expenditures remain the lion's share of spending for health in these countries--and exhibit important trends -- they do not tell the entire story.

Most CEE countries have undertaken -- or plan to undertake -- a movement away from exclusive reliance on general revenue financing toward a mixed system of financing based on national health insurance funded largely through payroll taxation and transfers from general revenues for more working population groups.

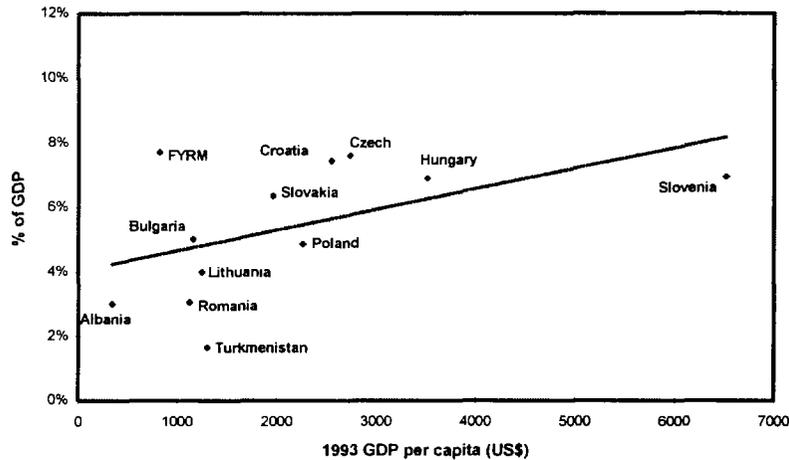
Among the former socialist countries, the transition has resulted in a shift away from health financing through general tax revenues toward national health insurance funded through payroll taxation. The republics of the former Yugoslav federation had such a health insurance system before the transition, while Hungary, the Czech Republic and Slovakia adopted such systems in 1991, 1992 and 1993, respectively. Bulgaria, Romania and Poland have national health insurance laws under consideration, and even Albania, with per capita income of only US\$ 340, has introduced a limited form of health insurance, while continuing to rely predominantly on general revenues to finance health services. Other former socialist economies, such as Lithuania and Turkmenistan, have also introduced payroll-based national health insurance.

The movement toward payroll-based health insurance is an attempt to adopt Western European models, and to link contributions explicitly to coverage. However, it has serious implications for the cost of labor and, hence, the competitiveness of the transition economies. Payroll contributions for health insurance alone range from around 3.5 percent of net wages in Albania and Lithuania to nearly 20 percent in Hungary and Croatia. Payroll taxation as a whole (including, but not limited to, health insurance, social insurance and unemployment compensation) ranges from around 30 percent of net wages (e.g. FYR Macedonia) to more than 60 percent of net wages (e.g. Hungary), increasing the cost of labor substantially. This compares to an average for Western Europe of 31 percent of net wages. Unfortunately, differences in the definition of the wage base used for making contributions make direct comparison of cross-national trends difficult. In countries where the chief source of competitiveness in the European market is their relatively inexpensive labor force, a tax burden which significantly increases the cost of labor could have significant implications for international competitiveness. Countries such as Bulgaria and Poland, for which payroll taxation without health insurance already tops 50 percent of net wages, need to seriously evaluate the benefits of further payroll tax increases to fund health services.

CEE countries follow the general trend in which the share of GDP spent on health is positively correlated with per capita income. However, the share of GDP spent on health tends to be higher in CEE countries than in developing countries at similar income levels.

As is the case throughout the world, the share of gross domestic product (GDP) devoted to health in CEE countries is positively correlated with per capita income (see Figure 13). In 1993, the share of GDP for health ranged from around three percent in Albania, with a per capita income of only US\$ 340 to around eight percent in Slovenia, with a per capita income of US\$ 6,515. FYR Macedonia, with a per capita income of only US\$ 820, is an outlier, spending seven to eight percent of GDP on health.

Figure 13: Public Sector Health Expenditures as a Percentage of GDP (1993)

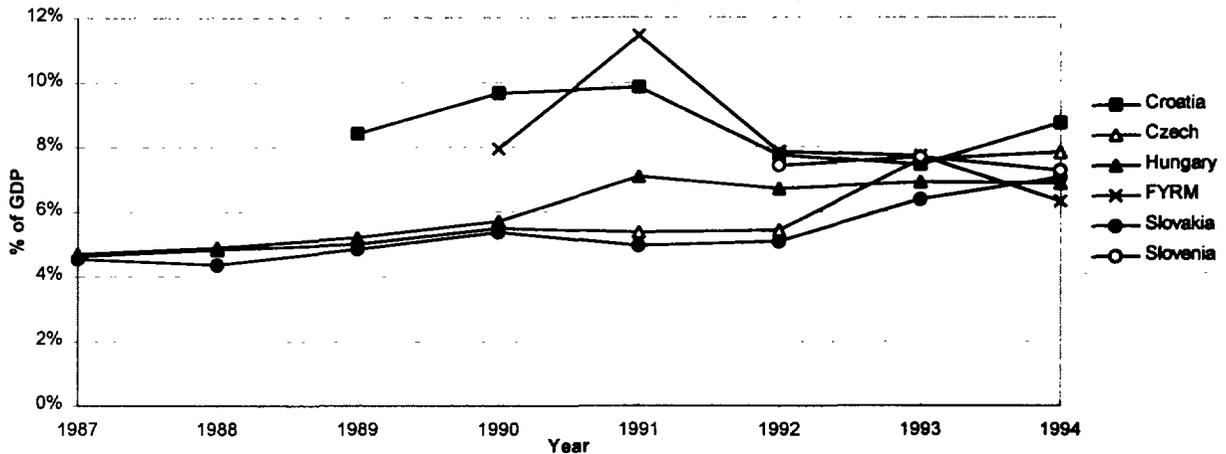


This high level of spending may partly reflect an underestimation of GDP, but was also made feasible in the past due to the country's inclusion in the Yugoslav federation, where it benefited from large fiscal transfers from wealthier republics. Many CEE countries currently lie above the worldwide trend line, spending a larger share of GDP than would be predicted given their income level. This has been exacerbated by recent economic contraction which led, in most cases, to proportional declines in health spending (discussed in greater detail below). In other words, during the early phase of the transition, the CEE countries shifted left relative to the global trend line, rather than shifting down the trend line, implying that the elasticity of health expenditures with respect to income has been approximately equal to one. A cursory review of data from the Baltics and former Soviet Union seems to indicate that they are not as far above the global trend line as the CEE countries.

CEE countries with national health insurance financed predominantly through payroll taxation are spending a higher proportion of GDP on health than countries relying largely on general budgetary revenues. Adoption of payroll-based health insurance during the transition has been followed by a marked increase in the share of GDP devoted to health.

The CEE countries which spend the highest proportion of GDP on health (7-9 percent) are those which have either historically relied on, or recently adopted, a national health insurance system financed by payroll taxation. This includes the former republics of Yugoslavia (Croatia, FYR Macedonia and Slovenia in this study), which had a decentralized payroll-based health insurance system before the economic transition, as well as Hungary, the Czech Republic and Slovakia. For these latter three countries, the introduction of payroll-based health insurance was followed by an immediate increase in the share of GDP devoted to health expenditures, rising from 5.0-5.5 percent to 7.0 percent or more.

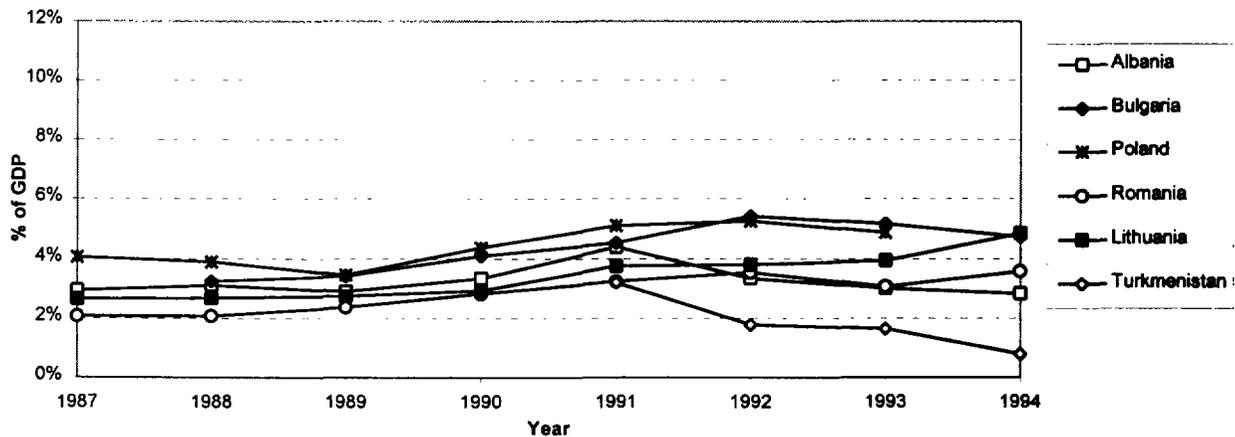
Figure 14a: Public Sector Health Expenditures as a Percent of GDP (1987-1994)



As predicted during the initial hypothesis, the movement to national health insurance has resulted in a shrinking revenue base for health through payroll taxes. Total resources have, however, increased because insurance contributions have not entirely substituted for general revenues. Instead, insurance contributions have been supplemented by general tax revenues, increasing total public resources for health. As a result of erosion in contribution compliance, the liable wage bill and unemployment rates, most of the insurance funds are currently developing the mandate for universal coverage and broad benefits packages. As a result, it has been necessary to continue to sustain desired levels of health expenditures. Anticipated further increases in expenditures are now contributing to fiscal crises in countries such as Hungary, Croatia and the Czech Republic, stimulating the search for ways to contain costs and limit fiscal liability. Croatia and FYR Macedonia, which had severe economic contraction, experienced a one-year lag in the adjustment of health expenditures, leading to a temporary peak in the share of GDP devoted to health (see Figure 14a).

Countries still relying predominantly on general revenues to finance health care -- Poland, Bulgaria, Romania, Albania and Lithuania -- are spending 3-5 percent of GDP on health (see Figure 14b). In some cases, the share has crept upward in the 1989-94 period, most notably in Bulgaria, where excessive decentralization has resulted in a loss of central expenditure control. However, there has not

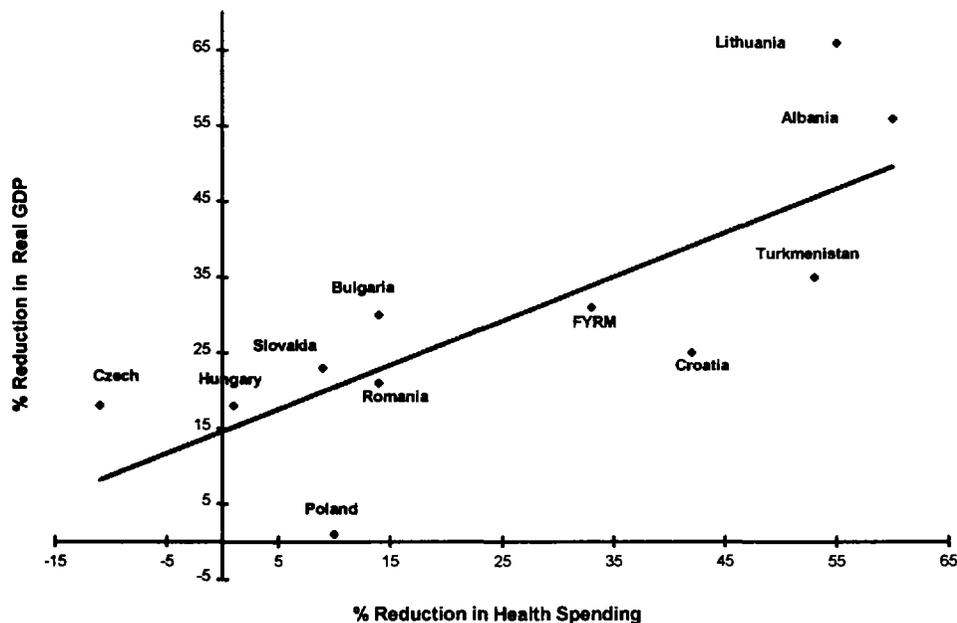
Figure 14b: Public Sector Health Expenditures as a Percent of GDP (1987-1994)



been in this group of countries the sudden, marked increase which followed the introduction of health insurance in neighboring countries. Turkmenistan exhibits a rather precipitous decline in public sector health spending as a share of GDP since 1991 -- a trend not generally seen in the CEE countries, but which is reportedly common in countries of the former Soviet Union, corresponding to a general collapse of the state apparatus.

CEE countries experiencing severe contractions in real income have had roughly proportional reductions in real public spending for health. Once economic growth resumes, real public spending for health tends to rebound to pre-transition levels, even before full economic recovery.

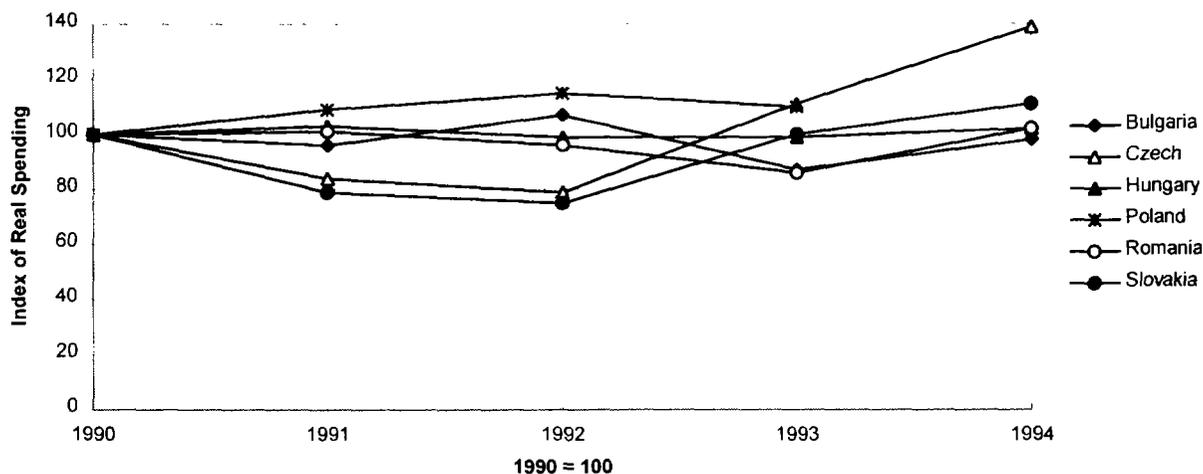
Figure 15: Reduction in Real Public Spending for Health (1990 - 1993)



As indicated in Figure 15, a relationship exists between changes in real GDP and changes in real public spending for health during the transition. Those countries with more severe economic contraction in the 1990-93 period (23-56 percent reduction in real GDP) had roughly proportional declines in public expenditures for health. Hungary and the Czech Republic, which have experienced the least severe economic downturn during the transition, maintained or increased real public spending for health in the 1990-93 period, with recourse to national health insurance.

Poland, a leader in economic reform, may foreshadow the spending pattern in other countries as they progress in the transition. Poland's economy contracted by around 20 percent in the 1987-90 period, and real public spending for health declined by a roughly proportional amount. In the 1990-93 period, the economy turned around, and once real GDP reached 80 percent of its 1987 level, public spending for health fully recovered to its pre-transition level. A "Rule of Eighty", i.e. partial economic recovery accompanied by full recovery in health spending is apparent in Romania, Bulgaria and Slovakia in 1994. All three

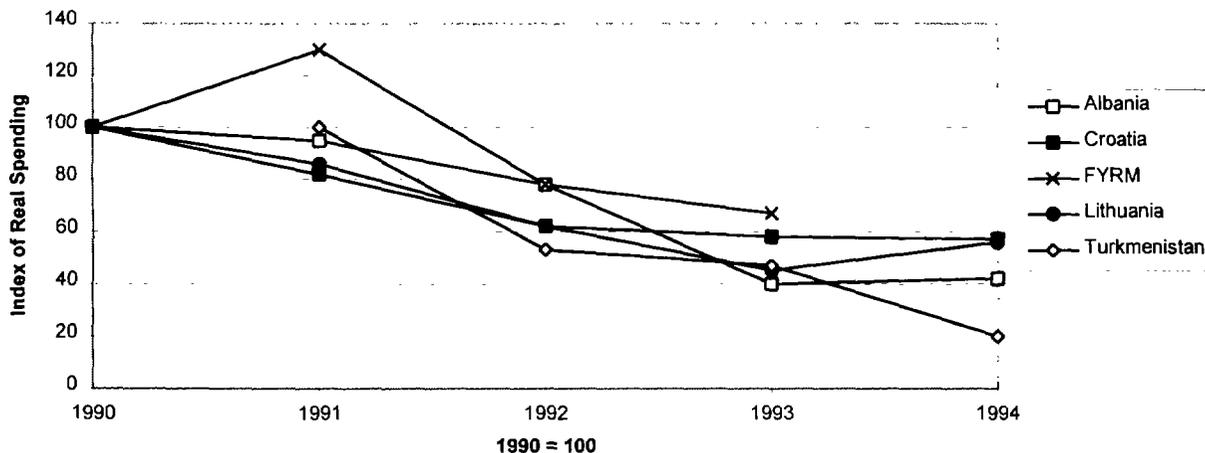
**Figure 16a: Evolution of Real Spending (1990-1994)
Total Health Expenditures**



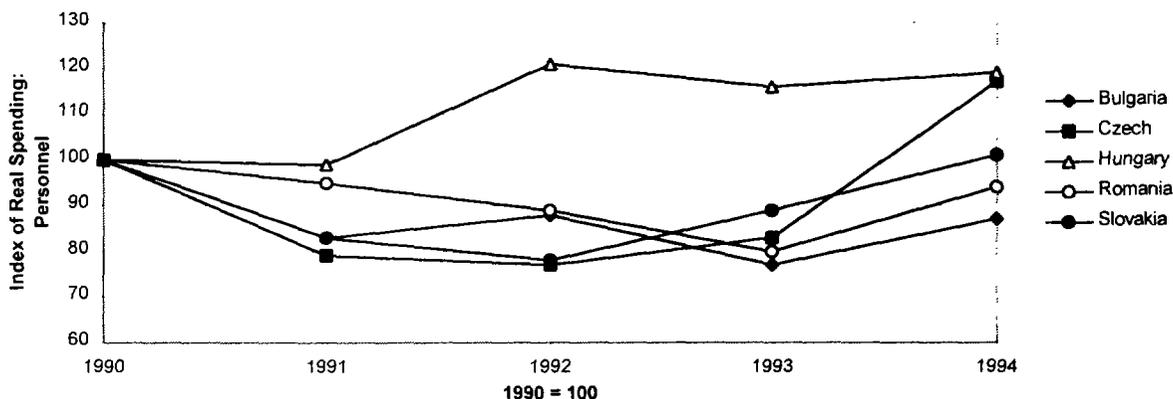
countries had proportional reductions in real spending for health in the 1990-93 period. In 1994, real GDP recovered to around 80 percent of its 1990 level, while public spending for health returned to around 100 percent of its 1990 level (see Figures 16a). Other countries such as Albania, Lithuania and Turkmenistan, that have experienced a severe drop in economic output, have suffered the most in terms of a drop in real spending on health (see Figure 16b). While it is probable that data on GDP underestimates the extent of actual economic recovery, given the burgeoning informal sector in most CEE countries, the implications are clear: governments face strong social and political pressure to restore and even increase real spending for health once economic recovery begins to take effect.

In countries where public expenditures for health declined in real terms, real spending for health sector personnel fell by as much as, or more than, total expenditures. At the same time, the number of health personnel on the public payroll did not change significantly – implying an erosion of real wages in those countries where personnel expenditures contracted.

**Figure 16b: Evolution of Real Spending (1990-1994)
Total Health Expenditures**



**Figure 17a: Evolution in Real Spending (1990-1994)
Personnel Expenditures**



Contrary to the initial hypothesis, expenditures for health personnel have not been shielded from overall spending cuts. Real spending for personnel has followed the general trend in public spending for health. Countries which maintained or increased overall health expenditures also maintained or increased personnel spending. In Hungary, real public spending for health sector personnel rose by nearly 20 percent (see Figure 17a and 17b) after the introduction of health insurance, fulfilling one of the explicit goals of insurance -- to increase the income of physicians. In countries experiencing severe contractions in public spending for health, expenditures for health personnel fell by as much or more. In Albania, Croatia, Lithuania and Turkmenistan public expenditure for health sector personnel fell by 60-70 percent in real terms between 1990 and 1994.

In some of these countries, as many as half the pharmacists and/or dentists have moved to the private sector, accounting for some reduction in personnel expenditures, while the vast majority of medical personnel (physicians, nurses, midwives, laboratory technicians, etc.) have remained on the public sector payroll. This indicates substantial erosion in real average wages for public sector health personnel. The exception being Croatia, where there has been a significant catch-up in real wages of all public employees during the last two years. The degree to which the official income of doctors is supplemented by gratuities or enforced payments is not well known, but is estimated to be substantial in some countries such as the Czech Republic and Hungary.

**Figure 17b: Evolution in Real Spending (1990-1994)
Personnel Expenditures**

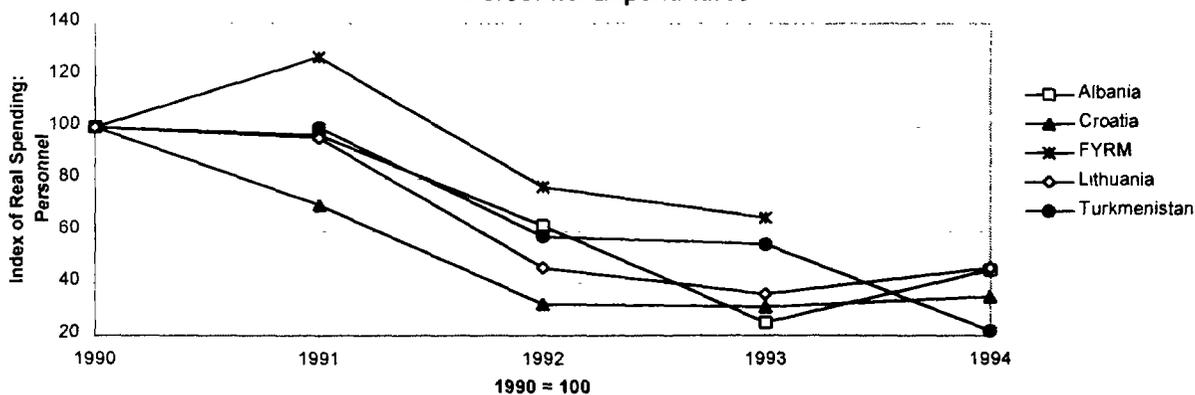
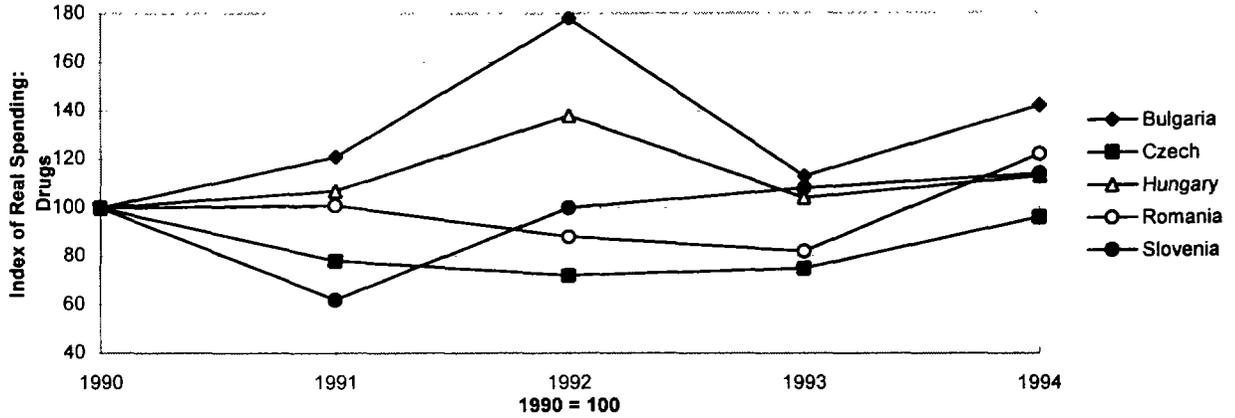


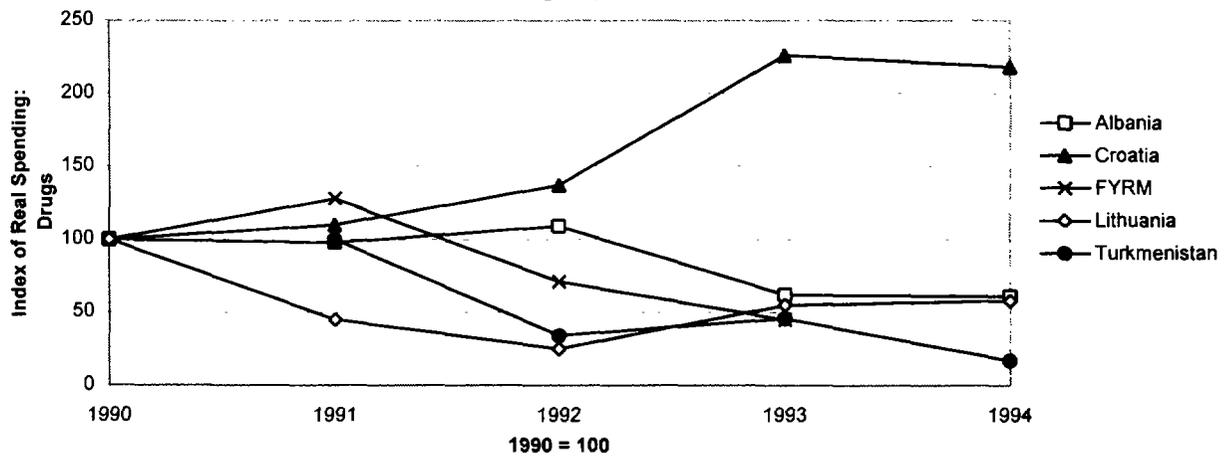
Figure 18a: Evolution in Real Public Spending (1990-1994)
Drug Expenditures



The relative share and absolute level of public expenditures for drugs during the transition has varied greatly from country to country. No clear pattern emerges, largely due to differences in the evolution of the relative price of drug supply, reliance on foreign assistance and the degree of cost shifting to the private sector.

Spending on pharmaceuticals as a share of recurrent public expenditures for health varies from less than 10 percent in FYR Macedonia and Turkmenistan to more than 40 percent in the Czech Republic and Romania. Change in the relative share during the transition has also varied from country to country, declining in Poland and FYR Macedonia, rising in Albania and Croatia, and holding stable in Bulgaria, Hungary and Romania. To accurately assess changes in public spending on drugs in real terms, one would need a deflator based on domestic and international prices, weighted relative to the import content of drug supply for each country since such a specific pharmaceutical deflator is currently not available. The GDP deflator was applied to the time series on drug spending. The results are informative, but do not adequately reflect real changes in the volume of drugs purchased by the public sector, particularly given the serious shortages which have occurred in countries suddenly exposed to world market prices.

Figure 18b: Evolution in Real Public Spending (1990-1994)
Drug Expenditures

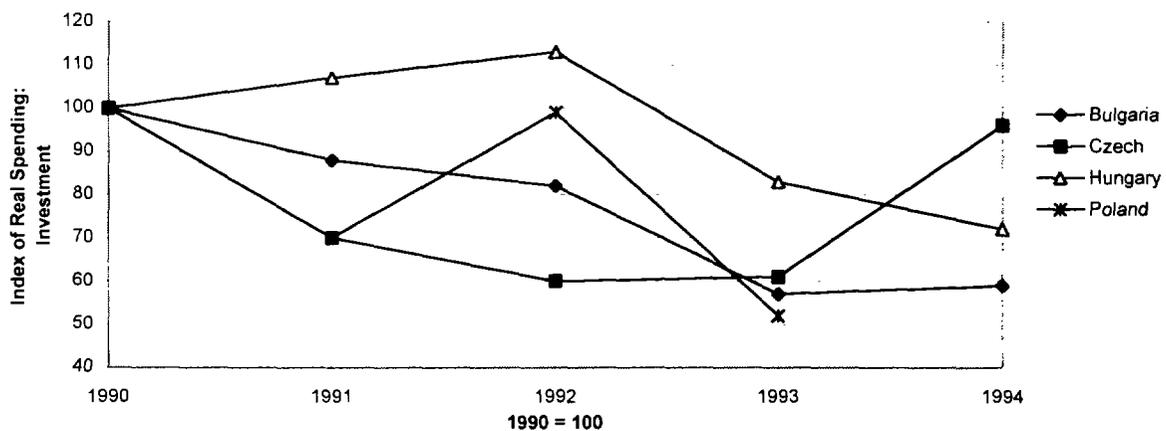


Using GDP deflators, public spending for drugs in the 1990-94 period declined in most countries with severe economic contraction, with the notable exception of Croatia. Drug expenditures held relatively steady in Hungary and Romania, while increasing dramatically in Bulgaria and Croatia (see Figures 18a and 18b). Three factors explain much of the variation among countries and through time in the relative share and absolute level of public spending for drugs: a) changes in relative prices of the drug supply associated with varying degrees of economic liberalization and reliance on imports; b) recourse to foreign assistance for vaccines and some drugs (such as in Romania); and c) planned and unplanned cost shifting to the private sector.

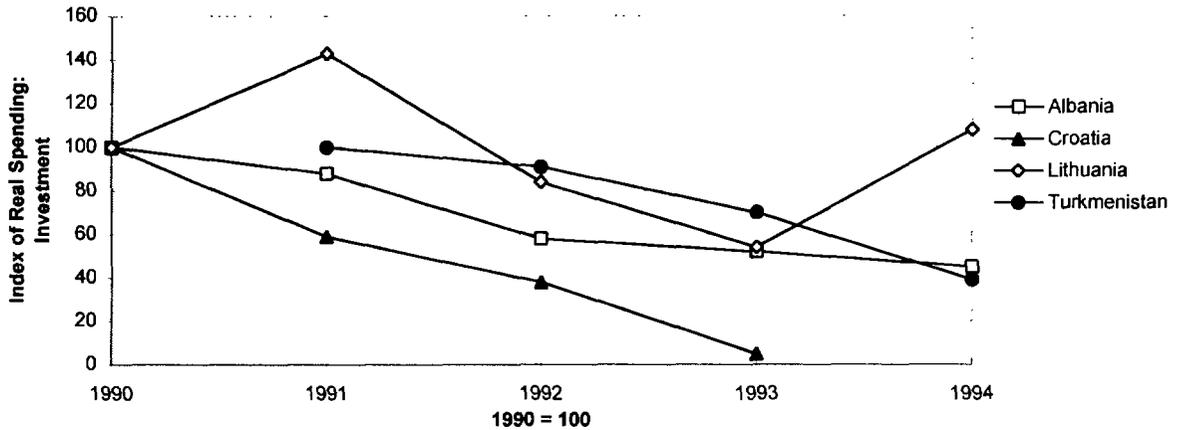
A country such as Hungary, with a relatively open economy prior to the transition, had largely adjusted to world market prices for drugs, and was able to keep public spending for drugs stable -- although relatively high -- in recent years. Countries such as Bulgaria and Croatia were supplied by internal markets with controlled prices and limited selections prior to the transition. When suddenly exposed to world market prices, both countries increased public expenditures for drugs, but insufficiently to maintain previous purchase volumes, particularly when policies were not in place to promote more rational drug use and limit public sector reimbursement. The poorer countries such as Albania, FYR Macedonia and Romania have relied heavily on humanitarian and other foreign assistance to supplement drug supply during the early transition.

More planned and unplanned cost shifting to the private sector has occurred for pharmaceuticals than for other types of health services. In virtually every country studied, pharmaceuticals were among the first areas in which copayments and user fees were introduced. In addition, some countries (e.g. Poland) have introduced policies, such as adoption of a limited national formulary reference prices and establishment of reimbursement ceilings, which have helped to restrain the growth of public spending on drugs. With or without such reforms, much of the pharmaceutical market is now being financed and supplied entirely by the private sector. Where the public sector has been unable to supply the quantity and variety of drugs demanded, consumers have turned to a thriving -- albeit imperfect and unregulated -- private market. If, as believed, a significant part of the out-of-pocket payments for health identified in household surveys is for the purchase of drugs and gratuities for doctors, then private spending for pharmaceuticals likely exceeds public spending in some countries.

Figure 19a: Evolution in Real Public Spending (1990-1994)
Capital Expenditures



**Figure 19b: Evolution in Real Public Spending (1990-1994)
Capital Expenditures**



Real public spending for capital investment in health declined for all countries during the early transition, as a short-term response to fiscal crisis. In several countries, capital spending dwindled to virtually nothing.

In the late 1980s, capital investment as a share of total public expenditures for health ranged from 4 to 15 percent in the countries studied. In several countries for which data are available (e.g. Poland, Albania), capital spending declined in real terms throughout the 1980s. It continued to decline through the 1990-93 period for all countries for which data are available (Figure 19a and 19b). Not surprisingly, real expenditure for public investment fell least in countries with the mildest economic contraction (Hungary and the Czech Republic), and most in the former republics of Yugoslavia, where regional conflict created an unstable investment climate and contributed to severe economic decline. Capital spending for health in both Croatia and FYR Macedonia was less than one percent of total health expenditures in 1993. This uniform decline in real investment for health is clearly a short-term response to fiscal crisis, as governments struggle to pay wages and provide basic drugs and medical supplies. In a few countries, it appears that investment spending in health began to recover in 1994.

IV. Conclusions and Implications for Policy

Health Status

A number of significant policy implications evolve out of the cross-national observations made in this study, which would not be obvious in a single country case study. The observed relationship between life expectancy at birth and GDP per capita within CEE countries is inconsistent with the global pattern, but it is consistent with previous reports that the southern countries of Central and Eastern Europe are poorer but healthier than the northern countries of Central and Eastern Europe (Preker and Feachem, 1994). In general, the single most important predictor of a nation's health status is its per capita GDP (Scheiber, 1989; World Bank, 1993). Despite the limitation of a small sample size, and the fact that the findings are more indicative than definitive, certain conclusions are in order here. First, although the absolute levels of IMR are higher in the FSEs than in the EMEs, the trends in both are consistent with the global pattern of declining IMR with increasing GDP per capita. One is led to conclude that the difference between the FSEs and the EMEs in the life expectancy/income trends is not largely attributable to IMR differences. Second, the trends in adult mortality risk differ between the FSEs and EMEs, indicating that significant risks of adult death in the wealthier FSEs counteract the positive net health effects that would be expected from increased income. Third, better clinical management in the EMEs probably accounts for some of the differences in the patterns of life expectancy at birth.

Lifestyle factors -- diet, alcohol and tobacco consumption, lack of exercise and stress -- account in part for the adult mortality patterns observed in the FSEs. Peto *et al.* (1994) noted that because the effects of tobacco were so great in among males in the FSEs, the death rates from non-communicable diseases were higher in that region than in any other. Overall, removal of the effects of tobacco in 1990 from their reported data would remove completely the anomalous excess of male deaths in the FSEs (Peto *et al.* 1994). In addition, environmental pollution contributes to adverse health outcomes, although the relative impact of environment pollution on life expectancy in heavily polluted areas of Central and Eastern Europe is unlikely to be as important as shortcomings in medical care and lifestyle factors such as smoking, diet and exercise (Hertzman, 1995) and causal associations are difficult to establish.

The health policy implication of these observations is that effective preventive health strategies must be formulated and implemented to reverse the alarming trends observed in CEE. Unless such strategies are pursued, the FSEs will face even greater burdens of preventable chronic diseases in the medium and long term, pushing the development of their health sectors to a higher cost trajectory, with a decreasing social return to health expenditure over time. This scenario has been succinctly discussed by other authors, although without the benefit of the kind of data presented in this paper (Berman, 1995). Gaizauskiene and Westerling concluded that a system that worked well at reducing avoidable mortality would probably be more dependent on national health policy than on the medical intervention *per se* (Gaizauskiene and Westerling, 1995). Many of these public health policies will be outside traditional intervention provided through health services and require extensive high level national coordination in areas such as agricultural policy, public education and strategic use of fiscal instruments such as excise taxes on alcohol and tobacco.

The example of the pro-natalist policies in Romania shows the adverse health effects of ill-conceived government policies. Although political decisions are not necessarily based on rational consideration of causes and effects, there is a case to be made for strengthening national capacities to anticipate possible effects of major policies on health status, thereby enabling decision makers to at least have access to information on possible effects of their actions.

Effective service delivery systems constitute the critical link between policies and the population. Even with the best of intentions, failure to maintain supplies and service delivery are likely to occur in the face of transient contractions in real expenditures on health. It is essential that health policies emphasize the maintenance of key public health functions through access to basic health services during the transition.

Evolution of Health Financing and Services: Causes and Implications

The shift toward national health insurance systems among CEE countries has led to a real increase in the public resources devoted to health, despite the weaknesses of payroll taxation (significant nonpayment by the formal sector and evasion by the informal and newly-emerging private sector). The introduction of payroll-based national health insurance has led to a marked and sustained increase in both the share of GDP (2.0-2.5 percent increase) and real public spending for health. This is because payroll taxation has been more buoyant than anticipated, and because earmarked payroll revenues have served as a complement to, rather than a substitute for, declining budgetary revenues. In several countries, notably Hungary, Croatia and the Czech Republic, the government is now examining ways to shift health care financing for non-active populations such as the nonemployed, unemployed and elderly pensioners back onto general revenues in an attempt to lessen the negative labor effect of excessively high payroll tax rates.

The real increase in public spending for health has been partially by design: policy-makers and vested interests chose to augment physicians' income, as part of the general trend toward increasing returns to higher education. Such was the case in Hungary, where capitation payments for primary care physicians were introduced *on top of* existing salaries. However, the swift rise in the share of GDP devoted to health also reflects inadequate attention to the structure of financial incentives for health care providers and patients, and is obvious in the subsequent fiscal crises which health insurance cost explosions have engendered in Hungary, the Czech Republic and Slovakia. In the rush to introduce "Western-style" health insurance, insufficient thought was given to setting limits on basic insurance coverage, defining actuarially appropriate premiums and establishing payment mechanisms with incentives for efficiency and cost containment. Experience thus far underscores the importance of the cost containment issue in evaluating the health insurance systems which are being proposed and/or introduced in countries which are less well off and/or have been harder hit by the economic transition (e.g. Albania, Bulgaria, Poland and Romania).

Trends in GDP and public expenditure on health during the transition indicate a tendency to restore, and even increase, real public spending for health well before the economy has fully recovered. The "rule of eighty" identified here -- i.e., this pressure to restore health spending before full economic recovery -- undoubtedly reflects social and political expectations of both maintaining past privileges (universal access to care, comprehensive coverage) and "catching up" to reference standards of care and income levels in Western Europe, despite a tremendous income gap between the CEE countries and their Western neighbors. Pressure to restore and then increase public expenditures for health is particularly strong when little has been done to downsize an underutilized public sector network of facilities and staff.

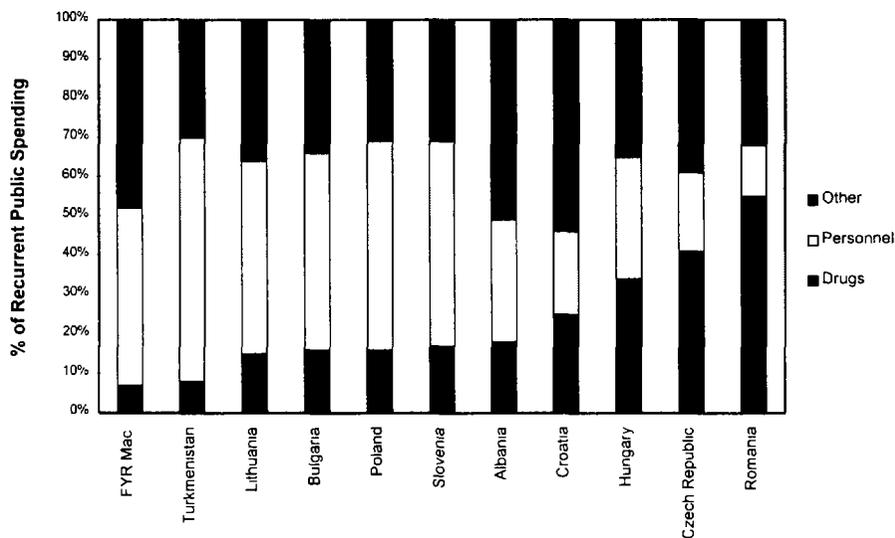
The countries of Central and Eastern Europe have long spent a greater share of national income on health care than would be predicted given their income level. This has been exacerbated during the transition, with many countries now spending 7-9 percent of GDP for public funding of health services. Indeed, health status in these countries also tends to be higher than would be predicted given their income level, and in some areas, a direct causal relationship is clear. Maintaining immunization rates at 95-100 percent has certainly been instrumental in the largely successful battle against childhood communicable diseases. However, long-run stagnation in life expectancy in most countries, despite high

and rising public spending for health, points to the ineffectiveness and inefficiency of many existing health services. While this problem can be traced to long-standing misallocation of resources and a lack of financial incentives for efficiency, it has been exacerbated by the pattern of fiscal adjustment in the health sector during the early phase of the transition.

The initial hypothesis that public spending for health personnel would be protected at the expense of non-wage recurrent expenditures was not borne out by the data. In countries in which real public spending for health fell, expenditures on health personnel fell by as much or more. At the same time, there has been little to no reduction in public sector health personnel in most countries. As seen in other types of state-owned enterprises, adjustment in the health sector has occurred through erosion of real wages, without recourse to mass layoffs. As in other types of enterprises, retaining workers at low wages without sufficient working capital -- in this case for drugs, medical supplies, utilities, etc. -- results in low productivity and low morale, i.e. inefficient and low-quality health services. More detailed study of wage and income data for different categories of public sector health personnel is needed, and would be possible in several of the countries in the study. In many countries, public sector doctors supplement their salaries through moonlighting in the private sector and/or unofficial out-of-pocket payments for public sector health services. However, data on this supplemental income is scarce to nonexistent. Opportunities for supplementing income tend to be limited for other categories of health personnel.

No clear trend emerged in real public spending for drugs, although a pattern of planned and unplanned cost shifting to the private sector was ubiquitous. Both containing pharmaceutical costs and shifting some costs to the private sector are an essential response to fiscal constraints and a step toward increased efficiency of health services. As seen in Figure 20, however, there is considerable variation across countries in the relative expenditure on pharmaceuticals. Countries which have not yet done so ought to adopt policies to limit public sector reimbursement and promote more rational prescribing and use of drugs.

Figure 20: Breakdown of Recurrent Public Spending for Health (1993)



All countries studied have reduced capital expenditures for health dramatically during the transition. This is an appropriate short-term response to fiscal crises which have undermined operating expenditures for basic health services. In the medium-term, however, the health systems of the transition countries need massive investment to replace and upgrade equipment and facilities which are often

outmoded and/or near the end of their economic life. At the same time, most countries are seeking to alter the public/private mix of health services, and redefine central government and peripheral responsibilities. However, they have not yet adopted the policy framework to do so, nor significantly restructured the physical capacity of the public sector network to increase its efficiency and sustainability. Development of a long-term strategy for public investment is dependent on decisions in these areas. The current downturn in capital spending for health is an opportunity for governments to develop appropriate objectives and criteria for future public investment.

Adjustment of health systems in Central and Eastern Europe in response to economic and fiscal contraction has been characterized by: i) diversification of revenues to include insurance contributions, copayments and user fees; ii) compression of recurrent public spending (where economic decline has been severe); and iii) dramatic declines in capital spending. However, implementation of the reform agenda for improvements in efficiency and effectiveness of health systems has scarcely begun, despite abundant rhetoric and support from international agencies such as the Bank. Most countries are moving very slowly -- with Hungary and Croatia as the front runners -- to introduce new reimbursement mechanisms which provide incentives for efficiency and cost containment, transfer ownership of some assets to the private sector, build management capacity and provide necessary managerial autonomy. Little action has been taken to limit the scope of basic health insurance coverage and restructure the public sector network of health facilities, both necessary -- but politically difficult -- steps to improve the financial sustainability, efficiency and effectiveness of health services. Until financial incentives are in place, restructuring and operational reforms are unlikely to take place.

An important barrier to reform is also the lack of relevant performance data upon which to base managerial decisions -- and a lack of managers skilled in using data to inform decisions. At the national level, available health finance and health service data are inadequate to monitor expected changes in the public/private mix of services, restructuring of the public network, efficiency of service provision and utilization of services. The situation is as bad, if not worse, at the facility level. Typically, the CEE countries have a free-standing network of health statistics offices which focus largely on the collection of demographic and health status data, as well as the enumeration of inputs (staffing, beds, clinics, etc.) in the public sector. In the past, very limited efforts were made to link case mix to financing and service provision, and no effort was made to record cost data. These systems remain the dominant data source, but often make no distinction between public and private sector data and/or capture only public sector data. Where finance data are being collected at all, no linkage is made to service data. Thus, the data available for this study were inadequate to analyze the on-going and expected changes due to economic transition and health sector reform. High priority must be given to developing more relevant cost accounting and information systems, training managers to use these systems, and giving managers the autonomy to act on information. Health sector reform projects financed by the donor community should systematically support development of appropriate operational research and information systems -- to serve as management tools at the facility level as well as a means for policymakers to assess the impact of the reform program.

The study revealed significant new information about health status and the health sector which could not have been obtained without a proper cross-national study. However, the sample size was too small and the selection of countries too biased for meaningful regression analyses and identification of the determinants of the changes and trends in health status and health services which were observed. In order to strengthen the objective criteria for influencing policies and implementing changes in the World Bank's client countries, there is an urgent need for a more systematic approach to data collection and operational research both in the Bank and among the various international agencies

Bibliography

- Arnold, J. H., Hecló, H., Adams, C. T., Comparative Public Policy: the Politics of Social Choice in Europe and America. 2nd Edition. (New York: St. Martin's Press, 1093):2-3.
- Barr, N. (ed.) Labor Markets and Social Policy in Central and Eastern Europe. Oxford University Press. 1994.
- Berman, P. "Health Sector Reform: Making Development Sustainable." Health Policy. 32 (1-3). 1995. 13-28.
- Bobak, M., Feachem, R.G.A. "Health Status in the Czech and Slovak Federal Republic." Health Policy and Planning. 7(3). 234-242. 1992.
- Centers for Disease Control (CDC). Smoking, Tobacco and Health: A Fact Book. U.S. Department of Health and Human Services, Publication No. 89-8397. Rockville, Maryland. 1989.
- Gaizauskiene, A., Westerling, R. "A Comparison of Avoidable Mortality in Lithuania and Sweden 1971-1990." International Journal of Epidemiology. 24(6). 1995. 1124-31.
- Hertzman, C., Environment and Health in Central and Eastern Europe. The World Bank. 1994.
- Lisle, L., "Perspectives and Challenges for Cross-National Research," in Comparative Policy Research: Learning from Experience, by Meinolf Dierkes, H. N. Weiler and A. B. Antal eds., WZB Publications (Hans: Gower, 1987): 475.
- Klugman, J., Schieber, G. "A Survey of Health Reform in Central Asia," The World Bank. Forthcoming.
- Murray, C.J.L., Bobadilla, J.L. Epidemiological Transitions in the Formerly Socialist Economies: Divergent Patterns of Mortality and Causes of Death. Harvard Center for Population and Development Studies. 1995.
- Palmore, J.A., Gardner, R. W. Measuring Mortality, Fertility and Natural Increase. East-West Population Institute Center. 1993.
- Peto, R., Lopez, A.D., Boreham, J., Thun, M., Heath, C. Mortality from Smoking in Developed Countries 1950-2000. Indirect Estimates from National Vital Statistics. Oxford University Press. 1994.
- Preker, A., Feachem, R.G.A. "Health and Health Care." In Barr, N. (ed.) Labor Markets and Social Policy in Central and Eastern Europe. Oxford University Press. 1994. 288-321.
- Scheiber, G.J., Poullier, J. and Greenwald, L.M. "Health System Performance in OECD Countries: 1980-1992." Health Affairs, 13(4). 1994.
- Sen, A. Mortality as an Indicator of Economic Success and Failure. Inaugural Innocenti Lecture. UNICEF International Child Development Center, Florence, Italy. 1995.
- Shaper, A. G., "Alcohol, the Heart, and Health." Editorial. American Journal of Public Health. 83(6). 1993. 799-801.

Stampfer, M.J., Rimm, E.B., Walsh, D.C. "Alcohol, the Heart, and Health." Commentary. American Journal of Public Health. 83(6). 1993. 801-804.

UNICEF. Crisis In Mortality, Health and Nutrition. Economies in Transition Studies. Regional Monitoring Report - No. 2. August, 1994.

UNICEF. Poverty, Children and Policy: Responses for a Brighter Future. Economies in Transition Studies. Regional Monitoring Report - No. 3. 1995.

World Bank. World Development Report: Investing in Health. Oxford University Press, 1993.

World Health Organization, 1995. World Health Statistics Annual 1994. Geneva.

World Health Organization, 1994. World Health Statistics Annual 1993. Geneva.

Glossary

Macroeconomic Indicators

Deflated GDP Real GDP in 1990 currency.

Deflated total expenditures Total expenditures divided by the GDP deflator.

GDP (Gross Domestic Product) The sum of the value of goods and services produced within a country in nominal terms.

GDP deflator The index of inflation within the country.

Population Total population within the country.

Total expenditures The sum of all government expenditures within a particular country.

Fiscal Indicators

Capital expenditures Expenditures on the construction of new and rehabilitation of old buildings, and the purchase of equipment and vehicles.

Deflated health expenditures (1990=100) Health expenditures divided by the GDP deflator, indicating the change in expenditures by category in real local currency.

Expenditure allocation The classification of hospital and non-hospital activities, with the hospital category classified into in-patient and out-patient sub-categories.

Medical education A range of activities, from training researchers, to the provision of retraining for midwives.

Personal health services A category including personnel (wages and benefits), drugs, other consumables/supplies, energy (heating and lighting), maintenance, transportation (official business trips) and "other" expenditures, which do not fall clearly into any of the previous categories.

Private expenditures The sum of private out-of-pocket expenditures and reimbursement by private insurance institutes.

Private revenues The sum of private insurance and direct charges levied by private health institutions.

Public expenditures The sum of recurrent expenditures, capital expenditures and reimbursement by the public insurance institutes to private sector doctors and institutions.

Public health activities Red Cross related activities as well as pest and rodent control.

Public revenues The sum of state budget (central government, district and local), national health insurance, drugs, direct charges levied by government health institutions, borrowing and foreign assistance.

Recurrent expenditures A classification including personal health services, such as hospitalization and visits to doctors, and non-personal health services such as public health activities, medical education and research and development.

Total health expenditures The sum of public and private expenditures.

Total health revenues The sum of public and private revenues.

Epidemiological and Demographic Indicators

Abortion rates = (Number of abortions/total live births)*1,000.

Annual alcohol consumption Measured in litres per person.

Annual cigarette consumption = ((Number of cigarettes produced + Number of cigarettes imported) - number of cigarettes exported)/Population.

Average length of stay (ALOS) = (Annual number of inpatient days/Annual number of admissions or discharges).

Crude Birth Rate = (Number of births/Population)*1,000.

Crude Death Rate = (Number of deaths/Population)*1,000.

50q15 = ((Number of survivors to age 15-Number of survivors to age 65)/Number of survivors to age 15)*100. This function is the numerical answer to the question: among persons who reach the exact age 15, what proportion will die before their 65th birthday, i.e., within 50 years? It is based on period/cross-sectional life tables, a mathematical model of the life history of a hypothetical cohort.

Immunization Coverage = (Number of children immunized in an age group/Total number of children in the age group)*100.

Incidence of low birth weight neonates = (Number of births weighing less than 2,500 grams/Total live births)*100.

Incidence rates The number of new events or cases of disease that develop in a population of individuals at risk during a specified time interval. In this study, the time interval is the given year. Incidence rates for the various diseases such as tuberculosis and hepatitis are measured per 100,000 persons. The same is the case for car accidents, suicides and work accidents.

Infant Mortality Rate (IMR) = (Total infant (i.e. under 1 year of age) deaths/Total live births)*1,000.

Inpatient admissions Expressed per 100 population.

Life expectancy The quotient of the total number of years lived after a given age (at birth, age 1, etc.) and the number of persons who survived to attain that given age.

Maternal Mortality Ratio (MMR) = (Total deaths of mothers during delivery or due to pregnancy-related causes/total live births)*100,000.

Medical personnel Doctors and nurses are expressed per 100,000 population, as are the number of medical and other health related graduates each year. The number of doctors and nurses working in the hospitals is expressed as a percentage of all doctors and nurses working within the country.

Standardized Death Rates (SDR) Expressed in terms of 100,000 people for various causes. Circulatory includes all deaths associated with the circulatory system, malignant neoplasm refers to deaths from cancers of all kinds; infectious/parasitic: include deaths from diseases such as malaria; respiratory system: refers to deaths from diseases such as asthma; and mental and nervous system: refers to diseases related to brain and the nervous system. SDRs from appendicitis are expressed as a proportion of 100,000, population as are SDR drug reactions and surgical wound infection rates.

Total fertility rate The number of children a woman would have if she passed through her childbearing years and experienced at the current age-specific fertility rates.

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