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Public-private Mix and Performance of Health Care Systems in CEE and CIS Countries

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Abstract: *The role of the public and private sector in health care systems remains one of the crucial problems of these systems' operation. The purpose of this research is to identify the relationships between the performance of health systems in CEE and CIS (Central and Eastern Europe and Commonwealth of Independent State) countries, and the mix of public-private sector in the health care of these countries.*

The study uses a zero unitarization method to construct three measures of health system performance in the following areas: (1) resources; (2) services; and (3) health status. The values of these measures are correlated with the share of public financing that represents the public-private mix in the health systems.

The data used is from World Health Organization's Health for All Database for 23 CEE and CIS countries and comprises the year 2010.

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The results show that the performance of health systems in the countries investigated is positively associated with a higher proportion of public financing. The strongest relationship links public financing with performance in the area of services production. For policy makers, these results imply that health systems in post-communist transition economies could be susceptible to a decreasing role of the state and that growing reliance on the market mechanism in health care can deteriorate the operation of these systems.

Introduction

The role of the public and private sector in developed economies seems to be one of the crucial problems in both economic policy and research agenda. Health care systems are not free from dilemmas concerned with the extent to which the government and market should run their operation. The growing pressure on public finance of contemporary welfare states has led to increased importance of market mechanism in health care systems over the last 25 years. Privatization processes, introduction of managed care and internal market as well as increasing private health financing are some examples of this trend. The expectations behind these market-enhancing policies were to restrain growth in health expenditure and to introduce the vital forces of competition into health care, traditionally dominated by public economics thinking. Nowadays, it is clear that the reinforcement of private mechanism has not led to improved control over health care spending and one of the side effects of market oriented reforms is a problem of health inequities. Currently, the question of appropriate public and private roles in health care is far from being answered and the claim of Saltman (2003, p. 24) that "...one of the most striking aspects of this public-private debate is that it never seems to be finally settled" still describes the state of present policy and research debates in the area of health care.

This study attempts to contribute to the debate on the role of public and private sectors in health care by investigating whether the public-private mix in health care financing is associated with the performance of health systems. To do so, data from 23 transition economies of Central and Eastern Europe (CEE) and Commonwealth of Independence States (CIS) is used. The way the public-private mix influences the operation and performance of health system is subject to heated debates and extensive literature on the topic has been published. However, a vast majority of these contributions focus on highly developed economies, usually OECD member states (see: e.g. Götze & Schmid, 2012; Holden, 2005; Rothgang *et al*., 2008; Rothgang *et al.*, 2005; Touhy *et al*, 2004). The intention of this research is to shed more light on the topic by analyzing the relationships be-

tween the magnitude of public/private sector and the performance of health care in transition economies context.

The paper is organized as follows. The introductory part of the paper describes the motivation behind the paper and provides context for the study. Next, in the theoretical section, the public-private dichotomy in health care context, as well as the concept of health care system performance, are briefly discussed. In the third section, the results of the empirical analysis are reported and discussed. The last section concludes the paper and provides future research directions.

Theoretical Background

There are two theoretical issues to be discussed here in order to clarify the concepts used in the empirical analysis. First, the problems of ownership and public-private distinction are considered; after that, a brief discussion of health care system performance is provided.

Public and private sector in health care

There is no single and unambiguous meaning or definition of public and private domains in health care context. The ambiguity is caused by a great complexity of health care systems that cannot be captured in a straightforward model describing ownership issues. Consequently, a reliable taxonomy of public and private spheres is difficult to construct, and the classifications used often do not follow the dynamics of modern health care systems.

Simplifying the reality of these complex interactions, one can use the Donaldson's and Gerard's model of the public/private mix in health care financing and provision (Donaldson & Gerard, 2005, p. 57). According to them, there are two 'pure' sectors in health care. In the pure public sector, public providers are publicly financed, while in the pure private sector, both service delivery and financing are organized privately. The point is that in health care public finance does not match public provision in each case, and private delivery does not have to be financed privately. Private provision accompanied by public provision, as well as public delivery financed privately, both represent the mixed sector (Donaldson & Gerard, 2005).

In fact, the public-private dichotomy in health care is not limited to the financing and provision dimensions. Maarse (2006) discerns the public and private dimensions also in the management and operation as well as in investment areas, while Rothgang, Cacace, Grimmeisen, and Wendt (2005) distinguish also a regulation aspect of the public-private mix.

Therefore, the complexity of the ownership problem in the health care context brings conceptual confusion and makes the definitions of 'private' and 'public' ambiguous and contextual. What is private, particularly, is difficult to define, as the arrangements in the private sector range from private-for-profit, through self-employment, to private-not-for-profit and each of the above can be extensively financed and/or regulated publicly (WHO, 2002). In fact, the phenomenon called 'melting of public-private boundaries' is increasingly observed with new schemes combining public and private elements, and where the public and private domains are not easily distinguishable (Maarse, 2005; Saltman, 2003). As a consequence, the application of the public-private dichotomy to empirical analyses in health care depends on data availability and, inevitably, simplifies the complex issue of ownership.

Performance of health care systems

The performance of an economic organization is usually defined in terms of achievement of some specified objectives. Thus, the performance of health care systems should refer to the goals of these systems.

According to World Health Organization (WHO), a health system consists of all the people and actions whose primary purpose is to improve health (WHO, 2000). In practical applications, this wide definition is often restricted to those activities that refer to formal health care services and exclude actions from other than health care industries.

There is an ongoing debate on the objectives of health systems. Probably, the most prominent approach to the issue is the one of WHO. As it is maintained by this organization, there are three main goals of health systems: (1) health, (2) responsiveness, and (3) fairness in financial contribution (Murray & Frenk, 2000, p. 719). In other words, health systems to meet their goals should deliver effective, preventive and curative health services to a whole population, equitably and efficiently, and protect individuals from catastrophic health care expenses (Kruk & Freedman, 2008, p. 264). The defining goal of health systems is to maintain and restore health both in terms of average health status improvement and health inequalities reduction. Responsiveness, the second intrinsic goal defined by WHO, refers to respect for the people interacting with the system as well as client orientation. The third goal, fairness in financial contribution, means that the operation of health systems should not lead households to impoverishment when in need of obtaining necessary health care, and that poor households ought to contribute to the health system less than rich households do.

Translating these goals into operational measures that could be applied internationally is a complex issue, and it was only once when WHO approached the problem constructing a composite index of health system performance (WHO, 2000). Thenceforth, the authors aiming at assessing the performance of health care systems focus rather on single aspects of systems' operation. The performance dimensions that are usually evaluated are effectiveness in outcomes (health status, patient satisfaction) and outputs (access to and quality of care); equity in outcomes (health status of disadvantage groups, fair financing and risk protection) and outputs (access to and quality of care for disadvantaged groups) as well as efficiency in outcomes (value of resources) and outputs (adequacy of funding, costs and productivity, administrative efficiency) (Kruk & Freedman, 2008, p. 267-268).

In this research, selected categories of health system performance in CEE and CIS countries are chosen, basing on the data availability; the details are provided below.

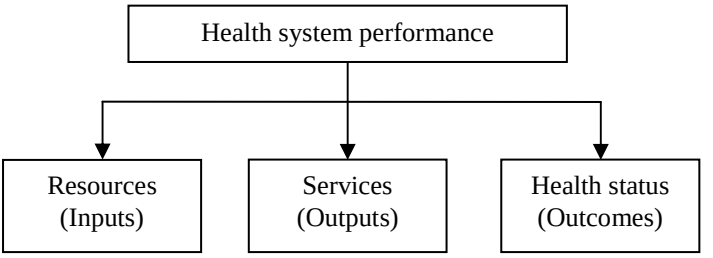
Research Methodology

The empirical analysis in the paper consists of two stages. First, the performance of health care systems in CEE and CIS countries is assessed. In this stage, three measures of health system performance are constructed, and their values are calculated for each country. In the next step, the values of these performance indices are correlated with a variable measuring the public-private mix of health care. A detailed description of methodology (variables, methods, time span of the analysis and data source) is provided further in this section.

The performance of health care systems is described in three dimensions, namely, their inputs, outputs and outcomes. This approach draws on Donabedian's structure-process-results approach (Donabedian, 1988, p. 1745-1746) and a health production model, which links health care inputs through outputs to health outcomes (Cumming & Scott, 1998, p. 55). The study follows a framework used in the recent paper focusing on health systems of OECD member states (Tchouaket *et al.*, 2012).

Figure 1 presents a conceptual framework to health system performance assessment applied here.

Figure 1. Conceptual framework for assessing performance of health care systems



Source: own work.

Three synthetic measures are constructed in order to evaluate the performance of health systems in each of the three above aspects separately. The construction of one general index that would combine all three aspects of health care seems not to be well-grounded in health policy theory.

As it is discussed above, the concept of health system performance is multidimensional, and its investigation requires using appropriate methods. Here, zero unitarization method (ZUM) (Kukuła, 2000), which is a multivariate analysis technique, is used to incorporate the multidimensional nature of health systems.

The method allows for constructing a synthetic development measure which is characterized by some specific properties; it combines the specificity of individual variables that it is built of, and reflects the investigated phenomena thoroughly (Młodak, 2006, p. 119). The method is based on the variables normalization procedure and is considered to be one of the simplest methods of synthetic measure construction, and one that is characterized by desired properties[1].

The method requires assigning variables to stimulants or destimulants. The former category groups those variables, in which case the higher values are preferred over lower values, while in the case of the latter, lower values have preference over higher ones.

Consider the complex phenomenon observed among r objects, each characterized by n diagnostic variables. The ZUM method allows for calculating a synthetic measure using the normalization procedure for the variables which are originally expressed in various units. For stimulants normalization is performed with the formula:

[1] It ignores units of measurement allowing for the comparison of diverse variables; it is characterized by equal variation range for all normalized variables [0,1]; it allows for normalizing positive, negative as well as zero values (compare Kukuła, 2000, pp. 81, 107).

$$z_{ij} = \frac{x_{ij} - \min x_{ij}}{\max x_{ij} - \min x_{ij}}$$

where $z_{ij} \in [0,1]$; also $z_{ij} = 0 \Leftrightarrow x_{ij} = \min x_{ij}$ and $z_{ij} = 1 \Leftrightarrow x_{ij} = \max x_{ij}$. When a variable is a destimulant the following formula is used:

$$z_{ij} = \frac{\max x_{ij} - x_{ij}}{\max x_{ij} - \min x_{ij}}$$

and again $z_{ij} \in [0,1]$; moreover $z_{ij} = 0 \Leftrightarrow x_{ij} = \max x_{ij}$ and $z_{ij} = 1 \Leftrightarrow x_{ij} = \min x_{ij}$. (Kukuła, Bogocz, 2012, p. 6-7).

With the variables normalized in the above way, the unweighted mean of these *n* variables constitutes a synthetic measure. Three such measures are calculated here for resources, services and health status for each of the *r* countries.

Since the problem of weighting indicators in constructing synthetic measures is controversial, I decided not to weigh the variables. Both the methods applied in weighting as well as the process itself are subject to a heated debate, and a vast majority of research tacitly assign equal weights to the diagnostic variables used (Kukuła, 2000, p. 64). What is more, health services literature does not provide any conclusive recommendations on weighting variables in synthetic measures. In fact, one influential study (WHO, 2000) which attempted to do so, was heavily criticized for the approach based on weighting.

There are numerous indicators that allow to describe health care in terms of inputs, outputs, outcomes, and their selection usually depends on data availability. The data for this analysis has been taken from World Health Organization's *Health for All Database* (WHO, 2014), an online database that collects information on various aspects of health systems in the European countries. The analysis covers 23 countries of Central and Eastern Europe, as well as some members of the Commonwealth of Independent States. The time span is limited to year 2010 solely, however, in cases of missing data, data from the nearest year (not earlier than 2007) is used. Using more recent data would be more appropriate, regrettably, the availability of data from the years after 2010 is too limited to rely on it.

The first step of the empirical procedure is to select variables according to data availability. Table 1 shows the initial set of variables selected with the use of this criterion. Potentially, more measures could be included, unfortunately, the data constraints prevented from doing so. The table also shows which of the variables are stimulants, and which are destimulants.

The resources employed in the health care systems were measured in physical, human and monetary terms. The physical resources were proxied by densities of hospitals and hospital beds; unfortunately the data on measures of technologically advanced equipment (e.g. magnetic resonance imaging or computer tomography scanners) is not available. The human resources were represented by two most common used indicators, i.e. densities of physicians and nurses. Of the monetary measures used, two were defined as stimulants and these were expenditure on health, expressed both as a share of GDP and in US dollars. On the other hand, two measures of out-of-pocket payments were classified as destimulants, because a higher share of direct private payments puts households at greater risk of catastrophic health expenditures. Clearly, not all the resources contribute to health status with the same efficiency and some of them (e.g. doctors) are more efficient in improving the quality of care then others (e.g. hospital beds). Yet, due to reasons explained above, no consistent approach to weighing variables exists and their contribution to the synthetic measures calculated was equal. The same applies to the service dimension and health status dimension of the health systems' performance.

Table 1. Definitions of variables used in the construction of synthetic measures

HEALTH CARE RESOURCES EMPLOYED
Stimulants:
R1: Hospitals (number per 100.000 population)
R2: Hospital beds (number per 100.000 population)
R3: Physicians (number per 100.000 population)
R4: Physicians per 100 beds (number)
R5: Nurses (number per 100.000 population)
R6: Total health expenditure as a share of gross domestic product (%)
R7: Total health expenditure in US dollars, adjusted for purchasing power parity (US$)
Destimulants:
R8: Share of out-of-pocket payments in total health expenditure (%)
R9: Share of out-of-pocket payments in private health expenditure (%)

Table 1 continued

HEALTH CARE SERVICES PRODUCED
Stimulants:
S1: Inpatient care discharges per year (number per 100)
S2: Outpatient contacts per year (number per person)
S3-S7: Hospital discharges adjusted for by-cause mortality*: (S3) neoplasms; (S4) circulatory system diseases; (S5) ischeamic heart disease; *(S6) cerebrovascular diseases***; (S7) respiratory system diseases (number per 100.000)
S8-S11: *Share of infants vaccinated against: (S8) diphtheria; (S9) tetanus; (S10) pertussis; (S11) measles (%)*
HEALTH STATUS ACHIEVED
Stimulants:
H1-H2: *(H1) Female and (H2) male life expectancy at birth (years)*
H3-H4: *(H3) Female and (H4) male life expectancy at 65 years (years)*
Destimulants:
H5: Difference in life expectancy between females and males (years)
H6: Infant mortality rate (deaths per 1.000 live births)
H7: Maternal mortality rate (maternal deaths per 100.000)
H8-H10: Incidence of (1) tuberculosis; (2) HIV; (3) cancer (number per 100.000 population)
H11: Standardized death rate for all causes and all ages (number per 100.000 population)

* - the study uses hospital discharges divided by mortality by cause. Raw data on discharges should not be used as it not only reflects the availability of services; it also depends on incidence of diseases.

** - *italic text format* – variables excluded from the analysis due to formal reasons (see text for details).

Source: own work.

The services produced in the health care systems were measured using inpatient care discharges and outpatient contacts. These were supplemented with five disease-specific discharges adjusted for mortality rates as well as with shares of infants vaccinated against four diseases. Each of the above services indicators was classified as a stimulant.

The population health status was proxied by demographic and epidemiological measures based on mortality and morbidity data. Life expectancies, infant and maternal mortality rates and standardized death rates are considered to be the best choice in international health status comparisons (Bonita *et al.*, 2006, ch. 2; Murray *et al.*, 2000), while the incidence of three ailments reflects problems caused by communicable (tuberculosis and HIV) and non-communicable (cancer) diseases. Of the health measures, all but life expectancy measures were classified as destimulants.

In the subsequent step, the set of potential variables was limited according to formal criteria required to apply the method efficiently. Firstly, the variation of indicators was investigated in order to exclude the variables characterized by too low variability. For that reasons, the measures of life expectancy (H1-H4) as well as infant vaccination indicators (S8-S11) were excluded, as their coefficient of variation values were lower than 10 percent, usually accepted threshold. Secondly, to avoid duplicating information contained in the selected variables, correlations among potential variables were investigated. Based on the correlation criteria, the measure of (adjusted) hospital discharges caused by cerebrovascular diseases (S6) was excluded as it was highly correlated (over 0,8) with the circulatory system discharges. The reason for excluding the former is that it is of lower magnitude for health care operation than the latter.

In the final step of the empirical analysis, three synthetic measures constructed in the way described above were correlated with the share of public financing in total health expenditure. Public financing was the only measure that allowed for proxying the magnitude of public sector in health care in international context. Obviously, this indicator is not without drawbacks, still it reflects the public-private mix in an acceptable way and is widely used in country-level analyses (see e.g. Rothgang *et al*., 2005). For the purpose of correlation, Spearman rank correlation coefficient is used.

Results and Discussion

The results of performance analysis are reported in table 2. The values of the indicators range from zero to one and higher values are interpreted as higher performance of the systems.

The countries with the highest resources availability were Slovenia, Belarus and Russia, while the ones with the lowest performance in this aspect were Bosnia and Herzegovina, Montenegro and Armenia. When it comes to service accessibility, the group of top countries includes Belarus, Lithuania and Ukraine, whereas low services production characterized Kazakhstan, Armenia and Azerbaijan. The health status synthetic measure values place Bosnia and Herzegovina, Slovenia and TFYR Macedonia at the top of the healthiest nations rank; Ukraine, Russia and Kazakhstan were characterized by the poorest population health.

Table 2. Values and ranks of synthetic measures in three dimensions of health care system performance in CEE and CIS countries

Country	Resources		Services		Health status	
	SM	Rank	SM	Rank	SM	Rank
Armenia	0,188	22	0,081	20	0,634	11
Azerbaijan	0,332	17	0,051	21	0,700	9
Belarus	0,557	2	0,907	1	0,474	18
Bosnia and Herzegovina	0,264	20	n.a.	-	0,834	1
Bulgaria	0,365	13	n.a.	-	0,642	10
Croatia	0,361	15	0,324	17	0,777	4
Czech Republic	0,494	4	0,551	5	0,751	5
Estonia	0,414	9	0,479	8	0,564	14
Georgia	0,406	10	0,396	15	0,536	17
Hungary	0,429	7	0,562	4	0,628	12
Kazakhstan	0,364	14	0,269	19	0,306	22
Latvia	0,326	18	0,429	13	0,559	15
Lithuania	0,424	8	0,570	2	0,554	16
Montenegro	0,259	21	0,433	12	n.a.	-
Poland	0,371	11	0,525	6	0,741	6
Moldova	0,367	12	0,274	18	0,348	19
Romania	0,296	19	0,421	14	0,594	13
Russia	0,496	3	0,469	9	0,310	21
Serbia	n.a.	-	0,436	11	0,736	7
Slovakia	0,485	5	0,446	10	0,727	8
Slovenia	0,560	1	0,511	7	0,814	2
TFYR Macedonia	0,337	16	0,372	16	0,793	3
Ukraine	0,440	6	0,569	3	0,332	20
Median value	**0,369**	**-**	**0,436**	**-**	**0,631**	**-**

Notes: SM - synthetic measure.

Source: own calculations based on WHO (2014).

The results suggest that countries differ in the way they transform their health care resources and services to health status improvement. Some countries employed relatively abundant resources and used them rather efficiently obtaining a good health status, see e.g. the Czech Republic, Poland, Slovenia and Slovakia. Expectedly, these are the countries which perform well not only in terms of health status, but also in terms of economic and social conditions. There were also countries, however, the societies of which benefited from good health with little resource utilization and production of services (see e.g. Croatia, TFYR Macedonia, Azerbaijan). Conversely, some countries that performed well in terms of resources and service availability failed to transform these into the health improvement of their populations; the examples are Belarus, Estonia, Lithuania, Russia and Ukraine. Interestingly, the countries which perform poorly in terms of

health status are the former Soviet Union (FSU) republics, suggesting that there is an intrinsic pattern of population health development in this group of countries. Apparently, the adverse health status in the FSU in 2010 still reflects a rapid decline in life expectancy in the early 1990s (Rechel *et al*. 2013).

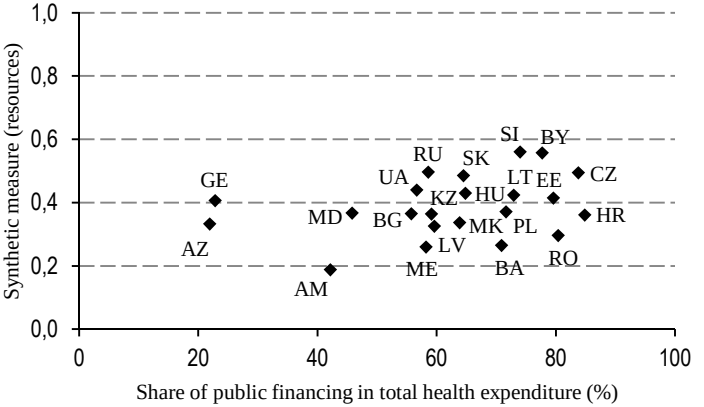
Two conclusions can be drawn from the above differences in the inputs-outputs-outcomes transformation in particular countries. Firstly, the differences seem to reflect the efficiency variation among the CEE and CIS countries' health care systems. The countries with low (high) resources and/or low (high) services utilization that were simultaneously characterized by good (poor) health status are probably the ones with relatively efficient (inefficient) health care systems. Secondly however, good health status in particular countries may result from factors other than health care, i.e. a higher income level and lower income inequalities, a higher education attainment, health-enhancing life style, better housing and working conditions. In this research these health affecting factors were excluded from analysis, still, one can presume that the differences in efficiency of health care system among CEE and CIS countries are the case.

The final stage of the analysis shows a relationship between the performance of health care systems in the group of countries and the magnitude of public sector in these systems. The share of public financing in total health expenditures represents the public-private mix.

The three following Figures (2, 3 and 4) show scatter plots illustrating the associations between the three measures of performance and the proportion of public financing.

There is a positive, but quite weak, association between the resource dimension of health systems performance and the share of public financing in CEE and CIS countries (ρ = 0,296; p = 0,17). More health care resources in the countries with a higher proportion of the public sector suggests that the governments secure relatively high accessibility of health care resources there. Conversely, in the economic transition settings, as the share of the private sector in health financing increases, there are less resources available. This conclusion should be treated with caution though, since the value of Spearman rank correlation is insignificant and at most moderate (Figure 2).

Figure 2. The association between health care resources synthetic measure and the share of public financing

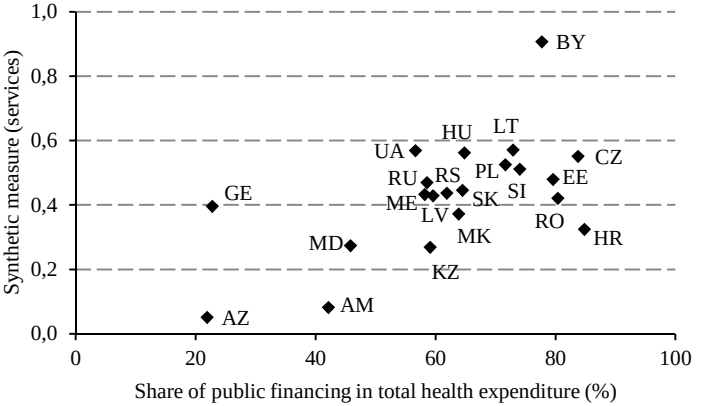


Note: The value of the Spearman rank correlation coefficient is 0,296 (p = 0,17).
Abbreviated country names according to ISO 3166 standard codes: AM - Armenia; AZ - Azerbaijan; BY - Belarus; BA - Bosnia and Herzegovina; BG - Bulgaria; HR - Croatia; CZ - Czech Republic; EE - Estonia; GE - Georgia; HU - Hungary; KZ - Kazakhstan; LV - Latvia; LT - Lithuania; ME - Montenegro; PL - Poland; MD - Moldova; RO - Romania; RU - Russia; RS - Serbia; SK - Slovakia; SI - Slovenia; MK - TFYR Macedonia; UA - Ukraine.

Source: own calculations based on WHO (2014).

The correlation between health system performance in the area of services produced and the extent of public financing, is also positive and the association is quite strong (ρ = 0,482; p = 0,03). The positions of marks on the scatter plot (Figure 3) suggests that an increment in the share of public financing is related to a quite high improvement in the services synthetic measure. It is in contrast to the previous graph (Figure 2), where, there is a slight variation in the resources synthetic measure with a growing share of public financing. Thus, it is the volume of services delivered rather than the resources employed to produce them which is correlated more strongly with the public/private mix in CEE and CIS health systems. For the health policy makers in the region it implies that in order to secure accessibility of services, they should focus on changing the mix of financing sources towards a higher proportion of public funding. Clearly, due to relatively lower public revenues in the less developed states, this action seems to be difficult, still, it shows a direction for the future.

Figure 3. The association between health care services synthetic measure and the share of public financing

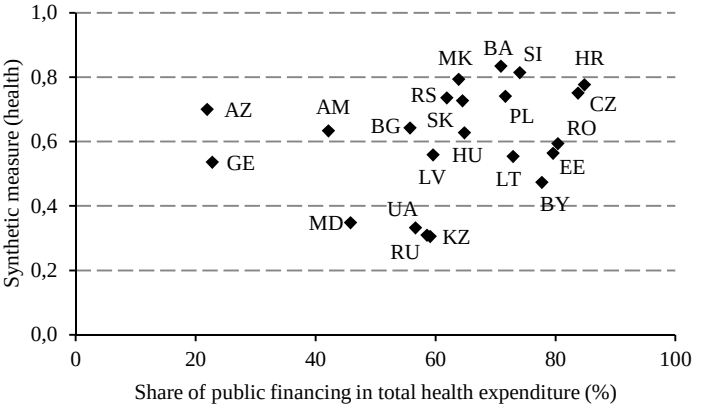


Note: The value of the Spearman rank correlation coefficient is 0,482 (p = 0,03). Abbreviated country names as in figure 2.

Source: own calculations based on WHO (2014).

The correlation between the health status performance of the CEE and CIS countries and the share of public financing is also positive (ρ = 0,381; p = 0,08) and the relationship is moderate (Figure 4). After removing the outlier case (Azerbaijan) the value of the correlation coefficient becomes statistically significant (ρ = 0,440; p = 0,05). Generally, the societies in the countries with a high proportion of public financing enjoy better health, examples being Croatia and the Czech Republic. However, also the countries with a low public involvement in financing. e.g. Azerbaijan and Armenia, perform quite well, suggesting that also other factors play an important role in determining a population's health status. There are at least two possible explanations for the positive association between the share of public financing and health status. Firstly, more public financing secures access to services for vulnerable groups which results in improving the average health status. Alternatively, other factors also correlated with public financing improve health and these could possibly be income level and inequalities, education, lifestyle and health expenditure. To shed more light on the reasons for the association identified here, the health production function could be used in future research.

Figure 4. The association between health status synthetic measure and the share of public financing



Note: The value of the Spearman rank correlation coefficient is 0,381 (p = 0,08). After removing the case with outlier value (Azerbaijan) the value of correlation coefficient grows to 0,440 (p = 0,05).
Abbreviated country names as in figure 2.

Source: own calculations based on WHO (2014).

Conclusions

The purpose of the empirical analysis was to estimate the performance of health care systems in the transition economies of CEE and CIS countries and to establish possible relationships between the performance of these systems and the magnitude of the public and private sector in their operation. The performance of the health systems was assessed using three synthetic measures describing: (1) the resources employed; (2) services produced; and (3) health status achieved.

The results show that the countries differ in terms of their systems' performance. Generally, the wealthier countries are characterized by high performance in both the resources availability and health status. The other ones, however, engage less than average resources and produce quite little services, but still are able to achieve a good health status. On the other hand, the former Soviet republics are the countries that fail to achieve a good population health status, despite quite rich resources in most of the cases.

When it comes to the relationships between the magnitude of public sector in the health systems and their performance, it was shown that the

share of public financing is positively associated with the performance in all the three investigated areas. The strength of the relationships was varied, but still the correlations proved to be significant in two of the three cases. To sum the discussion up, one can conclude that public financing is positively related to the performance of the health care systems in the CEE and CIS countries. The conclusion has important policy implications, suggesting that the states should not decrease their involvement in the operation of their health systems. Otherwise, the performance of these systems would be put at the risk of deterioration and, consequently, decline in the health status of the populations.

Before concluding, a limitation of this study needs to be outlined. Here, the public-private mix of health care is described only in terms of health care financing and no other dimension of this mix (delivery, investments, and regulations) is investigated. The shortcoming is caused by data restrains. No systematic and comparable data on the public-private structure of providers is available. Also, statistics concerning the investments ownership structure in the group of CEE and CIS countries are non-existent. The data on the regulation is qualitative in nature and is also uncollectable for the group of the investigated countries.

The study results suggest many possibilities for future research. The investigation of health system operation in the post-communist transition economies could be extended by e.g. efficiency analyses and grouping countries of similar characteristics.

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