STRENGTHENING HEALTH SYSTEM PERFORMANCE ASSESSMENT IN HUNGARY

Edited by: Szabolcs Szigeti
Tamás Evetovits
Péter Gaál
Zsófia Pusztai
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ANALYSIS AND RECOMMENDATIONS

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ABSTRACT

This publication summarizes the findings of a series of technical reports by many experts involved in introducing and institutionalizing health system performance assessment in Hungary. Following the adoption of the Tallinn Charter in 2008, the Hungarian Government worked closely with the WHO Regional Office for Europe on improving the analytic capacity in the country to assess the attainment of policy objectives and measure the impact of health system reforms in order to better inform policy-makers and to promote transparency and accountability for performance.

The research and consultation process behind this report contributed to local capacity building and political commitment to regular, institutionalized performance assessment in Hungary. A legal framework has been developed since the publication of the Hungarian version in 2012. The recent update of the Hungarian health system review by the European Observatory on Health Systems and Policies also made extensive use of the intelligence generated through this project. Individual technical reports listed in the annex were published as journal articles in two consecutive issues of the Hungarian Journal of Health Economics.

Keywords
HEALTH SYSTEM FINANCING
PERFORMANCE ASSESSMENT
HEALTH POLICY
FINANCIAL PROTECTION AND EQUITY
EFFICIENCY AND QUALITY
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LIST OF CONTRIBUTORS

Éva Belicza is Professor and Deputy Director at the Semmelweis University Health Services Management Training Centre.

Tamás Evetovits is Senior Health Financing Specialist at the WHO Barcelona Office for Health Systems Strengthening.

Péter Gaál is Professor and director at the Semmelweis University Health Services Management Training Centre.

Ferenc Lindeisz is a free-lance consultant for health policy and for statistical sciences.

Péter Mihalicza is Senior Policy Advisor at the National Institute for Quality and Organizational Development in Healthcare and Medicines.

Éva Orosz is Professor and Head of Department for Health Policy and Health Economics at the University of ELTE.

Zsófia Pusztai is Head of WHO Country Office for Hungary.

György Surján is Deputy Director at the National Institute for Quality and Organizational Development in Healthcare and Medicines, Directorate of Informatics and Health Systems Analysis.

Szabolcs Szigeti is Health System and Policy Officer at the WHO Country Office for Hungary.
ABBREVIATIONS

ALOS  average length of stay
AMI  acute myocardial infarction
BCA  biennial collaborative agreement
CCS  Care Coordination System
CMI  case-mix index
CT  computer tomography
DEA  data envelopment analysis
DMU  decision-making unit
DRG  diagnosis-related group
EMMI  Ministry of Human Resources
ESKI  National Institute for Strategic Health Research
GDP  gross domestic product
GYEMSZI  National Institute for Organizational and Quality Development in HealthCare and Medicines
HCQI  health care quality indicator
HCSO  Hungarian Central Statistics Office
HDG  homogeneous disease group
HIF  Health Insurance Fund
HUF  Hungarian currency (Forint)
HSPA  health system performance assessment
ICD  International Classification of Diseases
ISSA  International Social Security Association
IT  information technology
MSA  medical saving accounts
MRI  magnetic resonance imaging
NHIFA  National Health Insurance Fund Administration
NIC  neonatal intensive centre
NIHD  National Institute for Health Development
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>NIOQD</td>
<td>National Institute for Organizational and Quality Development in Healthcare and Medicines</td>
</tr>
<tr>
<td>NIPN</td>
<td>National Institute for Psychiatry and Neurology</td>
</tr>
<tr>
<td>NPHMOS</td>
<td>National Public Health and Medical Officer Services</td>
</tr>
<tr>
<td>NSTEMI</td>
<td>non-ST-elevation AMI</td>
</tr>
<tr>
<td>PCI</td>
<td>percutaneous coronary intervention</td>
</tr>
<tr>
<td>PIC</td>
<td>perinatal intensive centre</td>
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<tr>
<td>PMS</td>
<td>performance monitoring system</td>
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<td>SHA</td>
<td>system of health accounts</td>
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<tr>
<td>SHI</td>
<td>Social Health Insurance</td>
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<td>SSN</td>
<td>social security number</td>
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<tr>
<td>STEMI</td>
<td>ST-elevation AMI</td>
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<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
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<tr>
<td>VHI</td>
<td>voluntary health insurance</td>
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<td>WHO</td>
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EXECUTIVE SUMMARY AND KEY MESSAGES

Regular, institutionalized performance assessment did not exist in the Hungarian health policy process despite the widely shared view that policy-making in Hungary operates in a data-rich environment and the potential benefits of systematic use of the information collected are evident. In the frame of two consecutive biennial collaborative agreements (BCAs), between 2008 and 2011, the existing systems of data collection and analysis were carefully reviewed and recommendations were made for developing a comprehensive performance-monitoring tool. The aim was to enable the existing statistical system to routinely produce information useful for the evaluation of system performance and monitoring the impact of health policy interventions, producing a far more comprehensive assessment of health system performance than previously implemented. The BCA studies addressed several performance objectives, including financial protection, equity in financing, financial sustainability, efficiency, equity in access and quality of care. Where possible, the authors adapted internationally used performance indicators developed by WHO for the measurement of financial protection, such as catastrophic and impoverishing health expenditures.

Financial protection

Hungary performs relatively well on measures of financial protection despite the share of out-of-pocket spending having reached almost 25% of total health expenditure. The authors’ calculations, based on the secondary analysis of data of the Hungarian Central Statistics Office’s (HCSO) Household Budget Survey, show that fewer than 1%
of Hungarian households experienced catastrophic or impoverishing health expenditure between 2003 and 2010, and the poverty gap was small. This means that during this period some 12,000–30,000 households had catastrophic expenditures, and 150–9,000 households had impoverishing health expenditures.

**Looking at these indicators over time, it can be observed that between 2003 and 2006, there was a decrease in the percentage of catastrophic and impoverishing health expenditures, followed by a notable increase in 2007.** This increase coincides with the introduction of several health policy measures, including user fees in ambulatory and inpatient care and an increase in and restructuring of cost-sharing for pharmaceuticals. Measures implemented in 2007 have not substantially increased the financial burden of patients, thanks to the adequately developed social security system of the time.

**Most recent analyses suggest that the earlier positive trend of improvement in financial protection has been reversed, calling for timely policy interventions.** The elimination of catastrophic health expenditures would not be a significant burden on the national budget, and this should be taken into account when implementing policy measures addressing the adverse effects of the financial crisis and related economic downturn. Overall, the authors believe that annual monitoring of the financial burden indicators can easily be implemented with minor methodological changes to the existing data collection system and published in the annual reports of the Hungarian Central Statistics Office as well as on the Ministry of Human Resources web site.
Accessibility and quality of care

Based on extensive expert consultations, several tracer conditions and interventions were selected to monitor access, appropriateness, timeliness and effectiveness of care. The clinical areas covered were cardiology and stroke care, oncology, psychiatry and addictology, obstetrics and neonatology.

Access to care and the chances of survival of patients with acute myocardial infarction are highly dependent on their place of residence. While utilization of percutaneous coronary intervention (PCI) increased, there has been no significant improvement in mortality rates. The rate of acute myocardial infarction patients (AMI) treated with PCI tripled during the observed period, but there are significant differences among counties. For further and deeper analysis of AMI care it is necessary to clarify the measurement of timeliness and to separate the STEMI (ST-elevation AMI) and NSTEMI (non-ST-elevation AMI) forms of the disease. The latter is not possible with the currently used diagnosis coding. It is also necessary to extend the scope of the follow-up studies to the period after hospital discharge.

The rate of stroke patients diagnosed with CT is low (below 50%) and it is worse for women. Differences among counties can be significant in stroke care and access equity has not improved. The use of CT tests varied with location; the greatest difference between two counties was threefold.

Timely access to chemotherapy needs improvement, despite the overall good coverage of oncology care across the whole country. Based on the analysis of timeliness of access, recent reforms in service delivery (capacity redesign, indication criteria, financing protocols and treatments covered) delayed the start of care for many patients in the short term after the introduction of policy changes.
The hospital restructuring in 2007 had an unfavourable impact on the effectiveness of psychiatric services. The rate of patients discharged from acute psychiatric wards within a week started to grow soon after the introduction of the reforms, and by the end of 2008 it was 1.5 times greater than at the beginning of 2006 (12.1%). A less than seven-day average length of stay in acute care significantly increases the rate of readmissions within 30 days, lowering the effectiveness indicator, as does changing institutions during the care process. In general, all measures that force the psychiatry-addictology patients to leave their institution (closing units, reducing capacities, changing patient pathways) – thus their doctor and other caregivers – will increase the rate of readmission as long as sufficient capacity in outpatient specialist services is lacking.

Closing the National Institute for Psychiatry and Neurology (NIPN) had particularly negative impact on the effectiveness indicator. Patients treated by that institute and patients in Budapest and Pest County in general showed higher readmission rates around the time of the NIPN closing. The adverse effects diminished over time, but the indicator remained comparatively higher than for patients in other regions. In contrast to the original hypothesis, hospital rehabilitation after an active episode does not reduce, but increases the rate of readmissions. The authors’ analysis found that this is a result of temporary transfers of acute patients between acute and rehabilitation wards due to financial incentives that push providers to transfer patients to rehabilitation wards and readmit them to the acute ward later.

During the observation period complex care in obstetrics and neonatology improved and health policy decisions did not significantly affect them, although mortality and the rate of newborns being transferred to perinatal/neonatal intensive centres (PIC/NIC)s temporarily worsened.
in the second and third quarters of 2007. The thirty-day mortality rate is lower among babies born at the units where there is a PIC/NIC beside the maternity unit. The current system of temporary social security number for newborns makes the follow-up studies impossible for most of the cases. The authors suggest that the National Health Insurance Fund (HIF) issue monthly or annual bulletins to all the concerned organizations with the temporary and final social security numbers.

Financial sustainability

The dominance of HIF revenues from social health insurance contributions gradually decreased since the middle of the 1990s. The share of tax and social health insurance contribution sources changed substantially in two steps: between 1997 and 2000 and between 2009 and 2010. Contributions by employers dropped from 19.5% in 1994 to an all time minimum of 2% of wages in 2010, while the share of tax revenues in the HIF budget exceeded 50%. This supports the argument that when health expenditure data are reported according to financing agents only – which is the practice of the currently used system of health accounts (SHA) – the Hungarian health care system could easily be misinterpreted as being financed predominantly (84.6% of total public expenditure) by social health insurance contributions. The authors’ detailed analysis has shown that only 36.2% of HIF revenue came from social health insurance contributions in 2010, while 63.7% was from general tax sources. The planned introduction of the new version of System of Health Accounts (SHA) will allow for reporting these important and policy-relevant details.
The shift to more tax financing in the revenue sources for health lead to a worsening financial position of the HIF. While most countries increased public expenditure on health as share of gross domestic product (GDP) in the past 15 years prior to the financial crisis in Europe, Hungary is one of the few exceptions where public expenditure on health decreased between 1995 and 2009. For some time the increase of private expenditure compensated for this decrease at the expense of equity in financing, but in recent years total health expenditure decreased as well, to the level of the mid-1990s.

In order to secure predictable revenues for health and to sustain attainment of health policy objectives, it is advised to develop a health financing strategy with clear indication of the priority given to health. In theory, the mix of tax financing and social insurance contributions offers more tax policy flexibility while preserving the link between entitlements and contribution payments. It may also reduce the health system’s vulnerability to economic cycles and labour market fluctuations. However, if the health sector is not a priority in government budget allocations, then this financing system cannot offer predictable sources of health revenues, which adversely affects health policy objectives including efficiency.

Efficiency

Overall, hospital payment reforms successfully improved the performance of the Hungarian health care system. The output-based payment methods substantially improved the technical (production) efficiency of the system and potentially paved the way for an increase in allocative efficiency by enabling the reallocation of financial resources to previously underfunded high-need specialties and
regions. Allocative efficiency could be further improved, but this cannot be addressed by adjusting the payment system alone.

To increase health system efficiency, attention should be given to increasing care delivery coordination among levels of care provision, among provider institutions and between the social and health sectors. Earlier care coordination experiments have suggested that the sustainability of different models based on the financial incentives of potential efficiency savings is heavily dependent on the balance between savings resulting from the elimination of unnecessary services and the increased cost of addressing previously unmet needs. Improvements in allocative efficiency may not result in financial savings, but rather in more health gain for the resources spent.

The results of international comparative analyses on efficiency should be interpreted with great caution, as there are considerable methodological weaknesses. Studies based on composite indicators proposed by the Organisation for Economic Cooperation and Development (OECD) suggest that there is considerable inefficiency in the Hungarian health system; however, this cannot be attributed to the health care provision only, since the interpretation framework of the studies refers to overall government policies. While the indirect indicators do not send a consistent message about the performance of the health system, composite efficiency indicators pose difficult methodological and interpretational problems. Perhaps the most difficult of all these challenges is the question of how to assess the effects of different functions of the health system on final outcomes, while successfully controlling for external variables such as other public policies, lifestyles and the initial state of population health.
Institutionalizing performance assessment in Hungary

Institutionalization of performance assessment can secure sustainability of this initial investment in capacity building. One of the greatest challenges in health system performance assessment (HSPA) is institutionalization. Clearly, regular and institutionalized performance assessment can inform health policy-makers and in turn improve the policy process, influence decisions on allocation of resources and shape reforms of health system functions. Periodic assessments could be shared with other public policy sectors, key actors of economic policy and international organizations. Institutionalization facilitates transparency, accountability and evidence-informed policy-making.

Strategic planning is one of the bottlenecks of the Hungarian health system. This explains why HSPA has not developed over the years: there was no demand from a strategic planning perspective as evidenced by the lack of specific and realistic policy targets. Institutionalization of performance assessment can facilitate the strengthening of planning and performance management in the health sector by supplying information and highlighting strengths and weaknesses of the system. Since there is a sound system of data collection and information technology (IT) support – especially with respect to health financing – available in the Hungarian health system, the performance assessment process can be implemented in relatively short time.

A web monitoring tool for health policy interventions has been developed to document policy interventions in a timely manner. At present, there is relatively little systematic, publicly available, up-to-date overview of reforms and health policy interventions. This makes it difficult even for health professionals to understand the process, content and implementation of health care reform programmes and
interventions in timely manner. The proposed tool would improve the analytical capacity of health governance by facilitating a faster overview of changing patterns in health policy approaches, which would definitely contribute to more transparency. The monitoring tool would collect the policy interventions in a simple database format, including the exact date, a short description and the exact legal references of the interventions. In addition, hyperlinks would make it possible to link events to policy documents and performance indicators.

At the heart of the institutionalization process is a new ministerial decree that defines roles and responsibilities of health system performance assessment in Hungary. At the time of publishing this document, the ministerial decree is already entered into force. This marks the successful completion of the first phase of institutionalizing performance assessment in Hungary. It is suggested that the initial organizational arrangement of stakeholders may be aligned in the future to the evolution of strategic planning and management mechanisms as well as to the further development of accountability frameworks of the Hungarian health system.
1. INTRODUCTION

Following the adoption of the “Tallinn Charter: Health Systems, Health and Wealth” in June 2008 (WHO Regional Office for Europe, 2008), the World Health Organization Regional Office for Europe and the Government of Hungary signed biennial collaborative agreements (BCAs) with a strong emphasis on institutionalizing health system performance assessment in Hungary in order to promote transparency and accountability for performance and to improve analytical capacity to assess the attainment of policy objectives and impact of health system reforms.

These BCAs addressed priority areas identified jointly by the Government and WHO, and initiated activities to develop a comprehensive monitoring tool for health policy decisions. Implementation of the activities started with the 2008–2009 BCA and an initial set of monitoring tool components were developed, focusing on financial sustainability, financial protection, equity, quality and efficiency. The subsequent phase of the 2010–2011 BCA focused on producing performance assessment reports using the indicators developed in previous years and elaborating proposals for institutionalizing the production of these reports on a regular basis. In addition, a web monitoring tool was also developed to document policy interventions in timely manner accessible to wider audience.

The proposed framework for system-level monitoring was designed and developed for continuous assessment of reforms with respect to the relevant health policy objectives (financial protection and equity in finance, access to care, quality of care, efficiency). The monitoring tool comprises a set of defined performance indicators applied to analysing
health system reforms. The existing system of data collection and analysis was carefully reviewed and recommendations were made on how to adjust it to improve the monitoring tool’s policy relevance. The aim of this was to enable the existing routine statistical system to produce information useful for the evaluation of system performance and the impact of health system reform interventions on a regular basis. Finally, a proposal for the regulation of health system performance assessment (HSPA) in Hungary was drawn up, providing a sound basis for the current legislative work on institutionalizing the monitoring system.

This publication is based on a series of technical reports produced by many experts involved in implementing the above activities over the years. This report summarizes the main findings of those more comprehensive individual reports with the aim of providing a synthesis and also provides the basis for further development once the process is fully institutionalized.

The research work implemented in the framework of the BCAs (especially the chapters on performance assessment of efficiency, equity and financial protection) has contributed extensively to the update of the Hungarian health system review, published by the World Health Organization on behalf of the European Observatory on Health Systems and Policies (Gaál et al., 2011). A draft version of this publication was made available in Hungarian and discussed during a policy dialogue event at the Ministry of Human Resources in November, 2011. Based on the final version of the technical reports, a series of journal articles were published in Hungarian in two consecutive issues of the Hungarian Journal of Health Economics (Egészségügyi Gazdasági Szemle), the official journal of the Ministry of Human Resources and the Association of Finance Managers of Health Institutions (Volume 50, issues 2 and 3, May and July 2012).
2. CONCEPTUAL FRAMEWORK OF PERFORMANCE ASSESSMENT

Many international organizations have focused on performance assessment of health systems since the mid-1990s. A concise overview of the WHO health system framework that can be adapted to measure health system performance in Hungary can be seen in Fig. 2.1. In theory, the overall goals of health policy can be attained by reforms and programmes linked to intermediate objectives measurable according to the set priorities. These reforms affect system performance in one or more functional areas. If the health system performance framework is systematically adapted, the interventions in health system functions will be connected to the intermediate objectives serving the overall goals. In view of this, the performance assessment can provide important feedback about the attainment of the goals.

**Fig. 2.1 WHO health system framework, 2005**

Source: WHO Regional Office for Europe (2005).

Such a systematic approach is rarely applied in Hungarian health policy. In fact, the strategic goals and intermediate objectives are
usually not set in a measurable way, and the evaluations focus almost exclusively on the legal and fiscal aspects of policy implementation and of the changes in the main functional elements of the system. Institutionalized performance assessment aiming to systematically evaluate the attainment of strategic goals and operational objectives has not been set up yet, although the monitoring function has improved some respects since the mid-1990s. Therefore, proper evaluation and implementation of policies targeting measurable intermediate objectives via incentives to influence stakeholders are left to chance. Fig. 2.2 shows the development phases of the policy cycle and the interconnection among its most important functional elements, placing performance assessment in the health policy process and showing its relation to planning and performance management.

The performance assessment process, which the authors understand as the proper combination of monitoring and evaluation to involve stakeholders, as shown in Fig. 2.2, is an inevitable step in creating efficient performance management and transparent and accountable policy implementation. Its appropriate application makes policy formulation more precise and operations more coordinated. Policy-level performance assessment has been linked to the performance management system in an elaborated manner in the United Kingdom, to name one country.

**Fig. 2.2** Links of performance assessment to other functional elements of the health policy cycle
Preconditions for successful introduction of a performance assessment system include:

- an appropriate level of political support
- institutional embedding of activities
- regular and transparent publication of results
- methodological transparency in data collection and the production of indicators
- system-wide scope with the capability of evaluating particular targeted reforms.

During the course of the performance assessment, the functional elements of the system and the results achieved should be linked systematically. The three basic components of performance assessment are identification of system goals and priorities, determination of appropriate metrics to quantify the level of goal attainment and a collection system that can provide the data needed for calculation and analysis of the indicators according to a standard methodology.

If one uses the performance monitoring system (PMS) to detect the impact of various interventions, it is crucial that the same methods be used before and after the intervention. In addition, all concurrent interventions (with precise description of each measure and the date it was passed and took effect) should be considered together with factors such as demographic, social and economic changes that might have influenced the outcome in question. Given the methodological limitations of the before-and-after study design, it is also advisable to consider a longer period (more than one year), both before and after the intervention, and to carry out a complex, multivariate analysis to sort out the importance of various background factors. Furthermore, the results of the analysis should also be subjected to peer review with relevant experts to discuss and consolidate the findings.
While there is little debate about the components of performance measurement or the methodological limitations of performance impact assessment of system interventions, there is some confusion in the literature regarding both the objectives and the performance measures themselves. In the following sections the authors summarize these confusions and attempt to clarify them.

2.1 Health policy objectives, performance dimensions

The first and most important confusion concerns the definition of health policy objectives, or the dimensions of system performance. If one looks at the reviewed statistical programs and PMSs, it can be seen that while the proposed objectives or performance dimensions are more or less similar, there is disagreement and confusion over what the various terms mean, in those cases where objectives are considered at all. To clarify the definitions of the objectives, the authors use the standard economic production model on the basis of Jacobs et al. (2006).

At the centre of the simplest economic models of production are the various units – production or decision-making units (DMUs) – that transform resources (inputs) into goods and services (outputs), consumed and valued by the members of the society (Jacobs et al., 2006). Among ordinary market conditions the performance of DMUs is measured by the consumers, who give value to the produced outputs by purchasing and consuming them. The objectives against which the performance of the products is evaluated are set by the consumers themselves, and the level of achievement with respect to goods and services is represented
by the market price. Therefore, the market price of the product measures the increase in welfare due to its consumption, in monetary units.¹

The production of health and health care, in several respects, is much more complicated than this naïve model of production suggests. First of all, personal judgement underlying market valuations in health care might be distorted, or even unfeasible or undesirable. In the absence of consumer-derived market valuations – as in the case of the dominantly publicly-financed health systems – decision-makers have to make these value judgments by setting objectives and priorities on behalf of society (Jacobs et al., 2006, p.29). This entails decisions on what is valued in health care, and how much. Decision-makers may try to compile a list of the various types of benefits of health care, which constitute one of the main groups of performance objectives. Despite that the boundaries of health systems are defined in terms of activities, whose primary purpose is to promote, maintain and restore health (WHO, 2000), most PMSs consider gains other than health. These are conveniently summarized by the concept of responsiveness by the WHO PM framework, or patient-centeredness of the Organisation for Economic Cooperation and Development (OECD) Health Care Quality Indicator (HCQI) framework, while the economic framework distinguishes clinical quality (in terms of health) from service quality (in terms of circumstances).

It is important to note, however, that health systems have other benefits that can be distinguished from these two main categories, such as security. Most of the reviewed PMSs do not make this distinction, with the exception of the WHO PMS, which denotes the benefit of security

¹ For the sake of accuracy it is worth noting that the market price is equal to the increase in welfare due to consumption only in the case of the marginal consumer; in the case of all the other consumers the increase in welfare to a lesser or greater extent exceeds the market price, and the difference between the two is called the consumer surplus.
as financial protection. On the other hand, when the benefits of health care are considered, performance frameworks usually enumerate a much longer set of benefits (dimensions). As the OECD HCQI framework argues (Arah et al., 2006; Kelley & Hurst, 2006), these can be accommodated in one of the main categories discussed before. The reason for the disaggregation of the main objectives is that health, conveniences and security are complex concepts that are difficult to measure in their entirety. What constitutes good service, for instance, has many components from comfort to respect and dignity.

The detailed clarification of the different dimensions of performance was done in the studies prepared during the analytical work under the BCA. Here just a short summary is given with an emphasis on the use of the concept of quality in contrast with the other health policy objectives.

2.1.1 Efficiency

Efficiency expresses the relationship between costs (lost benefits) and benefits, i.e. between the value of inputs vis-à-vis the value of outputs and outcomes created by using these inputs. A system is more efficient than another one if its ratio of the value of outputs and outcomes related to inputs is higher. Within the concept of efficiency the literature also distinguishes technical (production) and allocative efficiency, the former focusing on the efficiency of the production process, while the latter also includes the efficiency of the consumption of the goods and services produced.
2.1.2 Equity

While efficiency is concerned with the overall or average level of gains, equity is the fair (not necessarily equal) distribution of the cost burden and the benefits of health care among the members of society. What is considered fair is a debatable value judgement, although purely market-based distributions are undesirable in European countries. Given that equity is a distributive objective, it can only be interpreted at the level of communities and not individuals.

2.1.3 Quality of care

There is some confusion about the use of “quality” in performance assessment, as it affects effectiveness, efficiency and equity. While the traditional economic concept of quality distinguishes it from efficiency and equity, the more recent quality management approach, rooted in the medical sciences, regards efficiency and equity (or equity-related concepts, such as access to care) as components of quality and equates the dimensions of systems performance with quality, often using the terms interchangeably. It is not difficult to show that such an all-embracing concept of quality is not just contradictory, but also impractical, because it is virtually impossible to measure in its entirety. As there is still confusion on how to distinguish quality from other dimensions of performance at the system level, in the following sections the links between quality and the other performance objectives will be presented and clarified.

2.1.3.1 Quality and efficiency

If efficiency were only one dimension of quality then there should be an unequivocal relationship between the two. That is, if efficiency
increases or decreases, all other things being equal, the quality of care should do the same. However, an increase (or decrease) in the production efficiency of a particular good or service does not say anything about changes in its quality, which may increase, stay the same or even decrease depending on the starting and end states of production on the production possibilities frontier (taking into account the quality-quantity mix, and the quality-quality mix, if the quality of the product has more than one dimension). Even the quality management framework acknowledges that costs and quality are different concepts. The absolute level of quality does not say anything about the value of resources used to achieve that level of quality. Health care costs represent the lost benefits of not using the resources to produce other goods and services also valued by people. A cost increase or decrease can be coupled with an increase, decrease or no change in the quality of care, depending on what is added to the production process by the cost increase or removed by the cost decrease.

However, if one interprets these changes in terms of efficiency, all other things being equal, if the same output is produced with higher costs without increasing quality, efficiency decreases. This suggests that not just costs, but also efficiency needs to be distinguished from the concept of quality. That is, the relationship between cost and quality cannot be separated from the relationship between efficiency and quality (note that the same inconsistency can be shown if one enters the quantity of the output into the equation and examine the relationship between the cost of production and the quality and quantity of the output). Looking at this way, the quality management framework is inconsistent when it comes to the definitions of quality and efficiency.
The authors argue that the source of confusion is that the concept of quality has been extended from the product level to the level of organizations and systems. While it is possible to interpret quality at the organizational and system levels, these new quality concepts inevitably include the concept of product quality in its own right, and therefore create an irresolvable internal contradiction. For instance, if one applies the “level of performance” definition of quality at the system level, efficiency becomes one dimension of this system quality, since efficiency is one criterion of system performance. Nevertheless, quality of care is also a performance criterion (provided that the quality of care is set as an important objective of health policy by the decision-makers), thus quality at the product level becomes one dimension of quality at the system or organizational level.

In principle, it is possible to make a clear distinction between product quality and system/organizational quality, especially if a different term is used to denote the latter (e.g., “excellence”). The confusion has been created by reapplying the concept of system quality (which rightly includes efficiency as one dimension) at the product level, and arguing that efficiency is one dimension of product quality (although this has never been the case).

2.1.3.2 Quality, access and equity
The same argument applies to other health system objectives, such as equity, where the confusion is further complicated by differing interpretations of access to care. Accessibility can indeed be one dimension of product or service quality, if one considers

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2 It is important to note that the authors do not mean that product quality cannot be measured on the level of institutions or whole systems. This can be done by aggregating (averaging) the quality of all the products or groups of products produced by all the institutions, the system or subunits of these.
the convenience of getting the required treatment in the building of the provider, and not the fairness of the distribution of health services. Therefore, in the present work access is defined as follows, in relation to quality: the utilization of an element of care within a care process according to the need. The criterion of need is the evidence of the efficacy of the care to be provided. Thus, the authors tried to distinguish between the quality dimension of access and the use of access in the sense of equity.

Otherwise, all the other dimensions of quality mentioned in the literature can be summarized in the traditional economic categories of either clinical or service quality. This shows that apart from efficiency and equity, the economic and the quality management definitions of quality can be compatible. However, in the case of effectiveness and quality it is advisable to apply a more subtle approach.

2.1.3.3 Quality and effectiveness
In the context of health system performance, the overall (or average) level of gains is often called effectiveness or quality. While the two terms are sometimes used interchangeably, they are not the same. Effectiveness is reserved for denoting the level of health gain achieved, but the scope of gains extends over health alone. Further, the level of health gain achieved by health care depends on several factors (such as patient characteristics or social context) outside the control of the health care providers. Furthermore, in quality management frameworks, effectiveness is often regarded as one component of quality (rightly so, but only in the extent to which it can be attributed to service providers). In order to avoid introducing new terminological confusion, the authors recommend using “quality” instead of “effectiveness”.

2.1.3.4 Measuring system quality as an overarching objective

Finally, it is important to note that system quality as the ultimate and overarching objective of health systems is of little practical use anyway. The most significant issue here is to identify those performance dimensions that make up this quality. It is the various performance criteria that make up this quality that matter, since measuring the multidimensional summary concept is at least very controversial (see for example the ranking of health system performance, WHO, 2000). It can be shown that in theory efficiency (using available resources to maximize the achievement of all objectives, including equity – the approach used by WHO for ranking) and equity can also be regarded as overarching health system objectives.

2.1.3.5 Proposals for clarifying the concept of quality

In sum, the authors of this report recommend that quality be used to denote the level of performance at product level, in relation to the intended objective. The dimensions of quality, with the exception of efficiency and equity, can be categorized under clinical or service quality. This is in line with OECD HCQI framework (Arah et al., 2006; Kelley & Hurst, 2006), which separates quality from efficiency and equity and defines three main dimensions of quality: effectiveness, safety (these two roughly equal to clinical quality) and responsiveness/patient-centeredness (service quality). Although in the quality management framework quality is also used to denote the level of performance of organizations and systems, this should not be called quality, in order to avoid confusion in terminology.
2.1.4 Sustainability

It is also recommended to identify sustainability in the performance assessment system in addition to the traditional objectives of quality, efficiency and equity. The objective of sustainability is attained if a DMU can sustain a stable performance in the long term. At the centre of the problem of sustainability is the observation that certain DMUs are able to temporarily produce above the possible production frontier by short-term exploitation of resources (sparing investment costs in human capital, infrastructure, etc.), which leads in the long run to a substantial decrease in production. Some authors suggest careful distinction between financial and fiscal sustainability, defining the latter as an accounting approach that does not take into account the benefits accrued by public expenditures on health. Fiscal sustainability is often used to justify government unwillingness to generate sufficient resources to address the needs of the health system (Thomson et al., 2009), even at low level of public expenditure on health, where increased spending would result in high net benefits for the society.

2.2 Methodological issues in performance measurement

According to Jacobs et al. (2006), performance measurement is complicated by several factors:
(1) the unit of analysis;
(2) the definition of health care outputs;
(3) the valuation of these outputs;
(4) the identification of inputs used for the production of outputs;
(5) valuation of these inputs; and
(6) exogenous factors outside the control of health care organizations, but influencing their performance.
Moreover, performance measurement is further complicated by the nature and scope of data availability, including practical challenges such as short time series, missing data, small sample sizes, imperfect measurement instruments, etc. Here only the issues regarding the unit of analysis will be discussed.

2.2.1 The unit of analysis

For the purpose of health system performance assessment the unit of analysis is the health system, whose boundaries are defined by WHO in terms of the primary purpose of its activities, i.e. promoting, restoring or maintaining health (WHO, 2000). However, the production process is so complex, and the expression of system outputs in a single measurement unit is so fraught with methodological problems and value judgments that meaningful comparative analyses require identification of various system subcomponents, where the measurement task can be simplified. The recommendations of the Council of Europe (1997, cited in Legido-Quigley et al., 2008, p.7), for instance, define four levels of performance improvement: central, local, unit and individual. The local level includes complex provider organizations, such as hospitals and regional organizations of smaller provider units, while the unit level includes groups of individuals working together, such as hospital units or practice teams (e.g. ‘oncoteam’). Other authors (Saturno et al., 1997, cited in Legido-Quigley et al., 2008, p.7), on the other hand, define three levels of health system division, in terms of service:

1. general, applicable to all the services;
2. specific groups of services; and
3. specific products or services.

System disaggregation offers the advantage of increased comparability and more precise identification of the actual causes of
performance problems, because the range of outputs is limited, the technological transformation process is less diverse and it is easier to assign personal responsibilities. In contrast, joint and shared production may require larger aggregation of small production units. The boundaries of these analytical DMUs can be artificial, i.e. they do not necessarily correspond to the boundaries of natural organizations (Jacobs et al., 2006).

2.2.2 Measuring objectives: the example of efficiency

Depending on the extent to which both inputs and outputs are measured in their entirety, one can distinguish simple and composite indicators of efficiency. Simple measures always use proxies for the inputs, the outputs or both. Measures of technical efficiency (such as average length of stay and bed occupancy), for instance, are always simple in this respect, because the inputs are measured in natural units, and there is no common natural unit in which all the various inputs of health care can be measured accurately.

If a measure of either inputs or outputs is used as a proxy for efficiency, one can talk about a partial measure of efficiency, but be aware of the assumptions behind the use of partial measures when making inferences regarding efficiency. For instance, the level of health care spending alone is often used as a measure of allocative efficiency, but this seems to be pointless unless we know something about system outputs. It is assumed therefore, that above a certain level, additional spending on health will be inefficient, because there are other sectors where the use of these additional resources would yield more benefit. Another example, on the output side, is the proportion of ambulatory care sensitive cases treated in inpatient care setting. Although, in this case, inputs are not measured
explicitly, it is assumed that the majority of these cases could be treated less costly with the same outcome in an outpatient setting. The same applies to indirect measures of efficiency, which describe the processes, or structures of health care, such as referral rates or the number and size of risk pools. In these cases, neither the inputs nor the outputs are measured, but the structural or operational features are thought to be associated with less or more efficient use of resources. For example, the fragmentation of risk pools (higher number, smaller size) is associated with higher administrative costs for the same level of risk protection, i.e. decreased efficiency, because of the diseconomies of small scale. The advantage of these indirect measures, though, is that they are much closer to the system features that are amenable to health policy interventions. They link performance problems to their causes, provided that the assumptions regarding the associations are valid.

The relative efficiency analysis uses complex measures of efficiency to compare organizations that produce similar set of outputs (Street & Häkkinen, 2009). Conditions of the comparison are:

1. organizations with similar production processes are compared;
2. the technically feasible production frontier (gold standard) must be estimated and
3. the exogenous production constraints must be controlled from the point of view of the analysis, because the frontiers of organizations operating in difficult socioeconomic contexts will lie inside those of more favourably endowed organizations.
The main requirements of the analysis are that the organizations’ operations and the outputs are comparable in such a way that the patient case mix can be standardized (Street & Häkkinen, 2009).

Data envelopment analysis (DEA) is a method that can be used to determine the production frontier and the level of inefficiency (Street & Häkkinen, 2009). DEA empirically establishes the theoretically possible and actual level of efficiency of organizations by comparing their inputs and outputs. If the actual level is lower than the theoretical one, then there is an efficiency loss (Street & Häkkinen, 2009). A pilot study used this methodology to compare the technical efficiency of hospitals in Hungary (Dózsa et al., 2010). OECD also used this method to compare the efficiency of its Member States’ health systems (OECD, 2010a). In Chapter 6, the authors discuss the limitations and pitfalls of this approach when used for cross-country comparative analysis.
The magnitude of private expenditure on health in Hungary (most of which is out-of-pocket spending) is not precisely clear due to different estimates on the extent of informal payments. OECD data indicate that after an increase from about 11% in 1991 to a peak of 31% in 2001, private expenditure as a share of total health expenditure has hovered between 27% and 30%. The figure for 2008 was 29%, which is just below Slovakia (30%), slightly above Poland (28%), but considerably higher than the Czech Republic (18%) (OECD, 2010b). Most of the private expenditure is out-of-pocket spending which is in the focus of the analysis of financial protection and equity in financing (Fig. 3.1).

**Fig. 3.1 Out-of-pocket expenditure on health as a percent of total health expenditure in selected European countries, 2010. (WHO, 2012)**

3.1 Financial Protection

This analysis of financial protection uses three, internationally accepted standard indicators: catastrophic health expenditures of households, impoverishing health expenditures of households and changes in the poverty gap. In addition, the authors discuss whether the WHO methodology is appropriate for drawing policy-relevant conclusions in Hungarian context and offer recommendations for improvements (Gaál et al, 2012a).

An important limitation of all three indicators is that they cannot capture the entire impact of user charges. Low income households might not experience catastrophic health expenditure because they delay or forego seeking health care precisely due to the deterrent effect of high out-of-pocket payments. The authors of this study had no access to datasets that provide the link between utilization and households’ income status. In theory, the data in the Household Budget Survey could be matched with National Health Insurance Fund Administration (NHIFA) health care utilization data based on the social insurance identification number. If matching had been possible, the analysis could have provided further insights to the relationship between household income and health care utilization. Depersonalized matching addresses data protection concerns, but this option was not realistic during the study period. In turn, an alternative approach was used to compare the distribution of utilization and income data at the level of settlements, but initial attempts to use this methodology did not prove successful. The authors recommend that in the future the analysis should be complemented with a detailed assessment of health care utilization data per income quintiles of the population in order to detect distributional effects.
In the course of the research, the authors examined how the change of thresholds (poverty line and the threshold of catastrophic expenditures)\(^3\) affects the value of the indicators. Using the standard WHO methodology the authors’ secondary analysis of Hungarian Central Statistical Office (HCSO) Household Budget Survey data show that less than 1% of Hungarian households experienced catastrophic (0.31–0.77%) or impoverishing (0.004–0.24%) health expenditure between 2003 and 2010 (Fig. 3.2), and the poverty gap was small. This means that during this period, some 12 000 to 30 000 households experienced catastrophic expenditure, and 150 to 9000 households experienced impoverishing health expenditure, with a poverty gap of 1–2 billion HUF (€3.95–7.9 million).

Fig. 3.2 Percentage of households in Hungary experiencing catastrophic health expenditure or impoverishing health expenditure, 2003–2010

\(^3\) According to the original WHO methodology, catastrophic level of expenditure is defined as the household’s total out-of-pocket payments for health that equal or exceed 40% of household’s capacity to pay (calculated as the household’s disposable income after expenditure on food).
However, if the threshold of catastrophic health expenditure is not set at 40%, but at 20% or 10%, the number of affected households increases from 1% to 6% and 17%, respectively (Fig. 3.3). In addition, if the poverty line calculation takes into account not only food expenditures but also other essential expenditures of the household (e.g., clothing and dwelling maintenance including heating) then the poverty line almost doubles and the number of households suffering catastrophic health expenditures is tenfold higher (Fig. 3.4). Furthermore, if the European Union poverty line standard is applied, putting the line at 60% of the median income, then there is a threefold increase in the poverty line and the number of affected households is twenty times higher. These results show that the choice of methodology has profound effects on the results. Given the magnitude of these additional essential household expenditures, interpretation of financial protection analysis using WHO standard methodology requires great caution in the Hungarian context.

**Fig. 3.3** Percentage of households in Hungary experiencing high levels of out-of-pocket health expenditures using different thresholds, 2003-2010.
Fig. 3.4 Percentage of households in Hungary experiencing catastrophic health expenditure or impoverishing health expenditure: comparison of the standard WHO methodology and the extended basket of essential goods approach, 2007.

Looking at these indicators over time, there was a decrease in the percentage of catastrophic and impoverishing health expenditure between 2003 and 2006, followed by a notable increase in 2007 (Fig. 3.2). This increase coincides with the implementation of several health policy measures, including the introduction of user fees in ambulatory and inpatient care and an increase in and restructuring of cost-sharing for pharmaceuticals.

The analysis shows that the measures implemented in 2007 did not substantially increase patients’ financial burden which suggests that the social safety net and the relatively generous pension system at the time provided effective protection. The total elimination of catastrophic health expenditures would not be a significant burden on the national budget. Analysis of the distribution of the financial burden confirms that catastrophic expenditures affect the poorest segment of the population the most (Fig. 3.5).
Fig. 3.5 Distribution of catastrophic expenditures according to income quintiles, 2007.

Even though user charges (introduced in February 2007 and abolished in April 2008) represented a relatively negligible amount of 300 HUF (or about €1.10) per outpatient visit and per hospital day, their deterrent effect on the poor was unexpectedly large. According to a survey carried out in April 2007, 15% of respondents said that they had not visited a physician because of the copayments. Among those who had completed only their primary education, this figure was as high as 25%, whereas it was 10% among the respondents with a higher degree of educational attainment. Similar differences in response to user charges were observed across the different income groups (Gfk Hungaria, 2007). These user charges were also expected to address the issue of informal payments. However, according to
another survey, 30% of participating physicians reported that the
introduction of copayments reduced informal payments by an
average of 14%, whereas 47% did not notice any change and 1%
observed an increase. Only 6.6% of patients said that they had not
made any informal payments, or paid less since the introduction of
user charges (Szinapszis Kft, 2007). A different study estimated a 25%
decrease in informal payments overall (Median, 2008). Expenditure
on informal payments and copayments combined increased by over
20% in nominal terms in 2007, suggesting that the overall burden
on patients increased, compromising financial protection, equity in
financing and access to care.

Overall, the authors believe that – with minor methodological
changes – these indicators can be useful to inform policy-makers
in a timely manner. They can be easily calculated and published in
HCSO yearbooks and on webpages. Analysis of financial protection
offers insights to policy makers who wish to develop interventions
targeting those most affected by out-of-pocket expenditures on
health. In order to address the weakness of the analysis, namely
the lack of information about unmet need, the financial protection
study could be complemented by time-series analysis of utilization
according to income groups. This requires depersonalized matching
of income and utilization datasets.

3.2 Equity in financing

Analysis of equity in financing looks at the distribution of the
financial burden on households in revenue collection for health.
Equity implication of different forms of revenue collection can
be described on a progressive-regressive scale, where progressive
means a greater burden on the richer households and regressive means a greater burden on the poorer households. In the middle of the spectrum, proportional means the same share of income is paid by richer and poorer households. It is important to note that this measure is about the share of income and not the overall amount paid by households. Private financing is usually regressive with user charges being the most regressive form of financing health care. Public financing tends to be proportional or progressive depending on the type and design of the different forms of taxes and other mandatory contributions.

In Hungary, the sources of health system financing are predominantly public. Although no longer subject to a ceiling, the Health Insurance Fund (HIF) contributions remain mildly regressive because they are levied only on wages (and not on all forms of income) and there is a minimum contribution level. The hypothecated health care tax, however, is more difficult to place on the spectrum as it has two components. Whereas the lump-sum component, in place until January 2010, was clearly regressive and was introduced to counter contribution evasion, the proportional component was levied on income types that had not been part of the contribution base before, so it can be considered as a measure to broaden the revenue base and also progressive as these types of income are the capital incomes, e.g. dividends that are typically derived by individuals with higher incomes. However, this progressivity is decreased by the ceiling established at the maximum level of health insurance contribution and hypothecated health care tax combined. Another recently introduced revenue collection modality is called the “simplified contribution payment” which is an option for artists and media workers who are not salaried employees. This tax can be described as regressive because the contribution rate is significantly
lower than the rate of contribution paid by citizens with average income while these professionals belong to the wealthier side of the population, so they end up paying much less in total than others if all taxes and contributions are taken into account. Revenue from this source represents only a negligible share of total insurance fund revenue.

Central government transfers to the HIF are generally progressive (like personal income tax, consumption tax on luxury goods, various types of property tax), but these transfers have a regressive part as well (consumption tax on goods consumed in large quantities by the poor including tobacco, alcohol that have additional excise tax levied). Since end of the 1990s, there has been a notable shift towards funding the health system through general taxation, a phenomenon very much in line with recent trends in Europe in order to move away from exclusive reliance on labour-related social insurance contributions and use a mix of revenue sources. At the same time, an increasing share of health system financing in Hungary is private, consisting mainly of out-of-pocket payments, which by definition are strongly regressive. Table 3.1 provides an overview of the progressivity of the main sources of health care financing.
Table 3.1 Main sources of health care financing in Hungary and their progressivity rated from 1 (strongly regressive) to 9 (strongly progressive) up to 2010

<table>
<thead>
<tr>
<th>Tools of resource collection</th>
<th>Regressive</th>
<th>Proportional</th>
<th>Progressive</th>
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<tbody>
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<td>1 2 3 4</td>
<td>5</td>
<td>6 7 8 9</td>
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<tr>
<td>SHI contribution</td>
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<tr>
<td>Hypothecated health care tax</td>
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<tr>
<td>Lump-sum</td>
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<tr>
<td>Percentage</td>
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<tr>
<td>Simplified contribution payment (for certain professional groups)</td>
<td>●</td>
<td></td>
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<tr>
<td>General taxes (through various budget transfers to the HIF)</td>
<td></td>
<td>●</td>
<td>4</td>
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<tr>
<td>Local taxes</td>
<td>●</td>
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<tr>
<td>VHI</td>
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<tr>
<td>Medical Saving Accounts</td>
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<td>Informal payment</td>
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<td>User charges</td>
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In practice, it is important to take into account the willingness to pay taxes and contributions. Evasion has been a persistent problem in Hungary, especially in the health system. Unpaid health and pension insurance contributions peaked in 1994 at 4.3% of gross domestic product (GDP) and even after significant progress in addressing evasion it was estimated to equal to 1% of GDP in 2008, out of which 40% were health insurance related arrears and claims (National Health Insurance Fund Administration, 2011).
It was argued in the past that the high rate of social insurance contributions had adverse effects on (formal) employment and competitiveness of the Hungarian economy and it led to delayed payments of contributions, non-payment and underreporting of income. Successive governments attempted to address the problem by cross-checking patients’ insurance status, lowering contribution rates, widening the contribution base and introducing other forms of revenue that are less prone to evasion. Unfortunately, in the absence of rigorous analysis, there is no evidence on the impact of these measures. On the other hand, the radical reduction of the employer contribution rate decreased HIF revenues and deteriorated the financial balance of the HIF without successfully boosting employment.

Recently, the data related to the health insurance coverage of the patients were cleaned from administrative errors and a real-time online checking of the patients’ insurance coverage status was introduced. Those who are not covered are obliged to pay unpaid contributions retrospectively and this is enforced by the tax agency. The novelty of this approach is that patients without insurance coverage are not denied receiving needed care, but are requested to settle unpaid contributions. Since the information is passed on to the tax agency, appropriate legal actions are taken for effective enforcement of the new regulations. According to government estimates, this measure identified 150 000 free-riders and led to increasing revenues from this source by almost 70% between 2007 and 2008 (i.e. an additional HUF1.75 billion or €6.9 million). Although this additional revenue represents a small percentage of the total income of the HIF, it has symbolic importance from an equity perspective.
Changes have also been implemented to shift burden from the public to the private purse through increased out-of-pocket payments and narrowing scope of coverage. In certain cases these measures have been accompanied by encouraging voluntary complementary health insurance. Initially, the voluntary health insurance system was not-for-profit private insurance scheme with community rating and no risk assessment prior to participation. The risk-pooling component was decreased to 40% of the insurance premium in 1996 and eventually it was completely eliminated in 2003, when the entire scheme was transformed to a system of medical saving accounts (MSA). In turn, it has become a more regressive form of private financing especially in light of the tax-subsidy from which the better off segments of the population benefit the most.

It is difficult to assess the overall impact of related reforms in the past 20 years. The effectiveness of different measures varies greatly and no monitoring of equity in finance has been in place. One study published in 2002 used the Kakwani index, a summary indicator of equity in financing widely used in international literature, and estimated the total financing burden of the health system as mildly regressive (-0.0211), with overall public sources being mildly progressive (0.0260) and private sources strongly regressive (-0.2745) (Szende et al., 2002 quoted by Csaba, 2007). Unfortunately, there has been no monitoring of this aspect of equity over the years, except for one study on private expenditure, which found it similarly regressive in 2007 (-0.2726) as in 1999 (Csaba, 2007).
4. IMPACT OF HEALTH POLICY MEASURES ON SELECTED QUALITY INDICATORS, 2006–2009

This chapter provides a summary of key findings of the project that had the dual objectives of developing a methodology for monitoring and evaluation of health policy measures and assessing the quality impact of the health policy reforms between 2006 and 2009, especially the restructuring of health service provision in 2007. The recent publication of the Hungarian health system review by the European Observatory on Health Systems and Policies provides a detailed account of the reforms (Gaál et al., 2011).

4.1 METHODOLOGY

The evaluation focused on four dimensions of performance:

1. access: utilization of services according to need (based on clinical evidence);
2. timeliness: timely delivery of services in order to maximize health gain;
3. appropriateness: care provided in accordance with professional standards, guidelines, best practice; and
4. effectiveness: achieved health gain.

It is important to emphasize that the policy impact analyses carried out in this study are not suitable for making far-reaching conclusions on policy propriety. In some cases the findings only indicate that further causal analysis is necessary to verify policy impact.
For the evaluation of the impact of the policy measures, the clinical specialities were selected on the following criteria:

1. availability of regular data in order to construct indicators before and after the intervention;
2. potential impact on at least one of the quality dimensions in the selected clinical field;
3. likelihood of short-term effects of the reform; and
4. large number of patients affected.

Based on these criteria, the working group selected the following clinical areas for analysis: cardiology and stroke care; oncology; psychiatry and addictology; and obstetrics and neonatology.

Table 4.1 provides a summary of indicators for the four dimensions of performance in the four clinical areas in a matrix. It is important to note that the indicators are not applicable to a comprehensive analysis of performance, for which a complex approach to each field and many other indicators would be necessary. The authors’ objective was to develop and test indicators relevant to the health policy measures under investigation.

The working group defined 16 indicators of which 14 were feasible to measure. The analyzed period is from 2004 to 2009, the data sources were the HIF’s utilization data of hospital inpatient and outpatient care, the Tauffer statistics and the official date of death of deceased patients.

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4 Addictology is a clinical sub-specialty of psychiatry that deals with patients with addictions.
4.2 Results of the analysis in the field of circulatory diseases

4.2.1 Hospital care of acute myocardial infarction

The three indicators of the circulatory system topic (access, timeliness, effectiveness) focused on the treatment of AMI. The evaluation of AMI care has special relevance in the international context as well, since there are standard, evidence-based practice guidelines in use. One group of guidelines concerns the application of PCI and its time frame for delivery which is closely linked to its effectiveness. For the application of PCI the contraindication is rare, so in case of AMI, the reasons for non-utilization are the following:

1. patient dies before treatment,
2. treatment could not be started within time period when PCI is considered effective,
3. patient is transported to a hospital where PCI is not available.
The time window is different for AMI with ST-elevation (STEMI) and AMI without ST-elevation (NSTEMI) forms of the disease. In case of STEMI, procedure should be performed within a few hours otherwise the concerned part of the heart muscle is subject to necrosis. Unfortunately, the International Statistical Classification of Diseases and Related Health Problems (ICD) does not distinguish between the two forms, therefore, it is not possible to analyse timeliness of care by the presence of ST-elevation using administrative data. In turn, this timeliness indicator does not provide policy relevant results until this weakness of the data source is addressed.

The evidence base for treatment of AMI is strong and appropriate use of curative care is proven to improve survival rates. This means that the thirty-day mortality is dependent on the quality of clinical care and timely access to services. The one-year mortality indicator reflects on the quality of both acute and long-term care. The latter includes rehabilitation and follow-up with special focus on reducing risk factors and monitoring medication therapy.

PCI can only be performed in special cardiology centres. The number of centres increases each year in Hungary, improving patients’ access to care. Access does not only depend on availability, but also on timely diagnosis and patient referral. Timely diagnosis is partly patient-dependant: if patients can recognize the symptoms and call emergency services, then the chances for timely diagnosis are excellent. If patients seek care long after the onset of the symptoms and turn to their general practitioner, then the most important question is timely referral to a special cardiology centre. If the patient is taken to a hospital where PCI is not available, then it is likely that appropriate care will not be initiated within the time period when PCI is effective (to avoid heart muscle necrosis and further complications) and as a
result survival will not improve significantly (even if PCI is eventually administered).

Hospital restructuring and changes to referral policies took place in the first half of 2007. Analysis of the indicators suggests that these policy changes did not directly affect the measured components of the quality of AMI care. Access to PCI continued to improve, the rate of AMI patients receiving PCI treatment tripled in three years. However, the increase of the number of PCI treatments did not lead to major improvements of mortality rates. While in 2004 the rate of PCI was 18.2% and thirty-day mortality was 18.9%, in 2009 the rate of treated patients was 49.8% with 17.1% mortality. The changes in one-year mortality are similar to those of thirty-day mortality: 29.9% of AMI patients died within one year in 2004 and 28.1% in 2009. There were 5038 more PCI treatments in 2009 than in 2004, and 369 more patients survived the first year.

**Fig. 4.1 Changes in access to and effectiveness of PCI care among AMI patients from 2004 to 2009 in Hungary (raw indicators)**
The changes in mortality indicators are influenced by two factors: the increase in the rate of lower mortality risk patients treated by PCI, and the increasing mortality of patients without PCI treatment. The analysis shows that patients with lower mortality risk benefitted most from the increase of PCI treatment availability.

The access to treatment for AMI patients and the chances of survival highly depend on their place of residence. There are significant differences among counties, especially in the rate of patients treated with PCI. These differences further increased during the observation period leading to increasing inequality among patients.

Overall, the following factors might have influenced the present results:

1. Some providers systematically over-code AMI cases, which means the actual need for PCI treatment is lower than what the administrative data suggest.
2. Late detection of AMI patients or inadequate patient referral, which result patients admitted to an institution that cannot offer them appropriate care.
3. PCI is administered later than the time period when it is effective leading to unnecessary interventions.
4. Late PCI is provided to the lower-risk patients, who survived the first few hours. For a proper assessment of the effectiveness of PCI, more accurate information on the time-window would be needed.
5. The combination of risk factors (co-morbidities, socio-economic status) of patients receiving PCI differs significantly between counties. This has implications on the measure of effectiveness.
Table 4.2 Regional differences in access to PCI by AMI patients by counties in 2008

<table>
<thead>
<tr>
<th>Counties</th>
<th>PCI % (comparison of 2006-2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zala</td>
<td>62.1</td>
</tr>
<tr>
<td>Jász-Nagykun-Szolnok</td>
<td>61.2</td>
</tr>
<tr>
<td>Csongrád</td>
<td>60.6</td>
</tr>
<tr>
<td>Pest</td>
<td>60.0</td>
</tr>
<tr>
<td>Nógrád</td>
<td>59.8</td>
</tr>
<tr>
<td>Vas</td>
<td>56.4</td>
</tr>
<tr>
<td>Baranya</td>
<td>56.0</td>
</tr>
<tr>
<td>Fejér</td>
<td>55.8</td>
</tr>
<tr>
<td>Budapest</td>
<td>55.4</td>
</tr>
<tr>
<td>Borsod-Abaúj-Zemplén</td>
<td>55.2</td>
</tr>
<tr>
<td>Hajdú-Bihar</td>
<td>51.3</td>
</tr>
<tr>
<td>Veszprém</td>
<td>50.4</td>
</tr>
<tr>
<td>Szabolcs-Szatmár-Bereg</td>
<td>49.3</td>
</tr>
<tr>
<td>Győr-Moson-Sopron</td>
<td>47.8</td>
</tr>
<tr>
<td>Komárom-Esztergom</td>
<td>47.3</td>
</tr>
<tr>
<td>Békés</td>
<td>41.4</td>
</tr>
<tr>
<td>Heves</td>
<td>39.8</td>
</tr>
<tr>
<td>Bács-Kiskun</td>
<td>39.5</td>
</tr>
<tr>
<td>Tolna</td>
<td>37.5</td>
</tr>
<tr>
<td>Somogy</td>
<td>35.8</td>
</tr>
</tbody>
</table>

The authors recommend that the reporting system for hospital cases should include the exact time of the administration of PCI and the coding system should distinguish STEMI and NSTEMI forms of AMI cases.
Main findings and conclusions

1. Based on the above indicators, no adverse effect of the hospital restructuring can be detected.
2. Access to PCI improved significantly.
3. Regional differences remain large with adverse effects on equity in access.
4. Women’s access to PCI is significantly worse in every age group compared to men.
5. Despite the steep increase in the volume of PCI treatment, only slight progress can be seen in short-term and long-term survival, questioning the cost-effectiveness of the huge increase in expenditure on PCI.
6. In order to improve the analysis it is necessary to establish standard measurement for timeliness of the intervention and separate STEMI and NSTEMI forms of the cases.
7. It is also necessary to extend the scope of the analysis to the period after hospital discharge.

4.2.2 Hospital care for stroke

The selected appropriateness indicator in the area of circulatory diseases is the CT scan of stroke patients on the day of hospital admission, which is essential for the differential diagnosis of different stroke cases (ischemic or haemorrhagic) as this is the basis for the selection of treatment procedures. The CT scan can take place not only after hospital admission, but also before, when the first symptoms occur. This has to be factored into the measurement of this indicator.
The analysis suggests that the percentage of stroke patients diagnosed by CT is low (44–48%) and the indicator is worse for women. This may be partly explained by the coding system which includes some of the conditions that do not require CT scan test.

An interesting finding is that after the hospital sector restructuring, the rates increased while the number of stroke patients decreased. This can be explained by the following factors:

1. there was a reduction in the number of patients whose stroke condition had developed earlier and who received hospital care only for follow-up purposes;
2. only those patients were admitted who showed more serious symptoms;
3. changes in the reporting and quality of data.

Differences between counties are significant. Equity in access did not improve during the study period. Whether patients receive CT scans or not depends primarily on the location of the treatment provider. There is a threefold difference between the counties with the highest and the lowest rates. It is notable that in 2009 the decreasing trend of stroke incidence reversed.

Overall, the indicator results suggest that this is an area for further investigation and monitoring.
4.3 Results of the analysis in the field of oncology

Oncology care is highly complex service: the numerous tumour types and locations call for a wide range of different procedures from screening to palliative care. In turn, the choice of indicators is not an easy task. For patients’ survival and quality of life timely access to effective and appropriate care is critical. Policy decisions may affect all these aspects of the service provision. There have been several relevant policy changes prior to the study period including the selection of providers that are allowed to treat certain cancer patients, the referral pathways to regional centres and reduction of hospital beds devoted to cancer care.

According to the experts, the key issues are:

1. timely access to specialized oncology services after first contact with primary care doctors,
2. whether treatment follows clinical guidelines (appropriateness) and
3. if treatment starts within the recommended time period after diagnosis (timeliness).

According to the analysis, access to specialized oncology services is quite good, the value of the indicator is above 95% on average across the country. In a handful of counties with 90% indicator value further improvement is needed.

For indicators of appropriateness and timeliness, colorectal cancer was chosen. After consultation with professionals the authors concluded that the calculation of the appropriateness indicators was not accurate due to incomplete reporting on hospital care. This indicator needs further refinement in collaboration with clinical experts. In contrast,
the indicator for the analysis of timeliness proved to be appropriate to detect effects of the policy changes on timely delivery of services to colorectal cancer patients. The value of the indicator was 64% in 2004 and dropped to 50% in 2009, marking a significant deterioration of health system performance. Differences among counties are low. It is highly plausible that the capacity restructuring and other policy measures like revised treatment guidelines, clinical indication for treatment and financing protocols affected care provision in the short term, which delayed the timely initiation of appropriate care for several patients.

For the analysis of effectiveness of cancer care the chosen indicator was survival of lung cancer given its short survival time, and the large number of patients affected. Lung cancers progress rapidly and mortality is very high. During the process of care it is possible to select the patients with good prognosis based on histology results and effective treatment increases their chance for survival. Incidence of the disease does not show increase over time. Since 2005 there is a moderate but significant deterioration in one-year mortality (2005: 58.4%, 2009: 60.2%) and this trend is observed in all age groups. Mortality increased in both groups of patients: for those who received chemotherapy mortality increased from 47% to 51%, and for those without chemotherapy the figures are 63% and 67% respectively. Differences among counties are low and remained stable. As the international trends are improving, this finding is alarming both from a public health perspective and the effectiveness of the health system. However, the authors did not find any logical connection between these findings and the recent policy changes, therefore, a more comprehensive analysis of the causes is needed.
In 2009, the National Development Agency launched a major development programme of regional, integrated oncology network and oncology centres, which may contribute to improvements in cancer care.

### 4.4 Results of the Analysis in the Field of Psychiatry and Addictology

In this clinical field, two indicators were used to assess appropriateness (rate of patients discharged from acute psychiatry hospital within a week) and effectiveness (rate of patients readmitted within 30 days of discharge). Up until the first quarter of 2007, the rate of readmitted patients was decreasing (from 2.8% in 2004 to 2.2%), and after a significant increase in the second quarter it stagnated at around 3%. The number of cases started to drop in the second quarter of 2006, from 15,000 to 11,000 in 2007, and remained stable thereafter. The rate of patients discharged within a week remained around 8% from 2004 to the end of 2006, after that it started to grow continually, and by the end of 2008 it became 1.5 times greater than at the beginning of 2006 (12.1%).

![Graph showing seasonally adjusted monthly time series of the rate of patients readmitted within 30 days of discharge from acute psychiatric/addictology wards.](image)

**Note:** 12-month moving average (dotted line) and dates of relevant health policy measures (vertical lines)
Main findings and conclusions

1. A less than seven-day length of stay in acute care significantly increases the rate of readmissions within 30 days. None of the observed measures had any obvious effects on the average length of stay, although the volume limit levels and the reduced payment levels beyond the volume limit might have influenced it. Clinical audits may be necessary to explore adherence to clinical guidelines which in turn may reduce readmission rates.

2. Transfers of patients between hospital units during hospitalization increases the probability of readmission within 30 days. Hospital restructuring in 2007 significantly raised the number of patients transferred between units, so it had an unfavourable impact on the effectiveness indicator. In general, all measures that force psychiatry patients to leave their institution (closing units, reducing capacities, change of patient pathways) and thus their doctor and other care givers, increase the rate of readmission.
3. According to the descriptive statistics, attending outpatient services clearly reduces the readmission rate, but during the multivariate analysis the authors got a slightly opposite effect. This may be due to an unidentified factor affecting patients in outpatient visits but not others. Distortion due to payment incentives at integrated hospital outpatient clinics is also possible endogenous factor: patients with co-morbidities visit outpatient clinics more frequently and in combination with hospital stays, because their clinical needs are greater and diverse. In any case, further research is needed to develop a more robust basis for this indicator.

4. Readmission is significantly higher among former patients of the National Institute for Psychiatry and Neurology (NIPN), which was closed during the assessment period. It is most likely that closing the NIPN had a negative impact on the effectiveness indicator. This impact has reduced over time, but the indicator stabilized at a higher level than for other patients.

5. In contrast to the original hypothesis, hospital based rehabilitation care does not reduce, but rather increases the rate of readmissions. This suggests that in many cases it is not the actual need for rehabilitation, but the financial incentives that drive temporary transfers of patients between acute care units and rehabilitation wards which in turn increase the readmission rates and also the income of the hospital.

6. The readmission rate is highest in the youngest and the oldest population groups. In particular, this raises concerns about the effectiveness of care provision in the younger age groups, where the length of stay is almost always shorter than the professional norms.
4.5 Results of the analysis in the field of obstetrics and neonatology

In this clinical field, the access indicator was the rate of very low birth weight (VLBW, under 1500g) live-borns transferred to perinatal/neonatal intensive centres (PIC/NIC) later than one day after birth and the effectiveness indicator was the thirty-day mortality rate of VLBW live-borns. The thirty-day mortality rate showed considerable – up to 10 percentage-point – fluctuation around the 12–13 percent trendline. Minor amelioration can however be observed over the 6-year period. The rate of new-borns transferred late to PIC decreased intermittently to one half by 2005 and 2006, maintaining a level between 2–3% since then.

Fig. 4.4 Monthly time series of 30-day VLBW infant mortality rate

Note: 12-month moving average (dotted line) and dates of relevant health policy measures (vertical lines)
Main findings and conclusions

1. During the observed period the complex care of obstetrics and neonatology has somewhat improved and health policy decisions did not have significant observable adverse effect on this improvement except for a short period from the second quarter of 2007 to the first quarter of 2008 for the mortality indicator, and in the second and third quarter of 2007 for the rate of live-borns transferred to PICs. The main reasons for the general improvement could be the nation-wide improvement in transport of premature babies, improved routine clinical care and the closing of a few small maternity wards that did not meet quality criteria.

2. Despite professional expectations, the effectiveness indicator does not seem to be connected to the timely transportation to PIC. It is possible that there is a selection bias that led to this unexpected finding of the analysis.

3. The mortality rate is lower among babies born at hospitals where there is a PIC unit beside the maternity unit. This may suggest that clinical quality of care provided by hospitals without PIC (prior to transferring the babies to PIC) needs further improvement.

4. There is an obvious connection between weight and mortality, while there are no significant differences between genders. The mortality of live-borns under 750g is many times higher than that of those of higher weight.

5. The current system of temporary social security number (SSN) for new-borns makes follow-up studies impossible in many cases. The authors suggest that the NHIFA establishes the connection between the temporary and final SSNs to enable monitoring and research.
6. The basis of the analysis was the Tauffer statistics, a very comprehensive professional data collection system. However, this database does not include any personal identification information therefore it is not possible to link it with the health care utilization database. There are several ways to solve this problem, but all requires policy makers’ attention to data protection and alignment with current reporting systems.

7. The policy of limiting overall volume of services in this clinical field led to a reduction of financing with its adverse effects on the number of staff (fewer doctors and nurses) and budgets for medication, consumables and new equipment. As a result the quality and effectiveness of PIC/NIC units may not be optimal which may not show in mortality rates, but in quality of life of surviving infant.
5. ANALYSIS OF THE REVENUE COMPOSITION AND FINANCIAL SUSTAINABILITY OF HIF

In this analysis the authors adopted the approach of the recently published 2011 edition of the System of Health Accounts (SHA 2011) (OECD, Eurostat, WHO, 2011), which enables tracking of the revenue sources to health financing schemes as well as the expenditures by these schemes. This contrasts with the approach of SHA 1.0 (OECD, 2000) used to classify national health expenditures in existing international databases such as those of OECD and WHO. SHA 1.0 only measures expenditures by financing agents such as the National Health Insurance Fund Administration (NHIFA), but does not identify the actual sources of revenue. The primary objective of this analysis is to show how the changing mix of revenues affected the sustainability of the health financing system (Szigeti and Evetovits, 2011). The application of the revised SHA methodology on the reported revenue items of the Health Insurance Fund (HIF) shows the difference in how health financing and expenditure patterns will be reported once the new edition of the SHA has been adopted by all countries. The authors believe this will improve the relevance of international comparative data on health expenditure to health financing policy-makers.

5.1 Methods

At the time of the systemic political changes, the country had inherited a health system of poor technical and allocative efficiency with low quality services due to the prior financing system. It is also notable that the influence of politics on the budget negotiation process has not ceased after the systemic changes, which led to large
geographical disparities and uneven development of the various specialties. Introducing diagnosis-related groups (DRGs) for hospital payment was seen as a way to address these problems by providing incentives to increase productivity and efficiency, promote cost-consciousness among hospital management and somewhat lower regional differences in service provision.

The introduction of the DRG system showed the geographic disparities of the communist health care system numerically, because at the time of its introduction, in 1993 the hospitals received an institution-specific base fee derived from the previous budget and the DRG production cost of the time (Table 7.1). A countrywide standardized base fee was introduced only 5 years later in 1998.

5.2 Analysis and main findings

5.2.1 Structure of HIF financing sources

According to WHO estimates based on the national health accounts data, the public expenditure share of total health expenditure in Hungary was 69.7% in 2009 and the HIF was responsible for 84.3% of general government expenditures on health (WHO, 2012). This might easily lead one to the conclusion that the bulk of health expenditures in Hungary are financed from SHI contributions. However, the detailed breakdown of the revenue side of the HIF shows that there are several items that could be categorized as tax or other sources rather than payroll contributions (Table 5.1).

First, the HIF revenue structure contains several private or external sources (see Table 5.1, items 16, 17, 20 and 22). It is important to note
that all voluntary sources are private, but not all compulsory schemes are public, only those for which this benefit principle does not hold. The various user charges (items 16, 17 and 22) fulfil these criteria since they are usually paid directly by the patients or their households in exchange for what they consume. These private sources have been included in the HIF budget for various technical reasons. For instance, the user fees for patient-doctor encounters (and the hospital per diem, both of which were introduced in 2007 and abolished in 2008) had to be collected by the health care providers (item 22) and the money had to be used to finance service provision. However, the government, to prevent protesting physicians from not collecting the user fees from the patients, incorporated this item into the HIF budget. That way, the NHIFA could punish the protesting physicians by withholding the lost revenue (by not charging patients) from their regular payments to these doctors, had they decided not to collect the user fees from patients. Another example is the reimbursement of health services provided in Hungary to the citizens of other European Union Member States (item 20), which can be considered an external source.

Second, the published HIF revenue data include revenues for the provision of cash benefits such as sick pay. This is evident from items 5 and 15, but the employer and employee SHI contributions also have a part dedicated to cover cash benefits (included in items 1 and 2). In 2010, 0.5% of the employer SHI contribution and 2% of the 6% employee contribution were used to cover cash benefits. These sources, together with any deficit financing for this expenditure, had to be deducted from the HIF budget to clean the data from non-health-care-related items. The authors divided the HIF deficit, which is always covered by the central government budget (i.e. from a tax source), between cash and in-kind benefits in proportion to the actual
expenditures on them. For those years when the SHI contribution was not separated into cash and in-kind benefit contributions, the authors applied the same method to determine the part of revenues covering health services and covering sick pay and other cash benefits from the SHI source.

Third, there are certain items whose categorization is not obvious and requires different accounting methods. For example, there is a hypothecated health care tax (item 10), introduced in 1997 as a lump sum tax paid by the employers, and intended to compensate the HIF for non-contributing groups. This tax was expanded in 1999 with a proportional component (Gaál, 2004). Although these new sources of revenue were introduced to decrease contribution evasion by widening the SHI contribution base, they do not meet the criteria of SHI contributions as defined in the SHA 2011, since the payment of these taxes does not provide entitlement to benefits of the SHI system. They were separated from the SHI contribution and defined as a tax source because the government is not expected to provide services to the paying individual in exchange for taxes. Both the lump sum and the proportional health care tax had to be paid in addition to the SHI contribution.
Table 5.1 Revenue sources of the Health Insurance Fund according to the annual reporting of the NHIFA (in HUF)

<table>
<thead>
<tr>
<th>Categories and items</th>
<th>2000</th>
<th>2005</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social health insurance contribution and other contributions</strong></td>
<td>653 715</td>
<td>1 104 335</td>
<td>1 028 377</td>
<td>898 597</td>
<td>677 734</td>
</tr>
<tr>
<td>1 Employer contribution</td>
<td>371 560</td>
<td>678 392</td>
<td>411 813</td>
<td>314 906</td>
<td>159 721</td>
</tr>
<tr>
<td>2 Employee contribution</td>
<td>81 314</td>
<td>227 707</td>
<td>447 761</td>
<td>424 335</td>
<td>431 835</td>
</tr>
<tr>
<td>3 Contribution by special groups (compulsory participation)</td>
<td>946</td>
<td>3 793</td>
<td>17 085</td>
<td>17 310</td>
<td>21 232</td>
</tr>
<tr>
<td>4 Contribution based on voluntary agreement</td>
<td>510</td>
<td>650</td>
<td>226</td>
<td>215</td>
<td>229</td>
</tr>
<tr>
<td>5 Employer repayment of sick pay</td>
<td>13 387</td>
<td>23 165</td>
<td>24 894</td>
<td>24 807</td>
<td>18 833</td>
</tr>
<tr>
<td>6 Contribution paid in connection with the &quot;taxes and duties voucher&quot; programme</td>
<td>31</td>
<td>707</td>
<td>427</td>
<td>461</td>
<td>147</td>
</tr>
<tr>
<td>7 Compensation for the contribution relief / expenditure related to the &quot;Start card&quot; programme by the Labour Market Fund</td>
<td>-</td>
<td>-</td>
<td>2 499</td>
<td>2 382</td>
<td>1 473</td>
</tr>
<tr>
<td>8 Contribution for conscripts a)</td>
<td>560</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>9 Special contribution to disability pension for soldiers b)</td>
<td>1 008</td>
<td>1 279</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10 Hypothecated health care tax</td>
<td>181 379</td>
<td>164 408</td>
<td>118 968</td>
<td>109 934</td>
<td>41 207</td>
</tr>
<tr>
<td>11 late payment and other fines</td>
<td>3 020</td>
<td>4 234</td>
<td>4 703</td>
<td>4 246</td>
<td>3 058</td>
</tr>
<tr>
<td><strong>Tax sources</strong></td>
<td>70 872</td>
<td>66 050</td>
<td>354 385</td>
<td>319 142</td>
<td>617 271</td>
</tr>
<tr>
<td>12 Tax transfers for abortion</td>
<td>900</td>
<td>1 250</td>
<td>1 500</td>
<td>1 600</td>
<td>1 600</td>
</tr>
<tr>
<td>13 Tax transfers for non-contributing groups</td>
<td>46 572</td>
<td>-</td>
<td>307 038</td>
<td>313 641</td>
<td>611 771</td>
</tr>
<tr>
<td>14 Tax transfers for special health services</td>
<td>2 900</td>
<td>3 500</td>
<td>3 800</td>
<td>3 900</td>
<td>3 900</td>
</tr>
<tr>
<td>15 Tax transfers for maternity pay</td>
<td>20 500</td>
<td>61 300</td>
<td>42 047</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Other revenues</strong></td>
<td>2 635</td>
<td>31 266</td>
<td>59 015</td>
<td>49 932</td>
<td>88 273</td>
</tr>
<tr>
<td>16 User charges for abortion</td>
<td>334</td>
<td>667</td>
<td>670</td>
<td>658</td>
<td>605</td>
</tr>
<tr>
<td>17 Reimbursement of HIF expenditures on accidents and other injuries/damages by the responsible entity (e.g. compulsory third party liability insurance for motor vehicles)</td>
<td>840</td>
<td>5 442</td>
<td>6 441</td>
<td>3 212</td>
<td>6 176</td>
</tr>
<tr>
<td>18 Other special revenues</td>
<td>980</td>
<td>1 923</td>
<td>1 541</td>
<td>1 494</td>
<td>1 636</td>
</tr>
<tr>
<td>19 Repayment of pharmaceutical subsidies by pharmaceutical companies</td>
<td>-</td>
<td>23 077</td>
<td>38 799</td>
<td>43 560</td>
<td>50 936</td>
</tr>
<tr>
<td>20 Reimbursement of HIF expenditures based on international agreements</td>
<td>-</td>
<td>93</td>
<td>270</td>
<td>647</td>
<td>1 146</td>
</tr>
<tr>
<td>21 Repayment of HIF subsidies &amp; payments by health care providers</td>
<td>481</td>
<td>60</td>
<td>335</td>
<td>361</td>
<td>294</td>
</tr>
<tr>
<td>22 User charges for patient-doctor encounters &amp; for hospital stay (visit fee, hospital per diem)</td>
<td>-</td>
<td>-</td>
<td>10 960</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>23 Additional tax transfers from the 2007 sufficit of the HIF</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>27 481</td>
</tr>
<tr>
<td>24 Revenues from asset management</td>
<td>3 885</td>
<td>207</td>
<td>26</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>25 Revenues from administrative fees</td>
<td>3 000</td>
<td>2 739</td>
<td>3 382</td>
<td>1 681</td>
<td>1 702</td>
</tr>
<tr>
<td><strong>Total revenues</strong></td>
<td>734 108</td>
<td>1 204 597</td>
<td>1 445 184</td>
<td>1 269 366</td>
<td>1 384 992</td>
</tr>
</tbody>
</table>

Notes: This table has been taken from the statistical yearbook of the NHIFA, a bilingual (Hungarian-English) publication, accessible on the NHIFA web site (http://site.oep.hu/statisztika/2010/index.html). The English translation of the various items in the publication does not follow the terminology established in the scientific literature of health care financing, so the authors have revised the original (word for word) English translation of the various revenue sources. The numbering of items has also been added by the authors.

a) Revenue items not included in the original publication, but included in the total revenue.
b) Figure for 2000 is not included in the original publication.

Another example is the repayment of NHIFA financing by health service providers for invalid payment claims (item 21), and the claw back of pharmaceutical subsidies from producers and distributors (item 19). The latter is a complex scheme, which was devised to prevent overspending in the HIF pharmaceutical sub-budget, and has been in operation since 2004 (Gaál et al. 2011). In such cases one must deduct the items from both the revenue and expenditure sides of the Health Insurance Fund, as the claw back of pharmaceutical subsidies and other direct payments from producers and distributors to the Health Insurance Fund have been recently reported by the Hungarian Statistical Office as a spending by “Enterprises financing schemes” in the Hungarian National Health Account and not as a spending by the Health Insurance Fund Administration. Therefore, calculating with these items in the budget of the HIF would only distort both the calculation of the authors and the reported expenditures in the NHA by unnecessarily inflating the expenditures and revenues of the Health Insurance Fund.
Table 5.2 Corrections applied to the published revenue sources of the Health Insurance Fund

<table>
<thead>
<tr>
<th>Category - Item</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. &quot;Income&quot;: derived</td>
<td>186683</td>
<td>23.0</td>
<td>461240</td>
<td>53.0</td>
<td>262277</td>
</tr>
<tr>
<td>2. &quot;General revenues&quot;:</td>
<td>28184</td>
<td>3.8</td>
<td>6110</td>
<td>3.9</td>
<td>148794</td>
</tr>
<tr>
<td>3. &quot;Employee contributions&quot;:</td>
<td>30841</td>
<td>3.8</td>
<td>6110</td>
<td>3.9</td>
<td>148794</td>
</tr>
<tr>
<td>4. &quot;Revenue from asset management&quot;:</td>
<td>1126</td>
<td>0.1</td>
<td>60</td>
<td>0.1</td>
<td>1290</td>
</tr>
<tr>
<td>5. &quot;Other special revenue&quot;:</td>
<td>284</td>
<td>0.0</td>
<td>284</td>
<td>0.0</td>
<td>284</td>
</tr>
<tr>
<td>6. &quot;Subsidies&quot;:</td>
<td>154262</td>
<td>1.9</td>
<td>154262</td>
<td>1.9</td>
<td>154262</td>
</tr>
<tr>
<td>7. &quot;CIST&quot;:</td>
<td>1176</td>
<td>0.1</td>
<td>622</td>
<td>0.4</td>
<td>3440</td>
</tr>
<tr>
<td>8. &quot;Other goods and services&quot;:</td>
<td>137</td>
<td>0.0</td>
<td>137</td>
<td>0.0</td>
<td>137</td>
</tr>
<tr>
<td>9. &quot;Total revenue&quot;:</td>
<td>196839</td>
<td>25.3</td>
<td>465220</td>
<td>53.6</td>
<td>263877</td>
</tr>
</tbody>
</table>

Note: The numbering of items corresponds to the numbering of items in Table 5.1, with the exception of item 26, representing the central government tax transfers to cover the HIF deficit.

Finally, data published by the NHIF do not include those central government budget transfers to cover the HIF deficit, a legal obligation of the central government. The authors have reviewed the acts on the implementation of the HIF budget to make up for these missing data (Hungarian National Assembly, 2010).

On the basis of these considerations, the authors have compiled a table of the applied corrections and adjustments (Table 5.2) and a
revised table of the classification of the revenue items (Table 5.3), to be able to follow the trends in the changing mix of tax versus SHI contributions in the HIF budget. What is immediately visible in Table 5.3 is that SHI contributions are not the dominant source of health care financing. This provides evidence for the argument that when health expenditure data are reported according to financing agents only – as it is the practice of the currently used SHA 1.0 – the Hungarian health system appears to be a system financed predominantly (84.6% of total public expenditure) by SHI contributions. This analysis has shown that only 36.2% of HIF revenues came from SHI contributions in 2010. That is, the majority of HIF revenues, 63.7% in 2010, were from general tax sources. The 2011 edition of the SHA will allow for reporting these important and policy-relevant details.

### Table 5.3 Revised table of the public revenue sources of the HIF (in-kind benefits)

<table>
<thead>
<tr>
<th>Categories / items</th>
<th>2000 million Ft</th>
<th>%</th>
<th>2005 million Ft</th>
<th>%</th>
<th>2008 million Ft</th>
<th>%</th>
<th>2009 million Ft</th>
<th>%</th>
<th>2010 million Ft</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social health insurance contribution</td>
<td>325 874</td>
<td>53.8</td>
<td>647 325</td>
<td>59.8</td>
<td>692 667</td>
<td>61.6</td>
<td>576 156</td>
<td>51.1</td>
<td>433 066</td>
<td>36.2</td>
</tr>
<tr>
<td>1 Employer contribution</td>
<td>263 924</td>
<td>43.5</td>
<td>478 557</td>
<td>44.2</td>
<td>370 632</td>
<td>32.9</td>
<td>269 919</td>
<td>23.9</td>
<td>119 791</td>
<td>10.0</td>
</tr>
<tr>
<td>2 Employee contribution</td>
<td>57 758</td>
<td>9.5</td>
<td>160 631</td>
<td>14.8</td>
<td>298 508</td>
<td>26.5</td>
<td>282 890</td>
<td>25.1</td>
<td>287 890</td>
<td>24.1</td>
</tr>
<tr>
<td>3 Contribution by special groups (compulsory participation)</td>
<td>946</td>
<td>0.2</td>
<td>3 793</td>
<td>0.4</td>
<td>17 085</td>
<td>1.5</td>
<td>17 310</td>
<td>1.5</td>
<td>21 232</td>
<td>1.8</td>
</tr>
<tr>
<td>4 Contribution based on voluntary agreement</td>
<td>510</td>
<td>0.1</td>
<td>650</td>
<td>0.1</td>
<td>226</td>
<td>0.0</td>
<td>215</td>
<td>0.0</td>
<td>229</td>
<td>0.0</td>
</tr>
<tr>
<td>5 Contribution paid in connection with the “taxes and duties voucher” programme</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6 Compensation for the contribution relief related to the “Start card” programme by the Labour Market Fund</td>
<td>2 145</td>
<td>0.4</td>
<td>2 987</td>
<td>0.3</td>
<td>3 781</td>
<td>0.3</td>
<td>3 434</td>
<td>0.3</td>
<td>2 550</td>
<td>0.2</td>
</tr>
<tr>
<td>7 Contribution for conscripts</td>
<td>560</td>
<td>0.1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8 Late payment and other fines</td>
<td>2 145</td>
<td>0.4</td>
<td>2 987</td>
<td>0.3</td>
<td>3 781</td>
<td>0.3</td>
<td>3 434</td>
<td>0.3</td>
<td>2 550</td>
<td>0.2</td>
</tr>
<tr>
<td>9 Hypothecated health care tax</td>
<td>181 379</td>
<td>29.9</td>
<td>164 408</td>
<td>15.2</td>
<td>118 968</td>
<td>10.6</td>
<td>109 934</td>
<td>9.8</td>
<td>41 207</td>
<td>3.4</td>
</tr>
<tr>
<td>10 Tax transfers for abortion</td>
<td>900</td>
<td>0.1</td>
<td>1 250</td>
<td>0.1</td>
<td>1 500</td>
<td>0.1</td>
<td>1 600</td>
<td>0.1</td>
<td>1 600</td>
<td>0.1</td>
</tr>
<tr>
<td>11 Tax transfers for non-contributing groups</td>
<td>46 572</td>
<td>7.7</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>12 Tax transfers for special health services</td>
<td>2 900</td>
<td>0.5</td>
<td>3 500</td>
<td>0.3</td>
<td>3 800</td>
<td>0.3</td>
<td>3 900</td>
<td>0.3</td>
<td>3 900</td>
<td>0.3</td>
</tr>
<tr>
<td>13 Additional tax transfers from the 2007 sufficit of the HIF</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>27 481</td>
<td>2.3</td>
</tr>
<tr>
<td>14 Tax transfer for covering the HIF deficit</td>
<td>45 187</td>
<td>7.5</td>
<td>264 728</td>
<td>24.5</td>
<td>-</td>
<td>-</td>
<td>120 869</td>
<td>10.7</td>
<td>76 474</td>
<td>6.4</td>
</tr>
<tr>
<td>15 Other public sources</td>
<td>3 456</td>
<td>0.6</td>
<td>1 503</td>
<td>0.1</td>
<td>1 259</td>
<td>0.1</td>
<td>1 220</td>
<td>0.1</td>
<td>1 374</td>
<td>0.1</td>
</tr>
<tr>
<td>16 Other repayments and revenues</td>
<td>696</td>
<td>0.1</td>
<td>1 357</td>
<td>0.1</td>
<td>1 238</td>
<td>0.1</td>
<td>1 208</td>
<td>0.1</td>
<td>1 364</td>
<td>0.1</td>
</tr>
<tr>
<td>17 Revenues from asset management</td>
<td>2 760</td>
<td>0.5</td>
<td>146</td>
<td>0.0</td>
<td>21</td>
<td>0.0</td>
<td>12</td>
<td>0.0</td>
<td>10</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total revenues (in-kind benefits)</strong></td>
<td><strong>606 268</strong></td>
<td><strong>100.0</strong></td>
<td><strong>1 082 714</strong></td>
<td><strong>100.0</strong></td>
<td><strong>1 125 233</strong></td>
<td><strong>100.0</strong></td>
<td><strong>1 127 320</strong></td>
<td><strong>100.0</strong></td>
<td><strong>1 196 874</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Note: The numbering of items corresponds to the numbering of items in Table 5.1.
5.2.2 Budget balance of the HIF

The analysis of the HIF budget shows different phases of development in terms of the actual deficits (Fig. 5.1). With the exception of 1994, a general election year, the period between 1993 and 1996 was characterized by relative stability with no or little deficit, and a surplus in 1995. In the second phase, between 1997 and 2002, a substantial deficit developed, starting with 10% in 1997. Another interesting feature of this period is the “planned deficit”, which became standard practice in subsequent years, although the level of actual deficit decreased in 1999 and 2001. Beginning with 2002, however, both the planned and the actual deficit increased to levels (close to 25%) unseen before. Those years further illustrate the concept of “planned deficit”. The authors call the deficit planned when the government set
the budget of the HIF lower than the previous year’s actual expenditure without introducing measures to actually reduce costs of delivering the benefit package or the scope of covered services. Planners and decision-makers were clearly aware of the financial consequences of the decisions regarding the revenue sources and the expenditures of the HIF, given that there were little difference between the planned and the actual levels of the deficit.

Table 5.4 Trends in public expenditure on health as a percentage of GDP in social health insurance countries, 1995–2010

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>7.0</td>
<td>7.6</td>
<td>7.9</td>
<td>8.0</td>
<td>8.6</td>
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</tr>
<tr>
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<td>6.1</td>
<td>7.6</td>
<td>7.5</td>
<td>8.1</td>
<td>8.0</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>3.9</td>
<td>3.8</td>
<td>4.5</td>
<td>4.1</td>
<td>4.0</td>
<td>3.7</td>
</tr>
<tr>
<td>Croatia</td>
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<td>6.7</td>
<td>6.0</td>
<td>6.6</td>
<td>6.6</td>
<td>6.6</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>6.1</td>
<td>5.7</td>
<td>6.1</td>
<td>5.6</td>
<td>6.7</td>
<td>6.6</td>
</tr>
<tr>
<td>Estonia</td>
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<td>4.1</td>
<td>3.9</td>
<td>4.7</td>
<td>5.3</td>
<td>4.7</td>
</tr>
<tr>
<td>France</td>
<td>8.3</td>
<td>8.0</td>
<td>8.8</td>
<td>8.7</td>
<td>9.3</td>
<td>9.3</td>
</tr>
<tr>
<td>Germany</td>
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<td>8.3</td>
<td>8.2</td>
<td>9.0</td>
<td>9.0</td>
</tr>
<tr>
<td>Greece</td>
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<td>4.7</td>
<td>5.8</td>
<td>6.1</td>
<td>6.5</td>
<td>6.1</td>
</tr>
<tr>
<td>Hungary</td>
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<td>6.0</td>
<td>5.2</td>
<td>5.3</td>
<td>5.1</td>
</tr>
<tr>
<td>Israel</td>
<td>5.1</td>
<td>4.7</td>
<td>4.6</td>
<td>4.5</td>
<td>4.6</td>
<td>4.6</td>
</tr>
<tr>
<td>Lithuania</td>
<td>4.0</td>
<td>4.5</td>
<td>4.0</td>
<td>4.8</td>
<td>5.5</td>
<td>5.2</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>5.1</td>
<td>6.4</td>
<td>6.7</td>
<td>5.7</td>
<td>6.6</td>
<td>6.6</td>
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<td>Netherlands</td>
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<td>5.0</td>
<td>5.9</td>
<td>7.4</td>
<td>9.5</td>
<td>9.4</td>
</tr>
<tr>
<td>Poland</td>
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<td>3.9</td>
<td>4.3</td>
<td>5.1</td>
<td>5.3</td>
<td>5.4</td>
</tr>
<tr>
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<td>3.5</td>
<td>4.4</td>
<td>4.5</td>
<td>4.5</td>
<td>4.4</td>
</tr>
<tr>
<td>Slovakia</td>
<td>5.4</td>
<td>4.9</td>
<td>5.2</td>
<td>5.4</td>
<td>6.0</td>
<td>5.8</td>
</tr>
<tr>
<td>Slovenia</td>
<td>5.8</td>
<td>6.1</td>
<td>6.1</td>
<td>6.1</td>
<td>6.8</td>
<td>6.9</td>
</tr>
<tr>
<td><strong>Country average</strong></td>
<td><strong>5.5</strong></td>
<td><strong>5.5</strong></td>
<td><strong>5.9</strong></td>
<td><strong>6.0</strong></td>
<td><strong>6.6</strong></td>
<td><strong>6.4</strong></td>
</tr>
</tbody>
</table>

In 2006, the government discontinued the practice of planning the HIF budget with an anticipated, “planned” deficit. Virtually no deficit was planned between 2006 and 2009, although the actual deficit levels were high and the planned and the implemented figures showed a big discrepancy both in 2006, which marked the beginning of government efforts to bring the general deficit under control, and in 2009, when the global financial crisis hit Hungary. Since 2010, deficit planning again seems to have become the standard practice. In general, these trends show the scale of instability in the revenue generation mechanism for the HIF.

In order to analyse the financial sustainability of the social health insurance system, the HIF deficit is but one indicator, and certainly not the best. It seems to be more relevant to look at the trend of public expenditures on health and the share of health spending in general government spending relative to other sectors such as education, defence or agriculture. These trends help to determine whether the deficit is attributable to a failure in cost containment, or to the inadequate revenue sources, insufficient collection practices, or the low priority given to health by government. Table 5.4 provides selected comparative data from countries with established social health insurance systems. The trends show that the average share of public expenditures on health has been on the rise among countries with social health insurance systems, but Hungary is among the few exceptions where public expenditures on health substantially decreased between 1995 and 2010.

Similarly, the share of public expenditures on health in the general government budget has been on the decline in Hungary. While between 1995 and 2010 this indicator increased by 2.5 percentage-points on average in countries with social health insurance systems, it
decreased by almost 1 percentage-point in Hungary during the same period (Table 5.5).

Table 5.5 Trends in the share (%) of the health sector in total government spending in selected countries with social health insurance, 1995–2010

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>15.7</td>
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<td>16.2</td>
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<td>15.1</td>
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<td>15.1</td>
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<td>Bulgaria</td>
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<td>11.9</td>
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<tr>
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<td>11.5</td>
<td>11.9</td>
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<td>11.7</td>
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<tr>
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<td>15.5</td>
<td>16.4</td>
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<td>9.7</td>
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<tr>
<td><strong>Country average</strong></td>
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<td><strong>13.6</strong></td>
<td><strong>13.9</strong></td>
<td><strong>13.9</strong></td>
<td><strong>13.9</strong></td>
</tr>
</tbody>
</table>


5.2.3 A marked shift from SHI contributions to taxes

Over the years the contribution rates paid by employers decreased substantially in Hungary. This policy aimed at the formalization of the informal labour market and the increase of employment, hoping that the lower social health insurance contribution rates would encourage
job creation by increasing investments in the Hungarian economy. Accordingly, the employer contribution rate decreased from 19.5% to 2% of the gross wage between 1995 and 2009. The lost revenue has been partly compensated by the increase in the employee social health insurance contribution rate for in kind benefits from 3% in 2003 to 7% in 2012, but additional tax transfers from the central government budget were needed to fill the gap.

Based on the categorization of the sources of revenues described above, Fig. 5.2 shows the changing trend of the share of tax and SHI contribution sources in Hungary. The dominance of SHI contribution disappeared in two steps: first during the years of 1997-2000 and then in 2009-2010. As a result, the share of tax revenues in the HIF budget exceeded 50% by 2010, reaching almost two-thirds of total HIF revenues.

**Fig. 5.2 Revenue sources of the Hungarian HIF, 1994–2011**
Successive Hungarian governments have increased direct control over the HIF since the establishment of the (originally) autonomous social health insurance system in the early 1990s. Among other measures, the government abolished the social health insurance “self government” (a body consisting of elected representatives of employee organizations, and delegated representatives of employers) in 1998; took control of the NHIFA, and step by step increased the share of tax sources in the revenues of the budget of the HIF. These measures could have provided the opportunity for the government to improve the financial sustainability of the system by securing stable revenues and prudent financial management of the HIF. On the contrary, the share of public expenditures on health as a percentage of the GDP has dropped from 6.2% in 1995 to an all-time low of 5.1% in 2010 (WHO, 2012), while the deficit of the HIF increased to levels unseen before.

5.3 Conclusion

The debate over the appropriate mix of financing sources is not new in the literature. Those in favour of SHI contributions point out the advantage of higher levels of public spending on health and less vulnerability to changes in political priorities, due to the predetermined contribution rate and higher visibility and transparency (Normand and Busse, 2002). Others appreciate the advantages of taxation, namely the higher stability due to a broader revenue base and less exposure to economic cycles (Mossialos and Dixon, 2002; Thomson et al. 2009). The recent history of the Hungarian health insurance system is a stark example of these dilemmas and highlights the importance of government commitment to secure stable and predictable sources of
revenues for the health system. Without that commitment there is no sustainable financing for health regardless of the revenue sources.

An accurate analysis of health expenditure data, providing a detailed description of the revenue sources for public expenditure is essential for sound, evidence-based health financing policy-making. Once adopted for international reporting, the 2011 SHA will facilitate improved international comparison of revenues sources for health.
6. EFFICIENCY IN THE HUNGARIAN HEALTH SYSTEM

In this section first allocative and technical efficiency will be assessed using indirect indicators. Then those studies will be reviewed that used composite indicators to measure health system efficiency (Gaál et al, 2012b). Overall, the authors argue that health financing reforms improved the performance of the health system. First, the output-based payment methods substantially improved the technical (production) efficiency of the system and potentially paved the way for the allocation of more financial resources to previously underfunded specialities and regions with higher health needs. Second, the reforms were implemented over a long period of time, extending over election cycles, i.e. there was a political (albeit implicit) consensus about the direction and implementation of the reforms. Third, as a by-product, the information system built around these payment reforms has made the system more transparent and accountable (e.g. quality indicators could be constructed from the reported output data and compared across providers). However, there is still room for improvement of allocative efficiency and further adjustments to the payment system may not be sufficient to address inefficiencies in allocation of resources to maximize health gain.

6.1 Technical (production) efficiency

At the time of fundamental political changes after the collapse of communist regime, the health system had poor technical and allocative efficiency with low quality services mainly due to the system of financing. It is also notable that the influence of politics on the budget negotiation process prevailed, which led to large
geographical disparities and uneven development of the various specialties. Introducing diagnosis-related groups (DRGs) for hospital payment was seen as a way to address these problems by providing incentives to increase productivity and efficiency, promote cost-consciousness among hospital management and lower regional differences in service provision.

Table 6.1 DRG base fee (per standard case) in 1993

<table>
<thead>
<tr>
<th></th>
<th>HUF</th>
<th>Deviation from average (mean = 100%)</th>
<th>Difference between min-max &amp; E-W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical universities average</td>
<td>30 900</td>
<td>100.0%</td>
<td></td>
</tr>
<tr>
<td>minimum</td>
<td>26 320</td>
<td>85.2%</td>
<td></td>
</tr>
<tr>
<td>maximum</td>
<td>52 680</td>
<td>170.5%</td>
<td>200.2%</td>
</tr>
<tr>
<td>County hospitals average</td>
<td>29 210</td>
<td>100.0%</td>
<td></td>
</tr>
<tr>
<td>minimum</td>
<td>20 860</td>
<td>71.4%</td>
<td>186.9%</td>
</tr>
<tr>
<td>maximum</td>
<td>38 990</td>
<td>133.5%</td>
<td></td>
</tr>
<tr>
<td>County hospitals – East Hungary average</td>
<td>26 450</td>
<td>90.6%</td>
<td>113.3%</td>
</tr>
<tr>
<td>County hospitals – West Hungary average</td>
<td>29 980</td>
<td>102.6%</td>
<td></td>
</tr>
<tr>
<td>Municipal hospitals average</td>
<td>25 200</td>
<td>100.0%</td>
<td></td>
</tr>
<tr>
<td>minimum</td>
<td>17 000</td>
<td>67.5%</td>
<td>237.5%</td>
</tr>
<tr>
<td>maximum</td>
<td>40 380</td>
<td>160.2%</td>
<td></td>
</tr>
<tr>
<td>Municipal hospitals – East Hungary average</td>
<td>23 820</td>
<td>94.5%</td>
<td>109.1%</td>
</tr>
<tr>
<td>Municipal hospitals – West Hungary average</td>
<td>25 980</td>
<td>103.1%</td>
<td></td>
</tr>
</tbody>
</table>

Source: GYÓGYINFOK, unpublished data.
The introduction of the DRG system revealed the geographic disparities of the communist health care system. At the time of its introduction, in 1993, the hospitals received an institution-specific base fee derived from the previous budget and the actual output based on the DRG methodology (Table 6.1). There were huge variations between hospitals in terms of the calculated cost of production of the same outputs. A countrywide standardized base fee was introduced only 5 years later in 1998.

The two most readily available indicators of technical efficiency of hospital care are bed occupancy rate and average length of stay. However, they are not very useful in this case, because several preconditions of their proper interpretation are rarely met in practice. For example, in the case of the bed occupancy rate, the expenditures depend on the number of beds, which alone is only loosely correlated to actual costs of acute care (in the case of long-term care the number of beds is a better proxy). The same is true for average length of stay: the association between the number of hospital days and cost of care is not linear, with the bulk of the costs being concentrated in the first couple of days of acute inpatient care (Carey, 2000).

**Fig. 6.1 HIF expenditure on acute hospital care, 1994–2009 (billion HUF, constant 1994 prices)**

![Graph showing HIF expenditure on acute hospital care, 1994–2009 (billion HUF, constant 1994 prices)](image)

*Source: Authors calculation based on the data of the NHIFA*
Production efficiency is measured by the comparison of the total cost of inputs (expressed in monetary terms) with the quantity and quality of outputs produced by the hospital using these inputs, and the efficiency measure is the cost per unit of output produced. For the inputs, HIF expenditure on acute inpatient care (Fig. 6.1) is a better measure than patient days. HIF expenditure on acute inpatient care decreased by 16% in real terms between 1994 and 1997, stagnated between 1998 and 2001, then began to rise again in 2002 and 2003 as a result of increased public spending mainly on salaries (50% pay rise of health workers). This was followed by another period of stagnation and then a drop in 2007 and in 2009. HIF spending on acute inpatient care in 2009 was the lowest value of the whole period starting in 1994.

As for the outputs, the number of hospital discharges is one option for assessment. Between 1994 and 2005, all hospital discharges increased by 20%; the 11% drop in 2007 is attributable to the introduction of the strict limit placed on the volume of services (Fig. 6.2). However, the number of hospital discharges is not the best measure of outputs for several reasons. First, it includes not only the acute but also long-term care cases. Second, it does not take into account how complex or resource-intensive patients were cared for in the hospital, i.e. it does not measure the case-mix. The very purpose of the DRGs, as a patient classification system, is to measure this. In the DRG system, hospital cases are weighted according to complexity and costs – bypass surgery, for instance, is assigned more points than an appendectomy – and these points (not just the number of cases) are added up.
Fig. 6.2 Hospital discharges per 1,000 population, 1989–2009

Source: NHIFA

Fig. 6.3 Sum of DRG cost weights/points (in thousands)

Source: NHIFA
In short, the DRG system considers not just the number, but the complexity of hospital cases; this is referred to as the case-mix. Thus, since the introduction of DRGs, a better measure of outputs in acute inpatient care is the total number of DRG points produced by hospitals (Fig. 6.3). The analysis of the time series of the sum of DRG points should also consider that the point value attached to a DRG could change due to the changes in technology and due to “re-standardization” applied to adjust for DRG creep which is the inflation of case severity reported by hospitals.

Comparing the HIF budget for acute inpatient care at constant prices (cost of inpatient care) and DRG points of acute inpatient care (output), acute inpatient care produced more output in terms of DRG points from the same budget in 2009 than in 1994 (Fig. 6.4). This means that by reducing the cost per unit of output, efficiency in acute hospitals increased significantly during the period in question.

**Fig. 6.4 HIF payment per DRG point as a percentage of 1994 figure (1994=100%), 1994–2009**

Source: NHIFA
It is important to note that this increase in output would have been even more substantial if the cost weights of all DRGs had not been regularly cut back to offset the steady increase in the average case severity, the case-mix index (CMI) (Fig. 6.5). This process is called “re-standardization” and assumes that part of the increase in the total number of points produced in a particular year is the result of an up-coding of cases by providers to report cases more severe than they are in reality. It is well known feature of the DRG system that hospitals try to maximize income by reporting higher severity cases (DRG-creep), thus increasing the CMI (Hsia et al. 1992; Rosenberg & Browne, 2001). There is some evidence of DRG creep in the Hungarian health care system, as the increases in the CMI have not been accompanied by an increase in hospital mortality which is a proxy measure to real changes in severity. Any interpretation of efficiency indicators must take into account that a rise in output may represent manipulation in reporting rather than a real increase in severity or improved coding practices.

**Fig. 6.5 Case mix index in Hungary, 1994–2009**

![Graph showing the case mix index in Hungary from 1994 to 2009](image)

*Source: NHIFA*
For a comprehensive assessment of technical (production) efficiency of the Hungarian acute inpatient care sector, several additional factors need to be considered. First, HIF payments cover operational costs only. Capital costs are covered separately by the owners of health care facilities. In addition, patients often pay physicians (and, to a lesser extent, other health care workers) informally. The EU investment subsidies in the framework of structural and cohesion funds since 2007 are significant.

Second, an increase in output and a reduction of cost produces efficiency gains only if the quality of care remains the same. Trends for certain indicators of hospital mortality, avoidable causes of death (Fig. 6.6) or infant and maternal mortality (Table 6.2) do not show unfavourable effects and, in some cases, have improved. This suggests that the clinical quality of acute inpatient care has not been affected dramatically. It is worth noting that there are some built-in mechanisms in the Hungarian DRG system to prevent providers from cutting costs at the expense of the quality of care, such as the minimum length of stay for each case groups and DRGs with special conditions that restricts provision by selected hospitals only.

In a recent study of the relative production efficiency of county and town hospitals Data Envelopment Analysis methodology was used (Dózsa et al., 2010). The study ranks institutions using number of beds, physicians and skilled ancillary workers as input variables and the DRG cases and severity weights as output variables, but several methodological and data source problems remain to be solved. For example, the number of beds is not a good indirect indicator of the inputs as there is considerable variation in one-day surgery among hospitals (Street & Häkkinen, 2009). Data on the number of physicians is also a source of error as the number of contracted (not employed)
physician entrepreneurs is increasing and they are not included in the database on the wage-statistics of the Hungarian State Treasury.

**Fig. 6.6 Crude indicators of quality in acute inpatient care in Hungary, 1989–2009**

![Graph showing crude indicators of quality in acute inpatient care in Hungary, 1989–2009](image)

**Table 6.2 Infant and maternal mortality indicators 1980–2009 (selected years)**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Infant deaths per 1,000 live births</td>
<td>23.2</td>
<td>14.8</td>
<td>10.7</td>
<td>9.2</td>
<td>6.2</td>
<td>5.1</td>
</tr>
<tr>
<td>Neonatal deaths per 1,000 live births</td>
<td>17.8</td>
<td>10.8</td>
<td>7.3</td>
<td>6.2</td>
<td>4.1</td>
<td>3.4</td>
</tr>
<tr>
<td>Perinatal deaths per 1,000 births</td>
<td>23.1</td>
<td>14.2</td>
<td>6.7</td>
<td>5.7</td>
<td>5.0</td>
<td>4.7</td>
</tr>
<tr>
<td>Postneonatal deaths per 1,000 live births</td>
<td>5.3</td>
<td>4.0</td>
<td>3.4</td>
<td>3.1</td>
<td>2.2</td>
<td>1.7</td>
</tr>
<tr>
<td>Maternal deaths per 100,000 live births</td>
<td>20.9</td>
<td>20.7</td>
<td>15.2</td>
<td>10.3</td>
<td>5.1</td>
<td>18.7</td>
</tr>
</tbody>
</table>

The number of physician entrepreneurs can be considerably higher in certain parts (e.g. in the capital) of the country than in others. The use of similar data led to distorted results in other studies as well (OECD, 2010a). Consequently, the input data used under- or overestimate the level of efficiency of hospitals. In fact, the authors admit that further methodological refinement is needed in order to take into account the professional profile and differing case-mix of the institutions (Dózsa et al., 2010, p.28) since the precondition for the applicability of the method is that institutions with similar production process be compared (Street & Häkkinen, 2009).

Based on the above, technical and production efficiency have most probably improved in the Hungarian health care system, at least for hospital inpatient care, as a result of the introduction and systematic development of the new payment system. Nonetheless, an increase in efficiency at one level of care, such as the acute inpatient sector, does not necessarily mean improvement of efficiency of the health system as a whole.

6.2 Allocative efficiency

Between 1993 and 2005, the number of hospital admissions per 1,000 population increased by more than 25%. This certainly cannot be explained by changes in the health status of the population alone. Indeed, the incentives of the new payment methods do not facilitate treatment at the lowest, clinically appropriate level of care. On the contrary, the current system induces overtreatment, DRG creep and point inflation. Hospitals had no financial incentive to treat people as outpatients rather than inpatients and there were no effective incentives or control mechanisms in place that would prevent
unnecessary hospitalization until the beginning of 2004, when a new measure (the system of volume control with diminishing fee schedule) was applied to contain output inflation. This effort was intensified in 2007. Originally, it was also presumed that family doctors would become gate-keepers to higher (more expensive) levels of care, but neither the financial incentives nor the regulatory framework support this function.

Other types of inefficiency that were not addressed include the use of ineffective or obsolete technologies, inappropriate care, provision of unnecessary (e.g., parallel) services and the medicalization of social problems (“social admissions”). It is not uncommon for patients to wander around the system before being correctly diagnosed and treated and there are clear problems with the interface between acute, chronic and social care, with long-term social care for the elderly being provided in acute wards due to the shortage of places in residential homes. A few examples of practice variations, which cannot be explained by differences in need for care, are shown in Fig. 6.7-6.9. The variations in the rate of Caesarean sections were not only high between county hospitals in the same year, but also within the same hospital from one year to the other (Fig. 6.7). Similarly high (two-fold) differences can be observed among counties in the use of prescription drugs in the treatment of diabetes, even after age and sex standardization of the population (Fig. 6.8). Practice variations are also reflected in health outcomes, which are illustrated in Fig. 6.9, which shows 30-day mortality in patients with acute myocardial infarction by counties.
Fig. 6.7 Variation in rates of Caesarean section (per 100 live births) in county hospitals (M1-M20), 1999–2002


Fig. 6.8 Variation in use of prescription drugs for diabetes (age and sex standardized), 2002–2003

During the late 1990s and in the early the 2000s, there were a few attempts to comprehensively address these problems, first in the framework of the Care Coordination Experiment (later Care Coordination System, CCS) by entrusting provider groups with the function of coordinating care. The experiment, which was launched as a pilot programme in 1999 and had several innovative elements, eventually was abolished in 2008 – without a final technical evaluation. The CCS employed a sophisticated system of financial incentives to ensure health care providers focus on the care coordination function. By 2005, the pilot programme covered more than 20% of the population (about 2.2 million inhabitants). The project was criticized mainly for lack of transparency as well as inequitable distribution of resources (State Audit Office, 2008).
One of the most important issues identified by the CCS is the manifestation of previously unmet need due to the improvement of care coordination activities. Relevant research findings suggest that the early identification and proper care of patients with chronic diseases do not generate savings in the short term (Fig. 6.10). Although the cost of routine inpatient specialist care for cardiovascular patients identified by screening programmes was lower on average, the total cost was higher, because these patients had timely access to high cost interventions (such as PCI) when needed. Undiagnosed and not properly cared for patients, on the other hand, were less likely to receive high cost interventions, either because they died early in the treatment process or because they were past the critical time period for the intervention to be effective. This finding also suggests that the financial sustainability of improved care coordination based on the incentive to generate efficiency savings is heavily dependent on the balance between potential savings resulting from the elimination of unnecessary services and the increased cost of addressing previously unmet need.

**Fig. 6.10 The comparison of the average cost of cardiovascular inpatient care for patients screened and properly care for and patient without screening and disease management, 2002.**

Source: Misszió Health Center, unpublished data
On the system level, however, care coordination makes more sense, since it selectively tackles inefficiencies by addressing both the provision of unnecessary services and the absence of necessary ones. In contrast, non-selective interventions such as user charges decrease cost by reducing both needed and unnecessary provision by deterring patients from utilizing health care. This is undesirable for both efficiency and equity.

As far as resource allocation among the various sectors of the economy is concerned, current overall public spending on health care is low, in comparison to both neighbouring countries at a similar level of economic development and historical spending. According to WHO National Health Accounts data, Hungary is one of those exceptional countries where public expenditure as a share of GDP decreased and the health sector was given lower priority in government expenditure between 1995 and 2009. Moreover, HIF expenditure on curative and preventive services was almost 25% (225 billion HUF or 0.9% of GDP) less in real terms in 2009 than in 1990, and this comparison does not account for technological advances in the past 20 years.

All of this suggests that the cost-containment policies of successive governments were effective. However, cost-containment in itself does not ensure efficient resource allocation within the health sector. It is difficult to assess inefficiency resulting from the misallocation of resources among various levels of care and services from aggregate spending data, but the structure of HIF expenditure could be used as a proxy (Table 6.3). The allocation of financial resources has not changed significantly since 1994: there was a small drop in the share of inpatient care and a slight increase in the share of outpatient specialist care around 2007 when structural reforms took place, but these changes have remained within a range of five percentage
points, without showing any clear or sustained trend that might be interpreted as a sign of the strategic reallocation of resources among levels of care.

Table 6.3 Breakdown of HIF expenditure on curative services

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<tr>
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<tbody>
<tr>
<td>Curative services (current prices, million HUF), of which:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary care (%)</td>
<td>10.67</td>
<td>10.98</td>
<td>10.03</td>
<td>9.20</td>
<td>10.07</td>
<td>10.28</td>
<td>10.53</td>
</tr>
<tr>
<td>Mother and child health services (%)</td>
<td>2.32</td>
<td>2.25</td>
<td>2.25</td>
<td>2.16</td>
<td>2.57</td>
<td>2.37</td>
<td>2.33</td>
</tr>
<tr>
<td>Dental care (%)</td>
<td>2.73</td>
<td>2.80</td>
<td>2.95</td>
<td>3.20</td>
<td>3.14</td>
<td>2.94</td>
<td>3.05</td>
</tr>
<tr>
<td>Dispensaries (%)</td>
<td>1.89</td>
<td>2.01</td>
<td>2.32</td>
<td>1.57</td>
<td>0.82</td>
<td>0.30</td>
<td>0.30</td>
</tr>
<tr>
<td>Patient transport (%)</td>
<td>1.02</td>
<td>0.93</td>
<td>0.87</td>
<td>0.76</td>
<td>0.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambulance service (%)</td>
<td></td>
<td>2.71</td>
<td>2.90</td>
<td>2.97</td>
<td>3.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dialysis (%)</td>
<td>1.99</td>
<td>2.50</td>
<td>2.83</td>
<td>2.46</td>
<td>2.87</td>
<td>3.03</td>
<td>3.01</td>
</tr>
<tr>
<td>Home care nursing (%)</td>
<td>0.33</td>
<td>0.36</td>
<td>0.42</td>
<td>0.46</td>
<td>0.49</td>
<td>0.57</td>
<td></td>
</tr>
<tr>
<td>Outpatient specialist care, including CT, MRI and laboratory services (%)</td>
<td>15.56</td>
<td>16.12</td>
<td>16.85</td>
<td>17.44</td>
<td>17.03</td>
<td>18.11</td>
<td>18.11</td>
</tr>
<tr>
<td>Inpatient acute services (%)</td>
<td>51.19</td>
<td>53.36</td>
<td>52.40</td>
<td>50.81</td>
<td>46.77</td>
<td>46.02</td>
<td>45.01</td>
</tr>
<tr>
<td>Chronic hospital services (%)</td>
<td>6.04</td>
<td>6.28</td>
<td>6.28</td>
<td>5.82</td>
<td>6.49</td>
<td>7.49</td>
<td>8.14</td>
</tr>
</tbody>
</table>

Source: National Institute for Strategic Health Research (http://www.eski.hu accessed on 5 May 2011)
In contrast, spending in the pharmaceutical sub-budget of the HIF has shown a general upward trend since 1993. It has peaked twice, in 1998 and 2006, spurring government efforts to contain pharmaceutical expenditure. The strict cost-containment measures introduced in 2007 led to measurable results in decreasing the overspending of the pharmaceutical sub-budget of the HIF, although this was mainly achieved by increasing patient cost-sharing.

### 6.3 Efficiency Results from Studies with Composite Indicators

In 2010, the OECD published a study applying a composite indicator, comparing the efficiency of OECD member country’s health systems. The methodology of the study was based on Data Envelopment Analysis (DEA), a means of comparing systems producing similar outputs by similar production processes. By using this methodology, maximum potential health gain productivity was determined for each country. If a country produced less than its potential it was given a lower efficiency score. Life expectancy at birth was chosen as the indicator of performance. Besides classifying the efficiency of the Hungarian health system as one of the worst among OECD countries, an important conclusion of the study was that it could be improved considerably while keeping spending constant (OECD, 2010a, pp.12, 161, 178).

The results of the study need careful interpretation as to the efficiency of the health care system in Hungary since it is not only the delivery system but entire health system, or rather the overall government

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5 The same methodology was used in the previously mentioned study of hospital efficiency by Dózsa et al. (2010).
policy that is responsible for health status of the population. It is difficult to separate the effects of the main explanatory variables and judge to what extent health care provision is responsible for the poor health of the population and to what extent it is due to the health system in a wider sense, or the role of other government policies. The explanatory variables were health care spending per capita, GDP per capita to describe the socioeconomic environment, and lifestyle factors like air pollution, consumption of fruits and vegetables, alcohol and tobacco (OECD, 2010a, p.65). The purpose of the study was to assess in an international comparison the extent to which life expectancy at birth in OECD countries is lower than its potential in view of health system resources in a wider sense.

The health care system is represented in the explanatory variables by total health care spending per capita, which in reality adds up the efficiency gains and losses of the different parts of the health sector. For example, the low and decreasing expenditure as share of GDP on curative/preventive services increases the efficiency of the Hungarian health care system, whereas the disproportionately high and increasing pharmaceutical expenditure reduces it. The adding up of the production of the two sectors of care distorts the efficiency evaluation of considerable parts of the health system. The authors of the study mentioned that expenditure data broken down by category could have been used in the model, but eventually they did not use them because of the blurred institutional borders between the categories (OECD, 2010a, p.43). The adding up of the private and public expenditures causes a similar problem, since an important conclusion was that the health status could be improved while keeping spending constant (OECD, 2010a, p.69). The authors assessed the potential savings in public spending – which is expected to increase because of the forecasted 50% increase in health
spending by 2017 (OECD, 2010a, p.70). The calculations were based on simplifying assumptions, two of which certainly do not apply to Hungary; they were: 1) between 1997 and 2007 the efficiency of the health system did not change; and 2) the public-private spending mix remains constant over time, which has broadly been the case in recent decades (OECD, 2010a, p.71). This chapter discussed earlier that efficiency increased considerably in many parts of the Hungarian health system in the last two decades, and that private expenditure also increased compared to public spending.

The DEA methodology assumes a standardized patient mix when assessing the performance of the units or systems to be compared (Street & Häkkinen, 2009, p.243). It is not clear from the description of the methodology whether this requirement was met when building the model. If the initial state of health of the Hungarian population is not taken into account, it is clear that even a health system of maximum efficiency can only partially improve indicators like life expectancy at birth. The study is based on data of one year (2007), so it says nothing about the dynamic changes of efficiency; it only speaks about the relative position of the entire health system compared to those of other countries. However, there were considerable changes in expenditure between 2007 and 2009. According to the model used in the study, health expenditure alone plays the most important role in efficiency improvement (OECD, 2010a, p.54). An increase in health expenditure can considerably increase life expectancy at birth, but a decrease in health spending – at a constant level of life expectancy at birth – increases efficiency considerably. This is what took place in Hungary after 2007, when total expenditure on health decreased – while in the majority of the countries studied in the study it increased significantly – and at the same time the life expectancy at birth increased considerably. Since in the period after
2007, life expectancy at birth in the European countries did not increase more than in Hungary, the efficiency position of Hungary may have improved significantly, provided one does not take other lifestyle factors into account. This is also supported by the significant decline in the Hungarian GDP compared to the other countries. Since lifestyle, per capita GDP and level of education were among the socioeconomic variables considered, one might ask whether the poor system-level performance showed by the model is rather the result of poor performance of other sectoral policies and not the poor performance of the health care system itself. For example, the level of employment is very low, which affects individuals’ health status.

In summary, composite efficiency indicators raise difficult methodological and interpretational problems. Perhaps the most challenging is the attribution of the effects to different functions of the health system based on the final outcomes while successfully controlling for external variables. An additional difficulty is the time lag between policy implementation and changes in final outcome measures that may signal an impact several years later only.
7. INSTITUTIONALIZING HEALTH SYSTEM PERFORMANCE ASSESSMENT

7.1 RATIONALE AND COUNTRY-SPECIFIC CONTEXT

One of the most important questions in relation to health system performance assessment is whether it gets institutionalized. This means a formal process that ensures translation of concepts, values and policy objectives into continuous monitoring, evaluation and adjustment of policy implementation so that feedback and accountability are enhanced over time and political cycles. As discussed in Chapter 2, regular, institutionalized performance assessment could help health policy-makers acquire comprehensive information about the extent to which various aspects and stakeholders of the health system meet key objectives (Smith et al, 2009). Periodic assessments could be shared with other public policy sectors, key actors of economic policy and international organizations. Institutionalization facilitates transparency, accountability and evidence-informed policy-making.

In chapter 2 of this report, the authors proposed a framework for system-level monitoring and continuous assessment of reforms using an initial set of performance indicators relevant to various aspects of system performance. The existing system of data collection and analysis was carefully reviewed and recommendations were made on how to adjust it to improve the policy relevance of the monitoring tool. The aim of this exercise was to enable the existing routine statistical system to produce relevant information for the evaluation of system performance and for impact assessment of health system reform interventions on a regular basis. The cyclical nature of the policy process and involvement of stakeholders in planning, implementing
and evaluating reforms have to be reflected in the institutionalization of health system performance assessment (Fig. 7.1).

**Fig. 7.1 The policy cycle and involvement of stakeholders in the process**

Strategic planning is one of the bottlenecks of the Hungarian health system. This explains why HSPA has not developed over the years: there was no demand for strategic planning as evidenced by the lack of specific and realistic policy targets. However, in recent years, both the international organizations and the Hungarian government have paid more attention to developing standards and norms in this field. In 2012, the Hungarian government regulated in a special decree the process of strategic planning that has to be followed by all ministries. The European Union and other international organizations increasingly link their grants to preconditions such as the development and continuous updating of strategy in the respective field of public policies. These developments are likely to increase the demand for performance assessment as well.
One of the most important tasks of HSPA is to measure the impact of strategic policy actions using clearly defined specific targets and baselines. Consequently, an institutionalized HSPA process would support the formulation of specific and realistic policy targets as well as of sectoral strategies for all health system functions by providing feedback on achievements. To create and maintain systematic organizational links between performance assessment and planning carefully designed accountability frameworks are central in ensuring the completeness of the policy cycle. As there is a sound system of data collection and information technology (IT) support – especially with respect to health financing – available in the Hungarian health system, the performance assessment process can be implemented in a relatively short period of time.

A recurring characteristic of the Hungarian health policy is that important policy decisions – for example, the introduction of care coordination in 1998, and later the increase of the covered population – are not based on policy documents prepared for the purpose, but simply on financial authorizations written into the Budget Act with insufficient regulation. This is in contrast to the dominant approach in public administration that follows detailed legal processes based on laws and decrees that define clearly the roles and responsibilities of different actors. Consequently, in many cases it is a serious challenge for impact assessment to track policy documents that provide the basis for implementation. The current electronic collection of legal references does not make it possible to get a systematic overview on policy interventions linked to the legal references in a timely manner for all health system functions.

It is often the case that even civil servants and experts in the field concerned cannot properly take stock and follow the interrelated
system of policy documents, decisions and legislation. As there has been no strict follow-up and evaluation system of policies, it is not always clear to policy analysts which policy document provided guidance to implementation. At the same time, it has happened several times that strategic documents were published by government agencies without ministerial or government approval and without formal promulgation. Moreover, government policy decisions were sometimes supported by reference to international experiences of unclear origin. Gathering relevant international experience requires time and expertise that is not self-evident in public administration struggling with scarce resources.

In response to the above, a web monitoring tool for health policy interventions has been developed to document policy interventions in a timely manner (Annex 1). The proposed tool would improve the analytical capacity of health governance by providing up-to-date overview of changing patterns in health policy approaches, which would definitely contribute to improved transparency. The monitoring tool would collect the policy interventions in a simple database format, including a short description, the legal references and the date of the intervention. In addition, hyperlinks would make it possible to link events to policy documents and performance indicators. International comparison of relevant decisions would also be possible.

At the heart of the institutionalization process is a new ministerial decree that defines roles and responsibilities of health system performance assessment in Hungary (Annex 2). By the time of publishing this document, the ministerial decree is signed and entered into force. The authors suggest that this initial organizational arrangement of stakeholders may be aligned in the future to the evolution of strategic planning and management mechanisms as well
as to the further development of accountability frameworks of the Hungarian health system. The following sections document how the proposed organizational framework would work and the process of institutionalization to date.

7.2 Proposed Organisational Framework and Guideline for Performance Assessment

The Hungarian organizational context supports institutionalization of performance assessment by health system functions, such as personal and public health services, resource generation, financing and stewardship, and using the criteria of efficiency, sustainability, equity and quality with special attention to general goals of the health system, such as improving health status, system responsiveness and financial protection (Table 7.1). Obviously, not all health system functions can be analysed along all criteria.
### Table 7.1 Elements of institutionalizing the performance assessment system

<table>
<thead>
<tr>
<th>HSPA Tasks</th>
<th>Population based health services</th>
<th>Personal health services</th>
<th>Financing</th>
<th>Resources</th>
<th>Stewardship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health status</td>
<td>NPHMOS</td>
<td>NIOQD</td>
<td>NHIFA / NIOQD</td>
<td>NIOQD</td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td>NHIFA / NIOQD</td>
<td>NIOQD</td>
<td>NHIFA / NIOQD / NPHMOS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equity</td>
<td>NHIFA / NIOQD</td>
<td>NIOQD</td>
<td>NHIFA / NIOQD / NPHMOS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>NHIFA / NIOQD</td>
<td>NIOQD</td>
<td>NHIFA / NIOQD / NPHMOS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsiveness</td>
<td>NHIFA / NIOQD</td>
<td>NIOQD</td>
<td>NHIFA / NIOQD / NPHMOS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sustainability</td>
<td>NHIFA / NIOQD</td>
<td>NIOQD</td>
<td>NHIFA / NIOQD / NPHMOS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Development indicators and assessments**

| Formulating policy recommendations | NPHMOS | NIOQD | NHIFA / NIOQD | NIOQD |

**Overseeing HSPA process, methodology development and recommendations**

- Intersectoral working group and scientific advisory board

**Approval of reports and publication**

- Ministry of Human Resources

**Abbreviations:** NHIFA (National Health Insurance Fund Administration); NPHMOS (National Public Health and Medical Officer Services); NIOQD (National Institute for Organizational and Quality Development in Healthcare and Medicines).
Carrying out the performance assessment is guided by an approved methodology directive with list of indicators and monitoring actions defined. The sectoral and intersectoral technical committees and the technical board are to mediate with government agencies playing an important role in health policy.

### 7.3 Process of Institutionalization of HSPA in the Public Policy Context

The project aiming to implement health system performance assessment (HSPA) in Hungary started after the adoption of the Tallinn Charter in June 2008 (WHO Regional Office for Europe, 2008). To support the implementation of the Tallinn Charter commitments, the World Health Organization Regional Office for Europe and the
Government of Hungary signed biennial collaborative agreements (BCAs) with a strong emphasis on institutionalizing health system performance assessment in Hungary in order to promote transparency and accountability for performance and to improve analytical capacity to assess the attainment of policy objectives and impact of health system reforms.

First, a comprehensive monitoring tool for health policy decisions was developed. The next phase focused on producing performance assessment reports using the indicators developed and elaborating proposals for institutionalizing the production of these reports on a regular basis. The outputs of this work were presented to the ministry and different stakeholders in the frame of a policy dialogue on 30th of November 2011. During this event, the State Minister for Health announced that the Ministry is committed to support the implementation of the recommendations on HSPA by issuing a ministerial decree on the institutionalization of HSPA, including the main actors to be involved. Therefore, the implementation of the project in 2012 focused on this commitment; the codification and operationalization of the ministerial decree.

The project implementation at this stage focused on two main activities:

1. consultations with experts and policy makers, including ministries/authorities and consultants from various expert organizations (universities, research institutes, government agencies), with the aim to support the drafting of the ministerial decree;

2. elaboration of recommendations on how to adapt the proposed recommendations for HSPA in the Hungarian regulatory and policy context, including suggestions on how to address challenges during the development of proper regulation in the public administration system.
The codification process started with setting up a committee in the Ministry, lead by the Head of the Health Policy Department of the Ministry of Human Resources. The members of the committee included representatives of various stakeholders, such as the National Health Insurance Fund Administration, the Hungarian Central Statistical Office, the National Institute for Quality- and Organizational Development in Healthcare and Medicines, the National Public Health and Medical Officer Services, other Ministries and Universities as well as the WHO Country Office for Hungary.

The process was comprised of the following milestones:

1. The committee first elaborated a concept paper, which formed the basis of the formulation of the legal regulation.

2. Then the committee identified the changes needed in the legal context to accommodate the new ministerial decree. *Act CLIV of 1997 on Health* had to be changed in order to get authorization for the Minister of Human Resources to issue the ministerial decree. The amendment to the *Act on Health* was passed by the National Assembly on the 18th of June, 2012 in the frame of *Act LXXIX of 2012 on the Amendment of Various Acts Related to Health* (Article 31, Section (3)), and was promulgated on the 27th of June, 2012 in the Hungarian Legal Bulletin (Hungarian Gazette) (Issue No. 78 of 2012).

3. On the basis of the concept paper the Health Care Unit of the Legal Department of the Ministry of Human Resources prepared the first draft of the decree on the process of the performance assessment and the corresponding ministerial order on the governing steering group by the 18th of December 2012. The drafts were discussed and reviewed by the committee and the members agreed on the necessary changes before the documents were submitted for approval by the high level decision makers.
within the ministry. The committee prepared and submitted its proposal, which described the context, objectives and main content of the proposed regulations.

4. The drafted legal documents were discussed and approved by the Ministry’s executive management board, headed by the Permanent State Secretary of the Ministry of Human Resources, on the 30th of January, 2013.

5. The draft documents were cleared by the ministerial decision making meeting on the 5th of February, 2013.

6. Lastly, the draft documents were circulated among the various ministries in the frame of the so-called “public administration harmonization” process, which aims to ensure that the proposed decree is consistent with the current regulatory framework and harmonized with plans of other ministries.

7. The few remarks made by other ministries were successfully addressed, so that the decree (Annex 2) and the corresponding order were allowed to be issued by the Minister of Human Resources at the end of May 2013.

This complicated and thorough process of institutionalization left one important issue unresolved. It is about avoiding conflict of interest by those involved in performance assessment. This relates to the question of which organization should host the necessary capacities for the coordination of implementation of health system performance assessment. Many senior health policy experts and stakeholders emphasized that potential conflict of interest arises when the same institution assesses the performance of the health system that, at the same time, is responsible for the service delivery and the owner of public hospitals. In the first draft of the document this question was left open, so that the Minister of Human Resources could make the appointing decisions separately. However, the Ministry of Justice
and Public Administration insisted during the review of the draft regulation, which is called as public administration harmonization process, to name the National Institute for Quality- and Organizational Development in Healthcare and Medicines (GYEMSZI) under the aegis of the Ministry of Human Resources as the responsible institution. This may prove to be problematic, given that the bulk of the inpatient health care providers are currently owned and operated by GYEMSZI, which in practice means, that GYEMSZI would have to evaluate itself to some extent. One way to address this potential conflict of interest is to involve an independent organization such as those universities and research institutes, which already have a great deal of experience in health system performance assessment. This will be the first test of how the new system of performance assessment in Hungary works in practice.


ANNEX 1. WEB-BASED MONITORING TOOL FOR HEALTH POLICY INTERVENTIONS

Earlier in Hungary, the National Institute for Strategic Health Research (ESKI) – one of the predecessors of GYEMSZI – started to produce systematic summaries of changes in legislation, relevant international events and policy measures, published annually in Hungarian. Moreover, ESKI launched a development project called HITOPEDIA in 2008 to create an international comparative monitoring system. In parallel, the European Observatory on Health Systems and Policies, working in close cooperation with the WHO Regional Office for Europe, launched a development project to produce Internet-based software to follow and compare changes in health systems.

It is worth mentioning that in addition to the above projects, MISSOC of the European Union, and the system monitoring tool of the International Social Security Association (ISSA) offer good possibilities for comparing social security systems from the point of view of certain important financial and organizational aspects.

The base of the web-monitoring tool to be shown in the following is a database containing the health policy measures linked to the related legislative references in health system perspective. The collection of the policy measures builds considerably on the Hungary country profile published in 2004 by the European Observatory on Health Systems and Policies (Gaál, 2004). In what follows the authors present their proposals for the development of an internet-based monitoring tool, based on the following goals and working principles.
• Short overview of policy decisions in important fields like governance, resource creation, financing, care provision and public health are to be easily accessible in time series from the systemic changes on. Within the broader systems, important policy subfields should also be accessible.

• Policy decisions together with the relevant legal references should be easily accessible. The legislative references should contain both the legislation implementing the decision and the later amendments.

• The list of policy measures is to be easily updated, at least quarterly. The database is to be managed by highly respected invited experts. This could guarantee that only appropriately checked data enters the database.

• It should be possible for the users of the monitoring tool to make comments and suggest corrections about the list of policy measures and the relevant legislative references. This way community-based knowledge development can be achieved. The authors are intent on linking discussion forums to the monitoring tool, enabling the users to discuss policy measures in greater depth.

• In addition to list of policy measures, explanatory texts and the original policy documents should be available, linked to the short overview of policy interventions.

• Provided there is adequate international cooperation, the monitoring tool could be expanded to compare and show the relevant international practice.

The policy measures were recorded in MS Excel format by entering the following data: year, name of the measure, type of measure, function and subfunction of the measure in the system, detailed sources of the relevant legal provisions. The type of measure indi-
icates whether it is a policy measure or a policy document. Under
the legal provision all possible sources are recorded at paragraph
level. If many legal provisions were related to the policy measure,
the authors strived to record all legislation – including those modi-
fying the others. When recording the system function, the authors
partly followed the WHO classification system.

To begin with, the policy measures introduced from 1998 to 2011
were collected in the database. With the use of an Internet search
engine, an easy-to-use query interface was created from the XLS
file, allowing use of all the important query terms like year, type,
function in the system, subfunction, in combination. The policy
measures are hyperlinked to the relevant parts of the explaining
background study. Furthermore, in the case of the policy documents
a separate hyperlink leads to the publicly available policy docu-
ment.

In the testing phase the international monitoring system module
was also created, with example files of three countries – Belgium,
Slovenia and the United Kingdom – in the same system as in the
Hungarian database. Similarly, the measures in the database are
hyperlinked to the relevant parts of the country profiles of the Eu-
ropean Observatory on Health Systems and Policies describing the
health systems of the respective countries.
The web site is based on a server-side PHP script, which calls up the required data from a MySQL database (a well known database, predominantly used in the Internet). An important characteristic of the application is that data can be transferred at any time, if needed by other (e.g. Oracle, MS SQL, etc) database servers. The structure of the database is in one-to-one correspondence with the structure of the Excel file, so the data can be imported again at any time.

In order to maximize the comfort of the user interface, a Web 2.0 AJAX base client-side technology was used. An important characteristic of this it is that during the user interactions, in contrast with the traditional web sites, the whole page is not reloaded, but only those parts, where there were changes. This results in a considerable dy-
dynamics during use, increasing the speed and convenience of searching, filtering and navigating in the database. The HTML generated by the web site, and the CSS code responsible for the appearance fulfil all standards (valid HTML and CSS) ensuring exactly the same appearance in all the most widely used browsers (Internet Explorer 5.5+, Mozilla Firefox, Google Chrome, Opera, Safari).

Due to the nature of the web pages on the client side, Javascript codes control the objects, which are directly used by the user (e.g., buttons, selection lists, tables and any other interactive items.) It is important to mention that the application is platform-independent, and that the use of any technological component is free. A password-protected administrator interface ensures to the maintenance of the database and the web site.

The authors believe, that they succeeded in developing a system of monitoring tools that fulfils the set objectives, and has several novelties. First, it does not set selected texts side-by-side, but the measures are listed in a database, so both the querying and the data updating by the administrator is easily performed. Second, the relevant legislative references are organically linked to the list of policy measures, according to the hierarchy of legislation, and the modifying legislation is also included. Third, from the list of policy measures one can easily get to the explaining texts or the original documents.
Fig. A1.2 User interface of the Hungarian database

- Search preferences
- Policy measures with hyperlinks to documents and reviews
- Health system functions
During the test phase the authors found that policy measure queries resulted in all query combinations in clear-cut lists. This is true not only in the case of the Hungarian policy measures, but in the case of the international comparisons. The international comparisons are also carried out very easily along many policy considerations.

The maintenance of the system requires just minor technical and financial resources, since a table of the policy measures is to be updated, while the longer texts explaining the changes can be updated depending on the available resources.

Fig. A1.3 Comparison of the international databases

Selecting countries

Policy measures with hyperlinks to documents and reviews
Fig. A1.4 Switch between the policy tools and the documents

Selecting policy measures

Documents or reviews
ANNEX 2. DRAFT VERSION OF THE MINISTERIAL DECREE ON THE PROCESS OF HEALTH SYSTEM PERFORMANCE ASSESSMENT AS OF FEBRUARY 2013

Decree .../2013 (...) of the Minister of Human Resources on the detailed rules of the performance assessment of the health system

On the basis of the authorisation granted under Article 247 (2) g) gi) of Act CLIV of 1997 on Health, acting within the scope of responsibilities defined in Article 41 d) of Government Decree No. 212/2010 (VII. 1.) on the Duties and Powers of the Individual Ministers and the Minister of State of the Prime Minister’s Office – I hereby decree the following:

Article 1

Phases of the performance assessment of the health system are as follows:

a) defining the specific focus areas of analysis,
b) preparation of the assessment and data collection plan including the budget plan ensuring the implementation of the assessment,
c) data collection based on the data collection plan in order to calculate the indicators,
d) evaluation of the data specified under point c) and preparation of the proposal for the comprehensive and the interim report,
e) review and discussion of the proposal for the comprehensive and interim report,
f) formulation of the necessary health policy measures based on the comprehensive and interim report, monitoring of their implementation.

Article 2

(1) The organization responsible for the tasks of performance assessment defined herein is the National Institute for Quality and Organizational Development in Healthcare and Medicines (GYEMSZI).
(2) According to this decree, the performance assessment period defined herein encompasses two calendar years, starting from 1 January and ending the 31 December of the following year.

Article 3

(1) The minister responsible for health (hereinafter: minister) shall define the specific focus areas of performance assessment by 1 June of the year preceding the two years constituting the performance assessment period (hereinafter for the purposes of this Article: year at issue), taking into account the proposals of the organization in charge of performance assessment, the health insurance organization and the public health governance organization.
(2) Based on the definition of the areas mentioned in paragraph (1), and taking into consideration the opinion
of the health insurance organization and the public health governance organization, the organization in charge of performance assessment shall submit its assessment plan proposal covering the performance assessment period by 1 October of the year at issue to the minister. The minister shall issue a decision on the approval of the proposal for the assessment plan by 15 November of the year at issue, sending the plan for comments to professional organizations before making decision.

(3) Annex 1 of this decree includes the guideline for setting indicators used in the frame of the performance assessment.

**Article 4**

The organization in charge of performance assessment shall submit its comprehensive draft report – drawn up based on the partial materials prepared and submitted to it by the public health governance organization and the health insurance organization by 30 April of the year following the performance assessment period – to the minister responsible for health (hereinafter: minister) by 30 June of the year following the performance assessment period.

(1) The minister shall review the proposal for the comprehensive draft report and initiate discussion with the bodies specified in Section (1), as necessary. Based on the outcome of the talks, the minister shall forward the proposal to the organization in charge of performance assessment for revision or finalisation.
(2) The organization in charge of performance assessment shall prepare the final comprehensive report within 30 days of submission of the proposal for finalisation and send it to the minister for approval. The minister shall approve the comprehensive report by 15 October of the year following the performance assessment period.

(3) In case of any further request for revision the deadline set in Section (3) shall be extended until 15 December.

**Article 5**

The comprehensive report includes the chapters as follows:

1. performance assessment of the specific focus areas in accordance with Article 3 Section (1),

2. analysis of the health system bottlenecks and causes of problems defined in the assessment plan and the methodology, as well as the causes and possible policy solutions to the issues identified,

3. analysis specified in Section (2) has also to discuss all other health system bottlenecks identified during the assessment period, including the formulation of possible policy actions,

4. the comprehensive report includes international comparisons and future perspectives

5. evaluating benefits and implementation of policy interventions following the recommendations made in previous reports.
Article 6

(1) The interim report shall be drawn using the procedure defined under Article 4. The deadlines set therein apply to the first year following the performance assessment period.
(2) The interim report specified in Article 6 is a report published in the interim period between two comprehensive reports, monitoring the progress of the health system’s performance, including a presentation and brief interpretation of data.

Article 7

The ministry and the organization in charge of performance assessment shall publish the comprehensive and periodic reports approved pursuant to Articles 4–6 on their websites by 5 days after approval of the report.

Article 8

(1) The minister shall take into consideration the proposals formulated in the reports for drawing up the health policy strategic draft documents.
(2) The minister and the organization in charge of performance assessment shall monitor the implementation and rate of use of the health policy measures defined based on the proposals formulated in the reports.
Article 9

To facilitate the effective and successful performance assessment of the health system, the organization in charge of performance assessment shall maintain a professional relationship and cooperate with other bodys in partnership, such as the affected universities, research institutes and international organisations. The organization in charge of performance assessment will inform the minister on the outcomes of cooperation along with the recommendations of the comprehensive report according to the procedure in Article 4 Section 1.

Article 10

(1) The indicator list for the performance assessment period and the related data collection forms shall be published in the methodological guidelines in the Health Care Gazette and on the website of the ministry and the organization in charge of performance assessment. The detailed description of indicators according to the requirements set in Annex 1 Section 4 shall be published on the website of the organization in charge of performance assessment.

(2) The number of indicators evaluating the performance of focus areas may not be more than ten. The list of indicators evaluating any additionally defined general objectives may diverge by at most 10% between two consecutive performance assessment periods.

(3) The organization in charge of performance assessment shall regularly publish the current values of the indicators defined in the methodology guidelines, at least every six months.
Article 11

(1) This decree shall enter into force on the day immediately following its promulgation.

(2) The organization in charge of performance assessment shall prepare the interim report covering the period preceding 2013 based on the data and methodology available at the time of entry into force of this Decree by 10 December 2013 and submit it to the minister for approval. The ministry and the organization in charge of performance assessment shall publish the approved interim report on their websites.

(3) The interim report, to be first published in 2015, and the comprehensive report to be published in 2016 will also contain the performance assessment for the year 2013.

(4) The guidelines specified in Article 10 Section 1 shall first be published by 31 January 2014.

ZOLTÁN BALOG

Minister of Human Resources
ANNEX 3. TECHNICAL REPORTS PRODUCED AS BACKGROUND PAPERS FOR THIS PUBLICATION


The WHO Regional Office for Europe

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

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Finland
France
Georgia
Germany
Greece
Hungary
Iceland
Ireland
Israel
Italy
Kazakhstan
Kyrgyzstan
Latvia
Lithuania
Luxembourg
Malta
Monaco
Montenegro
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Norway
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