

# Delegation and Control in Health Care Systems

Volume 2

Institutions, Achievement, and Efficiency in 22 OECD Health Care Systems

Peter Kotzian

Technical University of Darmstadt

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To S.L.Z.

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# 1. Introduction

Several challenges confronting health care systems have led to an increased discussion in the political as well as the academic arena about the operation and design of health care systems, henceforth abbreviated HCS. Among these challenges are demographic developments, in particular aging societies, rapid medical developments allowing for enhanced diagnostic and therapeutic options at higher costs, higher demands on the side of the patients regarding responsiveness, quality, access and choice, and the financial pressure exerted on the welfare states of open economies embedded in a globalized world.

The input to the HCS, the expenditure for health, has reached or is at least perceived to have reached levels that made it incompatible with other political targets, for instance the lowering of the non-wage labor costs in order to decrease unemployment or the aim to reduce public deficits.

The output of the HCS, both in terms of health output and beyond-health outputs, like enabling patients to take a more active role in the decision making, is at the same time seen as dissatisfying, at least when compared to some HCS, which are performing significantly better and are offered as benchmarks.

In the core of the debate on health system organization and health policy is the perception that the resources available for health care provision are limited. It is concluded, that the level of health care expenditure (henceforth HCE) and also its growth must be contained or at least controlled. Moreover, even in quarters where the actual reduction of the resources was not seen as an option, it is argued that the HCS should at least deliver more outputs given the resources it consumes. These demands are to a substantial degree powered by the observation that the performance of HCS differs substantially, a message spread by purely academic studies as well as studies done by institutions like the OECD or the WHO which are by far more influential in the political domain. From these motives – the wish to control costs and in particular the demand to limit the increase of growth which dominated the political arena and in nearly all developed countries – the politically motivated question arose, whether and how it is possible to use resources allocated to the HCS in a more efficient way. The demand to increase what is labeled “performance” – either by having the same outputs at lower costs or by obtaining more and better outputs at the same level of costs – became a dominant issue; see Parkin (1989), Smith (2002) and OECD (2002).

Pragmatically, there arose the question how this could be done, where to start and what to do. Regarding the starting points, it is on the one hand clear that the input and the output sides of HCS are also influenced by factors which are beyond political or public control. Factors like health related attitudes, life styles or demographic developments matter for the citizen's health status and thus for health expenditure. But on the other hand, the institutional design of the HCS is presumably also a source of variation in both parameters and furthermore institutional features are amenable to intentional change and intervention.

Consequentially, much theoretical and empirical work has been conducted in the fields of institutional economics and comparative social sciences in order to evaluate how the institutional setting and the organizational form of the HCS impact on its performance. And as a result regarding to the question of what to do, there are several established theories about how a HCS operates, what the potential problems for efficiency and performance are and how the HCS should be designed in order to use the resources available to produce as much output as possible. In short, there was and is considerable effort invested in the question of how to make a HCS more efficient by changing its institutional design. It must be remarked, that this effort is sustained by the observation, that the success of organizational reforms which were based on institutional theories is anything but unambiguous.

This ambiguity also originates from the problem of capturing and evaluating the overall impact of institutions on performance or more specifically, efficiency. While efficiency is a straightforward concept, its empirical measurement is much less straightforward and its implementation in health care not as unanimously a target as in other domains. So, complementary to research on the question of how a HCS should be designed from a theoretical point of view to be an efficient "instrument" for health production, conceptual work on efficiency and in particular on the actual measurement of HCS efficiency also progressed substantially. This strain of research, which became a major effort only in the recent years, produces the information required to evaluate whether the hypotheses about the effects of certain institutional settings on HCS performance actually hold true. In the absence of a valid indicator of performance or efficiency, research into institutional sources of efficiency and performance must remain at the level of formal reasoning. As Murray/Frenk (2001) put it, the inquiry of HCS performance is also a step towards an evidence based health policy: does an institutional change, after everything is taken into account, actually have the intended effect? The fact that health care is subject to normative considerations like equality



and equity which are often contradicting efficiency as a criterion, renders the overall evaluation of a HCS even more difficult.

But there is another issue, one step downstream from the problems of what to do, which consists of the chances of implementing what is presumed to be the right thing. Looking at the political efforts to redesign HCS reveals that having the theoretically derived blueprint of how an optimal HCS should look like is by no means sufficient to achieve any change, let alone any improvement. Reforms of HCS as well as the actual health policy and the political processes of health system change have created a widely shared perception that the capability of governments to reform the HCS according to the answers and insights obtained in health system research, so as to bring it back into line with competing political aims and the preferences of the electorate differs substantially; see comparative studies like Saltman/Figueras (1997), Raffel (1997), or Powell/Wessen (1999) but also the country studies in Oliver/Mossialos (2005). In some countries, the HCS was changed substantially and frequently in response to perceived problems, at times back and forth between two completely different models. In other countries, the HCS remained basically unchanged despite known problems and high pressure arising from these problems, both in terms of political and economic costs. The reasons for these differences are, as the analysis of health care reform indicates, found both in the political system and in the institutional setting of the HCS itself; see in particular Immergut (1990).

Thus, one has two observations. First, that institutional settings may under some crucial but often unspecified conditions improve HCS performance, but the effect of institutional settings is despite clear theoretical foundations much less straightforward than one would wish. Second, that HCS are amenable to politically motivated changes of the institutional setting to a different degree.

And, based on these two observations, one can divide the institutional sources of observable variation among different countries in the 'target variables' of health policy – viz. resource input and health output, performance and efficiency of the HCS – into two groups:

- a) institutional factors influencing the *current efficiency and performance* of the HCS, which refer to the current institutional setting of the HCS.
- b) institutional factors influencing the chances to *increase efficiency and performance* by implementing changes. These encompass features of the HCS, but also features from the

broader institutional environment of the HCS, most notably the political system, in which the HCS is embedded.

The central questions which shall be tackled in the present study are therefore:

- a) Why are some HCS more efficient and better performing than others and is this attributable to the differences in the institutional design?, and
- b) Why are some HCS more amenable to institutional changes than others?

Both questions are reflected in the public and political discussion: How should a HCS be designed to optimally provide the quantity and quality of health that is preferred by the electorate and how can such a HCS be created?

These rather broad questions need to be differentiated further, also to allow a treatment in theoretical as well as empirical studies.

First, with regard to the observation that HCS differ in their performance as well as their institutional design, the question is whether there are systematic relationships between both. It is tempting to attribute the former to the latter, but this relationship by no means a logical necessity. And, if there are systematic associations of institutional features and performance aspects, are these in line with the hypotheses stated in the theoretical works on HCS? Apart from isolated institutional features, this study will investigate the broader institutional arrangements – ‘syndromes’ of institutional features going together. Do these ‘institutional syndromes’ correspond to the standard types of HCS, e.g. public integrated, public contracted and corporatist etc.? Are there features interacting in a way that has an impact on performance and efficiency of the HCS, which is more than the impact of each feature taken alone? One finding of the research on changes in institutional arrangements in HCS is that introducing an isolated feature may not work. Institutional features interact, enforce each other but at times are countervailing, and to achieve the intended effect, policy makers have to change several features at once.

Second, with regard to the fact that HCS differ in their amenability to changes and reforms, the study want to explain, why this is the case, i.e. why the chances to create a HCS that is more in line with the preferences of the government and the electorate differ among countries but also among types of HCS.

And, as a third point, the interaction among the two aspects – the HCS’ current setting and the chances of changing the current setting – is of interest. One theoretical result of health system

analyses is that preferences of the actors in charge of running the HCS – be they corporatist or public-administrated – systematically diverge from the preferences of the population: In health care, everybody's costs are somebody's income. Thus any HCS, if left to its own devices and left to proceed according to its own "logic", is likely to diverge from the electorate's preferences, in particular in terms of resource consumption. To counteract this tendency, some kind of external control is required. The government as the political agent of the electorate, is in charge of intervening or changing the HCS, if the necessity arises. A HCS in which changes are hard to implement is more likely to "drift away" from the electorate's preferences and to be characterized by lower performance, higher levels of expenditure and higher rates of expenditure growth.

This study will address in particular institutional aspects, because, as noted above, institutional settings have the advantage of being – in principle – amenable to intentional change, even in the short run. The theoretical foundation and the method of the study will be based on the assumption that institutions matter and will inquire into the mechanisms and in particular into the magnitude of these effects:

ad a) with regard to variations in efficiency and performance among HCS, the study will test the empirical relevance of institutional features for which predictions can be derived from institutional economics. Special focus will be put on the principal-agent-relationships and the control mechanisms used to avoid opportunistic behavior and various forms of rent-extraction by the agents in the HCS. Delegation of tasks is a central element of HCS, and the concrete question is, whether HCS that are organized in a way, that is theoretically efficient are empirically more efficient than HCS in which this is not the case.

ad b) with regard to the questions of reasons for differing 'reformability' of HCS, I want to identify the features in the HCS, the way it is organized, in combination with features of the political environment which are conducive to reforms or obstruct reforms, combining veto player theory and theories of interest group organization. The concrete question is, what the possibilities of a government are, to intervene and to change the HCS and what the possibilities of the societal actors in the HCS are, to obstruct these interventions and changes.

### *Definition of Health and Health Care Systems*

Health is in studies on health systems often left either undefined or is defined in terms of common sense. A HCS can be defined as all institutions and actors who are promoting, restoring or maintaining the “health” of a population, defined in whatever way, see e.g. the definition in the World Health Report; WHO (2000). However, this rather wide definition raises problems if one wants to study HCS performance. For instance, Murray/Frenk (2001) see health production very encompassing, by arguing that it is the Ministry of Health’s responsibility to ensure that people quit smoking. Even if one accepts that the government shall overrule personal preferences by educating people of what is best for them, one can question whether this is part of the HCS.

The definition of what a HCS is depends on the definition of what health is. The HCS may produce a range of outputs, some of which are only indirectly related to health in a biological sense, while other are not related to health at all. For instance, there is the distinction between health output and beyond-health-output; see in particular Mooney (1992) and Mooney (1998). Producing biological health does for instance not require that the staff in the HCS is in any way “responsive” to patients, giving them information or even a say in medical decision-making, Nor does producing biological health require that money is spend for things like high accommodation standards in hospitals. However, if citizens demand these outputs, which they clearly do, and are willing to pay for them, which they do with less willingness, it is legitimate for the HCS to produce them. Thus, when evaluating a HCS’ performance or efficiency, all outputs must be taken into account. Moreover, different aspects of health and different outputs can be produced with different efficiency by a HCS.

In this study, some features and aspects of health have to be excluded. As a consequence those sectors of the HCS, which are producing this kind of health, are also excluded from the analysis.

The first element excluded, based on pragmatic reasons, is mental health. While surely an important aspect of health, problems arise from the availability of data and from measuring mental health in an objective and comparable way. With no reliable dependent variable, one cannot explain the impact of institutions in this sector.

The second element excluded, based on conceptual reasons, is long term care for the elderly. Age is not an illness, and long term care is not aiming at the restoration of health, but is the coping with an inevitable process, against which there is no medical remedy.

## **Part I: The Study of Health Care Systems**

### **2. Why study Health Care Systems? Themes, Methods and Findings**

Research on HCS is driven by practical problems and it aims at giving practical advice. Only few societal subsystems are as closely intertwined with the academic community studying the theme as it is the case for health policy. Ideas and theoretical notions developed in formal health economics, e.g. the idea that incentives set by the HCS impact on individuals' behavior and that health policy has to set the 'right' incentives to mitigate problems in the HCS, diffuse or are actively, by way of scientific advice, transported into the political arena; see Saltman (2002). At times theoretically derived advice is implemented in the HCS, and doing so provides a kind of natural or quasi experiment to test hypotheses developed in the scientific community; see Newhouse (1993) on the RAND Insurance Experiment, as the most prominent example. Research is stimulated by the developments of HCS, the particularities of health care and the problems occurring in HCS, which deliver an abundance of themes for research. As a consequence, the empirical and theoretical work on HCS often leads to policy implications.

#### **2.1. Research on Health Care Systems: The Major Issues**

In this section, I will briefly present the major themes which currently occupy those involved in health policy and those doing scientific research on HCS.

##### ***Core Issues in Health Care***

The issues in health system research are numerous and manifold. The themes enumerated under this heading have been an issue from the very beginning of HCS research. The list presented here is by far not complete.

a) *Equity in access and access to health care* are persistent issues of HCS research, see Wagstaff/et al. (1999). A "perfect" HCS, producing the best possible health at the highest quality in an economically efficient way is still no good, if it does so only for a fraction of the population.

b) *Financing* – the *level* of health care expenditure, HCE, is a major issue – and most likely always will be. For a long time the aim of cost containment was seen as undisputed; see Abel-Smith (1963), Parkin (1989) and the studies on cost containment efforts in Mossialos/Le Grand (1999). Recently, there are also arguments which question the assumption that HCE is “too high” and that it must be contained, see Aaron (2003). A closely related issue is the *way* the HCS is financed, whether it is close to a market where individuals buy and offer services or close to the model of the government providing a public good in the way it provides public services like education. Financing modes – e.g. taxation, pay-roll-contributions or co-payments – have substantial impacts on other policy areas and are connected to developments in other sectors. For instance, if the HCS is tax funded, funding is comparatively independent from developments in unemployment rates. If the HCS is predominantly financed by contributions levied from wages and salaries, the available funding immediately reflects changes in employment rates and wage developments. From the perspective of cost control, the government has control over the global budget, if it is funded from general taxation (or public debt). If health is funded from wages and salaries, it is more difficult to set a limit to what is available for health care; see Mossialos et al. (2002).

c) *Rationing* in the setting of limited resources is also an issue in health care. Resources are always limited, the HCS always competes with other political and social aims and the HCS is never able to meet all demands. Consequentially, allocative decisions have to be made. These can concern medical services provided in the individual case but also the HCS as a whole, by deciding how much shall be spent for health care at societal level. As Dowie (2001) observes, in allocating a medical service to a person, one takes away resources from other usage. By producing an outcome, e.g. process utility and responsiveness, one puts cost-pressure on the production of other outcomes of the HCS, e.g. health status. Many studies look into the way these allocative decisions are made – and made they are. As Brown (1991) argued, rationing is omnipresent in health care just as it is in other forms of welfare services, albeit most often done by implicit ways. Implicit rationing occurs in the sense that the medical staff makes an ad hoc decision about a certain service in a certain situation. A more explicit form is priority setting, like the Oregon approach, where the elected legislature was presumed to ‘draw the line’, see Fox/Leichter (1991) and Brown (1991). More explicit rationing takes the form of budgets, prices, waiting times, eligibility conditions, regulations of scopes of coverage. As Garber (2004) argues, political actors tend to delegate rationing issues – such as coverage of services, which are by nature rather political issues than technical issues – to the staff working

in the HCS, in order to avoid the political costs arising from taking a public stand on coverage policy or rationing.

d) *Cost effectiveness* is a theme closely related to rationing and cost containment. Is it possible to improve the cost-effectiveness/cost-benefit ratio of the HCS? For instance by focusing either on those medical interventions which create much benefit, by focusing on those medical interventions for which substantial evidence of medical effectiveness exists or by focusing on interventions, which are cost effective with regard to the output they achieve; see Garber (2004) on this issue. There is now an extensive body of research on evidence based medicine, how it is developed, how it is adopted by the HCS, i.e. how actors in the HCS can be motivated to use this as a criterion. But also what the implications of including economic evaluation are for the provision of health and for the distribution of power and competencies in the HCS; see Woolf et al. (1999), Patridge (2003), Garber (2004) and Jost (2004). Again, this theme is by nature a normative one, which becomes evident if cost benefit principles are applied to the individual case. For instance Skinner/Wennberg (1998) or Luce/Rubinfeld (2002) take up the question of whether HCE can be reduced by limiting the intensive care provided to people who are very likely to die despite all efforts made. As a normative question, such decisions should be made explicitly and consciously.

e) *Public health* recently also became a strong theme. The appropriateness of the HCS per se as an instrument to produce health outcomes is an even more general issue. The HCS as a whole can be seen as an instrument installed to produce health. However the HCS is but one factor influencing health states. There are other factors (like education, diet and life style) but also other forms of policy (regulations on inoculation, traffic safety, anti-smoking campaigns), which might be more important for health status. Indeed, studies like Tengs (1997), Filmer/Pritchett (1999), and Kenkel (2003) indicate, that the HCS might not be the optimal instrument to achieve health. Instead, policy measures aiming at an improvement of other factors, like education, prevention and sanitation, are much more effective. A theoretical argument supporting this is, that the HCS is all about healing illnesses. It might be both more effective and more efficient for producing health, to avoid the occurrence of illnesses in the first place by other policy instruments. Studies on the cost saving effects of prevention yields similar conclusions; see Gandjour/Lauterbach (2005).

### ***Responses to Recent Developments***

While the issues pointed out above are “classical” ones, there are more recent developments which created new pressures and new issues to which HCS respond very differently.

A strong pressure on health care financing arises from technological progress – new technologies are developed, which allow treating conditions hitherto untreatable. The diffusion and the determinants of the usage of technological innovations are a theme of its own, see Bech (2003). Advanced medical techniques, devices and medicines improve the health output, but they also incur substantial costs. Technological development is seen as a ‘major driver’ for HCE; see Newhouse (1992), Okunade/Murthy (2002) and Moise (2003). An additional impact of the growing medical knowledge and possibilities is the growth of expectations and demands: there is the general philosophy that everything that can be done for the patient should and must be done and that prices and cost effectiveness, in particular the question of the marginal utility in relation to the price, must not be criteria for medical decisions. Hence, as the domain of what is technically possible grows, so do the expectation and the demands of the public, and in the end the expenditure; see Smith et al. (1997).

A second source of pressure is the demographic development, which raises two kinds of problems. First, people get older on average and older people seemingly require more health care, causing higher costs; see Polder et al. (2002), Moise/Jacobzone (2003), Bains (2003) and Dormont et al. (2006). However, despite the plausibility of the argument, the impact of an aging society on future HCE is debated. Empirical studies, e.g. Seshamani/Gray (2004) and Werblow et al. (2007), indicate that it is not age per se, but the proximity to death which influences HCE. Second, the current practices with regard to length of occupational engagement do usually not pay heed to the demographic development: people are retiring at a point in time, when many years of life are still before them. In countries where only the population active in the labor market finances the HCS, while retired people are either exempted completely or pay only a nominal contribution, this causes long term problems of intergenerational redistribution; Böcken et al. (2000).

The overall economic environment and situation also puts pressure on the HCS for two reasons. First, the money devoted to health care must be generated by the country’s economy, i.e. persons or enterprises. If a country’s available overall income is high and moreover grows steadily, society will demand and be ready to spend more for health care. This however is a clear instance of a ratchet effect, where the status quo of health care provision is locked in and can only be increased but not reduced. HCS developed most of their features during periods of substantial economic growth and relied on high growth rates for HCE. But in times of



economic stagnation or even recession, HCS have to meet the challenge of coping with limitations to available funding<sup>1</sup>. And the degree to which HCS proved to be able to adapt differs substantially. Furthermore, states and economic areas are competing among each other for factors relevant for economic welfare. The opening up of the economies has made this competition more or less global. If private enterprises, as it is the case in many countries, are involved in the financing of health care either by paying contribution via wages and salaries or by general taxation, they have the possibility as well as the incentive to avoid these burdens by relocating to other countries where the burden is lower.

A last source of pressure are political restrictions set by an external institution, like the EMU or the IMF. The IMF actively intervenes in national health policy by encouraging privatization and the limiting of public financing for health and has substantial impact on health policy in developing countries. For some of the cases included in the present study, the EMU plays an equivalent role, and indirectly sets factual limits to HCE by limiting governmental expenditure. Even if both, the government and the society to which the government is politically accountable, agree that the resources devoted to health care shall keep on growing even if they have to be financed by running debts, the restrictions imposed by the EMU make this impossible.

In short, HCS as well as the welfare states in which they are embedded, face a set of common problems, to which they respond by varying degrees and with different strategies; see Parkin (1989), Mechanic/Rochefort (1996) and Pierson (2001).

### ***Institutional Sources of Health System Performance, Achievement and Efficiency***

Given the variety of issues and themes in health policy and HCS research outlined in the previous section, it is clear that a study cannot treat all aspects of it, but has to choose some of the issues. The present study will focus on a question which – while the problems and challenges confronting HCS differ to some degree – is a universal theme in all HCS: performance, achievement, efficiency and the possibility of their creation.

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<sup>1</sup> Moran (2000) argues that HCS developed in economies dominated by sectors which at the time of their creation had high potentials for productivity growth. Now, the focus of the economies has changed from industrial production to services where productivity growth is limited, which in turn also limits the surplus available for the welfare state.

### *Health System Performance, Achievement and Efficiency*

A HCS is in the most straightforward conception an instrument to achieve a certain aim, viz. the production of health for the population. As an instrument to transform financial resources and labor force into health output, a HCS should achieve its aim to the highest level feasible and without wasting resources in doing so.

In the political debate as well as the academic research, these two criteria are denoted as achievement and efficiency of the HCS, often combined into the rather unspecific concept of performance. While the notions of achievement, performance and efficiency have a certain common sense meaning, the problems associated with using them as criteria to evaluate HCS are manifold and severe. They will be discussed in chapter 9 in more detail. At this stage, a preliminary working definition will be sufficient.

Achievement – a term I prefer to performance, because the latter often is mixed up with efficiency – shall refer to the levels of outcome (in particular health of the population) reached, and thus also reflects issues of coverage and equality in access.

Efficiency can have many definitions, two of them are: 1) Does the HCS produce health for those persons who actually have access at the least possible costs? 2) Does the HCS produce for the total population the maximum of health feasible the input devoted to health care? Under the first definition, only the health levels of those who actually have access is the output indicator, while under the second definition, the health level of the overall population is the output indicator. The selection of HCS on which this study is based however makes this distinction secondary, because all countries chosen have near universal access to health care. Including the United States would be a different thing altogether: Asking whether the American HCS is efficient with regard to those who have access might yield a different answer than asking whether the American HCS is efficient with regard to the total population of the country.

Despite their synonymous usage, the notions concern different things and the one does not entail the other. When defining HCS performance as the outcome level reached, a country might underperform, because too little health is produced, or some services are not produced and some conditions remain untreated. One may say, correctly, that the achievement level in the country is low. But at the same time, this HCS might be efficient, producing the maximum of health output feasible given the limited input available. While some services are not produced, those which are, are produced at the least costs. Societies' preferences may differ with regard to the question, what health services should be provided by the HCS and to

whom, but one can assume that they all agree on the point, that the HCS should not waste resources for its operation. As Retzlaff-Roberts et al. (2004) point out, it does not matter for efficiency, whether the society has decided to produce much or little health. There are countries which produce much health, like Sweden, or little health, like Mexico. But both cases do so in an efficient way. Acknowledging this implies that one need to be very careful about using the terms like efficiency, achievement and in particular a catch-all notion like performance, if they are not clearly defined. Most studies skip this conceptual problem of efficiency, achievement and performance by using straightforward indicators, like life expectancy for output, and HCE for input. Both, input and output, can also be combined into a ratio as a very simple indicator of efficiency, such as “health care costs per life year”.

Having clarified the dependent variables of the study, viz. achievement and efficiency, empirical evidence shows that even by very simple proxies for each, HCS differ substantially, just as they do by more refined efficiency indicators; see Retzlaff-Roberts et al. (2004), WHO (2000) and Bhat (2005). The finding of a high variation in performance, achievement and efficiency among HCS is a constant result, and quite independent of the sophistication of the measures used.

#### *Institutional Determinants of Health System Performance, Achievement and Efficiency*

Having defined the dependent variables, the question is how to explain the variation in them. With the tasks of the HCS being clearly defined, a major question is, how institutions impact on the degree to which the HCS is able to perform the tasks. Research on HCS is to a good deal driven by the normative motivation to gain knowledge about the functioning of the HCS in order to improve its performance respectively bring it back into line with the preferences of the electorate. Thus, there is an extensive strain of literature summing up evidence of the impact of institutional settings on HCS performance aiming at least implicitly, at providing advice for governments<sup>2</sup>. To learn from those HCS which seemingly perform better is a central motive in comparative work on HCS: ‘(...) international comparisons should be of interest not simply for curiosity’s sake, but for insights that they give people about their own country. All countries can learn from elsewhere, and may be better able to assess their own ways of dealing with issues by observing how others do it’; Parkin (1989: 75). Thus, the first theme of the study will be the institutional factors which might account for variations in HCE,

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<sup>2</sup> See for instance Wille/Albring (1998), Beske (2002), Johnston (2004), and Oliver/Mossialos (2005).

HCS achievement and efficiency after factors beyond political control (like technical development and demographic factors) are controlled for. The theoretical tool used to link certain institutional and organizational forms to a certain level of efficiency is the institutional economics framework, especially the principal-agent approach; see chapter 4.

### *Creating Health System Performance and Efficiency*

While a range of developments – e.g. the demographic development and to some degree the technical progress – are not under the control of the political system, the institutional design and the organization of the HCS are in principle amenable to control and conscious change. Given the ‘will to change’ and the available knowledge created by comparative research on HCS, one would expect governments to intervene and change their HCS until it works perfectly. However, this is clearly not the case. While changes, can be observed, also oriented at insights from the scientific analysis of HCS, one also observes institutional stability, despite high levels of dissatisfaction with the HCS and incompatibilities with other political aims. So knowledge about how to design the “perfect HCS” is not enough. Knowledge needs to be implemented, either by way of small operational changes or by large scale reforms, in any case by the action of the government as the actors politically in charge. The degree to which change occurs and why HCS differ in terms of how amenable to change they are, is the second theme of the study.

## **2.2. Institutions, Performance and Institutional Change: A Review of the Literature**

The themes selected for this study in turn raise three questions which have been treated in various depth in the literature, which shall be very briefly reviewed in this section.

First, what institutional mechanisms can be built into the HCS in order to achieve a high “performance”, i.e. achievement levels and efficiency, and what effects do institutional settings exert on various aspects of HCS achievement and efficiency?

Second, which instruments for influencing the HCS’ operation do governments have at hand under a current design of HCS and what is their impact on HCS achievement and efficiency?

Third, what determines a government’s ability to use the available instruments for influencing the operation of the HCS and what determines whether a HCS is amenable to changes?

The following review on the literature is structured along these questions. Since the literature even to these selected aspects is very encompassing, a further distinction is loosely based on the methods used by the studies.

### ***2.2.1. Institutional Sources of Variation in Health System Input and Output***

Health policy is about influencing the inputs and the outputs of the HCS, and the instrument of health policy is primarily the design of the institutional setting. Thus, it is necessary to know the magnitude of the effect institutional settings have and moreover, what effects individual institutional features exert. Life expectancy as the main output and HCE as the main input of the health system differ among countries for a range of causes. While exogenous factors – e.g. demographic factors, the environment, the state of technological development, health related attitudes and behavior like diet and life style – explain a good deal of the variation in both, there is a considerable share in variation, which is not due to these factors. And one reason why there is such an interest in the impact of institutional settings is the institutionalist' assumption that these differences in achievement and efficiency are at least partly due to institutional factors, in particular the organization of the HCS. If this is true, the variation between the best performing and the least performing HCS is also a proxy of the potential for improvement by institutional changes. The question is, whether the research was up to now able to prove the effect of institutions.

#### *Case Studies of Health Care Systems*

Case studies dominate the research on HCS and the number of case studies even on single HCS is large<sup>3</sup>. Thematically, they encompass all aspects of HCS, like accessibility, the roles of states and markets, centralization and decentralization, the question of solidarity vs. private responsibility, the rights of patients, the responsiveness of the HCS, quality etc.; see Saltman/Figueras (1998) for an overview. Since research in recent years tends to focus on expenditure related issues, the interaction between institutional factors, expenditure levels and expenditure development is usually an aspect.

With regard to the question of the impact of institutional factors on efficiency and the expenditure level however, the results of the case studies are ambiguous. Several case studies

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<sup>3</sup> See for Germany Webber (1988), Webber (1989), Knappe et al. (1989), Rosewitz/Webber (1990), Döhler/Manow-Borgwardt (1991), Alber (1992), Manow (1994), Perschke-Hartmann (1994), Behaghel (1994),

describe in detail, which regulations have been introduced and which effects were expected. But a clear proof that the expected effects actually occurred is not yet given, often because the effects are manifold and contradictory.

In an early study on the incentives set by institutions and in particular contractual relations between patients, providers and insurance, De Alessi (1989) derived the implications of different modes how these relationships can be designed and, studying the US, found evidence for the predictions. Studies on remuneration modes, like Delattre/Dormont (2003), also find that remunerating physicians by fixed fees per defined service results in more services and in particular more services per case, supporting the argument that physicians induce a demand for the services offered by them.

In a review of the research on the effects of financial incentives (i.e. remuneration modes), Chaix-Couturier et al. (2000) found evidence that such incentives have the intended impact on expenditure – for instance lower prescription volumes if the prescriber has a limited budget for prescriptions – but also incur a range of risks for the quality of care, in particular by installing a latent conflict of interests between the patient and the physicians; see Ma (1994), Lynch (1998) and more specific Garcia Marinoso/Jelovac (2003) for referral practices under different settings, see also for payment modes and quality issues in in-patient care Shmueli et al. (2002) and Norton/et al. (2002).

Maioni (1999) discusses the introduction of measures expected to change the incentives in the Canadian HCS, but cannot give a definite evaluation. While there is evidence of some cost containment, the HCS did not profit from the introduction of competition elements because the latter also introduced conflicts and tensions between the various actors and governmental levels in charge of the HCS. The study by Danzon (1992) indicates that the organizational structure of the Canadian HCS, by involving many layers of government, also creates a costly administrative overhead, which should be taken into account when the expenditure for health is calculated; see also the comparison of the NHS and the HMO model in Feachem et al. (2002).

Studies on satisfaction, like Carlsen/Grytten (2000), find that consumer satisfaction increases parallel to the density of providers, which in turn goes together with higher costs and more services provided per case and in total. Like many other studies, this hints at a tradeoff, which is often ignored by policy makers: while costs are higher under some institutional settings, the

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Döhler/Manow (1995), Döhler/Manow (1997), Röttgers (1999), Wille/Albring (1998), Bandelow (1998), Oberender/Zerth (2001) and Sauerland (2002).

quality and the satisfaction are higher too. It is difficult to purport that money is “wasted”, if there is indeed something bought for the money.

Studies comparing institutional setups on a theoretical level, like Diamond (1992), predict that the integration of financing and provision is of advantage, in particular when the entities in charge of both functions have to compete. The study by Feachem/Sekhri et al. (2002) comparing an American Health Maintenance Organization, HMO, and a public integrated health service, the British NHS, finds support for the performance increasing effects of competition. While the NHS as well HMOs have integrated the financing function with the provision of care, HMOs compete for clients while the NHS has a monopoly. Similar results are reported by a study by Cutler et al. (2000).

Elements of competition were a major feature of many reform efforts in the past. It was assumed, that the introduction of competition in the HCS would increase its performance by incentivizing actors to show more effort. For instance, if insurance funds in a corporatist HCS compete, they are expected to have an incentive to negotiate lower prices with the suppliers, offering the realized savings to the insured and thereby attracting more insured. The evidence however differs from that prediction. A study done by Greß (2002) for the Netherlands did find no such effect. An equivalent study by Tamm et al. (2007) for Germany finds that effects are very small, at least in the short run. Citizens do not shift to the cheaper insurance quickly, but there might be stronger effects in the long run.

The same reasoning on the effects of competition was the basis for restructuring a HCS as a whole along principles of competition. The argument was, that theoretically, many of the problems in health care arise because neither the supply nor the consumption of health care is guided by the market mechanism. Patients don't pay for what they consume, and providers have a substantial control over the demand for their own services. It was thought that introducing market elements would remove some of the problems. The introduction of the internal market in the UK was a large scale effort to introduce competition in a system, which was virtually free of competition until then. The District Health Authorities were expected to buy services from the cheapest suppliers, but in practice the managers did not have an incentive to do so and the expected effect did not occur. The same was the case in the fundholder model; see the evaluations of the various elements of the “Internal Market” model in Boer (1994), Light (1999) and in particular the summary of research in Le Grand et al. (1998).

A HCS' achievement is also influenced by the quality, and regarding quality of medical care, one reasoning for introducing competition among providers recurs to the argument that patients are able to perceive the quality of treatment and if they think it to be inappropriate, they can change the provider. Since providers don't want to lose customers, they have an incentive to invest effort in assuring quality. Thus institutional settings which increase choice should also increase quality of treatment. One finding in this context is the study by Sari (2002), which analyzed the impact of the wave of mergers in the US Hospital sector on quality, and indeed found diminishing effects on at least some quality indicators. But it can also be argued that the patient is – lacking medical knowledge – unable to evaluate quality and might orient himself on visible but meaningless indicators like the usage of technology.

Another instance of changing institutionally created incentives are co-payments. Oftentimes, medical services and products are offered free of charge, which sets an incentive for the consumer to consume services until s/he derives no longer any utility from them. The only limit are personal constraints, for instance time, see Torgerson et al. (1994), or availability, e.g. the capacity of the providers. The theoretically expected effect would be that the price is made relevant for the consumer, comparable to a “normal” market setting, and this introduces a cost-benefit calculation in the patients' decision on medical consumption. The patient is more likely to ask for the price and the expected benefit, and is more likely to renounce services with a poor cost-benefit-ratio. This reduces the overall costs, because the services or products are no longer supplied and consumed at zero costs. But an alternative mechanism may be that the costs are actually not reduced, but merely shifted – that additional resources are feed into the HCS and only the share paid by the state remained constant; see Hoffmeyer/McCarthy (1994) for an overview on studies on the effects of co-payments for medical services.

Other studies, most pronounced the study by Scheil-Adlung (1998), explicitly negate any effect of co-payment-based measures that actually works by changes in the incentives for actors: 'Cost control in public healthcare expenditure by means of the market-based incentives described appears to be virtually impossible' (ibid. : 134). The use of incentives and other policy measures based on institutional economics have – according to Scheil-Adlung's observations – merely the effect to open up new sources of finance (as is the case for co-payments) or to shift the costs, thereby stabilizing the public share of health expenditure. But they do neither impact on the quantity of services consumed nor improve quality.



A structural feature often used to contain costs is gatekeeping. The argument rests on the observation that secondary care (and even services provided by secondary providers) is typically more expensive – irrespective of being provided by outpatient specialists working in their own practice or by the outpatient department of a hospital. It is argued that gatekeeping may help to contain costs by assuring that care is provided at the level of care with the lowest degree of specialization and thus, presumably, at the lowest costs. To make sure that this actually happens, the patients are by default only referred to secondary, specialized providers, if the gatekeeper – the first contact General Practitioner (GP) – thinks this is appropriate. The evidence of this mechanism and the net-effect of gatekeeping is debated. Using data on the OECD countries, Delnoij et al. (2000) find only one effect of gatekeeping on expenditure: expenditure growth is slower in countries with gatekeeping than in countries without. There are no effects on the level of total HCE. The authors conclude that while the effects at the micro level – between the patient, the GP, and the secondary provider – are clear, they do not show up at the macro level.

Another institutional setting with attractive properties is the fundholder model. The idea is that fundholding combines several properties and incentives to an optimal constellation. Fundholding means that a fixed budget is allocated to a provider, e.g. a GP, per patient enlisted with this provider. The fixed budget sets an incentive for the GP to deliver only those services which are necessary and to choose the most cost effective ones. Because of the GPs medical knowledge, the GP is able to evaluate alternatives according to the expected cost-effectiveness in any given case. While the difference between the allocated budget and the expenditure cannot be realized as profit, the GP is incentivized by the possibility of investing the difference in the equipment of the practices. On the upside, this sets an incentive to minimize the costs per patient but also to attract more patients as clients by offering good service. On downside, this sets the incentive to undersupply service, to attract healthy patients and to get rid of less healthy ones who are likely to cause higher costs, an activity labeled “cream skimming”. To counter act the first problem is necessary to give patients a free choice among the fundholders so that the GP does not provide too few services, or poor quality. The overall impact of fundholding is debated, depending very much on the details of the design; see Breyer/Zweifel (1997: chap 8) for a detailed discussion of the model, Fattore (1999) and Croxon et al. (2001) for empirical evidence from the UK, where the model was actually in use.

### *Qualitative Comparisons*

Given the complexity of HCS, a strategy to obtain insight on how the institutional setting affect efficiency, achievement and various indicators of “performance” is to compare few HCS in detail, using qualitative comparative research designs. Even though qualitative comparative studies of HCS usually do not focus on efficiency as such, cost containment, the question of how to design the HCS in a way that costs are contained and the evaluation of measures taken by the government are a central part in this strain of research. However, a gap exists between theoretical and empirical work: Studies conducted by economists view the organization of HCS as a special case of industrial organization and remain theoretical comparing *models* of HCS; see for instance Diamond (1992), Dranove/Satterthwaite (2000) and Blomqvist (2001). Studies conducted by social and political scientists compare *real* HCS, but often only implicitly refer to concepts of institutional economics<sup>4</sup>. Often, the introduction of appropriate individual incentives as a measure to contain the overall costs is discussed under labels like the introduction of market elements, public-private-mix, privatization etc. Nevertheless, these studies are in fact looking at the incentive effects of these measures for the actors in the HCS. For instance, Moran (1999) studied reform measures in countries representing the three basic types of HCS (NHS, corporatist and market) aiming at a limitation of the demand of expensive high-technology or aiming at restricting the supply of medical services. Stewart (1999) analyzed the effect of privatization – in the sense of shifting the ‘public-private-mix’ from solidarity to private responsibility – as a strategy to increase efficiency. Strategies of decentralization, studied for instance by Trottier et al. (1999) not only look at the responsiveness aspects of decentralization, but also at the increase of efficiency expected from this strategy. Some studies compare complete HCS (for instance the contributions in Hoffmeyer/McCarthy (1994) or compare the incentives set in the same domain / relationship in different countries; see the contributions in López-Casasnovas (1991), De Alessi (1989), McClellan (1997) or the detailed review on the effects of activity based financing methods in Street et al. (2007).

Contrary to other fields of social policy, there are several ‘experimental studies’ available which seem to indicate that incentives, in particular co-payments, have an impact on the consumption of medical services. The most clear cut instance is the ‘RAND Insurance Experiment’, see the documentation in Leibovitz et al. (1985), Manning et al. (1987),

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<sup>4</sup> The ideas of institutional economics and the role of incentives for actors as a leading concept of reforms is widely used in practice: Freeman/Moran (2000) find a convergence in the content of recent reform projects in very different HCS aiming at the creation of micro and macro-efficiency, i.e. to ensure, that a bundle of input and output is produced, that is optimal given the preferences of the electorate.

Newhouse (1993) and Newhouse (2004). The experiment explicitly tested for price effects on medical consumption and found substantial, and also strong effects if prices are made relevant for health consumption. Increased co-payment diminishes the consumption of services, both with respect to the frequency of usage and the costs of usage episodes. But the effect depends on the income level: for high income groups, which use medical services most often, the diminishing effect is weakest; it is stronger in the middle income groups and strongest in low income groups. However, the RAND experiment also found adverse effects: for those who are both poor and sick, the reduction of consumption proved to be harmful, leading to a mortality increased by 10%, Newhouse (2004: 108). Reduced were in particular services and treatments of non-acute nature, like the treatment of hypertension. While this does not immediately affect the present well being, since it is not a hindrance to the usual 'way of life', it might decrease life expectancy in the long run.

Despite coming close to a 'true' experiment, the RAND group and the results were criticized for several reasons. Rice (1998: 130ff) argued firstly that the external validity can be challenged. The sample of persons included, which was then randomly assigned to the experimental groups with different levels of involvement in payment, was in itself already highly selective and not representative for the overall population. Second, while the patient may well decide on the initial contact, it is the supplier who decides on the next steps, i.e. the services consumed and usually does so in an authoritative way. The patient is neither in the position nor factually able to make an informed decision on what services to consume. Further, under the RAND experiment, the people who were included in the experiment only made up a small fraction in each providers pool of clients. Their reduced demand posed no threat to the provider's income. But if all clients of a provider were subject to a diminished demand due to increased co-payments, the provider might react by increasing demand, using his role and the informational advantage, i.e. the reduction in overall HCE due to demand reducing effect of co-payments may be compensated by more supply induced demand.

The study of Cockx/Brasseur (2003), on the 'natural experiment' of the increasing co-payment rates for several kinds of medical services in Belgium, also found diminishing effects of co-payments on usage, but despite the large relative increase in prices – 35 % for home visits by general practitioners, 45 % for visits with general practitioners and 60 % for visits to specialist – the elasticity of the consumption was only low, and much of the cost saving effect was equalized by substitution effects. These observations lead Cockx and Brasseur to conclude, that 'the efficiency gain of the reform, if any, is modest' (ibid.: 881).

The introduction of co-payments, which are frequently used as an ad-hoc measure to increase available funding, makes them a feasible theme of qualitative intervention studies: does the introduction of a co-payment for a certain service or product have the intended effects or not? The prediction is, that as long as the service or the product are free, the consumption is basically unconstrained. Introducing a price, is supposed to limit the consumption to the level where the benefit exceeds costs. Because medicines are often the first product subjected to co-payments, there are several before/after-studies on the usage and effects of co-payments for medicines. Most of these studies only test for demand side measures, that is measures which change the costs of consumption for the patients, either in the form of direct co-payments or in the form of deductibles and varying degrees of cost coverage by an insurance. Most studies find the predicted effect of lower consumption of medicines if they are subject to co-payments. But even elaborate studies like O'Brien (1989) are very careful when drawing conclusions because co-payments might lead to a cost-shifting instead of an actual reduction of consumption and costs. And indeed, studies taking into account the prescriber, who makes the actual decision on medical consumption. Hassell/et al. (2003) found that GPs as the main prescribers of medicines respond to the introduction of co-payments with sophisticated strategies, which allow their patients to elude the costs, e.g. by diagnosing patients with conditions which qualify for an exemption from co-payments.

Thus, summarizing the literature with regard to the role of institutional aspects as determinants of efficiency and costs, the results of qualitative comparative studies are ambiguous. The RAND experiment showed that institutional changes, while having certain intended effects, also have effects, which are unintended and may counteract the former ones to a degree which makes the overall improvement debatable.

### *Quantitative Comparisons*

Quantitative comparative studies search for the determinants of quantitative properties of the HCS, using either intra-national or international data. A typical application of the former is the analysis of the behavior of GPs in a country, which was partly already covered above. A typical application of the latter strategy is the analysis of levels of HCE using pooled data from various countries for many points in time. Because HCS are often evaluated with regard to their consumption of inputs, a question studied intensely is: Why does HCE differ so much among countries? As was elaborated in the introduction, the input alone is of limited value in terms of actually evaluating the performance of a HCS, if it is not combined with a measure

of output. Nevertheless, the theme of expenditure is clearly the predominant issue in quantitative studies.

Questions concern the role of the GDP for the expenditure level, the classical question raised by Newhouse (1977), the role of demographic factors; Barros (1998) and Karatzas (2000), and the impact of technology Okunade/Murthy (2002). Since the development of health expenditure as well as other independent variables, most notably GDP, have a clear one-way-trend over time, the question whether the effects found are real or spurious is crucial – and is answered differently by various authors<sup>5</sup>.

The quantitative literature can be divided into several strains. The first basic question is, what societal and economic factors determine the amount of money a society is spending for health. The second question is about the institutional sources of variation in HCE.

#### *a) Non-Institutional Factors Influencing Expenditure for Health*

The question, “Why HCE does differ so much among countries?” was the basis of the classical study by Newhouse (1977), who found that the most relevant factor in HCE is GDP and concluded that institutions don’t matter for HCE. Neither does – at least in industrialized countries – additional HCE improve health. According to his findings, health care is a luxury, and the physiological limit of life expectancy can be reached by spending comparatively little for health care. Once a life expectancy of about 70 to 80 years is reached, even multiplying HCE by several magnitudes does not increase the life expectancy any further; see chapter 10 for a more detailed discussion. For the additional resources spent, societies ‘buy more care, but little additional curing’ (Newhouse 1977: 122). The finding of diminishing returns of HCE in terms of health status was supported by many follow up studies, see Newhouse/Friedlander (1980), Pritchett/Summers (1996), WHO (2000: 43) or Self/Grabowski (2003): 844).

Nevertheless, the conclusion that health is a luxury and more of it is demanded as people get richer (which in turn makes them more healthy by default) stimulated political debates because of its political implications but also many studies on the validity of the findings.

What remains still open is the nature of the relationship between HCE and GDP. It is also questioned, whether there actually a relationship. Does higher GDP lead to higher HCE, and if so, by what mechanism? While the bivariate correlation of both is well supported, and also

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<sup>5</sup> Central question is the problem of unit-roots and co-integration: since GNP and health expenditure have a clear increasing trend over time, it is possible that the found correlation is spurious. Results, even of studies using most advanced methods, is ambiguous.

found in multivariate studies, the existence of a connection is nevertheless debated. Both figures (GDP and HCE) are growing over time. This may – even in the absence of any causality – create a spurious relationship, discussed in the econometric discussion under the label co-integration respectively unit-root-problem. Various studies answered the question differently, some tests report co-integration for individual countries, some for all; see Hansen/King (1996), Blomqvist/Carter (1997), Gerdtham/Löthgren (1998), Gerdtham/Löthgren (1998), Gerdtham/Löthgren (1999), Okunade/Karakus (2001), Gerdtham/Löthgren (2002), Jewell et al. (2003) and Freeman (2003). The issue is studied so intensely, because of the implications a definite answer would have: if health is indeed a luxury, or at least certain services are luxuries, the question arises, why the state or the public should be forced pay for that.

But even if one assumes that there is a true correlation among HCE and GDP, there is much debate about the underlying mechanism; see also chapter 9 for the problem. While the view that GDP causes HCE is clearly dominating, the causality may just as well work the other way around. Studies like Bhargava et al. (2001), Sachs (2001) or Van Zon/Muysken (2001) argue, that better health of the population leads to an increase in GDP, because healthier people are more productive, live longer and in doing so less human capital is wasted. Support for this interpretation also comes from studies on the economic impact of AIDS on economic development; Sala-i-Martin (2005) and Philipson/Soares (2005).

Demographic and socioeconomic developments like the aging of the population or high unemployment rates (which are a factor for health status), were often found to be of little impact, while the effect of health related life styles were significant; see Gerdtham/Jönsson (2000). Regarding overall social developments, the study by Schmidt (1999) tested for the effects of the increased participation of women in the labor market. The underlying idea is that it were and are usually women who perform a range of tasks related to health care in the household. For instance, women are taking care of the older generation, usually their parents, or take care of their children if they are ill. If women are employed, they have no time to perform these tasks, and their workforce has to be replaced by professional personnel, which in turn raises the HCE. The effects found significantly confirm the hypothesis.

Another factor increasing HCE is the technological progress, but its effect is – both in terms of existence and magnitude – also subject to debate. The extensive usage of new technologies and medicines is a factor in the political debate, and Okunade/Murthy (2002) found that the

technological development, proxied by R&D investments is a statistically significant ‘major driver’ for HCE. However, this finding in turn raises the question, what institutional and political factors influence the widespread usage of new technologies. The decision to invest in high-end medical technology and also to make intensive use of the technology may be a consequence of the institutional settings but also the societal preferences. Further, there is also contradictory evidence: the Japanese HCS is, as Anderson et al. (2003), point out, highly endowed with high technology equipment which is also used intensely, but in terms of HCE it nevertheless ranks low among OECD countries.

*b) Institutional Factors of Health Care Expenditure and Health System “Performance”*

While in particular GDP is – for whatever reason – the most important factor in statistical models explaining HCE, another strain of quantitative studies explicitly focuses on the impact of the institutional setting in the HCS on HCE and indicators of performance. Summing up about three decades of empirical research on HCE and their own encompassing research on institutional factors for HCE, Gerdtham/Jönsson (1998) and Gerdtham /Jönsson (2000) report the following insights: Gatekeeping seems to have an decreasing impact on HCE, and so have payment systems in which patients pay first and receive reimbursement later. In-patient care is seemingly more expensive than outpatient care, which implies that if a service can be provided either by a hospital or by a GP respectively an out-patient specialist, it should be provided outside of the hospital; see the argument on gatekeeping mentioned above. The density of providers (physicians per head) and in particular remuneration modes which are based on the quantity of services provided increase HCE. This in turn supports the supply-induced-demand argument which will be discussed in more detail below.

However, the research is fragmented, and the results are not consistent, and authors like Gerdtham and Jönsson who have reviewed a substantial number of studies are very careful when drawing conclusions.

One strain looks at the impact of specific institutional features on HCE, but also on output related aspects of HCS performance. Among the issues covered by studies are for instance referral rates from general practitioners to specialist and hospitals, Franks et al. (1999), Croxon et al. (2001) and Garcia Marinoso/Jelovac (2003); the relative impact of economic and medical priorities on the behavior of salaried medical consultants; Iversen (1998); the differences in waiting time for hospital admission when the gatekeeper has a financial stake in the decision, Propper et al. (2002); the determinants of waiting times, Siciliani/Hurst (2003); the impact of prospective payment for hospitals on the length of stay, Norton/et al. (2002) and

Shmueli/Intrator et al. (2002); the impact non-profit / for-profit status of hospitals on the expenditure per case; Wilcox-Gök (2002); the impact of DRG remuneration, Dismuke 1999 and other forms of budgeting, see Wilton/Smith (1998); the impact of prospective payments on length of stay in hospitals, Norton/et al. (2002); the treatment intensity in dental care under different remuneration modes, Chalkley/Tilley (2006); and the prescription behavior of physicians, Hellerstein (1998) and Lundin (2000).

Other, in particular intra-national studies analyzed several institutional features simultaneously or combinations of features. Again the question is, does a certain institutional change or a coordinated change of several institutional features aiming at changing the incentives of actors in the HCS actually improve the performance, either by lowering expenditure or by improving quality treatment. An instance of such a study is the study by Lynch (1998) who inquired whether the physicians in the UK react to incentives set under the new institutional setting, maximized the share of good risks among their patients and whether the introduced competition did indeed have positive effects on the services of the physicians. The first hypothesis could be confirmed weakly, which means that the so called ‘cream skimming’ occurs, but is not a common feature. The introduced competition however had no effect on the physicians’ behavior; see also Fattore (1999: 761), Croxon/Propper et al. (2001) and Propper/Croxon et al. (2002) for quantitative evaluations of the fundholder model.

### *Role of the Government for Health System Performance*

A major institutional feature of a HCS is the role of the government. Because health care provision is in many countries an integral part of the state’s functions, there are many studies on the role of the government for health care.

A consistent finding of the quantitative studies is that expenditure levels in public-integrated HCS are usually lower by a significant amount; see Gerdtham et al. (1998) for a review. The mechanisms are not fully clear. It can be argued that the state just limits the funding available, and thus makes the HCS not more efficient but just undersupplies services. It can also be argued that the government as a “steward” keeps those actors in check, for whom HCE is income and who thus have an interest in high levels and high growth rates. If this is the mechanism underlying the effect found, it would indeed be an improvement in efficiency.

An example of a study using features of the political and societal environment in addition to the standard explanatory variables like NHS type, is offered by Schmidt (1999). As a feature of the political environment, Schmidt studied the impact of so called ‘etatist problem solving



routines', i.e. the tendency of a state to solve problems by spending more money. A more elaborate argument is that funding health care is a distributional conflict and that the state may reconcile the conflict by standing in with additional funding raised in a diffused way by general taxation. The relationship found is in line with the argument.

A very different argument underlying lower expenditure levels in state-governed HCS is given by Anderson et al. (2003) who look at the basic organization of demand and supply in a HCS as determinant of HCE, in particular the prices charged by providers, e.g. GPs and hospitals. Whether or not there is an explicit bargaining between the supply and the demand side in a HCS, both sides are always existing and they are factually bargaining – explicitly and visible or implicitly. HCE can be seen as divided into one share which goes into the production of services and products, which are given to the patients. But another share is realized by the providers as income. If the latter can enforce their demands to a higher degree in the overall bargain, the HCE will be higher, but moreover, since they can also obtain a larger share of the “cake” it may well be that in the end less resources end up with the patients than in other countries. Anderson et al. argue that this is the case in the US: prices for medical services and goods are high as a consequence of a fragmented demand side, which consists of hundreds of Health Maintenance Organizations and insurance funds. While there is some aggregation of demand in form of the MEDICARE and the MEDICAID programs, ‘most money flows from households to the providers of health care through a vast network of relatively uncoordinated pipes and capillaries of various size’; Anderson et al. (2003: 102). In other HCS, demand for services is much more organized and centralized, either by a National Health Service, NHS, where the state is the only purchaser or by aggregating individual demand in form of several large insurance funds, or one monopolistic national level insurance fund, which also negotiates together with the supply side. In terms of this reasoning, a NHS leads lower expenditure, because it has much more bargaining power when prices are negotiated.

Apart from the studies comparing systems where the HCS is fully integrated into the public administration and subjected to immediate government control, there is a number of studies available which inquire into the effects of other, less immediate relationships between the political system and the HCS. Using data on the Swiss Cantons, Vatter/Rüefli (2003) study several genuinely political factors, e.g. the political orientation of the government, and found

a significant effects for them on the level of public spending; for instance left-wing governments tend to increase the public health expenditure.

A relatively simple institutional feature of a HCS, which is easily usable for international comparisons as proxy of “state control”, is the share of HCE borne by the state. The question is, whether the institutional feature of “state involvement” respectively “political control” increases or decreases HCS performance and efficiency; see Leu (1986), Jönsson (1990), and Santerre et al. (1991). The argument underlying the expectation is basically, that the state, by virtue of its superordinate position vis-à-vis the providers of medical services, can force them to accept conditions (prices and quantity constraints) which they would not accept in a voluntary agreement; see Danzon (1992: 22). As for the results, Santerre et al. found an decreasing effect of the size of the government’s share in financing on the level of health spending. Santerre et al. also found that high levels of government involvement went together with higher levels of infant mortality.

Thus, it is once unclear whether government involvement actually leads to an increase in efficiency or just to a situation in which under-funding results in undersupply. The latter interpretation is also supported by the finding of higher waiting times and limited access to health care in public-integrated HCS; see Siciliani/Hurst (2003).

### *Measuring and Explaining Health System Efficiency*

As outlined above, studying isolated parameters – like input or output – of a HCS, is not sufficient to make a statement about the HCS’ efficiency. Consequentially, there are also attempts to measure the productive efficiency, i.e. the ratio of input to output. The approaches and problems are just outlined here, but will be discussed in more detail in chapter 9. A first approach is primarily concerned with measuring efficiency and to capture the variation in HCS performance and productive efficiency – without paying heed to the question, which of the many institutional factors are influencing HCS achievement and efficiency. Because non-institutional factors are usually controlled for, this strain can be seen as an overall test of whether the institutional setting of a HCS has an impact or not.

An example of the basic idea of comparing institutional settings of HCS as a “black box”, i.e. without dividing them analytically, is the study by Grubaugh and Santerre (1994). They conduct a regression analysis of performance indicators, in their case HCE as input and infant mortality as output, on exogenous features of the country, treating the features of the HCS as non-observable and using country dummy variables as proxies for the HCS. Using the values of a country A in the independent variables plus the country dummy for country B, one can

calculate an expected value for the output indicator country A would have, if it had the HCS of country B; see Grubaugh/Santerre (1994). A problem is of course, that the country dummy does not only contain the effect of the HCS, but all other unspecified features as well.

This “black-box”-method of looking at institutional effects without analytically dividing them into individual institutional variables, can also be applied at a sub-national level. For instance the study by Hauck et al. (2003) uses multilevel random intercept model to estimate the effects of wards, which are nested in District Health Authorities, which in turn are nested in Regional Health Authorities, to capture the share in several outcome variables which is do to – unspecified – features of the administrative unit. The finding most noteworthy is that the administrative unit’s impact differ substantially among various indicators of outcome: while the features (whatever they are) of an administrative unit have a strong impact on a certain outcome variable, like mortality, it is irrelevant for other outcome variables.

Another method also based on predicted values of a regression consists of looking at how close a state is to what the best operating HCS would achieve in a comparable situation. This is the idea underlying the WHO efficiency measurement and many other studies based on productivity frontiers; see Gravelle et al. (2003), Retzlaff-Roberts/Chang et al. (2004), Bhat (2005) and Greene (2003).

Finally, another way to study performance of HCS is to look at the effect of the HCE it consumes on health status. Again, the results found for the impact of HCE on different HCS outputs differ. The survey in Babazono/Hillman (1994) reports a significant decreasing effect of HCE on infant mortality – and positive relationship among HCE and life expectancy. Their own study however did not find such relationships. Grubaugh/Santerre (1994) conclude, that it is not so much the HCS as a system, but exogenous factors like socioeconomic factors or life style, which impact on infant mortality as the performance indicator they use, with regard to output. Anderson/Poullier (1999) conclude in their survey that the way the HCS in general and the delivery of health in particular are organized does not impact on the usual outcome indicators.

### ***2.2.2. Institutional Changes in Health Care Systems***

Given the “objective” pressures but also the more “subjective” dissatisfaction with the HCS in many countries, changes and reforms aiming at improvements, however defined, are frequent and there is extensive research on health system reform, analyzing institutional health policy making: what was the problem, what was intended, what was actually done, and: did it work? With regard to reforms and the “reformability” of HCS, case studies and qualitative

comparisons clearly prevail. Most often with a focus on describing the content of a country's major reform projects (see for instance the introduction of a national health service in southern Europe studied by Guillén (1999) or definite reform projects; see for instance Manow (1994), Perschke-Hartmann (1994) and Maioni (1999). A major result of the historically oriented studies of health system development – see for instance Wilsford (1994), Hacker (1996), Maioni (1997), Tuohy (1999), Pauly (2002), Hacker (2004) and Altenstetter/Busse (2005) – is the high degree of path dependency and the constraints created by institutional developments for the future development. Other studies do research into the reasons and the 'windows of opportunities' for reforms; e.g. Geva-May/Maslove (2000). The most dominant form are studies which give an overview on the content of reform projects in several countries, try to identify trends or evaluate the impact and success of reform projects<sup>6</sup>. A quantitative study, which at least implicitly studies the interaction of reformability and the expenditure level is again the study by Schmidt (1999). Schmidt uses the theory developed by Olson (1982) on the age of a democracy and the establishment of distributional coalitions. The central argument is that over time interest groups establish themselves, gain more and more influence in the political process and thereby obtain obstruction power with regard to reforms relevant for them. For this reason, it is more and more difficult for the state to enact reforms against interest groups that would make them worse off. In the case of HCS, reform measures aiming at containing costs directly go at the expenses of the groups currently profiting from the large quantities of financial resources going into the HCS, viz. all actors providing services or products. The theory as well as the operationalization – by the time since the introduction of popular votes for the population – are straightforward but subject to two problems: First, the theory can only explain a constant decrease in reformability over time. But no windows of opportunities, no interaction effects with changes in the political system or changes in the relationships among interest groups and the government, for instance due to changes in government compositions and not the increasing reform activities observable in almost all industrialized countries. Second, the empirical test is subject to the same problems as is the effect of GDP on health expenditure: Health expenditure has a clear trend over time, and time is, what is measured by age of a democracy. This may create a spurious correlation, just as in the quantitative studies described above.

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<sup>6</sup> See OECD (1994), OECD (1996), Saltman/Figueras (1997), Drache/Sullivan (1999), Böcken/Butzlaff et al. (2000), Ritsatakis et al. (2000), and Oliver /Mossialos (2005).

While description of reform activities dominates the research, there are also studies investigating the chances and the success of reforms with reference to a theoretical framework. The usage of the theoretical framework is however comparable to the rather informal applications of institutional economics for comparisons of “performance”: they often use the vocabulary of veto points and veto players as the predominant theory to explain reforms, see Tsebelis (1995), study the role of organized groups for reforms and see the access of societal groups to these points as critical for the success of a reform. For instance, Moran (2000) sums up the low reformability of the US health system with the words that „supplier interests still control the critical veto points in the decision-making-system“ (ibid: 151). Döhler/Manow-Borgwardt (1991) explicitly refer to veto power that accrued with the societal groups in the German HCS as the state delegated more and more tasks to them, which is in their argumentation the main reason; see also Schulenburg (1987), Hassenteufel (1996) and Giaimo/Manow (1999). But the usage of the underlying theoretical concept remains implicit, often rather ad hoc, and its potential to structure the complex processes and interactions among interest groups, the organizational form of the HCS, the wider political context and the political system was not studied in a comparative way. Neither was the interaction among the political system as an environment of the HCS studied in comparison with respect to the resulting consequences for HCS reformability and government capacities. With regard to the interaction among the political system and the HCS, the promising approach developed by Immergut (1992), which clearly suggested an extension of the cases Immergut herself studied, was not followed up. On the whole, the research on HCS reforms remained highly descriptive, and inductively. A fact attributable to the importance attached to take duly into account the complexity of the processes and the systems.

### ***2.2.3. Open Questions and Methodological Problems***

The research on HCS is manifold and covers virtually all aspects of health care organization and provision and also the developments in these aspects. However, the findings obtained by the individual studies, only a fraction of which was reviewed in the above section, indicate that there are still open questions abound and that the research efforts, while substantial, are not as cumulative as one would like them to be.

Looking at qualitative approaches, in particular case studies, it is observable that they deliver detailed information on a HCS and the way it works. But they also hold the implicit view that each HCS is an entity *sui generis* and not really comparable to others. Even if one understands

how a certain HCS works, how it reacted to a certain institutional change and why something worked out the way it did – and many studies give excellent insights in the intricate workings of a specific HCS – these insights are limited to the specific HCS from which the insights were obtained. Further, and this is a serious obstacle to obtaining cumulative insights, the diversity of features which are covered by case studies make it impossible to accumulate information with regard to a certain aspect of HCS organization, e.g. which delegation relationships exist, how they are organized and how they affect the HCS' performance. Even in edited volumes, e.g. Mossialos/LeGrand (1999a) or the “Health System in Transition” Reports by the European Observatory on Health Systems, which feature the advantage of having at least a common frame, the way a certain feature is studied in different countries differ between the individual contributions. For some HCS, certain issues are in the focus of interest, like devolution. In others, these issues are never treated, albeit there may be similar developments.

Looking at quantitative studies, e.g. on the determinants of HCE, HCS output and the impact of institutions on both, several points have to be acknowledged:

a) Methodological problems, in particular the debate on co-integration of GDP and HCE resulted in the situation that even the answers to “old” problems are moot; see Kanavos/Mossialos (1996) for a critical evaluation of the “lessons for health policy”.

b) Even more problematic is the fact, that many of the relationships found in cross-national research are macro relationships and are lacking comprehensibility. Even if one accepts that NHS/public-integrated systems have lower levels of expenditure, the question remaining is: What feature in the NHS system is causing the lower HCE and how does that work? And, is less HCE actually a sign of higher efficiency? Or, looking at another question: Why do people in richer societies spend more on HCE, respectively in Newhouse' perspective, select institutions which consume more money to produce more and a different kind of health care? As Kanavos/Mossialos (1996) emphasize, the relationships found at the macro level can be interpreted in many ways. They conclude that:

„The literature in this field is quite extensive but by no means conclusive. A number of methodological problems arise in the treatment of the data, which make the conclusions problematic and subject to review.“ (Kanavos/Mossialos 1996: 4)

c) Quantitative studies differ in regard to which institutional features they include and how these are proxied. Looking at the way an institutional feature is proxied, there is already a lot of intra-category variation within each study, which is all the bigger when different studies using different operationalizations of an institutional feature are compared. The cause of the

problem is the following: The usual database regarding the countries and the time frame of quantitative analysis is the OECD Health Data, which covers the OECD countries from 1960 on. The data on HCE and its composition and HCS output as provided in the OECD Database is sufficiently consistent, albeit there too are breaks in the series. But the data on the institutional features for a time frame like this is of much poorer quality; often enough there is no institutional data. As a consequence, only some features can be used, and even they are very rough and have a large intra-category variation. For instance, Gerdtham et al. (1998) as a study using the most encompassing set of institutional features, use dummy variables for NHS system type, gatekeeping by general practitioners, fee-for-service remuneration etc. Prima facie there is a consensus which HCS classify as NHS/public-integrated systems. But due to the large variation in the way HCS of the NHS/public-integrated type are actually organized at a given point in time, there is a large variation among cases in the NHS/public-integrated type category. As a consequence, effects found in a regression analysis for the type-variables (usually coded as a dummy variable) will be small. So when study A finds an effect for gatekeeping and study B doesn't this does not imply much about gatekeeping but rather implies that both studies operationalized gatekeeping differently and that moreover, the way gatekeeping is handled in practice, differs among countries.

d) Methods which use the HCS as a whole, as a "black box" without dividing it analytically into components which may exert a certain effect, capture the effect of the overall setting of the HCS, but cannot tell what feature of the HCS is most relevant. Strictly speaking, not even the conclusion that it is the country's HCS is certain. For instance, including a country dummy variable for the US when analyzing HCS quantitatively increases the fit of quantitative models substantially. The US-dummy variable has almost always a significant increasing effect on HCE, and often enough a decreasing effect on health outputs. While this tells us, that the US is a special case, it does not tell us anything about what features of the US cause these effects. Nor does the effect of the US-dummy mean that it is the US health system rather than US life style which is the cause.

So while producing advice for health policy making is clearly an aim pursued by much of research, there is little certain and workable advice to be obtained for policy makers and even less requested and used by the latter. While much of research suggest policy changes, indeed giving recommendations for health policy is a requirement in some journals on health economics and policy, the transfer of knowledge from the academic research to the policy makers is difficult. In a review on the usage of evidence provided by scientists to policy

makers, Innvaer et al. (2002) found a range of factors which make this transfer difficult, also evidence of selective use of research findings by policy makers. Pawson et al. (2005) suggest ways to improve this critical connection. They suggest to renounce the *ceteris paribus* statements which so often result from theoretical studies, but instead to elaborate the theory, and in particular its assumptions and whether they are met in the domain the policy maker has in mind, because the success of interventions in a field as complex as health care will depend on the context.

### **2.3. Working Program**

Regarding the present study's working program, I want to emphasize the following points:

The first problem is that effects of institutions on HCS "performance" show up seemingly unsystematic. Some findings come up more consistently than others, but for many findings the occurrence is not stable. Even if one looks at the effects in a certain domain, e.g. mortality, the effect of an institutional setting might be found for infant mortality but not for adult mortality. This is true for case studies as well as quantitative/qualitative comparisons. A certain regulation has the impact expected in one HCS, but completely fails to achieve its aims in another one. The explanation I suggest is that effects are conditional. It is not the presence or absence of a certain feature, but the combination of several features, which has an effect. As Pawson et al. put it, the question is not an unconditional "What works?", since there are no 'magic bullets'. But rather a highly conditional "What is it about this kind of intervention that works, for whom, in what circumstances, in what respects and why?"; (Pawson et al. 2005: 31). If there is one consistent finding, it is that institutional features work differently in different institutional environments.

This immediately leads to a second problem which limits research on institutional effect in health care: the limited availability of comparable institutional data. In particular quantitative studies have to rely on very crude institutional data. And one solution coming into one's mind is of course that the manifold case study literature could provide this missing information. But in practice it is impossible to collect the information necessary for institutional analysis from a review of the case study literature, because the descriptions in the literature covered very different themes, different periods or are even inconsistent in stating how things are regulated in a HCS.

The present study will firstly contribute to redress the lack of comparable institutional data by gathering such data, secondly analyze the impact of institutional settings by combining



institutional information. The working program resulting from this overall aim encompasses the following steps:

*a) Development of a Framework for the Comparison of Health Systems*

The institutional complexity of the HCS prohibits a comparison which takes into account all features. Thus, a comparison must be guided by a theory, and the first step of a comparison is the development of a theoretical framework. HCS “performance”, achievement, efficiency and also reformability are properties of the HCS as a macro phenomenon. What the study is interested in, is the effect of institutions, which are also macro phenomena. However, in the present study, all explanations of macro properties and the differences therein will be based on the micro level, i.e. individual behavior which is both comprehensible and rational: Individuals behave self-interested but are influenced by the institutional setting in which they are acting. At aggregate level, the behavior of individuals will lead to certain macro level features. Thus, macro level features seen as independent are linked to macro level features seen as dependent, by the micro level of rational individual behavior. For instance, assume that a certain remuneration mode sets an incentive to over supply services. All providers respond to this institutional setting by oversupplying services, because this is the rational thing to do. This will at the aggregate level, result in higher levels of expenditure, caused by the institutional features, but intermediated by rational behavior. Based on the explanatory framework of institutional economics and the new institutionalism as theoretical tools for explaining variation in “performance” and the chances to improve performance, I will develop in a first step a unified framework to compare HCS with respect to delegation relationships, incentives and control, which is applicable to any HCS, independent of organizational form or type. Next, the independent institutional features were operationalized by deriving an Health Care System Inventory, HCSI, of observable features of the HCS.

*b) Collecting Data on Institutional Settings*

The Health Care System Inventory allows for a systematical, directly comparable description of HCS and their political environment with regard to delegation problems, their control, the possibility to exert control over the agent from the outside as well as properties of the HCS and the political environment relevant for the reformability of HCS. This institutional data was collected – together with data on performance and efficiency of the HCS – for 22 OECD countries for two points in time, 1995 and 2004; see Kotzian (2007b) and chapter 8.

*c) Descriptive Analysis*

The framework defines a property space and the first, descriptive question is, what are the basic dimensions underlying the manifold organizational features of HCS and where are the HCS located in this property space? A second descriptive question is, whether there are typical ‘institutional syndromes’, several features going together and do these institutional syndromes correspond to standard types of HCS? To answer both questions, I will use the collected and combined institutional data to locate and to cluster the 22 HCS included in this study with regard to similarities, differences, and institutional syndromes of features typically going together.

*d) Causal Analysis: Control and Performance, Indirect Veto Power and Institutional Change*

The causal analysis shall test, whether there is a consistent relationship between control and performance as predicted by the institutional economics approach underlying the analysis.

aa) The first question is, is there a relationship among control and performance in HCS? Once the data on the delegation relationships and control mechanism in a HCS is collected, it can be used to evaluate the design of the overall HCS as well as on a sectorial basis, with regard to the efficiency of the institutional setting: HCS, in which either fewer delegation relationships exist or in which the incentive problems inherent to delegation are better controlled, should be more efficient than HCS in which many delegation relationship exist, of which many are not or only insufficiently controlled.

bb) The second questions is, how can the variation in the ‘reformability’, i.e. the chance to change the HCS be explained and whether reformability, the very chance to improve performance, already affects efficiency and achievement. I will propose a conceptualization of why and how the variation in reformability and amenability to institutional changes depends on the political system, the organization of the HCS, but also on features of the societal groups in the HCS. The empirical question is hence, which of these factors is most relevant for the occurrence of change.

*e) Institutional Interplay and its Effect*

As outlined above, HCS “performance”, and in particular productive efficiency consists of two complementary aspects: output and input. More precisely, quantity and quality of health care as the central output and HCE as the central input. The theory of delegation relationships and agency in its application to health care will be elaborated in detail in chapter 4 below. The theory predicts that the delegation of tasks – e.g. of restoring health – to an actor in the setting of where one side has more information than the other induces problems, in particular the

temptation to exploit this relationship – either by extracting more money or by providing less output. Control mechanisms, either in form of external control or in the form of setting incentives for actors, impact on both aspects in different, often opposing ways. Take the example of a remuneration mode for medical providers. A remuneration mode might be appropriate to contain the costs, because it uncouples income from the quantity of services. But it may also uncouple income from effort, thus lowering quality of health care and lower levels of certain services, thus lowering the overall output level. Thus, to achieve efficiency, some institutional features will have to go together in an optimal way. This notion was first raised by Alber (1995), who referred to “institutional syndromes” as institutional features which usually occur together. In addition to look for co-occurrences of institutional features, the question is: What institutional syndromes should – from the perspective of the delegation approach – go together, to make the HCS a good and efficient instrument of health production? And, if these features go together, does it actually matter?

## **Part II: Theoretical Basis**

### **3. Explaining the Effects of Institutional Settings in Health Care**

Why is there such a dominance of institutional analysis in health system research? Health care is empirically not provided by pure market mechanism but by other institutional arrangements, involving a country-specific mixture of market elements, organized societal groups, public administration and direct state intervention. A share of the current performance, but in particular the institutional development is the product of a basically political process, involving voters and political actors on the one side and institutions and organized groups in the HCS on the other side. Because HCS are dominated by institutions which often completely replace market mechanisms, the question is: What are the implications of these institutions for health system achievement and efficiency? How does the institutional setting for instance influences the current productive efficiency of the HCS? And how does the institutional setting influence the direction and dynamic of a HCS' institutional development?

In this chapter, I will briefly elaborate on why health is neither produced nor allocated by an institution-free market. Next I will sketch the general approach employed in this study to answer how institutions affect HCS performance and development, by elaborating on how an micro-level based institutionalist explanation of macro-level phenomena works.

#### **3.1. Market vs. Non-Market Provision of Health Care**

Given standard economic theory, the provision and allocation of a good by the market mechanism will lead to efficient production and a Pareto-optimal allocation when compared to any other form of provision and allocation. However, the market mechanism grants these optimality only if several assumptions are met. Health – as a good, as a service, but also the insurance against the risks of illness – has properties making it potentially subject to several forms of market failure, resulting in sub-outcomes, or at least outcomes, which are explicitly rejected by the society. These failures in turn justify the introduction of other forms of provision and allocation from a welfare point of view. The following illustration will focus on the main problems; see the literature beginning with Arrow (1963), Culyer (1989), Rice

(1998) and Gaynor et al. (2000) for a detailed discussion. Among the assumptions which are made by the economic market model but which are not met in health care are the following:

a) Consumers are sovereign and perfectly informed – the first aspect means that the consumer can determine whether s/he consumes a product or not. For health, this assumption may not be met for several reasons: The consumer – i.e. the patient – may be physically unable to make the decision at the point in time when the decision has to be made. Further, while it is usually the patient who initiates the first contact to a medical provider, it is not the patient who decides, what and how much services are consumed. Instead, the medical provider, i.e. the physician or the hospital, decides what is done, often with little or no involvement of the patient. As a consequence, supply and demand of medical services are not independently determined and then enter the marketplace. Instead, to some degree, the supply side determines the demand for its own services. Even more problematic is the assumption that consumers are perfectly informed. For health care the assumption implies that the patient knows perfectly well what medical service s/he requires. This means that s/he is assumed to be able to diagnose the illness, to know which treatments are possible, their respective chances of success and side-effects, as well as their price and cost effectiveness. Empirically this is obviously not the case. Instead, one of the central features in health is the asymmetrical distribution of information among providers and consumers of health care. The consumer is assumed to choose the provider who offers the best service in terms of a combination of price and quality. While the information about the price is in principle available, it is very often completely irrelevant. Nevertheless, the consumer is interested in getting high quality treatment. But the consumer does not have information on quality, when s/he chooses a provider. Moreover, the consumer is by all likelihood unable to evaluate the treatment quality ex post, since the outcome of a medical treatment is only partly dependent on the providers services; see Arrow (1963), Culyer (1971), Nelson (1970) and Sloan (2001).

b) Absence of externalities –immunization is the classical example of a positive externality. By getting immunized, an act involving costs both in financial terms and in terms of a risk for her personal health, a citizen also reduces the probability of falling ill for others. Albeit realizing a utility (a reduced risk of contagion) these fellow citizens are however not contributing to the costs of the immunization. Thus, at the aggregated level of society, the public good “immunization” and the lower risk of catching a contagious illness is not provided at the optimal level but at a lower level; see the discussion in Breyer/Zweifel (1997; chap. 5).

c) Absence of free riding – It might be, from the point of an individual, be worth the risk to skip paying for health care on a regular basis, i.e. independent of the actual consumption. The individual might speculate that most other citizens will to pay for a medical infrastructure, which will be available to all, whether the individual did contribute to it or not. At the aggregate level, this may imply an under-investing in health care. By making some form of health insurance obligatory, the state can remove this problem.

d) Economies of scale – The provision of a medical infrastructure is characterized by economies of scale and what Breyer/Zweifel (1997) call the “option good characteristic”. Health care requires substantial investments in an infrastructure. Because many medical devices are expensive it makes sense, once the investment in a new medical device is made, to make as much use of it as possible. So it makes sense to centralize the provision of services requiring sophisticated technology in one place, e.g. to pool resources of many patients to purchase technology which neither could afford alone. Second, the existence of a medical infrastructure is an option good: it necessary that medical capacities are kept ready to use, even if the citizens do not currently need them and underestimate the chances that they will require them in the future.

Many of these problems can – and empirically are – treated by a form of insurance, which is acting as an intermediate agent, or “care taker”, performing many of the tasks the consumer of health should perform but cannot; see also chapter 4. Instead of risking to pay the price of a medical service which might be very high and not foreseeable, each citizens regularly pays a certain amount on a regular basis to a health fund or a government agency. This “purchaser” pools the risks of all members, pays for the provision of a medical services in the case of need, but also pays for the provision of a medical infrastructure and capacities, independent of whether the capacities are used currently. Insofar, a health insurance does not differ in its task form other kinds of insurance. However, the application of the market mechanism for health insurance is also subject to problems, once again due to the asymmetric distribution of information. The argument is based on Akerlof’s ‘market for lemons’ example; see Akerlof (1970). An insurance fund when calculating its contribution uses the aggregate data on probability of illness and the average costs accrued by them. While the citizen might be ignorant of the costs associated with the illnesses he already experienced, he might have an inkling, e.g. from experience, the probability of illness. Based on this, he can at least make a guess on the average costs which he would have to pay for health care. Given this calculation, he can decide whether the insurance offer is attractive to not, i.e. whether he is better of

paying the contribution regularly or to pay for health out of his own pocket only in those cases he requires them. Consequentially, the offer made by the insurance fund is in particular attractive for those who know that they would have to pay more for health on average, since their probability of illness and average costs for illness are higher than the population average. For those with lower probability of getting ill, the offer is not attractive since the contribution or premium is above the expected value of what they have to pay for health. As a consequence, if the citizens have the choice, whether to sign up or not with an insurance offering an “uniform tariff”, only those with probabilities and costs of illness above the population average on which the insurance’s calculation is based will sign up. Consequently, the calculation of the insurance fund will not hold, its average expenditure will be higher and in the next period, higher contributions will have to be charged. If citizens have a choice, those whose expected average expenditure for health is now lower than the increased contribution charged, will exit. As these ‘good risks’ leave, the average probability of illness and the costs of illness of those remaining in the insurance increases. The contribution has to be raised again and so on. In the end, the insurance market will collapse, because the only ones who would be willing to enter an insurance contract are the ones for which the costs arising are higher. Two solutions to this kind of market failure are discussed, see Breyer/Zweifel (1997), Pauly (1974), Manning/Marquis (1996) and Neudeck/Podcizek (1996). The first is institutional, and requires that everybody is forced to sign up with an insurance guaranteeing that the insurance’s calculation holds because the whole population is client of the insurance. The second possible solution is that the insurance can conduct a health check on entry and calculate the respective risk and an risk-equivalent contribution, comparable to the premium in other types of insurance. However, this results in different contributions for different clients, and immediately goes against the principle of solidarity on which many HCS rely.

*Evaluation: Institutional Solutions to Market Failure in Health Care*

Whether these potential market failures justify the degree of replacement of the market mechanism by other forms of allocation which one can observe, whether these market failures could or should have been tackled by instruments more market oriented, and whether the replacements installed are actually leading to lower or higher overall welfare is debated; see Zweifel/Breyer (1997: pp 127).

Empirically, the market mechanism as a mean to allocate health was over time either substantially complemented or completely substituted by other, non-market forms of

organizing the provision of health. Historically, the first way to provide it were markets: medically educated people offered medical services and the patient, if ill, paid for these services on the basis of a bilateral relationship similar to the purchase of any other goods and services. In the later phases of industrialization, also because of political considerations fueled by the extension of suffrage, resulted in more institutionalized and non-market forms for the provision and allocation of health care. Since the importance of health for the individual is so high, with its very life at stake, the question of access to health care is a political one. While the fact that a person cannot afford a car will not make voters support a party offering redistributive policy, the fact that a citizen might have for financial reasons no access to health care and will have to suffer or even to die earlier, will mobilize political support for redistributive policies.

The market as the allocative mechanism occurs only in some countries respectively only in selected, and in a way non-vital, sectors of health care, like dental care. Recently there is a trend to install market mechanisms, i.e. to extend this allocation mode in scope and magnitude.

The starting point for the present study is the empirical observation that health is not allocated by the market, but by non-market mechanisms, which vary substantially among countries. Various institutions were introduced into the once institution free market for health care, and it is their effect one has to study if one wants to explain why HCS differ in performance and efficiency.

### **3.2. Effects of Institutions: Methodological Foundations**

#### *Studying Institutions: Problems of Macro-Level Explanations*

The very existence, present form and consequences of institutions are a central theme of social sciences, i.e. sociology, political sciences and economics. Albeit all three disciplines differ substantially with regard to the explanatory strategies used, i.e. how they approach the study of institutions and what constitutes an explanation, there is an observable convergence. In sociology, the usual explanatory strategy, based on the 'sociological method' proposed by Emile Durkheim, was that an explanation had to be based at macro level, by studying how institutions affect societal outcomes and other institutions. Parson's structural functionalism and Niklas Luhmann's system theory are modern variants of this paradigm; see Esser (2000). With regard to the analysis of HCS this approach will look for features of the HCS as a



system, e.g. remuneration modes, which are related to other system level features, like performance. Central to this approach is that the analysis remains at system level, explaining macro-level features with macro- features. The study of institutions, in particular the sociological approach, is subject to three problems:

Incompleteness – albeit there are regularities among macro features, there are no macro-laws that apply universally; there are always exemptions to the rule. Hence, one has either to engage in the unproductive effort of ad hoc explanations or to specify the conditions under which the macro rule applies.

Incomprehensibility – even if a certain universal macro law is found – why does it exist? And how does it actually work?

Causality – causality is impossible to establish at macro level: controlled experiments, the only basis for valid causal inference, are impossible as societal level, so there is always insecurity about the question what is cause and what is consequence.

These problems seem to be very abstract but nevertheless, they are present in virtually every study of institutions, including HCS; see the overview by Goldthorpe (2000) and Bollen et al. (1993) for a discussion of the problems inherent to macro-comparative research. The review of the literature as well as the summaries of health policy making based on institutionalist theories of the HCS showed in particular one thing, viz. that the three problems mentioned in the above paragraph are virulent in the research on health care: institutional features work, but not everywhere, there are exemptions. While it is clear a macro level relationship is present, it is not clear why it sometimes has the effect, or which is causing what – the relationship between GDP and HCE is the most flagrant example of this.

#### *Micro-Level based Explanations of Macro Phenomena*

Institutions are macro-level phenomena, and so are the features of interest, e.g. HCS achievement and efficiency. The question is then not only, what effects do institutions have, but also: By which mechanisms do institutions exercise these effects? The New Institutional Economics approach in economics and the New Institutionalism respectively Actor-Centered-Institutionalism in political sciences and sociology both provide a similar answers to the second question. Both cope with the problems by using an explanatory strategy –

methodological individualism – which bases the explanation upon the behavior of individuals.<sup>7</sup>

Given that causality in the absence of experimental evidence, which is unavailable in the study of macro level phenomena, cannot be established in a definite way, one can at least try to maximize the plausibility of the explanation proposed, i.e. in the terms of Renate Mayntz, “causally reconstruct” the processes and events that lead to the phenomenon one wants to explain; see Mayntz/Scharpf (1995). To achieve plausibility, one has to resort to some level, where understanding of what happening is possible. While one cannot actually understand the behavior of macro-phenomena like a HCS or a society (basically, because neither a HCS nor a society does “act”), one can understand the behavior of individuals: putting oneself in their position, imaging, one had been in their situation, had believed and known what they have believed and known, had been confronted with the same opportunities and restrictions they have been confronted with, wanted what they wanted, one can arrive at same decision on what to do as they did.

In the core of the micro-macro-explanation respectively the methodological individualism explanation of the effects of institutions, are the three following statements.

- 1) Institutions are an important part of the environment in which human behavior takes part, and the impact of institutions is exercised by the restrictions and opportunities the set for individual behavior.
- 2) Individuals behave rational and strive to maximize their own utility given the restrictions and opportunities of the situation they are in. This is the step where the causality is established in the sense of providing a explanation which is plausible, since it rests on the comprehensible behavior of individuals.
- 3) Macro level phenomena are themselves the product of aggregated individual behavior.

The basic notion of how the effect of an institution can be explained underlying this study is, that the impact of institutions is exercised by the impact they exert on individual behavior. The first step of such an explanation consists in translating the institutional environment into opportunities and restrictions for human behavior. The universal behavioral assumption is that individuals are acting self interested and rational, albeit rationality may limited, e.g. due to problems of information etc. But confronted with a institutional environment, individual

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<sup>7</sup> In social sciences, i.e. sociology this strategy is labeled micro-macro explanation and was proposed by Coleman 1990, in economics it is labeled methodological individualism, see Furubotn/Richter (1998), whereas in political science it runs under the label of actor-centered institutionalism; see Scharpf (1997a) and Mayntz/Scharpf (1995).

actors will behave in a certain way. What they will do and why, can be understood by looking at their situation and motives. When aggregated over all actors, a certain macro level effect will be found; see Esser (1993); chap 4) for the three steps of this ‘sociological explanation’.

However, one can also provide a radically different interpretation by seeing institutions as epi-phenomena, fully endogenous with no actual causal effect of their own and chosen for a reason, as Newhouse (1977) does to some degree. To illustrate this view of institutions, one could argue that for example the feature that physicians are remunerated by fee for service is not the actual reason that the supply of services and the costs of consumption is so high. Rather, this mode is chosen for reasons of preferences, to achieve just this: to make sure that the patients are supplied with every possible medical service, whether it is necessary or not.

## 4. Delegation Relationships and Incentives in Health Care

### 4.1. Delegation and Delegation Relationships

#### *What is Delegation?*

The term principal-agent-relationship respectively delegation-relationship is generally defined as the delegation of a task by one actor, the principal, to another actor, the agent, by way of an implicit or explicit, ad hoc or long-term contract. In exchange for a remuneration paid by the principal, the agent performs a task which the principal cannot or does not want to perform himself.

By entering into an exchange, agent and principal realize advantages. The agent acquires specialized knowledge or equipment that the principal lacks and as a consequence can perform the task better or cheaper than the principal. Because of its advantages, delegation and delegation relationships are a common feature of many economic and political activities. For instance the hiring of a electrician to repair a TV is a typical example of a short time delegation with a very specific task, while the hiring of a executive manager by the owner of a firm is a more long-term one with a much broader and less specified task; see Pratt/Zeckhauser (1985) or Eisenhardt (1989). In the political arena the creation of a committee or a public agency like the FDA to evaluate new medicines is another example of delegation; see Epstein/O'Halloran (1999), but one can also see the political system as a whole as a delegation network, see the Bergman et al. (2000), and Strom et al. (2003).

But delegation is also subject to problems, which become immediately obvious when looking at some examples. The problems have two reasons, the first one is that information is incomplete and distributed asymmetrically, the second one is that preferences differ among principal and agent.

a) When looking for an agent, the principal might be unable to evaluate potential agents ex ante with regard to their skill, knowledge and willingness to show effort. Making a guess about the respective fractions of good and bad applicants in the job market, the principal might offer payment oriented at the average ability of potential applicants. But for those agents who think they are worth more in terms of payment, the contract is not attractive, while it is so for those who know that they are less able. By putting a certain contract out for tender, the principal might just attract less able agents; see Akerlof (1970) for the problem of adverse

selection. After entering the contractual relationship, the principal may neither be able to see what the agent is actually doing, nor be able to recognize how much effort the agent invests in the job. After the task is done, the principal might be unable to draw an inference from the outcome on the agent's skill or effort, on whether the agent has done a good or poor job. This is usually the case, if the outcome not only depends on the effort and skill of the agent but is also influenced by other, random factors. If the owner of the firm hires a new manager, and things go well, this might be the case, despite the manager's ineptitude. But the firm may go downhill, even despite the fact that a very skilled manager is putting very much effort in his work. This problem is denoted asymmetric information – the agent knows more than the principal, which is the very reason why the agent is hired; respectively hidden action – the principal might not be able to observe, what the agent is actually doing.

b) This lack of information becomes even more problematic, if and to the degree that the interests of the agent and the principal diverge: the owner's interest is that the firm prospers and it is in his interest, that the manager devotes as much effort to this end as possible. Once hired, the manager might also be interested in the prospering of the firm, but he might also be interested in having a quiet job, with as little effort and as little pressure as possible. The problem also occurs with more clearly defined tasks: the owner of a TV is interested in getting his TV repaired at the lowest costs and as fast as possible. The electrician repairing the TV may work a little slower, if he is paid by the hour than he would if it were his own TV or as he would if he were paid a fixed price. He might also replace more parts than are necessary. Both kinds of behavior are called opportunistic behavior, and are basically an exploitation of the principal by the agent. In both examples, the agent can do this, because the principal does not have information about the problem and what is appropriate and does not observe, what the agent is actually doing.

The avoidance of the problems arising from informational asymmetries and diverging preferences in delegation relationships is a central theme in institutional and contractual economics, see the literature beginning with Williamson (1963), Milgrom/Roberts (1992), Holmstrom/Milgrom (1991), Bohn (1987), Gibbons (1998), Prendergast (1999) as well as in the design of political delegation; see Bartolini (1999), Bartolini (2000) and Strom/Müller et al. (2003). The basic idea of exercising control in a delegation relationship is to design the 'optimal contract', which firstly allows to hire the best agent by offering a certain contract which is either attractive only to those agents with certain properties or which at least allows the principal to distinguish among agents with much or little skill and to pay them

accordingly. Secondly, with regard to the agent's behavior once he entered the delegation relationship, the contract should set incentives to make the agent act in accordance with the principal's preferences. This is what I denote in this study as "built-in control": control that is built into the relationship. Control, which operating by directly affecting the behavioral incentives, as opposed to external control as a form of control that is visibly exercised by a third actor, which I will treat in chapter 5.

### ***Delegation in Health Care***

The provision of health care, albeit organized in very different ways in the various HCS, has two central features, which influence the productive efficiency of the HCS as an instrument of providing health care. The first central feature is delegation of tasks by way of "delegation relationships" between principals and an agents in the way described above. The central delegation relationship is the one between the patient and the provider of medical services, which has been complemented by additional delegation relationships, mostly concerning administrative tasks. The second central feature in the HCS is asymmetrical distribution of information in these relationships.

#### ***a) Delegation as a Central Feature in Health Care***

In the core of health care provision is the bilateral delegation relationship in which the patient delegates the restoration of his health to a provider of medical services. The motives and advantages of both sides are similar to the delegation of any other specialized service, like hiring an electrician to repair a TV. The principal delegates the task, since he himself is not able to perform this task respectively because both sides realize advantages; see Smith/Stepan et al. (1997), Scott/Vick (1999) and Scott/Farrar (2003).

In principle, the task of restoring one's health can be delegated in a bilateral and ad hoc way just as any other task. The patient may chose among various agents, i.e. providers, and enter a bilateral contract with one of them, in which he pays for a certain medical service. This kind of provision would, just as any market, not require any organization in charge of the allocation process as such. But health is usually not provided by a market where the patient buys medical products and services ad hoc on a bilateral basis in the moment he needs them and directly pays for them. Instead this core delegation relationship, in which medical goods and services flow from the provider to the consumer who in exchange pays for these, has for various reasons – market failure but in particular political motives – been complemented by

other delegation relationships. In particular those organizational tasks arising from the very fact that health is not supplied by a bilateral market consisting only of patients and physicians are delegated to organizations and corporative actors, acting as Zweifel and Breyer call them 'complementary care takers' on a permanent basis. For example, since the patients do not pay the providers ad hoc and individually for the services they consume, but pay a constant contribution, the organizational and administrative tasks necessary for the collection of these contributions and their transfer to the providers performed are delegated by the patients to 'complementary care takers', viz. the state or other organizations like insurance funds; see Smith et al. (1997: 38); and Breyer/Zweifel (1997: chap. 8). for this conceptualization. Once it was politically decided to provide health not by a pure market, several organizational tasks arise, and the delegation of these tasks in a permanent way to intermediate actors is the central organizational feature of HCS.

#### *b) Informational Asymmetries in Health Care*

A central feature of the delegation relationships in health care are informational asymmetries. Just as in the examples of the delegation in the economic or political domain given above, the assumption of perfectly informed actors is not met.

As a first example, the patient delegates the task to restore his health to a specialized agent, the provider of medical services. He does this for the reason of getting healthy again. Usually patients have at least some choice in selecting the provider, i.e. which physician or hospital they go to. Even if costs are irrelevant, patients are interested in getting high quality health care. To make this choice, they need information, which they usually neither have ex ante nor can obtain ex post: the patient's information is incomplete in the moment he makes his choice, i.e. selects a provider. He does not have reliable or valid information on the quality of the provider, how skilled he is, whether he keeps his knowledge up to date, how often he has performed a certain task, how much effort he invests in performing a task etc. The principal's information also remains incomplete during the relationship. The principal can, due to his lack of medical knowledge, not evaluate whether the physician's diagnosis is correct and whether he is doing the right things, e.g. selects the best therapy given the diagnosis. Moreover, there are often instances, where the principal cannot observe the agent's behavior at all, for instance how laboratory analyses or surgical operations are performed in a hospital. Last, the patient's knowledge remains incomplete after the relationship has ended, i.e. the medical service was performed. The provider's efforts are only one component in the process of restoring health, which is also influenced by other factors, often of random nature. As the patient cannot make

an inference from the eventual outcome on the provider's quality, he cannot make ex post evaluations of the provider on which future choices could be based<sup>8</sup>.

The same problems characterize the organizational tasks performed by the "complementary caretakers", i.e. Health Insurance Funds, Health Authorities, Health Maintenance Organizations etc. Take the following example: Organizational tasks, like collecting the contributions from the insured, negotiating contracts with providers, paying providers etc, are delegated by the patients to insurance funds. They conduct these tasks, offer a certain bundle of medical services covered and charge a contribution in exchange. Again, the patient's interest is that the insurance fund performs these tasks in the most efficient way, i.e. without wasting the patient's contributions. While the way the insurance fund is actually operating is not observable, the contribution charged by a fund is observable by the patient. He can compare contribution rates offered and the services covered by various funds when deciding where to sign up<sup>9</sup>. But again, the outcome – here: the level of contributions charged – provides no valid information about how good the insurance fund performs. An insurance fund's contribution may be high because many of its customers became ill and the insurance fund had large expenses. It may also be high, because the insurance fund works internally inefficient and wastes a lot of resources due to 'organizational slack'. The patient can observe what contribution is charged, but not, how the fund is working or what happens to his contribution nor which share of the contribution is consumed by the insurance fund itself for its internal operation.

To sum up the argument of informational asymmetries, one has to state that the original principal, the patient, who is the 'origin' of all delegation in a HCS, has only very limited ex ante information on which to base the decision which agent to choose. Once the patient has entered into a contractual relationship, he can not observe what the various agents in the 'chain of delegation' are doing, a problem called hidden action. Nor can the patient use an observable outcome as a definitive criterion when making a choice among various suppliers

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<sup>8</sup> A consumer might not know, what to expect in a restaurant, he has never been to. However, he may have a meal there once and gather this information, which he can use when deciding where to have the next lunch. In health, this inference is usually more difficult, since the impact of the providers effort on the outcome is less deterministic, the principal might remain ill despite the most intense efforts of a very skilled and knowledgeable physician, or he may become cured, despite the activities of a unskilled and negligent provider; see Culyer (1971) and Breyer/Zweifel (1997; section 5.2.4).

<sup>9</sup> If both elements of an insurance package, catalogue of covered services and contribution vary, the task of finding the best offer is difficult, since the patient has to make a tradeoff between additional services covered and higher contributions. In doing so, he may be uninformed about the costs of services covered and not covered, as well as the probabilities, that he will need such services. If the catalogue of services an insurance has to cover is fixed externally by the state, the patient can base his decision on the contribution only.



of medical or organizational services because the outcome cannot be attributed in a deterministic way to the agent's effort or skill.

### ***Opportunistic Behavior and Health System Performance***

So, delegation in health care takes place in the setting of incomplete information and hidden action. Just as in any delegation relationship, this informational problem gets problematic if and to the degree that the preferences of the agent and the principal differ. Just as in any other form of behavior, all actors, patients as well as the various agents, are assumed to be motivated by self interest and to behave rational. In a situation like this, the agents they may use their informational advantage and the fact, that their actions cannot be observed, to exploit the principal. The term 'opportunistic behavior' refers to the situation in which the agent increases his utility at the expenses of the principal.

The utility an agent tries to maximize is positively related to his income and negatively related to his workload and effort<sup>10</sup>. Opportunistic behavior can concern both elements of the agent's utility. With regard to the question of HCS "efficiency" as a concept consisting of input and output, the two kinds of opportunistic behavior of the agents impact on overall "performance" of the HCS by influencing either the input component or the output component:

a) An agent's opportunistic behavior can take the form of extracting financial rents. He increases his utility by increasing his financial income at the expense of the principal. This in turn will increase the quantity of (financial) resources consumed by the HCS, without creating more output or improving the health status of the population. HCS performance is diminished, since more input is required, which is not invested into the production of health, but extracted by the agents. The typical example thereof is the provider induced demand, i.e. the fact that the provider of medical services can oversupply medical services of no objective use merely for the reason, to increase his income, while the patient due to his lack of knowledge can not recognize that a service is unnecessary.

b) Opportunistic behavior of the agent can also take the form of increasing his utility by reducing workload and effort, that is by 'shirking'. A provider can perform a task in a negligent way, provide poor quality of service. An agent in charge of organizing the provision of health care might do little or do nothing at all to foster the principal's interest in the organization of health care. Just as in other delegation relationships, this is possible because the principal cannot observe what the agents is doing. This type of opportunistic behavior

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<sup>10</sup> See for the financial and non-financial motives of physicians Scott (2001).

decreases HCS performance by reducing the output and also the health status achieved by the HCS.

### *Strategies to Avoid Opportunistic Behavior in Health Care*

To counteract the tendency for opportunistic behavior, two strategies are possible, both of which I will denote as ‘control’. The first strategy of control consists of including control into the delegation relationship itself. The extensive literature in on delegation and incentives in health care is mostly concerned with the design of contracts, which enable the principal to hire the optimal agent and further set the ‘right’ incentives for the agent, to act in line with the principal’s preferences. The second, alternative form of control, which I treat in the next chapter, consists of exercising control from the outside: an external actor, vested with the means to collect and to evaluate information, observes the operation of the HCS and intervenes, if things are not going well<sup>11</sup>.

The focus of the theoretical and empirical work within the institutional economics respectively the delegation relationship approach to HCS is on expenditure. It has to be stressed that the agency problems and opportunistic behavior concern not only the extraction of financial rents, but also the quality of the medical services provided. HCS achievement and efficiency, the variables I want to explain in this study, are based on the combination of costs on the one side and the quality/output on the other. Both are per se of equal importance for HCS “overall performance”. The design of a delegation relationship has an impact on both forms of opportunistic behavior, and therefore is of equal importance for quality and costs of health care. Moreover, a control instrument which is appropriate to avoid the extraction of financial rents might aggravate the problem of shirking and reduce the quality of health care<sup>12</sup>.

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<sup>11</sup> See Eisenhardt (1989). Smith et al (1997) call this control by behavioral incentives or by integrating the agent into a hierarchical chain of command and control, as it is the case in agency relationship in firms.

<sup>12</sup> Take for instance the remuneration modes for provider of medical services: under a capitation remuneration, the provider has no incentive to oversupply the patient with services, since his ‘profit’ is the difference between the fixed amount of money he gets for the patient and what he actually spends for the patient. This does not only mean, that the supplier restricts his services to the medically necessary. It can also mean, that the provider offers less than what is necessary, under supplies services and engages in reducing costs at expenses of the patient. On the other hand, the remuneration by fee for services sets an incentive to increase the number of services, since the income is directly dependent on the number of services supplied. The extraction of financial rents takes the form of oversupplying the patient with services which may be not necessary from a medical point of view. But again, this says nothing about the quality of the services provided: under fee for service, the supplier can try to increase the number of services conducted in a working day by reducing the time invested in each service, for instance, by making superficial examinations etc. As a consequence, while the two remuneration modes are dissimilar with regard to the extraction of financial rents, they are similar with regard to quality. Looking at HCS performance as a bundle of costs and quality, it is not clear, which aspect is more relevant.

Thus, health policy makers might be confronted with a trade off between control of the extraction of financial rents and the quality.

#### **4.2. Delegation in Health Care: Actors, Tasks and Incentive Problems**

This section will sketch the basic delegation relationships in health care, describe who is the principal, who is the agent in each relationship, the nature of the delegated task, the incentive problems inherent to this delegation relationship as well as the mechanisms proposed to counteract the problems of opportunistic behavior. To get a list of the possible actors and delegation relationships in the HCS one can use as a template the basic functions a HCS has to fulfill to achieve its basic aim, viz. to produce health for the population. Basically, the functions can be divided into productive and administrative tasks.

a) In any HCS, health services must be provided, medical products must be developed and produced. Health services applied to a person can be divided into those which can be delivered in an ambulatory way, i.e. the patient visits the provider, who performs a task, and is able to leave afterwards. This is what I will call ambulatory or primary care, the agent is variously labeled as primary care provider or General Practitioner; GP. There are other medical services, where the patient has to undergo more invasive actions, e.g. operation, and has to stay in care of the provider. This is will be called in-patient care. Usually, two the types are performed by tow separate agents, the primary physician, and the hospitals. But the distinction is shifty: hospitals, i.e. ‘poly-clinics’, may provide ambulatory services and a primary care physician may also provide operations, for instance if he has a certain contingent of beds in a hospital whose infrastructure he can use. Other medical services do not require the presence of the patient: examples for this would be analysis of tissue samples, and diagnostics of blood samples, more generally services conducted by a laboratory. Compared to the physicians, these services require specialized knowledge and equipment to a degree and are characterized by economies of scale, which justify a organizational concentration. These services may be provided by a stand alone organization, but again, these services might also be conducted for instance by the hospital itself. But even there, they will be organizationally focused in a unit, since the nature of the task fosters concentration of performing the task in one place.

b) Medical products can be distinguished into medicines and medical devices – both of them have to be produced and distributed. The agents in charge of these tasks are pharmaceutical

industry, the producers of medical devices and the distribution chains for both, pharmacies, wholesalers, sellers of medical devices etc.

All these supply side agents will exist in any HCS, since it makes sense for the provider of services to specialize in certain task and to outsource others. But they may be self-employed or part of the public administration. Furthermore, the existence of these providers is independent from the way the financing of health care is organized.

c) If HCS is not organized as a pure “bilateral spot-market”, but the relationship between producer and consumer was complemented by a third party (an insurance, or a public agency) a range of administrative tasks accrue: the memberships must be organized, contributions must be collected, providers must be contracted, providers must be paid for the services they deliver etc. As a consequence, if the HCS is not organized as a market, there will be at least one actor in charge of the purely administrative task of collecting, pooling and distributing the funds. As will be discussed below in more detail, the privileged situation of this actor allows it in principle to conduct other tasks as well, requiring information which is available either on the side of the provider and on the side of the consumers of health care. In practice, the organizational forms of this “third party” are manifold. They can be Health Insurance Funds, Health Authorities, Local Governments or the regional division of a National Health Service. The actor will be denoted as administrative organization, respectively purchaser.

d) As I will describe later on, it makes sense to see the government as the electorate’s agent by which the population in a country decides on how health care is provided. By electing a party which offers a certain health policy, the electorate decides on the basics of health care: Whether there is an organized HCS or a health care market, but also, how the state decides on the make-or-buy question of either delegating health care tasks or to integrate them into the state administration. In a democracy, the government is the electorate’s main instrument to act collectively, and hence the government is the electorate’s agent in charge of the overall design of the HCS.

Looking at the delegation, one can say that some of these tasks are always delegated or outsourced, like pharmaceutical research and the provision of medicines. There is for instance no HCS where the state itself produces pharmaceuticals, albeit it subsidizes firms to do so. Just as the way these tasks are performed in various HCS differs, so does the list of actors and delegation relationships vary. And the way the control of delegation-relationships is organized

varies even more. So, to compare HCS regarding the existence and the control of delegation-relationships in a systematic way one needs a template. The following list is such a template, which will allow to make an inventory of delegation and control in all HCS, irrespective of their type.

- The citizen as the original principal at the beginning the delegation chain, in his role as patient, payers of contributions, consumer and voter.
- Administrative organizations concerned with collecting and administrating the financial aspect of HCS: the collection of contribution and the reimbursement of the provider. This can be the insurance funds (collecting contributions and distributing them to the providers) or a public administration (collecting taxes and paying the wages and salaries of the medical personnel) in a NHS
- The providers of medical services and goods: physicians, hospitals, producers of medical devices and services laboratories , the pharmaceutical industry.
- The state as the agent in charge of a meta-control over the HCS,

Because of the multi-step delegation, i.e. delegation chains, actors are agents in one relationship, but principal in the other one. For instance, the insurance fund is the agent by which the patient organizes the financial administration of the HCS. But the fund is also the principal of the providers of health services; see for the various delegated tasks and the forms of opportunistic behavior Rice (1998; chapters 3 and 4), Breyer/Zweifel (1997: 188) and Santerre/Neun (2000): 293).

Each relationship is defined by the delegated task, the problems inherent to the relationship and the measures implemented to counteract these problems. In the end, a HCS can be described by what delegation relationships exist and how they are controlled. The main hypothesis of the present study is, that this – delegation and control – will either determine or at least affect the performance and the efficiency of the HCS. In the following, I will describe the tasks, nature of the informational asymmetry, the problems of control and ways by which this can be controlled for the delegation relationship among the above mentioned actors. With regard to the problems and their control, I will cover the implications for both quality and quantity, since both are equally relevant for HCS “performance”.

## ***Patient-Provider-Relationship***

### ***a) Delegated Task***

This delegation relationship is the core of the provision of health care and exists independently from how the provision or financing is organized. The patient requires the services of the physician because he does not know what the cause of his illness is, does not know how it can be treated and cannot perform the treatment by himself. So, the patient delegates this task to a specialized agent by way of a permanent or ad hoc contract. So far, there is no difference to the purchase of other services a consumer can or does not want to perform personally. Just as in the case of other examples of delegation, the patient does this for the reason, which is here to get healthy again. Here, as in other examples, it is his interest to get the best value for his money. The term ‘money’ here equally refers to the ad hoc payment of a service in a market for health care or the payment of a contribution independent of the quantity of services provided, e.g. by way of taxes or contributions. In exchange for this payment, which flows either direct from the patient to the provider or via an administrative organizations described later on, the provider offers medical services and goods aiming at the restoration of health.

### ***b) Incentive Problems***

The asymmetrical distribution of information in the patient-provider-relationship has consequences for quality and costs.

As with regard to the quality of services, the patient is interested in getting high quality, even if he does not have to pay for the services. Usually the patients have some choice in selecting the provider, i.e. which physician they go to, but have no information on which to base this choice. The patient cannot evaluate the quality of a physician *ex ante*, cannot guess his effort, his skill, nor his knowledge, e.g. whether the physicians is up to date with newer medical research or whether his decisions are based on what he learned decades ago. As a consequence, the patient does not know when selecting, whether the physician is good or bad. Given his lack of knowledge, the patient remains ignorant as long as the interaction, i.e. the treatment, continues. Even if he observes that the provider does something, the patient can not evaluate if whether what the physician is doing is appropriate to the medical problem at hand. Last, the patient cannot attribute an outcome to the physician’s actions since the restoration of health is influenced by other factors as well. In this setting, it is hard for the patient to enforce

quality because quality is basically unrecognizable and thus cannot be a criterion in the decision making. Indeed, some of the evidence seems to indicate that patients rely on the usage of equipment as an indicator of quality. On the side of the provider, the incentives are to reduce the effort. Both, because its effort and thus disutility and also, because assuring quality is time consuming, and decreasing the “turnover”. So while salaried and fee-for-service remunerated providers differ in their incentives to provide more services, they are in a similar situation as far as quality is concerned.

The financial aspect of the problems in the patient-provider relationship arise are also due to the lack of information. The initial decision to enter the relationship rests with the patient: if the patient fees ill, she visits a physician or provider. But once the initial contact is made, it is the provider himself who decides on what is done. It is the supplier, who decides, what is demanded, i.e. the supplier controls the demand for his own services. Lien 2004 enumerate three ways by which the provider can induce demand: he can persuade the patient that a certain service is necessary, he can offer only a fixed bundle of services, e.g. a certain package of diagnostic tests, which the patient can either accept or reject. Or the provider can show effort, which is observable by the patient, who – presuming that higher quality is offered – will demand more health care. In the setting that the patient can neither control nor evaluate the necessity of a medical measure, the supplier can use this situation to increase his income, by oversupplying medical services, and this supply induced demand is a central concern of theoretical and empirical works; see Reinhardt (1985), Rice (1984), Hay/Leahy (1982), Ma (1994), Ma/McGuire (1997), Delattre/Dormont (2003) and Chalkley/Tilley (2006). However, the motive for oversupplying services needs not to be as selfish as assumed in the economic analysis. The provider may also be motivated by the philosophy of doing virtually everything that is possible for the patient. There may also be the motive to making the patient satisfied by living up to her expectations. The provider may also be motivated by the risk of a medical malpractice suit, if it turns out that an additional service, for instance a more advance diagnosis, would have avoided damage for the patient; see Smith et al. (1997: 43), Kersnik (2001), Barigozzi/Levaggi (2005) and Dusheiko et al. (2004).

The problems inherent to the delegation relationship between patient and provider in the setting of lacking knowledge and hidden action are threefold: First, the provider may bill services he did not actually deliver. Second, the provider may (over-)supply medical services which are not actually necessary. Third, the provider may shirk from a task, by putting

insufficient effort in performing the job, i.e. provide poor quality of services. Given the lack of specialized knowledge, the patient may recognize neither of the three.

The following section will shortly discuss the most prominent designs and control mechanisms in use. I will structure the control mechanism by their aim, i.e. whether they avoid problems relating to quality or to the extraction of financial rents.

### *c) Control Mechanisms*

The principal agent relationship between the patient and the provider is the one most intently studied in health care. Numerous articles have developed contracts and mechanisms, which ensure that the patients gets the best provider in the first place, and that the provider behaves in line with the patients preferences, i.e. ensure that the provider makes the same decision the patient would have made, if the patient would have had the necessary information; see the extensive literature starting with Mooney/Ryan (1993: 132), Rochaix (1989), Chaix-Couturier/Durand-Zaleski et al. (2000) and Lien/Ma et al. (2004) for theoretical and empirical literature on the patient provider relationship. Most contract and mechanisms are very complicated, and the ones implemented in practice are much more simple.

#### *Basic Financial Control*

In HCS where the patient is completely excluded from payments, there is the real possibility of fraud. The provider might bill more services than were actually delivered. A basic financial control against cheating, can be exercised by involving the patient. Albeit the patient cannot evaluate, whether a service was useful or not, she can at least check, whether a service was delivered at all. To do this, the patient, as the one who experienced the services, needs to see the bill the provider submits to the funding organization. The cost reimbursement method, where the patient receives a bill which is then handed in with the insurance for reimbursement, allows for this basic form of control. A pure service-in-kind-principle isolates the patient from the billing and payment of services. In HCS where the latter principle is implemented, the patient has no idea of what the services she consumed actually costs. If the patient has to pay the bill in advance and submit it to the insurance fund to get reimbursed, she has at least an information on the price of certain services.<sup>13</sup>

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<sup>13</sup> To have an idea about the prices of medical services is an information, which is useful for the patient in other contexts, for instance if he has to chose among several insurance offers, which cover varying catalogues of services at different contribution rates.



To be of effect as a mean to avoid cheating, the possibility of control as such may be not sufficient: the patient must have some incentive to check the bill. If she gets complete remuneration for it, she will not have an interest in the bill, but will just pass it on to the insurance without looking at it. If however, the possibility to check the bill is complemented by an incentive, a deductible, the patient has the incentive to check the bill at least with regard to whether everything which is billed was actually delivered. While it may be to bothersome for the individual patient to engage in this form of control, the patient may delegate this basic control at least partly to the administrative organization; see the respective section later on. But while the health insurance fund as a central clearing institution may identify cases in which a provider bills a seemingly unlikely number of services, the question, whether the provider for instance actually performed five x-rays or only four, can only be answered by the patient.

### *Remuneration Modes*

One of the main design-elements of a HCS is the way, the provider of medical services is remunerated. The incentive to oversupply medical services is strongly dependent on the way the provider is remunerated. I will discuss the main remuneration modes for providers of me, not differentiating among hospitals or primary care, but denote, which mode is typically in use for each type of care; see Breyer/Zweifel (1997) for an overview.

a) Fee for service remuneration – under this remuneration mode, the supplier receives a fee for each service he supplies. The fee maybe either a fixed amount per service or depend on the overall quantity of services. For instance in Germany there is an overall budget for the primary care sector and the fees are based on a system of points: the number of points determines the relative price of each service. But the financial value of a point depends on the lump sum / budget negotiated between a health insurance fund (Krankenkasse) and a regional physician association and the quantity of services provided by the members of that association. The financial value of a point is the budget divided by the sum of points of all services provided in an accounting period. If the physicians as a group supply more services, the number of points increases and the actual value of a point decreases. If the physicians limit their supply of services, the value of a point increases. But in each case, fixed as well as flexible fees, this remuneration mode sets an incentive to increase the quantity of services supplied. If the fees are fixed, producing more services immediately increases the income. If the fee decreases with the number of all services supplied, the incentive exists nevertheless. Each supplier has the choice either to increase the quantity of services supplied or to restrain

his supply in order to retain a high value of a service. The logic of the situation is that of a collective good ‘tragedy of the commons’. If a provider restrains himself, there is no guarantee that others do so as well. If they do not, they obtain more income, because they can bill more points, plus they might profit from his self-restraint by higher values for a point. Hence it is rational for all supplier to supply as many services as possible.

b) Case based remuneration – an example hereof are Diagnostic Related Groups, DRG. A case, an illness, is defined and the provider receives a certain amount was assigned to it. This amount of money can be calculated from the information the administrative organizations collect over the years on average costs of a case etc. The financial incentive is on the one side to minimize the actual effort and resources invested in each case, since the profit is the difference between the lump-sum per case and the actual costs, on the other side to increase the number of cases.

c) Capitation – under capitation remuneration, a provider, be it a hospital or a physician, receives a fixed sum for each patient enrolled. This sum can be paid for all potential patients, e.g. for all patients who registered with a certain GP, independent of whether they actually visited the GP. Or it can be based on the number of patient living in the area for which the provider, e.g. hospital, is responsible. The capitation can also be a fixed sum for each patient who actually visited the provider.

d) Budgets – the remuneration by budgets is also a mode which can be used for both hospitals and physicians. The provider calculates, either prospective or based on past costs, a budget per accounting period, which is given to him by the administrative organization. If the budget is based data from the past and adapted constantly, this sets an incentive to increase the costs and to work inefficiently. If the budget of the next period is reduced, if the budget of the current period is not exhausted, this sets an incentive to exhaust the budget under any circumstances.

e) Per diem – this is a remuneration mode typically in use for hospital remuneration. The hospital gets for each “patient-day” a certain amount of money. This amount can be negotiated directly between the hospital and the administrative organization or be related to the current total cost of the hospital, which is divided by the number of patient-days. The incentive set for the provider is it to maximizes the number of patient-days, for instance, by

prolonging the length of stay. The provider will try to use the capacity to its full extent at any time, i.e. to keep the hospital as occupied as possible with no vacant capacities. This is not only motivated by the wish to maximize the income, but also by the wish to cover the actual operation costs. The first days in a hospital are usually the most expensive ones, since most of the diagnostic and surgical activities happen during this period. To send patients home as soon as possible, would mean that the costs incurred during the first days are not covered. Given that spare capacities are politically wished for, i.e. one wants to have some capacity reserves ready in case of unforeseen contingencies, the fact that hospitals are seemingly permanently operating at the limit of their capacity induces political decision makers to increase the bed capacity, a process which in the long run creates substantial over capacities, which are however not recognized as such.

f) Salary – physicians may be employed by the administrative organization, at a fixed salary. This fixes the financial part of the utility, and removes the incentive to increase the income by supplying or billing more services. However, it makes the effort the central variable by which the provider can increase his utility – i.e. by reducing his workload. This remuneration mode is also of importance, if the physicians are only for instance, if the hospitals receive a budget, but the physicians working in the hospitals are remunerated on a fee for service basis, they still have the incentive to increase supply.

g) Coverage of costs or by input – in this form of remuneration, the provider simply bills all the costs arising during his work to the administrative organization, which pays for them. The incentive set is to increase the number of services, to increase the input and the costs, since a share of the costs, how ever marginal, presents the provider's profit.

What are the financial and quality effects of the remuneration modes? It is important to recognize, that the effects are double-edged. The utility of the provider is dependent on the workload and the income. If the provider's income is dependent on the quantity of services delivered, he has the motive and the opportunity (due to the informational advantage and the missing control) to increase his income by increasing the number of services, the phenomenon of provider or supply induced demand. The provider will increase the income by trading off increased dis-utility arising from additional workload against increased utility from additional income, until an optimal combination is achieved. If the income the provider receives is fixed, he cannot influence his utility by influencing his income. Given a fixed income, a provider's

financial profit is the difference between what the amount he receives and the amount he spends, his utility is the difference between the fixed utility arising from the income and the dis-utility arising from workload and effort, which he can influence by choosing a level of effort and workload. Under these remuneration modes, providers have an incentive to reduce the quantity of services to what is medically necessary or even below that.

Regarding workload and effort, it has to be stated that there is always, independent of how the provider is remunerated, the incentive to reduce the workload, by reducing the effort invested in the performing of a task.

### *Quality Assurance*

While the effect of remuneration modes on the supply of services and thus on aggregate health expenditure is presumably substantial and widely studied, their impact on quality is studied less often, theoretically as well as empirically. Interestingly, quality cannot be assured in a feasible way by any remuneration mode of the provider.<sup>14</sup> Two remuneration modes may be very different with regard to how they impact on the issue of over-supplying services, but be similar with regard to the question of quality. Neither of the abovementioned remuneration modes ensures quality or effort. If the physician can increase his income by performing more services, he may do so by inducing demand. But to perform more services, he may be forced investing less effort and less time in each. If the physician is salaried, he may increase his (net)utility by reducing his effort and thus the disutility associated with hard work. The incentive to minimize effort is omnipresent, the agent's utility is always higher, if the same task is performed with less effort.

How can quality in the provider patient relationship be ensured? Either by explicit quality control, exercised by an independent actor (e.g. the administrative organization), the professional association of the providers (by way of peer-review), or by the state (by licensing and regulations on continual education) -or de-centrally by competition and free choice.

As for the explicit control of the providers by an external organization, these organizations might not be able to know, where to look for quality problems; even the patient might be unaware of a quality problem. The administrative organization in charge of handling the billing might identify cases of substantial over-billing, but it does not observe, not experience the quality provided. It may however act as an ombudsman in cases in which the patient experienced mal-treatment.

More decentralized is the control by the patient, who immediately experiences some aspects of the provider's quality. Even though the patient may not be able to attribute the outcome to what the provider was doing, he still may get an idea on whether the provider shows some effort or not. By voting by feet, i.e. by leaving physicians which treat the patient bad, the free choice forces providers to treat patients well and competition creates a counteracting effect to the ever-present incentive of providers to increase their utility by reducing effort and quality.

Apart from the ex post evaluation, there are mechanisms which allow a quality assurance already at the initial stages of the physician patient interaction. When looking for potential providers, the patient is confronted with the problem of entering into a delegation relationship with a provider of unknown quality, knowledge and skill. The patient visits the physician, who makes a diagnosis and proposes a treatment. The patient does not know, whether the diagnosis is correct or the treatment is the optimal one. Even if the patient is not involved in the payment, he is still interested in getting the most effective treatment. If the patient is involved in payment, he can be further assumed to be interested in getting the most cost effective treatment. Lacking medical knowledge, the patient can not evaluate the proposed treatment with regard to either criterion. The work by Rochaix (1989) has shown, that in this situation the possibility of getting a second opinion, i.e. a diagnosis and a proposal of a treatment, might act as a control mechanism, independent of whether the patient actually use this option; see also Chalkley/Malcomson (1998).

Free choice of the provider and the option, to get a second opinion are hence quality ensuring features, relating to the output and quality aspect of performance. Independent of whether the remuneration modes of the provider set an incentive to over-supply or under-supply services, the free choice is a security-net, counteracting the ever present incentive to reduce the workload by reducing the quality of a service

### ***Patient-Administrative Organization Relationship***

#### *a) Types of Administrative Organizations and Delegated Tasks*

Administrative organizations and Purchasers, which are complementing the patient-provider relationship, are created and involved, because the flow of money has in virtually every HCS been made an indirect one. The patient usually does not pay the provider ad hoc for the services he consumed. Instead, the patients pays a contribution on a regular basis, usually

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<sup>14</sup> Indeed the only remuneration mode would be the one used in ancient China, where physicians of a village received payment only as long as all inhabitants were healthy.

independent of whether and how many services were consumed, to an intermediary agent, the administrative organization respectively the purchaser. As Smith et al (1997) put it, the indirect flow of funds from the consumer to the provider is the central feature of health care. The way this indirect flow of money is organized, is the central organizational feature of a particular HCS. Another basic aspect of this feature is the double edged impact of having an intermediate actor between consumer and provider. As Anderson et al. (2003), argue, the administrative organization per se costs money to operate: people employed by the purchaser must be paid, and so must the infrastructure like offices. On the other hand, the purchaser is a possibility to aggregate demand and to obtain better conditions and prices than an individual patient could achieve. Another task delegated to the purchaser consists of controlling the providers of medical services on behalf of the patients.

As for the labeling, the terms “purchasers” and “administrative organization” will be used synonymously throughout the study. The term “purchaser” usually implies a “purchaser-provider” split, i.e. the fact that the providers are organizationally independent from but contracted by the organization doing the administration of the HCS. The occurrence of a purchaser provider split is often used synonymous with the term public integrated, where the public administration is in charge of organizing health care. As the empirical section will show, the distinction is less clear than the formal criterion would suggest. As for the organizational form of the administrative organization, there are several options. Historically the first examples of administrative organizations were mutualities run by guilds, but also firms, which as employers are interested in healthy employees. Today, the organizational forms range from commercial enterprises, like HMOs, to private or public insurance funds, but also to the public administration, e.g. the public administration of a NHS.

The constellation “Patient-Administrative Organization/Purchaser-Provider” is the most obvious example of a multi-step delegation chain. The patient delegates various tasks to the purchaser, which in turn performs some of the tasks, mostly the administrative ones, but also delegates tasks further to the providers of medical services, by contracting them on behalf of the clients. The tasks performed by the administrative organizations / purchasers are manifold. Mostly, they concern issues and tasks, which are useful and to be wished for, but not feasible for the patient to conduct themselves, since they involve economies of scale or the aggregation of information which arises decentrally. The administrative organization is hence an agent, in the relationship to the patient, but also a principal, in the relationship to the providers. In the latter delegation relationship, the task of providing medical services is

delegated to the provider and the informational asymmetries and incentives are the same in this relationship as they are in the relationship among the patient and the provider. The only difference is, that the administrative organization has more possibilities to exercise control, by gathering information available de-centrally, controlling the bills, identify cost effective measures, identify provider who constantly charge more services etc.

a) The first and foremost task is the administration of the money in the HCS. Since the flow of money from the patient to the provider is an indirect one in most HCS, there is always the need for a complementary agent, who takes care of managing this flow. Insurance funds, HMOs, but also the state administration all perform the task of collecting the money from the consumers and of paying the providers out of this “common pool”. This is the central *raison d’être* of these administrative organizations / purchasers, and the reason they were created. However, once created, they can also take care of other tasks in addition to this one.

b) As second task is the administration and coordination of the relationship with the providers. This encompasses in particular the negotiation of prices and remuneration modes. By delegating the negotiation of prices and conditions of medical services and goods to the administrative organizations/ purchasers, the patients realize several advantages. Since the administrative organization represents the aggregated demand of many consumers, it has a higher bargaining power and can achieve better terms and conditions, in particular lower prices<sup>15</sup>. With regard to the fulfillment of this task, a critical question is the one raised by Mooney and Ryan: ‘The standard theory of agency assumes that such schedules are set by the principals and will be, at least in part, a function of outcome. In health care, methods of remuneration are usually set by some third party (government or insurance companies). The question then becomes: how can we get this third party to define optimal methods of remuneration?’ (Mooney/ Ryan 1993: 131/2). Indeed, one of the crucial problems is that of collusion between the administrative organization/purchaser, because higher expenditure levels are also in the interest of the administrative organization/ purchaser.

c) A third task of the administrative organization/purchaser is the exercise of control over the suppliers of health services and products on behalf of the principals.

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<sup>15</sup> Historically, this bargaining power arising to the aggregation of demand by the mutualities was one of the reasons why providers, mostly self-employed and not organized in associations concerned with the negotiation of prices (only in terms of medical association to aggregate and share knowledge etc.) were opposed to insurance

A first aspect of this control is financial control, i.e. the control that the provider does not cheat by handing in faked bills or that the provider is not systematically oversupplying services. Since the purchaser is in contact with many providers, it can gather the information arising from many treatment episodes. This information is necessary to exercise control by identifying providers which constantly supply more services than could be expected on average or stand out for other, unexplainable reasons. The purchaser can, in principle, identify potential cases of provider-induced-demand and sanction them.

A second aspect of control concerns quality aspects but also issues of cost effectiveness. The patient himself can not be expected to perform these tasks for two reasons. First, for the individual patient, it is way too much effort to acquire enough medical knowledge to evaluate the appropriateness of a medical service or to evaluate, which of several feasible therapies yields the best result with the highest probability or which is the most cost-effective, i.e. has the best “improvement in health status per price ratio”. Second, the patient only has information based on what medical services he consumed personally, i.e. one case. Since the outcomes of medical treatment at individual level have substantial random components, the patient cannot make an inference from one observed case on the effectiveness of a treatment.

But both tasks, quality control and cost-effectiveness evaluation, make sense for an administrative organization / purchaser involved in a large number of bilateral patient-provider-relationships. The purchaser can collect information on whether some providers are doing a good job, for instance by making a survey among patients or by looking how often a certain provider succeeded in restoring health in certain, comparable cases, using what therapies and at what costs. A purchaser can, based on existing knowledge, perform the task of checking whether the therapy chosen by a provider for a given diagnosis is appropriate, either by acquiring medical knowledge or by hiring medically educated persons to do the evaluation. Further, the purchaser can generate knowledge by aggregating and evaluating information that exists de-centrally in the HCS and use this information to enhance the HCS’ performance. The administrative organization/purchaser is in the unique position to have access to information about which treatments were used for what cases of illness, at what price and whether the treatments chosen were effective for restoring the patient’s health. The administrative organization/purchaser can collect this information for many cases and partly eliminate the random components by conducting a statistical analysis and identify systematic differences among treatments and providers. The administrative organization/purchaser can

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\_\_\_\_\_ funds and reacted by aggregating supply, to gain bargaining power, see Ryll (1993) and Barros/Martinez-Giralt (2005).



for instance use the kind of services and their prices as listed in the bills submitted by the providers in combination with the information on the outcome (whether the patient's health was restored or ameliorated after the services was provided or whether the illness continued, which can be identified by the administrative organization/purchaser based on the question, whether the patient continued to consume medical services after this treatment episode) to generate information on the effectiveness but also the cost-effectiveness of treatment alternatives. Given this knowledge, the administrative organization/purchaser can publish the information to make it available to the patients. It can also restrict the set of providers available for the patient to choose from to those who fulfill certain standards (for instance by a kind of preferred provider list). Or it can set benchmarks and force the providers to use the most cost-effective treatment, for instance by remunerating only those services which have proved themselves as to be of a certain effectiveness<sup>16</sup>. This kind of control can equally be exercised on pharmaceuticals, by demanding evidence on the impact of a drug, as a precondition for remuneration by the administrative organization/purchaser or making cost effectiveness analysis based on experience with certain alternative medicines for similar illnesses; see Neumann (2004).

To sum up the arguments, the administrative organization/purchaser is in the position to improve HCS performance in various ways, like evidence based medicine, utilization review, cost-effectiveness analyses etc.; see Smith (2002) on the various problems and opportunities of exercising control by collecting and supplying information.

The capability of the administrative organization/purchaser to aggregate and analyze information is conceptually independent of the organizational form of the HCS: the task can equally be conducted by the public administration of a NHS, by private for-profit insurance funds or public non-profit funds. It can equally be performed, if the providers are self-employed and only connected to the administrative organization/purchaser by a contract or if they are employed by the purchaser. In any of these cases, the administrative organization/purchaser can make the information available to the patients, which in turn can use it when making their choices. There are however, two aspects which have to be kept in mind. First, as I will show in the next section, the possibilities of an administrative organization/purchaser to make actual use of the information gathered differ empirically among various organizational forms of the administrative organization/purchaser. Second, as

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<sup>16</sup> An example of this is the combination of medicines into classes of equivalent products in Germany. The insurance funds then only reimburse the cheapest of the equivalent products.

Neumann (2004: 127) stated: evidence costs money. The performing of the information gathering and analyzing task require resources, which have to be paid for and which increase the overall operation costs of an administrative organization/purchaser substantially; see Danzon (1992).

*c) Incentive Problems and Constraints*

In the ideal case, the administrative organizations and purchasers as the patient's agent, should perform all these tasks and do so at a minimum of operational costs. Two things are necessary to ensure that the purchaser to actually perform its various tasks: the possibility to do so and the incentive to do so.

The possibilities to exercise control over the providers are dependent on the legal framework, for which the state has the decision competence. The degree to which control can be directly exercised by the administrative organization/purchaser vis-à-vis the providers, e.g. the degree to which the purchaser can force the providers to use medical guidelines, is dependent on the way the purchaser-provider relationship is organized. The leverage the administrative organization/purchaser has vis-à-vis the providers varies substantially among countries and organizational forms of HCS. The administrative organizations may have hierarchical control over the employed providers, or have to negotiate any aspect of the provision with them on equal footing; see Ryll (1993) and Barros/Martinez-Giralt (2005a). For instance, in health insurance systems like Germany, the physician organizations are autonomous; professional independence and the provider's free choice of a therapy are crucial themes in health policy. In other forms of HCS, most prominent the HMO model, the administrative organization/purchaser has much more leverage vis-à-vis the providers and can actually force them to use only those therapies which are the most cost effective ones.

The negotiation position of the administrative organizations may be strong, e.g. if the administrative organization is the only purchaser of medical services in a region and hence be able to enforce its own terms in the contract with the individual provider. It may be weak, e.g. in the situation of many competing purchasers, which are confronted with a single organization representing all providers in a region. Here, the provider may interfere in the competition among administrative organizations for customers, by treating those patients better or more customer-oriented manner who are sent to him from insurance funds which remunerate him better than other ones.

The possibility to perform any of these tasks alone is not sufficient. The administrative organization/purchaser also needs to be motivated to perform these tasks. This is in particular the case because the principals, i.e. the citizens, are largely uninformed about what the “black box” administrative organization is actually doing, how much money is spent and in particular what for. This informational advantage allows the administrative organizations to behave in an opportunistic way, maximizing its own utility and not that of the principal.

Standard bureaucratic theory assumes, that the administrative organization is be interested in maximizing its budget. The motive for this, is that a larger budget requires a larger bureaucracy and more staff, which increases the chances of persons already working in the administrative organization to get promoted to higher ranks; see Niskanen (1971). It can also be tempted do increase the budget to hide organizational slack and on the job consumption. If the administrative organization is allowed to extract about 10 % of the sum of all contributions, it may have an incentive to let the overall volume of contributions and expenditure grow, to increase the absolute value of the 10%; see Moe (1997). The study by Danzon (1992) on the comparison of public and private health insurers gives a detailed overview on the various kinds of costs, which together make up the ‘administrative overhead costs’ and how these differ in amount and composition among both types.

One way to keep the budget growing, is to allow providers to oversupply services respectively to extend the catalogue of services covered by the health system. Because in this aspect, the interests of providers and the purchasers go hand in hand, the possibility of collusion must be taken into account.

Exercising control requires an effort, and doing so may be an bothersome task, in particular if the controlled can create public critique which will fall back on the controller. It might be both easier and more lucrative to let things go their way and focus on assuring that sufficient funding is available for the internal operation of the administration, i.e. for the “on the job consumption”. If the patients criticize the increased contribution level, the administrative organization/purchaser can easily blame the providers or other developments – like technological development, increased consumption by the patients, or inflation – for this development. Since the contribution level depends on many factors, the patient as the original principal has massive problems to recognize such a shirking of the administrative organization.

An additional type of opportunistic behavior is the problem of cream skinning. In this situation insurance funds/administrative organizations focuses on a task, which is clearly objectionable. Instead of focusing on doing their job well in order to decrease the contribution

rate, purchasers can try to influence the contribution level by attracting only good risk – people who are in good health and will not consume many services, which in turn allows a lower contribution level in absolute terms, or, if the contribution is a percentage of income, lower rates. Or, the administrative organization/purchaser can renounce its effort dedicated to its core tasks altogether in favor of getting money from a central risk-equalization fund; see Leber (1992) and Beck/Zweifel (1998).

#### *b) Control Mechanisms*

In theory, a possible mechanism for counteracting the incentives for opportunistic behavior and to force administrative organizations and purchasers to do their job, is competition among them. If there are several administrative organizations/purchasers competing for clients, the client can choose the one which is offering the best combination of costs and services. The possibility that customers leave to a degree that endangers the very existence of the administrative organization forces for-profit as well as non-profit organizations alike to perform their task. In particular Danzon (1992) has argued, that competition among purchasers forces them to be very inventive in order to increase the internal, operative efficiency. However, such a competition requires several necessities to be effective.

The first necessity is that patients have free choice of the administrative organization. As for the free choice of administrative organization, this varies. If the public administration performs the provision of health care, there is only one provider of administrative services, and thus, there is no choice. The NHS administration is the only ‘insurance fund’, it has a monopoly and can behave like a monopolist. If there are several purchasers or administrative organizations, but the assignment of a citizen to them is based on fixed rules, like the occupational sector etc., there is also neither choice nor competition.

Second, there must be a reason for the patient to chose and change the purchaser. Even if there are several purchasers among which the patient can chose freely, this might be insufficient to create an effective competition. The problem is that the only information the patient has to base his choice on is the contribution rate and the catalogue of services covered by the purchaser. Often, the catalogue of services covered is fixed by law and only the contribution rate differs. In this case the patient’s decision problem is easier since it does not require a tradeoff between a contribution rate on the one side and a services of unknown costs of which the patient does not know, how probable it is, that he will ever need them. There are countries, in which the contribution rate is fixed; independent of how a fund operates, it must charge a certain contribution but is also not allowed to charge more. In some NHS-type HCS,

there is also a competition based not on the official catalogues, but on the factual availability of services and waiting times. Moreover there is, also in some HCS labeled as National(ized) Health Systems, a factual competition among the purchasers. For instance in Scandinavia, the municipalities and regional governments are often in charge of providing health care, and are financing this by levying local taxes. If factual availability is inappropriate, or the local taxes are considered too high by citizens, they may vote by feet.

A third requirement for competition concerns the problems associated with the lack of information. The fundamental problem arises from the fact that while the contribution level is observable, the contribution level does not contain information on the administrative organization's efficiency. It depends on many factors other than efficiency and there are also institutional features which make the contribution level uninformative:

a) The risk structure among the insured – a low contribution may be due to the fact that the insurance focuses on “cream skimming”, i.e. on attracting good risks and getting rid of bad risks by treating them in a way that shows them that they should leave<sup>17</sup>. The contribution rate of a health insurance fund may be low. But not, because the insurance fund is operating efficiently and does its job well, but only because the insurance fund has specialized on the easier task of attracting good risks and actively encourages bad risks, e.g. chronically ill people with low income, to leave the fund.

b) Bad luck and chance – a regional fund, e.g. an AOK in Germany, or a municipality in charge of organizing health care may be subject to a locally concentrated epidemic or economic crisis involving locally concentrated high unemployment. These factors strain the financial situation of a purchaser, e.g. a municipality, independently of its operational efficiency. Even if the purchaser is operating efficient, the contribution levels may be higher than elsewhere.

c) The equalization of financial surpluses and deficits by way of risk-equalization among the purchasers – a telling example of this is Germany. Given the problem of adverse selection and cream skimming as well as the dependence of a sickness fund's financial situation on the economic situation of its clients and their health, the German government introduced a so called “Risk-Structure-Equalization-Fund”, RSA. The idea was to make the contributions the sickness funds charged – which are a percentage of the wages and salaries – more comparable and a more valid indicator of how good a sickness fund is doing its job. This should be achieved by making the contribution levels independent of the demographic and economic

features of the people enrolled with a sickness fund. Before the introduction of the RSA, a sickness fund with many younger people with high income among its insured, could offer a lower contribution rate. Not because it was operating more efficient, but because it had lower expenditure and even a lower percentage meant on the whole higher cash-flows in absolute terms if the insured had a higher average income. After introducing the RSA, such a sickness fund has to pay a transfer into RSA-fund, from which sickness funds with a higher percentage of chronically ill, more elderly people or people with lower income among their insured receive a subsidy. The conception was, that the RSA would equalize the impact of those factors influencing a sickness fund's contribution rate, which are not related to the fund's operational efficiency. But in practice, the design and calculation of the transfers set an incentive to select bad risks, since a sickness fund could receive more transfers from the RSA than it did actually spend for the medical treatment of the "bad risks".

A point which is often stressed is the question of the ownership of the administrative organization. Looking at its implications, ownership is not so much of interest for the performance of a task or the extraction of rents but for the question what is done with them. While a privately owned insurance company may use difference between the contributions gathered and the expenditure as profit, non-profit funds, public owned funds or a public administration do not have the possibility to make profits. Usually they have the constraint to guarantee that received contributions and expenditure are, at least in the long run, in balance: if the expenditure rises, contributions must rise, if the expenditure sinks, the contribution must be reduced. The motive to attract customers, in particular good risks unless bad risks are more attractive after risk-equalization, is shared by private and public administrative organizations/purchasers alike: private insurance companies are motivated by the possibility to make profits, public purchasers are motivated by the fact, that more customers require more staff to perform the administration; more staff employed implies more chances for promotion since a larger number of personnel allows and even requires a bigger hierarchy. Competition works by profits in the case of private insurance companies or by the threat to be dissolved or force-merged with another fund in the case of public purchasers. In any case, the purchasers have the incentive to increase the number of customers.

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<sup>17</sup> See Akerlof, (1970) Pauly (1974) and Breyer/Zweifel (1997: 161 and 186ff) for the basic problem of insurance markets under adverse selection and the issue of cream skimming; see Beck / Zweifel (1998: 211) as well as Leber (1992: 170).

## ***Patient-Government-Relationship***

### *a) Delegated Task and Incentive Problems*

Basically the government can perform two roles in health care: First, it can perform the task of the purchaser, as they were described in the section above. This is the case, if the government has integrated the provision of health in the public administration, e.g. in NHS systems. In this case, the administrative body performing the task can be analyzed just as any other purchaser.

This section will focus on the second role, the role, any government always has, independent of whether it performs the task of an administrative organization or not: the government is in charge of the HCS; see Saltman (2002). The possibilities and potential of exercising control will be the central theme of the next chapter, but a sketch of the delegated task and the incentive problems is in order at this step.

The government is the electorate's agent to control the aspects of everyday life which are perceived to be part of the political domain and thus an issue of political control. The government is also in charge of a meta-control over the HCS – if it doesn't work in line with the citizens preferences, either by requiring too much resources or by delivering too little output, the government must intervene. The HCS and its organization are a societal subsystem and they are locally fixed to the realm of the country, i.e. they can not leave the country like a firm might do if it thinks a certain regulation is unacceptable. Hence the government as the superordinate steward, has much potential leeway vis-à-vis the HCS and can redesign the HCS in any way it seems fit, introducing or reducing competition, creating organizations or abolishing them, by integrating the whole HCS into the state apparatus or remove it from this by outsourcing it.

So the delegated task is quite clear, viz. a controller of last resort. But problems arise once again due to incomplete information and divergent interests. The citizens cannot observe how the government exerts its role as a controller. Nor can they attribute the outcome – the overall performance of the HCS – to the government's control over the HCS. In many countries, the government is intervening all the time, usually because there is the public demand that "something should be done about it". Whether the government's interventions have any effect, and if so, which one, is often enough unclear even to scholars specializing on the HCS. In these circumstances the government may shirk from the task of controlling the HCS, which not only requires effort but where both, doing something and doing nothing, can and often does incur substantial political costs. The government as the citizens' agent has not the supreme aim to provide the citizens with the best HCS. Its supreme aim is getting reelected.

The chances for a government's reelection depend on the citizens and their satisfaction with the HCS, but not only. While citizens might be dissatisfied, and calling for changes, it might not be clear, what the problem is and what can be done about it. Organized groups in the HCS are more powerful than the latent group of the patients and may create much public opposition and protest than the citizens. This is basically Olson's argument that despite the fact that the citizens as patients are a much bigger group of voters, small but well organized interest groups can exert much more influence on policy than the large group of citizens; see Olson (1965). Indeed, the government, when acting in the interest of the citizens, might be confronted with opposition from those very citizens. Further, given that the citizens don't observe the actual interactions among the government and the other agents in the HCS but only political rhetoric, the government can collude with the groups in the HCS and enter into an informal exchange relationship, in which abstention from protest or active political support by the societal actors in the HCS is exchanged for the granting of autonomy and the renouncement of the exercise of substantial control by the government. Indeed, one motive for delegation to societal actors is, apart from the better performance hoped for, the chance of "blame avoidance"; see Weaver (1986). If the government is not seen as in charge of the HCS, the political costs of objectionable developments are lower.

This collusive exchange is of advantage to both sides, but goes to the expenses of the citizens as the original principal. I will elaborate on this point more extensive in chapter 5.

#### *b) Control Mechanisms*

Control of political actors works by elections and electoral competition: different political parties offer different overall-concepts of health policy, are in favor of or opposed to introducing a certain kind of structural elements, the usage of existing instruments to influence the HCS etc. So in theory governmental control over a HCS embedded in a democratic political system is motivated by the current government's fear that if it does not exert control to a sufficient degree and assures that the HCS works well, the opposition might offer a version and get elected to do this; see Bartolini (1999, 2000) and Strom/Müller et al. (2003), Persson/Roland et al. (1997), Bonoli (2001) and Persson/Tabellini (2000): 70ff). While it is clear that political competition might induce the political parties to engage in improving the HCS, one has to keep in mind the fact that health policy is but one issue of many in the electoral arena, and it might not be the crucial one.



### *Patient-Producer of Medical Devices and Medicines*

The character of the medical devices and medicines makes them more similar to a normal market, but still the relationship between the patient and the producer can be conceptualized as a delegation relationship. The pharmaceutical industry can be seen as an agent to which the principal, i.e. the patient, delegates the task of developing new medical products in exchange for a financial remuneration. This remuneration is firstly the price paid for the product, with higher prices usually granted to new innovative products, but also various forms of explicit subsidization. Despite much variation in the organizational form of HCS, this delegation relationship is a constant one; there are no cases, where the state or a purchaser has integrated the development or the production of medicines.

The problems in this delegation relationship arise once more from incomplete, respectively asymmetrically distributed information and diverging interests, the combination of which allows for opportunistic behavior on the side of the agent.

The information problems are similar to medical services. The problem is not so much the question of safety, which has to be answered in any case, but the question whether a product is actually worth its price. Ex ante, the customer has no information on the quality or impact of a medicine. Similar to the consumption of non-medical products, like food or a car, the customer can collect experiences with the medicine or the quality of a medical device, from which he can extract some information on its effectiveness. On this information, the consumer can base his choice for the next period. However, even this information is incomplete. The patient can observe, whether he tolerates the medicine well or suffers from negative side effects. But with respect to the effect of medicines on healing, the problem is once again that the outcome is dependent not only on the medicine, but on other factors and subject to substantial individual variability. A medicine may be effective in the case of one individual, but not in the other, despite the fact that both are suffering from the same disease.

What are the preferences and incentives of the pharmaceutical industry? Creating new medicines is a time consuming and in particular costly process; see Comanor (1986), Scherer (1993), DiMasi et al. (1991) and DiMasi et al. (2003). To stimulate pharmaceutical R&D, the pharmaceutical enterprise is granted a period of patent protection during which it enjoys a monopoly and can – in theory – charge monopoly prices allowing it to recover the R&D investments and to realize a profit. The profits of an pharmaceutical enterprise are dependent on the market size, the effective length of the monopoly phase and the R&D costs arising. The

incentives of the pharmaceutical industry is to increase profits by reducing the costs of R&D, increase the market share and increasing the factual period of patent protection. One strategy is to improve existing products, which is less costly than starting from the scratch, in order to have a new product for which a new patent and another patent period applies.

The question is, how a HCS copes with the issue that there is an incentive to improve existing products marginally, which means that the new, modified versions are much more expensive, while it is not clear whether their advantage is worth this mark up.

Practically, the question is, who is able and has the incentive to gather information on whether the new product is worth its price.

The patient has neither the possibility, nor the knowledge to gather pharmacoeconomic information. Nor does the patient has the incentive to consider the potential for savings, because often enough, the medicine is paid for by the HCS. The actors able to do this evaluation are either the government, when setting the price of a new medicine, or the purchasers, who can commission cost-benefit evaluation studies.

Another issue in this area is the issue of generics. Once the patent protection of a medicine has expired, other pharmaceutical enterprises are free to copy the original product and to bring it on the market under a different name, as a generic. From the point of the regulator, the argument is that the original innovator had its period of monopoly and is appropriately remunerated. Indeed the limit to patent periods is the main instrument to incentivize enterprises to engage in R&D. Once the patent has expired, the market mechanism applies to the product and the competition among the generic producers and the original producer should cause the price to drop to the level of production costs, which are usually way below the prices charged. There is no medical or economic reason to pay more than the price of a generic.

However, there are some particularities and incentives in the consumption of medicines which result in the fact that the generic substitution does not happen automatically. Instead, there is the original product, available at a higher price but also generic substitutes, produced either by the original producer himself or by firms specialized in the production of generics, available at a lower price. One explanation is that patients, in particular patients requiring a certain medicine on a regular basis, are used to a certain product, its appearance and the conditions of its usage, e.g. how often it has to be taken. If the price is irrelevant patients might for reasons of pure convenience continue to take the original product at the higher price. An integral function of the patent period is just this: to make patients used to a certain product, its usage

and appearance, so that they continue to use this product after the patent has expired, a strategy which of course only works if the price is irrelevant for those who decide on the consumption segments<sup>18</sup>. If the physician is also not involved in the payment of the medicine, he may do the patient the favor of prescribing the more expensive original instead of a generic substitute; see also Hassell et al. (2003).

In addition, the distribution chain is also relevant. In countries where the decision what medicine is used rests exclusively by the physician, pharmacists have no influence in the usage of generics. In some countries, the pharmacy has such a role, i.e. it has been assigned the task to substitute an original with the generic. The crucial question is, whether the pharmacist also has an incentive to do so. If the pharmacy receives a percentage of the retail price of the medicine, it has no incentive to substitute, since this reduces its profit. The same is true for all mechanisms of remunerating pharmacies which are based on the price of the product. If the pharmacy receives a fixed amount per item sold, this incentive is not given and substitution may occur more often.

### ***Patient-[Administrative Organization/Provider]-Patient: The Common Pool Problem***

The chain of delegation and control usually extends in one direction only – the citizen as the original principal delegates various tasks to other actors, who in turn delegates part of these tasks further on to other actors. There is however, one instance, where delegation is not a one way street. Albeit the term “delegation” gets somewhat stressed in this relation, there is a chain of delegation in which the patient is the first, but also the last link. In this chain of delegation, the patient delegates the control over himself, his consumption, to agents.

The core of the issue is that the non-market organization of HCS also creates incentives for the individual patient to exploit the common pool, i.e. the collective of patients, of which he is a member. The patients as a group lack information on whether the services consumed by an

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<sup>18</sup> The interests of the generic producers and the pharmaceutical enterprises engaged in R&D differ. The former are interested in shorter patent periods and good access to the information necessary to copy the product, later want longer periods and as much restraint on the information sharing as possible. The industry structure is also different for both: enterprises engaged in R&D require huge financial resources to bear the costs of R&D, they are usually bigger. To recover the incurred R&D costs as quick as possible during the patent period, the R&D enterprise needs access to as many markets as possible. As a consequence they are often multinational, with subsidiaries acting as distributors in other countries. Producers of generics don't have to bear long term investments in R&D, and are usually smaller and national. However, the R&D oriented enterprises try to capture the potential profits associated with generics themselves, by employing a strategy of product differentiation. The original producer lets the original under the original name on the market, but also brings in a generic on the market under a different name to capture those market segments where the original is substituted by generic alternatives, see the Valium Librium example in Breyer/Zweifel (1997) as an instance of the product differentiation strategy.

individual patient are reasonable and necessary. And, while they can observe how much is consumed at the aggregate level by looking at the contribution rates and overall HCE, they cannot observe, who consumed how much.

If the patient has to pay for a service, he will consume only services which are of utility and only to a limit where marginal utility of a service is equal to the costs incurred. If the bilateral relationship among patient and provider is replaced by a pooling of resources, the patient pays a contribution, which is – at least in the short run – independent of the quantity and kind of services consumed. Or in the case of taxes pays for the services in a way which not identifiably as a contribution at all.

If the price of an additional medical service is zero, the service will be consumed if it has a monetary value above zero. In many HCS, the patient has free access to services. Further, nobody apart from the provider has any knowledge about how much the patient consumes. In this situation, the individual patient has the opportunity to exploit the collective of patients, increase his individual utility at the expenses of the collective. The limit to consumption is not set by the price, but by other opportunity costs, like time. Indeed, as Getzen (2000) remarks, the decision situation of purchasing health services differs systematically between the individual and the societal level.

The consequence is substantial over-consumption of medical services. In the ‘tragedy of the commons’ framework of  $n$  persons pooling their resources to a fund from which the medical services provided to each member are paid, this means that the patient receives the full utility of a service, but pays only  $1/n$  of the costs accrued. From the perspective of the individual, the personal consumption will have next to no effect on the overall level of expenditure. Moreover, independently of what the other members of the pool do, it is rational to consume all services which have some utility, i.e. a monetary value which is above the additionally incurred costs, which are zero. Hence, every member of the pool will behave this way and in the long the overall costs and the contributions to be paid will rise. Despite the fact that this problem and its consequences can be seen by everyone it is not realistic to assume that the patients see that in over-consuming they are also exploiting themselves and as a consequence, limit their consumption voluntary.

In this situation, it makes sense to delegate control over the patient’s consumption to external agents, to explicitly delegate the task of setting a limit for one’s own consumption as well the consumption of the other pool members to an agent. The agents in charge of the task can be the purchaser and the providers.

The purchaser should, for the good of the patients, set incentives for the patients to restrain their consumption of medical services, e.g. by introducing deductibles or co-payments as a price signal. In the contractual relationship with the providers, the purchaser should set the right incentives for the providers, incentives which avoid a willingness to oversupply medical services. Further, the purchaser should set incentives for healthy behavior and living, e.g. by introducing bonus regulations for people engaging in sports or participating in preventive measures etc.

The provider should, also for the good of the patients, keep the demand for free medical services in check. Any provider should deny unfounded demands. A further example for this is the gatekeeping role of General Practitioners, a mechanism aiming at avoiding the unnecessary usage of expensive specialized services, which can be expected to be used more often, if the patient can directly access a specialist; see Blomqvist (1991) for the physician's role as a 'double agent'.

However, the problem is how to make these two agents actually perform this task.

If the purchasers compete for customers, a bundle of higher contributions in combination with the free access to whatever necessary or unnecessary medical services the customer wants to consume may be more attractive than a bundle of somewhat lower contributions but co-payments, deductibles and a catalogue of services covered, which is restricted to the most cost effective services.

Providers are even more difficult to use as a controller of demand, since patient and provider both share the interest in over-consuming medical services; see Vaithianathan (2003) for the problem of collusion among patient and provider leading to over-consumption. However, the choice of an remuneration mode may induce the provider, for instance a fundholder, to deny services which are unnecessary but are demanded nevertheless. Here, the free choice of the provider exerts a negative impact on health system efficiency: the quantity of services provided is an important determinant of the patients' satisfaction with a provider; see Carlsen/Grytten (2000), which in turn influences the patient's choice of a provider. So if the patient has a choice, he may change his GP if the latter does deny the provision of services the patient wants to consume.

On the whole, this reasoning illustrates the double edged effects certain regulations may exert. Limiting access may lower expenditure and increase efficiency, since services with little or no effect are not provided. But, looking at the demands uttered by patients, one can ask, whether this is actually what the patients want.

### **4.3. Summary: Delegation and Control**

Delegation is a central feature of health care delivery, as well as the organization of health care provision. Each delegation relationship is subject to incentive problems, which, if uncontrolled, will lead to lower performance and lower efficiency of the HCS.

HCS vary with regard to which delegation relationships exist and how they designed and the problems inherent to them are controlled. Some delegation relationships are present in all HCS, e.g. the delegation of the development of new medicine to the pharmaceutical industry. Other delegation relationships are absent in some HCS, e.g. in some countries there are no insurance funds or for some sectors the market mechanism is in place which does not require additional agents to assure efficiency.

The health economics has developed several possible control mechanisms for the problems inherent to the various delegation relationships. Most of these control mechanisms aim at avoiding that type of opportunistic behavior which concerns the extraction financial rents. Each of these control mechanism has certain effects which can be derived from the motives of the actors and the restrictions and opportunities set for rational and self-interested actors by the control mechanisms. The implementation of these control measures can expected to have an decreasing or at least limiting effect on HCE.

However, with regard to HCS efficiency the study of control mechanisms aiming at avoiding the extraction of financial rents is insufficient. In particular, because HCS efficiency is a combination of output and costs.

First, the control mechanisms described mainly concern costs and are primarily studied with respect to their implications for cost. An institutional mechanism, for instance a remuneration mode for a provider, has several consequences and may simultaneously influence a HCS' quality and costs in opposite directions.

Second, the formal existence of a control mechanism does not say anything about its actual usage and impact.

Third, isolated features may be not effective. For instance the introduction of cost reimbursement systems enables the patient to check whether all services billed were actually performed. But this task is a bothersome one. So, if the patient has no incentive to, he will not do this. Such an incentive is missing, if the fund covers all costs. The patient will not invest time in checking whether all services billed were actually delivered. So cost reimbursement will remain without any substantial effect, if it not goes together with a co-payment.

#### **4.4. Applying New Institutional Economics to Health System Comparison**

Since delegation in the setting of informational asymmetries is conceptually as well as empirically a feature all HCS share, it can be used to analyze and compare HCS. Even if a HCS is a pure market, the core delegation relationship among patient and provider will occur. If in a HCS this core delegation relationship is complemented, even more delegation relationships occur. I use this concept to compare HCS, with regard to how the features of delegation and opportunistic behavior, are treated in the HCS. The advantage of this comparative strategy is threefold:

First the delegation approach is comprehensible in the sense that it is based on rational behavior of self-interested individuals in a situation defined by opportunities and restrictions.

Second, delegation and control shows itself in the organizational form and the rules of the HCS, which are accessible to observation. One can make comprehensible conclusions from the institutional setting to the opportunities and restriction which guide individual behavior.

Third, the delegation approach allows strong statements on HCS expenditure, but also statements on productive efficiency as the relation of input to output. The theory makes statements about how an institutional feature of the HCS will impact on the resources consumed and the quantity as well as the quality of the health care provided.

#### ***Networks of Delegation Relationships***

The principal-agent-approach to health care has a long tradition, centrally focusing on the relationship among patient and provider, see Mooney/Ryan (1993), Delattre/Dormont (2003) and Lien et al. (2004). Apart from looking at isolated relationships, one can also use the delegation approach as a framework for comparing complex systems. The idea to look at the organizational structure of a HCS under the perspective of agency and delegation when explaining the differences in efficiency among HCS is not new, but was largely left unused. Meurs (1993) proposed the agency approach as a template with which to structure the comparison of economic systems. Starting, in particular in HCS, from the analysis of one relationship ( usually the one between the patient as principal and the physician as his agent) the idea was soon extended to complex relationships among several actors in very different domains; see for instance Dixit (2002) for the public sector, Prendergast (1999) for the organization of firms, Persson et al. (1997) for an application to compare the consequences of various designs of budget process and Strom et al. (2003) for political systems.

From these beginnings, the idea to use the existence and design of delegation relationships as a method to compare spread to other tasks and relationships, and today, the delegation of tasks is seen as the central feature of a HCS; Breyer/Zweifel (1997: 279) and Smith (2002) states, that the principal agent approach is a kind of ‘natural starting point’ to analyze HCS. The approach was used to structure HCS under this theoretical perspective; see for instance Smith et al (1997), Jones/Zanola (2001) and Cardon/Hendel (2001). However, as was stated in the review on the literature, the theoretical treatment, the comparison of organizational models and their properties, is the central concern. The empirical application, in particular the collection of data on how delegation is actually handled, remained far behind the theoretical efforts and insights.

### ***The Logic of an Institutional Economics Explanation of Health System Performance***

The institutional economics approach is following the logic of explaining features of the HCS as a macro phenomenon by the aggregation of micro level behavior. This micro level behavior is in turn influenced by the opportunities and restriction set by the current design of the HCS.

To illustrate the basic idea of an actor centered explanation, take the relationship among two features of the HCS. The first one is the remuneration mode for physicians, the second feature is the level of HCE in a country. For the sake of illustration the comparison is restricted to two remuneration modes. A physician can be salaried or can be remunerated by a fee-for-service-remuneration, i.e. he gets an amount of money for every medical service he delivers.

The general behavioral assumption is that physicians, just as everybody else, are behaving rationally and self-interested, striving to maximize their personal utility. A physician’s utility is related positively to his income and negatively to his work effort. How does the physician behave when confronted the two different institutional settings?

a) Under fee-for-service-remuneration, his income is directly related to the quantity of services he delivers. Since the patient cannot evaluate the appropriateness or necessity of the services but is more or less forced to accept the physician’s judgment and recommendation, the physician can use the information advantage to increase his income by supplying additional services. There will be a trade off, because doing so also increases his workload and reduces his utility. For instance, one would expect that the physician oversupply services which require little work more often than those require much effort and time.



b) If the physicians receives a fixed salary, he has no incentive to supply additional service: this increases his workload but does not increase his income. He may have an incentive to maximize his net-utility by reducing his dis-utility arising from effort.

Both predictions of behavior hold true for all individual physicians in a country's HCS. Every single one of them is confronted with basically the same situation, and will make on average the same decision: in the one HCS he will increase the number of services, in the other he won't. The macro level consequence of this micro level behavior follows from a simple aggregation process. The HCE in a country encompasses, among other items, the sum of the costs incurred by all physicians. In the HCS with salaried physicians this is the sum of their salaries, while in the HCS with fee for service remuneration it is the sum of the fees for all services provided. In the second case, each physician has an incentive to increase his income by supplying more services - aggregated, i.e. by counting the costs of each service supplied, one ends up at a higher level of HCE in countries with fee for service remuneration.

Connecting institutions to micro level behavior which is then aggregated allows to give an actual explanation for effects found on the macro level. For instance, one observes that NHS systems require less resources. Why is that? What in the NHS system is it which causes lower HCE? Given that in NHS systems most of the providers are salaried, and thus have no incentive to increase the quantity of services one has an causal mechanism underlying the effects found for NHS dummy variables in regression models for HCE.

But in addition, one can make the prognosis, that the effect of a NHS dummy is to a certain degree spurious, since it is not the NHS type per se, but the fact that the NHS dummy is a proxy variable for a certain remuneration mode, namely salary. Further, this explanation also provides an explanation for variation within the NHS type – for instance in a NHS, the HCS may administered by the state administration, paid out of general taxation and the services may be provided by physicians employed by the state. According to the explanation provided, none of these features is relevant for HCE. The only relevant question is, how physicians are remunerated. If the physicians employed by the state are nevertheless remunerated on a fee for service basis, the HCE will also be higher. The same is true for non-NHS systems: if physicians, albeit self-employed, are remunerated in a way which makes the income independent form the number of services provided, HCE will be lower.

### ***The Logic of a Delegation-Based Comparison: The Health Care System Inventory***

The logic of a comparison based on delegation relationships and built-in control in application to the HCS is the following: the institutional design of a HCS is analytically divided into delegation relationships among various actors. The idea is that it is not actually the “type” of the HCS, but a certain feature frequently associated with this “type”, which is the relevant variable. The delegation approach restrains the domain of what relevant variables are, to delegation relationships and their control.

Despite its intellectual attractiveness, the empirical application of this comparative strategy remained scarce and restricted to isolated relationships, for instance among a provider and a patient. This limitation to one relationship may result in misleading conclusions.

For instance, if an incentive has been introduced in a country’s HCS, this happened by way of a reform which usually also changed many other aspects – possibly such aspects, which could counteract the impact of the incentive introduced, canceling out the effect of the latter. For instance, the incentive set by a different remuneration mode lead to a reduction of services provided, as was intended. But if the reform failed to create a “safety net” for instance free provider choice – the incentive may also decrease output and quality, and there may be no net effect of the HCS’ efficiency, because both, input and output decrease. An example from the demand side is the introduction of competition among insurance funds. This competition is without any effect on the funds’ behavior, as long as the management of the fund can rely on the fact that the state or other funds will stand in, if the financial situation of the fund gets critical. Similarly, to give the administration of a fund the means and instruments which enable them to increase their internal efficiency, is without impact if the citizens have no free choice among funds. Last, to introduce co-payments to influence patient’s consumption can be expected to be without effect, if the patients can turn the consumption-dependent payments into a consumption-independent payment by entering a supplementary insurance which then covers the co-payments completely. The overall costs for the citizen is higher, but the marginal consumption remains free of costs.

To capture the existence of delegation relationships, an Health Care System Inventory is required – a check list with which to look at a number of HCS and make an inventory of which features are present, obtaining a standardized and also encompassing description of a HCS in terms of delegation and control.

## 5. External Control of Health Care Systems

The previous chapter treated the built-in control mechanisms implemented in the current design of a HCS which shall avoid the problems inherent to the provision of health care by setting the ‘right’ incentives, so that the actors behave in a way that no opportunistic behavior occurs in the delegation relationships. If these control mechanisms are functioning, active and visible control by an actor outside of the HCS is not necessary, since opportunistic behavior is not in the interest of the actor respectively does not pay off.<sup>19</sup> Complementary or supplementary to these built-in mechanisms, control can be exercised from outside the HCS. Concerning the exercise of such control, the questions arising are threefold:

- 1) Who shall be or is the actor, the steward, exercising control over the HCS?
- 2) What instruments for exercising control are available to this actor? and
- 3) What determines, whether the instruments available are used or can be actually used, which is a precondition for the effectiveness of control?

In particular the last question is of importance, since the existence of a controller with a large range of control instruments available is without impact if the controller is – for reasons elaborated later on in more detail – either unable or unwilling to use the instruments available.

ad 1) As for the actor exercising external control, the primary actor is the national government. The HCS a societal subsystem is as such in principle under control of the government, subject to changes, regulations and intervention. The government is hence the primary actor in charge of control, its task being a kind of “meta-control” over the HCS as a whole, in particular controlling the control mechanisms and controlling the controllers. The argument is that if the electorate – i.e. the citizens in their role as patients – is dissatisfied with the way the HCS works, the government as the peoples’ elected agent should take up this demand for changes and use its power to intervene in the operating of the HCS in some way.

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<sup>19</sup> For example, there is no need for an external actor to perform a review of whether a supplier of medical services has oversupplied unnecessary services in order to increase his income if the income of this supplier is not dependent on the quantity of services provided. In this case, the problem of supply-induced demand does not exist. The question of whether the supplier did perform the task in an acceptable way, i.e. the quality aspect, is another question altogether, which may require review and intervention.

ad 2) As for the instruments available, I follow the distinction proposed by McKee/Healy (2002b): 10-12) and differentiate the control exercised into control by internal levers vs. structural control. Internal levers are policy and regulatory instruments currently available in the HCS allowing the government to intervene in the day-to-day operation of the HCS. Examples of this are the government's competence to set budgets or contribution rates. Structural control shall be defined as the government's usage of its superordinate position vis-à-vis the HCS by changing the institutional design of HCS. An example of this is the creation of a purchaser provider split or the shift of competences from one agent to another agent.

ad 3) As for the exercise of control, I see the exercise of internal levers as policy, and the structural control as changes, i.e. reforms of the HCS. The capabilities of political systems regarding the production of policy and reforms differ largely among countries. I will discuss two approaches to explain these variations before presenting an additional approach combining both approaches.

In the remainder of this chapter I elaborate on these three points, in particular the question, how the observable variation, which is to some degree albeit not completely correlated with the type of the HCS and the political system, in control and reformability can be accounted for by structural features of the HCS and the political system. The empirical questions, i.e. measurement of control and the question of its impact on HCS efficiency and performance, will be treated later on.

## **5.1. Instruments of Control, and the Exercise of Control**

### ***5.1.1. External Controllers: Politically Accountable Actors***

As for the actor who exerts external control, I see the national government as the actor in charge of exercising the external control over the HCS as a whole, in particular over the HCS' institutional design. Even though in some countries, the state respectively the national government has no actual say in the organization of the HCS and the provision of health, the HCS is a societal subsystem under governmental control. The elected government is the central instrument by which the electorate influences its conditions of living and makes policy, in other policy areas as well as in health care. Political parties competing for votes in the electoral arena will offer competing concepts of how health care can be provided and how much of it, and the electorate chooses health policy by electing parties. Albeit health is but

one of many issues in election campaigns, the question of how the provision of health care shall be organized may be a critical question in the competition among the parties.<sup>20</sup> So in electing a party, a voter states a preference for a certain health policy, a certain organizational form of HCS but also on more operative aspects of health care, for instance the size of the budget etc<sup>21</sup>. For this reason, the elected government also has the mandate to create, maintain and supervise a HCS. As described in previous chapter, the election mechanism serves as a mechanism by which the electorate states preferences and can ensure – at least in principle – that the government acts in line with these preferences.

No matter what role the government currently has, it can in principle redesign the HCS. Even a government which has delegated all tasks associated to the provision of health to societal actors remains politically responsible. It can in principle change of HCS, e.g. take back all the rights and duties granted and delegated to societal actors. As the agent of the majority of the electorate, the government is expected to provide what the electorate wants within the limits of the objective constraints.

### ***5.1.2. Instruments of External Control***

To classify the levers a government has at hand to exercise control, I use the distinction proposed by McKee/Healy (2002b: 10-12). I differentiate the control exercised by the government as an actor external and superordinate to the HCS into control by internal leverages vs. structural control. The first lever consists of the involvement of the state in the day to day operation of the HCS. The second lever is more fundamental in nature: the government may change the institutional design of the HCS itself, if the results under the existing design are not acceptable.

The distinction among the usage of an internal lever and the implementation of a structural change might become fuzzy, if one looks at the reality of health policy. While the setting of a co-payment rate is the usage of an internal lever, the decision on which of several remuneration modes possible under the current ‘constitution’ of the HCS is a more structural aspect. Even the criterion of a legislative act as a distinction cannot help here. For instance in

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<sup>20</sup> An example for this were the German elections in 2006. Even though the public was not really in favor of reforms, all parties share the perception that the welfare state in general and the HCS in particular is in need of changes to secure its long-term survival. The way by which this shall be done, is seen differently.

<sup>21</sup> One illustration is the absence of a national health insurance with universal coverage in the United States. According to Rockman (1995) and Hacker (1996), this is due to the fact, that a majority of the electorate has coverage, either by private insurance or associated with employment. This majority opposes the introduction of a system of universal coverage – also, because this would include groups with low or no income and hence increase the redistribution towards these groups.

Germany, even some routine administrative decisions by which the ministry of health sets parameters over which it has control under the current “constitution of the HCS” may require a legislative act, or at least a ministerial directive.

Both features, internal levers and structural control, define one basic dimension which could be called the “autonomy” of the HCS. Autonomy may be high, for instance if the government has no levers available or cannot use existing ones for some reason, e.g. because it is internally blocked. The other extreme, no autonomy, is the situation in which the HCS is part of the state’s administration and under direct governmental control – at least to a degree comparable to which a public administration is under political control.

To be effective, the option of control by institutional reforms does not need to be exercised - it is sufficient that the threat to reform the HCS fundamentally is credible. If the HCS is ‘reformable’, the HCS is under control of the government even if no reforms occur, otherwise it is autonomous.

#### *Internal Levers for Control: Government Involvement in the Health System Operation*

The term “internal levers” refers to all instruments and regulations, concerning in particular competencies, which are currently existing in a HCS which allow the government to exercise control. The border to structural control cannot be drawn clearly, since many instruments also have organizational implications.

Examples of control mechanisms by which the government can intervene in the HCS implemented in various countries are the following:

- Setting limits and restrictions on the access to the medical profession
- Capacity planning for hospitals and physicians in a region
- Regulations concerning the usage of technology
- Price and reimbursement regulations for pharmaceuticals
- Setting of sectorial or overall budgets for the HCS
- Setting of the contribution rates and premiums in Health Insurance Systems
- Deciding how the contributions are calculated, a fixed premium, a share of the wages and salaries, a share of the overall income from work but also of other
- Deciding who has to contribute (only the employed or also the employer, are family members of a contribution payer include with or without paying their own contribution)
- Regulating the catalogue of services covered by the HCS

- (Dis-)approval of decisions made jointly by societal actors in the HCS

The degree to which these levers exist empirically, i.e. both formally exist as a competence of the government and are factually used by the government, shows a wide range. The levers for state control range from the integration of the HCS in the state's bureaucracy with immediate administrative control over the operation and the resources of the HCS by the government to indirect external control for instance by approving the decisions made by the societal actors in the HCS or setting overall restrictions, like overall or sectorial budgets, increase rates for budgets or contributions.

With regard to the empirical application, two things are noteworthy: first the number of instruments available is a first indicator of the availability of external control, second the various control instruments can be expected to be of unequal effectiveness.

A further noteworthy point is that the availability of these levers does not tell us something about whether they are used or not. If a government is blocked, for instance because the parties in government cannot agree on the usage of a control instrument, the lever is unavailable and ineffective as a mean for control. If the government is unitary and has a clear position on health policy, the actors in the HCS might anticipate this and behave in a way that makes it unnecessary for the government to actually use the lever.

### *Structural Control*

Apart from the usage of existing levers, the government may exert control by changing the HCS itself. For instance, the government may increase its possibilities for operative control by creating additional internal levers. The strongest measure of external control is the threat of the government to change the structures of the HCS fundamentally, if it does not work in accordance to the electorate's preferences. Examples of structural control are:

The integration of suppliers into the state apparatus, like nationalizing or buying hospitals, turning self-employed physicians into state employees.

The abolishment of insurance funds by replacing them through institutions which are an integral part of the state's bureaucratic apparatus. Or the other way around, i.e. the delegation of tasks hitherto conducted by the public administration to societal actors independent from the public administration.

The creation of decision-making bodies and institutions respectively changes in the way they work. The latter encompasses their composition, i.e. who participates in them, the question how decisions are made and what happens, if the institution it is unable arrive at a decision.

For instance, a decision may require a consensus of all delegates or a majority; in the case no decision can be agreed on, regulations can state that either the status quo can prevail or it is up to the government to make a unilateral decision etc.

Or, as a last example, the creation of internal levers for operative state intervention, such as the requirement that outcomes negotiated among societal actors require the approval of the state.

## **5.2. Exercising External Control**

Control is exercised as a mean to bring the HCS back into line with the wishes of the electorate. But looking at some examples for the relationship among government and the HCS, reveals, that both the government's involvement in the operation of the HCS and the government's chances to implement structural changes differs substantially among countries.

- Government control is highest in NHS systems, e.g. in the UK. The government controls nearly all major aspects of the HCS and is directly responsible for them. In France, the HCS has corporatist elements, but the government has retained several levers of control, also a kind of ex post approval of decisions made by societal actors. In the American HCS, which can in fact be seen as consisting of several HCS existing parallel in the same country and covering particular groups of the population, the government directly controls two of the country's HCS, Medicare and Medicaid. The third HCS is under control of the government only to a degree that any other economic business is under government control. In Germany the HCS is in effect run by the associations of suppliers and the sickness funds, while the government has few levers to exercise control. Far from being superordinate to the HCS, the government is one actor among others, and not even one of importance.
- Changes in HCS show similar variation. When looking at the incidence of structural control, e.g. reforms of the HCS, the case study literature on health care reform showed that there are countries in which reforms are very difficult or impossible to achieve. In others, fundamental changes can be observed. Both the British and the New Zealandian HCS were changed fundamentally. Other countries show no such changes. Health policy is in many countries a typical example of government failure in the sense that governments and political actors despite formal power, the explicit appointment and legitimacy appear to be helpless in the struggle with the societal



actors, see as the most clear example the German case as described in Webber (1988, 1989), Rosewitz/Webber (1990), and Bandelow (1998).

The actual question is thus, why despite the fact that it is clear who shall exercise control and what instruments could achieve what aims, the usage of control differs so much among countries.

There are additional observations which indicate a possible answer. Regarding the usage of levers, it is observable that there are certain types of political systems, in which more changes are observed, and existing levers are used more often. And there are certain types of HCS, in which more change is observed than in other types. Both features however, explain only part of the variation. There are HCS of a certain type, which are easy to change, and HCS of the same type, which are difficult to change. Similar, there are political systems which bring about change in all policy domains, and political systems, which didn't get changes done in any policy domain.

My answer is to combine both features to explain the exercise of external control, be it in the form of interventions (usage of levers) or institutional changes. The first step is to answer, how the differences among political systems' capabilities for political action in general and the potential for control can be explained. The second step is to explain why some HCS are more amenable to intervention than others. To explain the occurrence of policy changes and the variation in a country's capability to bring about policy changes, two general approaches were proposed in the comparative politics literature. The first strain, based on the work of Tsebelis and Immergut, focuses the political system to explain variation in policy production and the occurrence of reforms. The second strain focuses on societal factors and is based on Olson's work on interest groups and the impact they have on policy making.

I will present both approaches before developing an addition which is a synthesis of both. My basic argument is, that the explanation of the variation in the potential control of the HCS is clearly dependent on the organization of the HCS and features of the political system, but that these two approaches must be complemented by the interaction among these two.

### ***5.2.1. The Comparative Politics of Government Capabilities***

The production of policy, the occurrence of reforms or the lack thereof, or more generally: the capability of a state to act is a central theme in comparative politics. This is also an implicit

aspect of all studies on HCS reforms<sup>22</sup>. The exercise of control over the HCS or any other societal subsystem in any form is policy making and a government action. To exercise control or to keep societal actors in line by credibly threatening with the exercise of control, the political system must be capable to act, i.e. to make policy and to bring about policy changes. A government is capable for action to the degree it can easily produce policy and to the degree that it is free in the range of policy it can make<sup>23</sup>. Empirically, capability for policy making in this sense varies substantially. In some states fundamental policy changes in any policy area can be implemented relatively quickly and easily. In other states there seems to be what is often called a deadlock: the policy making process itself is cumbersome, time consuming and the outputs are only small changes and moreover, even the actual implementation of the laws seems questionable; see the overview in Tsebelis (1995) and Tsebelis (2002).

What features of the political system determine its capability for policy change, in particular the policy making capabilities of the government which is usually the initiator of policy changes? A priori, the factors relevant for this can be distinguished into actors and the institutional setting which the actors are embedded. Two actor-based concepts relevant for the explanation of variation in policy production have been proposed in the literature on comparative politics. The first one is the determinedly actor centered veto player approach by Tsebelis (1995), the second one, more structurally oriented but nevertheless also actor-based, is the veto point approach by Immergut (1992).

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<sup>22</sup> The comparative analysis of political systems and the study of HCS are confronted with the same problems. Cases sharing one central feature, e.g. responsibility of the government vis-à-vis the parliament, have some other features in common as well, enough to classify them into one category, one type. But the same time, there is substantial variation in other features, e.g. in policy production and political stability, both within a individual political system over time and within the types. This makes theories based on typologies, like 'in parliamentary systems, the production of policy is easier than in presidential systems' subject to ad hoc explanations for the exceptions which are inevitable as long as one stuck to fixed types. The same can be found when comparing HCS. NHS-type systems share some features, e.g. lower consumption of resources and are more amenable to structural reforms than other organizational types of HCS, e.g. corporatist HCS. But at the same time, there is variation within an individual HCS over time, e.g. periods of reform deadlock alternating with windows of opportunity, and an even larger within-type-variation.

<sup>23</sup> Empirically these dimensions are not independent, unusually one can expect that a government may creates small policy changes easily and the degree of difficulty increases as the changes aimed at with a certain policy get bigger.

### *Veto players*

The concept of veto players was proposed by Tsebelis (1995), see also Tsebelis (2000), and Tsebelis (2002: chap. 3) in order to explain variation in the chances of policy change, the occurrence of political reforms and legislative output among political systems.

Background of his work was the question of similarities in policy production within types of political systems but also variation within types of political systems found in comparative political studies. Using the methodological strategy proposed for instance by Kieser/Kubicek (1992): 53) and Przeworski/Teune (1982), Tsebelis went beyond typologization based on fixed and 'typical' combination of features.<sup>24</sup> Instead Tsebelis searched for the underlying variables, dimensions with possible impact on the dependent variable in question. In this methodological framework, an explanation is not based on the type, but on variables; see Ragin (1989); chap. 4). Political systems are not assigned to types for which a statement is made, but evaluated with regard to variables, which can have a range of values. The variation in the explanatory variable is then used to explain variation in the dependent variables, usually with statistical techniques like regression or Boolean analysis.

The concept of veto players as well as the mechanism by which they influence policy making capacity are very straight forward:

„If different characteristics of political systems are significant it must be because of the effects they have on policy outcomes. Every new policy outcome is a departure from a previous policy outcome or, as I say in the remainder of this article, from a status quo. For the status quo to change, a certain number of individual or collective decisionmakers have to agree to this change. For example, to change legislation in Greece, the Parliament, which is a collective player, has to vote in favor of a new law. In contrast, to change legislation in the United States, the House, the Senate, and the president (two collective players and one individual player) have to agree. Alternatively, qualified (2/3) majorities in the House and Senate can overrule any disagreement with the president“ (Tsebelis 2000: 1/2).

The number of veto players is a quantitative feature of political systems and given the definition, the veto players merely have to be counted. Typical veto players for Tsebelis are actors whose agreement is required for changing the political status quo, i.e. to do something.

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<sup>24</sup> Methodologically, this approach is in sharp contrast to the usage of typologies of political systems. Methodologically, a 'type' is seen here as a fixed combination of features, as a particular constellation of underlying variables; see the Przeworski/Teune (1982); Ragin (1989: pp34). What is studied is not the impact of the variables, but the impact of a certain constellation of variables. This methodology is problematic for at least two reasons. First, as Esser (1993) stated, the assignment of a case to a type is no explanation, albeit often seen as one. Second, even if one accepts the approach of 'explaining by assigning' to a certain type, the empirical

At first glance, these are institutions whose agreement is necessary for producing a policy according to the constitution. For an empirical application to policy making in a certain policy area, counting the institutions in a political system who have to agree for a law to become enacted, is according to Tsebelis insufficient: The political institutions are not unitary but typically consist of political parties. The veto player is thus not the institution, e.g. the government, but the parties in government. Similar, a second chamber might be a veto player if it is dominated by the party which is in opposition in the first chamber and in opposition to the government. This explains for instance, why a political system with a second chamber is more often, but not always unable to produce policy than a political system with only one chamber. If the second chamber is dominated by the parties in government, it is not actually a veto player, any proposal acceptable to the first chamber will also be accepted by the second chamber. If the second chamber is controlled by a party, which is in opposition to the majority in the first chamber, the second chamber, or rather the party dominating it, is an actual veto player. As for purely institutional or rather non-political veto players, examples would be a constitutional court or referenda. These exist as a stable feature i.e. as additional veto player independent on the outcome of elections. While the number of partisan veto player may fluctuate, countries with referenda and constitutional court always have c.p. two additional veto players.

As a theory, the veto player approach has the potential to explain for variation in policy production among policy areas within a country as well. But to apply the veto player model to its full extent, one needs a wide range of information, position of the veto players and the policy proposals in a common policy space, which is seldom available. The currently only studies using information on policy positions of the actors and the resulting winsets are Bawn (1999) and Tsebelis/Chang (2004). Despite these high demands, empirical applications using reduced and simplified versions, like the number of veto players resulting from counting relevant political parties and institutional veto players in the simple way described above, can already account for much variation in policy production among countries and also over time<sup>25</sup>.

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application of typologies led to the problem of exemptions and special cases, with a low overall explanatory power of the types and labels used.

<sup>25</sup> The systematic difference, e.g. in the difference in the average of policy production, between a One-Chamber-System and a Two-Chamber-Systems is due to the fact that it is possible that different parties have majorities in each chamber, which is impossible if no second chamber exists. The variation within the group Two-Chamber-Systems or within a country of this type can be accounted for by the current majorities in each chamber.

### *Veto points*

The concept of veto points was developed in the studies by Immergut (1990), and Immergut (1992) on the historical development of HCS. Even though the concept is more structurally oriented than actor-based, it basically captures same idea underlying the veto player approach. There are actors and institutions in the political systems – which are actors and institutions with veto power and hence veto players – which are potential points of access for societal actors:

'By envisioning political systems as sets of interconnected arenas and examining the rules of representation within each, one can predict where such 'veto points' are likely to arise. Political decisions require agreement at several points along a chain of decisions made in different arenas. The fate of legislative proposals, such as those for national health insurance, depends upon the number and location of opportunities for veto along this chain. The ability of interest groups to influence such legislative outcomes depends upon their access to the political representatives situated at the 'weak links' or veto points in this chain' (Immergut 1990: 396).

As an exemplification, Immergut studied three HCS, Switzerland, France and Sweden. Up to 1929, all three were very similar. From this comparable situation, the three systems developed in very different ways and in the 90s, the time Immergut conducted her study, the HCS differed substantially. Looking at the developments, Immergut finds that in all three countries similar proposals were discussed in the political arena and all three governments had similar ideas and preferences on how the HCS should develop institutionally. The supreme aim of physicians in all three countries was the maintenance of the self-employed status and the minimization of control exercised by the government or other institutions on the physicians professional independence. What differed between the countries was the political system, in particular the number veto points, i.e. points where a societal actor could try to intervene in order to stop any change. In Sweden, there were no veto points after the government made its decision. As a consequence, once a proposal was decided by the government, there were no points of access for the physicians to stop the changes and the government got its way. In France under the IV Republic, a large number of potential veto points existed: many quite fragmented parties in government but also fractions of these. All the physicians had to do were to establish contact to one of these veto points, and to make him cast his veto. In Switzerland, governments were more stable, but the option of a referendum gave the physicians a mean to block legislation even after the enactment.

According to Immergut, these differences among the political systems explains quite well the differences in the HCS development which started from a very similar situation and was driven by actors which had in all three countries basically the same interests.

### ***5.2.2. The Societal System: Interest Groups and Policy Production***

Complementary to the political system one can also look at the question, what societal factors influence a government's capability to bring about policy change. Using interest groups as an explanatory factor for variation in policy production and reforms can explain some variation, in particular with regard to the question whose interests are more influential for policy.

The classical theory for this domain is Olson's logic of collective action, see Olson (1965, 1982). His basic idea is that interest groups are created or come into existence over time, but that chances for becoming organized differ systematically between groups. There always exists a large variety of people with common interests in a policy area, which are in the beginning unorganized, latent groups. Groups vary with regard to features necessary for becoming an organization which then actively articulates interests vis-à-vis the political system and as a consequence, certain groups will become organized more easily and once organized be more influential than others. Olson's argument is basically that the incentives of the individual to participate in an organization differ systematically among groups, and that smaller groups with higher stakes are more likely to get organized and to exert influence than larger groups with lower stakes.

The model offers an explanation for two empirical findings in health policy. First, Olson's model can account for the dominance of physicians, pharmaceutical industry or insurance funds in the process and outcomes of health policy, while the patients remain a latent group. The first three groups are small, and their stakes are high. The patients are numerous, and the stakes for each patient are quite low.

Second, because the organizations created by interest groups have, as a organization, a will to survive, the number of organized interest groups is usually growing. With regard to reformability, the model implies a decrease of a government's capability for action, i.e. a constant trend towards increasing difficulties in policy production, fewer reforms and less policy production. The reason for this lies in the fact that once interest groups exist they will articulate the interest of their members vis-à-vis the political system and will obstruct changes. This explains the ratchet effect and the path dependency observable in many policy areas: once organizations of interest groups are created, their primary aim – of course apart from obtaining advantages for their clients – is it to survive as an organization. The more of

them exist, the higher the chances that a policy change will hurt at least one of them, which will provoke actions aiming at blocking the reforms.

### ***5.2.3. Exercise of Control: Open Questions***

Both explanations for the occurrence of policy changes and reforms presented in the above sections use a certain set of explanatory factors located either in the political system or in the societal system. These factors vary at one level, e.g. the country, but are constant at another one, e.g. the policy area. This sets a limit to the type of variation in control which can be accounted for by each approach.

The disadvantage of the veto player approach is the substantial amount of information required for an application of the full model. Applying the model to its full extent requires not only the number of veto players but also information on their ideal points and the location of the status quo. Only then the full explanatory power of the model arises, allowing for prediction of whether and which change will occur using the spatial model as an analytical tool; see Bawn (1999) and Merkel (2003).

Lacking this detailed information, both the veto player and the veto point approach are able to explain differences between countries, but not within a country unless the number of veto players differs over time. There are however cases of countries with a similar number of veto players, which nevertheless differ in regard to the usage of external control. The question is, how this can be explained.

The approaches focusing on societal factors, i.e. the idea, that interest groups get established over time, implies that the explanatory variable ‘establishment and power of interest groups’ has a more or less constant increasing trend over time. A variable like this can only account for a diminishing capability of the political system to implement policy changes or reforms over time. The model cannot account for sudden windows of opportunity which can be observed. The model as proposed by Olson and as applied by Schmidt, aims at explaining variation among countries: albeit not explicitly stated, the approach is also applicable for explaining variation among policy areas, since the number of interest groups varies among policy areas and so does the age of a policy area.<sup>26</sup> The other aspect of Olson’s work on the economics of group organization, can explain why certain groups are to be expected to be much more influential on health policy than others. This however, is completely in line with the empirical evidence on the content of reforms, which usually spare the providers rather than the patients.

Each of the two approaches offers explanations for a part of the variation in the usage of control. For instance, it follows from the veto player/veto point approach that the chances to exercise control are lower in countries with many potential veto players / veto points. From Olson's work on interest groups it follows, that small groups with high stakes are more likely to build organizations able to articulate their interests vis-à-vis the political system and are therefore more likely to influence the policy outcomes. The both approaches are in a sense complementary.

### **5.3. Indirect Veto Players: Veto Power of Societal Groups**

In this section, I will propose a model, which bases the exercise of control over the HCS on the interaction among the political system and the HCS. Following the approach of Ellen Immergut to combine societal and political features, this model shall be able to explain the chances for overall control and reformability in a country's HCS as well as the overall direction the development a HCS follows:

With regard to the empirical measurement of "external control" as a factor influencing HCS achievement and efficiency, the central point is to develop a feasible way to answer the question, why veto players cast their veto against the exercise of control by the government on behalf of the electorate. It shall also be taken into account by what mechanism the organizational form of a HCS impacts on the exercise of external control. The answer I propose is a conceptualization using comparatively accessible information on the political system and the organizational features of the HCS, in particular the organized groups existing in the latter.

Using veto player / veto point theory, one can straightforwardly state that the usage of existing control instruments or the implementation of structural reforms as means of external control by the government in a situation in which changes and interventions are demanded by the electorate will occur, if none of the veto players in the political system casts its veto respectively no veto point is used. At the conceptual level, getting an answer to the question whether a political veto player will exert its veto when the usage of a control instrument or a

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<sup>26</sup> Environmental policy is a "younger" policy area than are agricultural, trade or social policy. Thus one would expect more changes and reforms in this domain than in established domains.



reform is to be decided on, is *prima facie* equally simple: the veto player will cast its veto, if the proposed policy is less preferred than the status quo. But what determines this?

With Tsebelis and Immergut, I start with veto players/points in the political environment, i.e. actors whose agreement is necessary of a policy change or the usage of a certain control instrument. These institutional or partisan veto players I will call **direct veto players**. Direct, because of their immediate involvement in the policy making process, where it is their decision whether to cast a veto or not. Insofar, as health policy is non-constitutional policy making, these veto players are first of all the parties in government. Health policy, e.g. setting the budget for health care, does not require the agreement of the constitutional court and is not subject to referenda.

Without information on the ideal points, the status quo and the location of a policy proposal, the number of veto players is merely the *potential* number of veto players. This does not really contribute to predicting the exercise of control over a country's HCS. Parties, as the typical veto players, have a general ideology, which also has certain implications for health policy.<sup>27</sup> But in the end, these are relatively vague positions and the derivation of a position towards a certain control measure or a reform may be possible but surely will be both imprecise and difficult unless done in the setting of a case study; see for instance Bawn (1999) and Merkel (2003).

Regarding an empirical application this means that, given only the ideological label of a party in government, it is quite difficult to predict, whether this party will cast its veto on a certain intervention or reform. Further, direct veto players, like political parties, have no genuine (i.e. financial) stake in health policy. Nor do they have sufficient information to evaluate a policy in terms of advantages or disadvantages for certain groups, let alone its overall effects.

To sum up the problem, with regard to the exercise of operative control or the occurrence of structural reforms, the mere counting of institutional or direct veto players without information on the spatial constellation is insufficient to make any prediction. It remains unclear, whether any of them will cast its veto. To make a clearer statement, one would have to extract the health policy positions of the parties, a task which is beyond this study.

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<sup>27</sup> For instance left wing parties are more likely to favor a strengthening of solidarity, i.e. the redistributive function of the HCS. One would then expect to be in favor of introducing elements in the HCS which redistribute money from high income to low income groups. Liberal parties are more likely to favor personal responsibility and prevention, and are often closer to the self-employed, among which the self-employed medical providers are a large fraction.

To get an approximate but feasible solution to this problem, I propose to base the question on the interaction among political actors and societal groups by seeing policy making as an exchange among both. The notion of policy making as an exchange is based on the assumption that parties are motivated by the reelection motive. To get reelected, they need votes, i.e., political support. They can obtain this support by offering certain policy. Speaking with Downs (1957), parties offer a certain policy in order to get elected and to enjoy the ‘spoils of office’. As a consequence, the ideal points, their interests and positions to general as well as specific questions are derived from the interests of voters or interest groups.

Usually, parties do not appeal to all voters, but to certain groups. Parties have their traditional clientele, for instance the self-employed, the farmers or blue collar workers, but also certain interest groups, like the industry, trade unions or professional associations; see the “selectorate model” Bueno de Mesquita et al. (1999). The party acts as a representative not of the whole electorate, but of its clientele. The interaction among a party and its clientele can be seen as an exchange: the clientele delivers political support, by votes or other ways like campaign contributions, public support or protest. In exchange, the party delivers a certain general policy, blocks disadvantageous policies, respectively enforces a specific policy advantageous to the supporting groups. The exact way by which this exchange is performed is not of particular interest here.

Applying the idea of policy making as an exchange of policy in return for support to health policy, implies that a party’s position in health policy is the product of the interests presented to it by it’s voters and supporting interest groups. A certain party will have the support of certain groups, will represent primarily their interests and cast a veto on behalf of them. For instance, a party may represent the supply side, e.g. the pharmaceutical or medical devices industry, the physicians or pharmacies. Other parties may have no such link and will maybe more concerned about the patients in their role as the payers of the HCS. Contrary to parties, the clients are directly concerned by whatever health policy is made. Societal actors can be assumed to be well informed about the consequences of policy interventions and institutional changes, i.e. they can translate abstract policy in concrete financial consequences for them.

Based on this conceptualization, I propose to measure indirect veto power and to count indirect players as organized societal groups with access to direct veto players.

With regard to the question of using a certain control instrument or the enacting of a certain structural reform of the HCS, direct veto players will cast their veto when their clients tell them to do so. Indirect veto power arises from the following constellation:

- On the one side, there are institutional and particularly reelection-motivated political actors with formal veto power, but usually without substantive interests at stake.
- On the other side, there are societal actors with no formal veto power, but with informal resources (protest or political support), relevant for the political actors and most of all with a substantive interests for or against certain policies.
- Both are connected via exchanges, in which a policy or an intervention is either delivered or blocked by the political actors in exchange for political support offered by the societal actors.

The interaction between the societal actors and the political actors will determine, whether control in any form is exercised or will be available at all. And if so, at whose advantage or disadvantage. The answer to the question, whether a direct veto player will cast a veto, is therefore, that it depends on which societal actors have access to him and have enough influence on him to make him cast his veto on behalf of a certain societal group.

Summing up the argument, I arrive by the concept of the **indirect veto player** and **indirect veto power**, as the actual determinant of the possibilities of the external control over and the reformability of a HCS. To the degree that a societal group can obtain access to a political actor, this societal group will become an indirect veto player vested with indirect veto power. With respect to the question of external control the hypothesis is, that it is indirect veto power and not the political system nor the organizational form of the HCS per se, which determine whether external control over the HCS is or can be exercised respectively structural reforms are possible. And, with regard to the achievement and the efficiency of the HCS, the hypothesis is, that the more indirect veto power exists, the lower the levels of both achievement and efficiency, because it is not possible to intervene from the outside to improve the HCS' performance in both regards. Low levels of both have to be tolerated, because the state can neither intervene in the operating of the institutional setting nor can change the institutional setting producing these low levels.

#### **5.4. Indirect Veto Power: Political Systems and Organizational Forms of Health Systems**

The question is now, What determines how many and which indirect veto players will exist in a certain country's HCS at a given point in time? Given the concept of the indirect veto power, the number of indirect veto players and the fact which groups will be an indirect veto player is dependent on three aspects:

- a) The political system, i.e. how many direct veto players exist, which can be addressed by societal groups as potential addressees?,
- b) How many organized societal groups exist in the HCS? A HCS in its current organizational form may (or may not) foster or even require the creation of organized societal groups.
- c) Which societal groups are, given their characteristics, more likely to have resources available which can be exchanged in return for access to a direct veto player like a political party.

This section will elaborate the impact features of the political system and the organizational form of the HCS have on the number of indirect veto players. This structural perspective will be supplemented by a review of how the characteristics of societal groups, which make it more or less likely that a particular group becomes an indirect veto player. These elaborations also serve as a reconstruction of some observations already existing in the literature.

##### ***5.4.1. Impact of the Political Environment***

The number of potential veto players, even without information on their ideal points or the position of the status quo, is one component influencing the number of indirect veto players. The more direct veto players exist, the higher the chances, that a societal group will establish a link to one of them strong enough to obtain indirect veto power. Thus one would expect less exercise of external control in political systems with many veto players. The empirical question is, whether in HCS embedded in political systems with many veto players, the performance of the HCS diverges from the interests of the electorate both longer and to a larger degree compared to countries with fewer veto players. Do HCS embedded in a political system with more parties in government systematically underperform in terms of achievement and efficiency?

##### ***5.4.2. Impact of the Basic Types of Health System***

The basic type of a HCS might affect the number of indirect veto players because certain types of HCS affect the number, role and the power of organized societal groups. Indeed, one

finds stronger government control and more reforms in HCS, which are not relying on organized societal groups to operate the system. What follows is also a reconstruction of the between-type variation in reform activity found among basic organizational types of HCS in many studies of health system reform.

The basic types of HCS are market systems, Nationalized Health Services (NHS) and corporatist systems, a typologization, which in turn corresponds to the three more basic modes of (re-)allocation: market, state hierarchy and negotiation<sup>28</sup>. The elaboration will, for the sake of the argument, abstract from the actual design of “real” HCS belonging to each type and focus on the “ideal” type.

### *Market Health Systems*

The market as the organizational principle of a HCS means in its “ideal” form, that all actors in the HCS act just as individuals behave on a normal market for goods and services. Every consumer individually decides to consume or offer a certain quantity of goods and services respectively to buy an insurance that will cover the costs. The HCE is hence the aggregated willingness to pay of all individuals in the country. Every supplier decides individually to offer certain medical goods and services, to use certain medical techniques or therapies. The interaction among supply and demand leads via the market mechanisms to prices for goods and services from which features of the HCS like the quantity of medical services provided or the overall expenditure for health follow. So all aspects of the HCS are determined by decisions which are essentially of private nature.

The central organizational feature in a market based health system is that – in the abstract, model-like ideal form – all this happens decentralized, without any form of centralized decision making or an organized aggregation of demand or supply, for instance by way of negotiations among collective actors. The role of the state is limited to the enforcement of contracts and so on, and does not differ to its role in other economic sectors.

What is the effect of this organizational form for the existence of indirect veto players and thereby the chances for the exercise of external control and reformability? There is no actual process in which the HCS is “governed”, and therefore no regular basis for the societal actors to participate and to develop a self-perception of being in charge of the system. Individual actors will organize themselves to groups, for economic reasons, like firms do in the normal market, to try to influence the market according to their interests. But the mode of interest

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<sup>28</sup> See Mayntz/Scharpf (1995: pp.62) and Schulenburg/Greiner (2000): 176).

intermediation will be pluralistic, and there will be no guaranteed roles for societal actors. The question what groups will build organizations and what power resources these organizations will have, will be dependent on the features of the groups, i.e. the economics of collective action (which will be explored in more detail in the next section). There will be no encouragement from side of the state for societal groups to build organizations and there will be no activity of the state consciously creating organizations, for instance as countervailing power to spontaneously build organizations.

### *National Health Services*

A National Health Service, NHS, in its “ideal” form means the provision of health care by the state. The medical infrastructure is provided by the state, medical services are provided by persons employed by the state and the HCS itself is administered by the state, by means of an administration which is part of or directly accountable to the government. The state is therefore in control of every aspect of the HCS: the way the HCS is financed, the amount of financial resources available for medical consumption, the types of services and quantity of services provided, the quality, the technologies available and the conditions of their usage and so on.

The central organizational feature is an extremely centralized process of decision making by which the government does, by administrative or legislative act, decide on all above mentioned aspects the HCS. These decisions are then implemented in a strictly hierarchical way. Together with the complete control over the HCS goes consequentially also the complete political responsibility.

Given this admittedly idealized definition, the question of control is prima facie trivial one, because the government has all levers available to exercise control. It is then only a question of “organizational inertia” and the number of direct veto players at the top of the “chain of command”. The HCS does not require groups, and if they exist, they are more like trade unions of public employees, with a role in negotiating the wages and working conditions, but with no say in how the system is run.

However, even this organization form has at least one not really societal, but at least “non-state” actor, viz. the bureaucracy running the HCS. While in theory the HCS administration is part of the state administration and subject to hierarchical control, its preferences differ, as described above, from those of the electorate. Consequentially, it will try to influence direct veto players with the aim of blocking certain interventions. Empirically, the question of how much the state, the political hierarchy is actually in control of the lower sections of the public

bureaucracy has to be answered differently, and the same is true for HCS. For instance, in some HCS of the NHS type, the hierarchy is extending downward from the ministry of health. In others, there are structural breaks, e.g. that the actual job is done by regional or local bureaucracies, which are organizationally independent from the national bureaucracy.

### *Corporatist Health Systems*

In a corporatist HCS the state has delegated the task of providing health care in an encompassing way to societal actors.

HCS of this type share with the market mechanism the basic feature, that the system is divided in to supply and demand. But contrary to the market system, both sides are aggregated and incorporated: the individual suppliers or consumers are by public law organized into larger corporative actors. The central parameters of the HCS – prices, quality, catalogues/kinds of services, use of technology, investments in infrastructure etc. – are all negotiated between the organizations representing both sides. This concerns not only the operational parameters like budgets, but organizational questions as well<sup>29</sup>. The state as an external and superior actor, is massively reduced in its capability to intervene. Even if the state intervenes, this happens by way of participating in negotiations rather than by way of unilateral and authoritative intervention. For instance, if the government participates, it participates just as another actor or mediator. However, the only substantial control mechanism retained by the state is the power to abolish the corporatist structure as the overall governance mechanism, which is itself removed from the negotiation among the corporate actors.

What is the impact of this organizational form on the existence of indirect veto players?

The first point concerns the existence of organized groups. Since all tasks are delegated all societal actors enumerated as agents in chapter 4 can exist, and indeed often do. Due to the fact of all decisions being made in negotiations among organized groups of societal actors, the HCS forces the actors to organize themselves. Sometimes the state even created the organization of actors, if they did not spontaneously built organization on their own and transferred substantial rights to them.

The second point concerns the role of the societal groups. Due to its basic mechanism of putting societal actors in charge of the HCS' day-to-day operation as well as basic

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<sup>29</sup> For instance in Germany, the amount of remuneration (as a substantial question/decision) but also the remuneration mode as a procedural and structural question is negotiated (for instance fee for service or capitation) or can be changed, if the actors agree to do so.

organizational questions, the organizations developed a self perception of being in charge and legitimately so. Autonomy from state intervention is a goal shared by all organized groups in a corporatist HCS, often up to the degree that any state intervention is seen as requiring legitimization.<sup>30</sup> One reason why the state might renounces control over a societal subsystem as vital and politically relevant as health, that by delegating, the state realizes several advantages. It relieves itself from the cumbersome task of regulating and operating a HCS which is a complex system: the solution reached by the societal actors might be better in a technical sense, since the societal actors have more information about what might work. It also relieves itself from the political responsibility.

Regarding the question of how a health system's basic organizational form impacts on the indirect veto players, the hypothesis would be that the number of societal actor is lowest in market systems and NHS systems, but substantially higher in corporatist systems. The chances of exercising external control are inversely related to the number of organized societal groups. With regard to the variables this study wants to explain, the hypothesis is, that the achievement and the efficiency of corporatist HCS is lower than that of either market or NHS systems, for the reason that the existence of a multitude of organized groups make interventions less likely and thus objectionable developments in the HCS have to be tolerated for longer periods of time.

#### ***5.4.3. Impact of Group Features and Indirect Veto Potential***

Apart from system level features, there is a systematic variation regarding which societal actors will form an organization strong enough to influence political decisions and gain indirect veto power. Of all latent groups, only some build organizations and of the organized ones only some are really powerful and play an active role in health politics. To explain which group will become an actor, one has to look at some of their features.

As for the features relevant for building an effective interest group, there is an extensive literature on interest groups, beginning with Olson (1965, 1985) classical work on the logic of collective action.

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<sup>30</sup> Consequently, the organizations perceive themselves as having the right to be heard and the right to oppose what they think is a bad solution (or a solution which is bad, because it would be bad for them). For Germany, a HCS closest to the ideal type of a corporatist HCS as described here, a series of research showed, how the establishment of corporate actors, sometimes with active intervention of the state, created a HCS, which is structurally stable and autonomous to the highest degree.



Features listed in the literature as relevant for building an organization and exert influence are for instance the size of the group, the homogeneity of interests among the group members as well as the intensity of interest (i.e. the size of the stakes), the degree of competition and distributional conflict within the group; once the group is organized, features influencing the potential for influence are the degree to which the organization includes all potential group members and can speak for them, the way the internal decision making is organized, the available of resources, which encompass the potential to threaten with certain actions, political resources (influence on the public opinion or the electorate, access to political actors) but of course also financial resource (for instance to launch publicity campaigns).

Albeit it is hard to evaluate groups in all HCS with regard to these features, some statements are possible because societal groups differ substantially and typically. Factually, the main fault line runs between the patients and the other groups. For the patients, the groups size problem is largest, and the individual patient's "stakes" in health policy, both in absolute and relative terms, are lowest. For all other actors, the stakes are higher, the number of individual actors is lower, and moreover, the problem of building an organization was often solved by the state.

This finding can be differentiated. Within sectors, e.g. the providers, the specialization of the medical discipline lead to distributional conflicts and the growing numbers of providers increased competition for patients. Consequentially, there are among physicians trends towards both taking a unified stance in health policy, but also towards fragmentation. The observable trend towards differentiation into specialist and generalist leads to a competition among these two groups for the share of HCE that is available for each group. This split is in some countries reflected in the existence of separate organizations, for instance for specialists, generalists or physicians working in hospitals, which may weaken the position of the physicians as a group in the relations and negotiations with other actors in the HCS, in particular the purchasers<sup>31</sup>. This effect is countervailed by other group features which are favorable toward organization-building. Because of their small number, physicians are easy to organize, the individual stakes are high and interest in particular within subgroups homogenous. So, despite competition for patients, the common interest is clear: expansion of the 'cake' by increasing the quantity of services provided and higher remuneration for these. The resources available for the provider organization in order to try to influence the health politics are substantial: self-employed doctors as a group can, even if every single one only contributes a small share of his income toward the fund of the organization, achieve a high

level of financial resources which can be used for campaigning. This is in particular the case if the physicians' organization is involved in distribution the money obtained from the administrative organizations to the individual provider. Second, medical providers have substantial political leverage by influencing the opinions of their patients, and therefore the voters: by conducting 'politics in the waiting room', they can influence the voter and the public opinion, stimulate protest in the electorate.

Similar differences in interests can be found among insurance funds (public ones and private, for profit ones) or among the producers of pharmaceuticals (research oriented enterprises vs. the producers of generics). However, the chances of exercising influence for these groups usually dwarf the chances of patients, and little surprising, the former are dominating the health policy processes and outcomes.

### **5.5. Indirect Veto Players and Health System Development**

The interaction between HCS organization and political environment can illustrate health system development in a highly intuitive way.

Consider for instance a corporatist HCS. The number of organizations is high, because the state forces groups to build organizations, and then involves them in operating the HCS. If such a HCS is embedded in a political system with many direct veto players, viz. governments consisting of a large number of parties, the chances that one societal actor can make one political actor cast its veto are high. According to the argument made, one would expect low levels of external control, resulting in persistently low performance and few interventions. But if the political system has few direct veto players and hence offers few veto points, the level of external control may still be high.

The number of veto players may also change over time, which allows to account for even more variation, and also "windows of opportunity". Combined with the prediction about the incentives of latent groups to form organizations and their resources, the model allows for a reconstruction of some empirical observations reported in the literature.

a) Political systems with few direct veto players, like the British system, are more able to political reforms. Even a large number of societal actors exists, they have – c.p. – lower chances to establish a connection to a direct veto player strong enough to become an indirect veto player. Even if there are many organized groups, they still have to address the same veto player, the single party in government, and it may well be that the effects offset each other. If

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<sup>31</sup> See the study by Behaghel (1994).

many direct veto players exist, even few organized societal actors will suffice to increase the probability that at least one will manage to make one of the many veto players cast his veto is higher. One would also expect that the connections between particular societal groups and particular political parties are more stable and more characterized by ideological proximity, because there is a overlapping in the composition of the government. Societal groups do not have to reallocate their attention and support to the current government party, but there is a high chance that certain parties will member of the governing coalition for long time. A case in point is the German Liberal Party, FDP, which is close to the “entrepreneurial” side of health care, and was member of the governing coalition for decades.

b) The organizational form of the HCS impacts on the existence of organized societal actors and at least part of the variation in external control observable between types of HCS can be accounted for in this way. External control will be lower in those HCS which rely on organized groups. Because those groups with an interest in a growing “cake” run the system, this implies, that the HCS consumes more resources. Whether this actually implies underperformance in terms of lower efficiency is however not that clear.

c) Not all groups of actors in have the same incentives to build organizations, nor do they have the same potential power that makes them an attractive partner for a direct veto player. As a consequence, some groups are structurally, more likely to become indirect veto players than others, which has implications for the direction of reforms. The finding, that changes most often go – literally, i.e. in the form of out-of-pocket payments – at the expenses of the patients is one of the best supported results.

c) Another empirical finding is the path dependency of HCS development, see e.g. Wilsford (1994), Giaimo/Manow (1999), or Altenstetter/Busse (2005). It is clear that societal subsystems and institutional settings will change over time. Changes are inevitable since there are always exogenous developments that cannot be handled by the HCS in its present form. But the question is, how easy it is to adapt the HCS to these changing circumstance and in which way it will develop? The idea of path dependency captures this idea: decisions about changes made today will determine which, if any, changes are possible tomorrow:

- Once organized groups come into existence, spontaneously or by administrative decree, they will be part of the future policy process and influence its outcomes. As the number of organized groups increases, the chances for external control and structural changes generally diminish for the reasons given by Olson and Schmidt.
- As with regard to the content of policy changes, the creation of a certain group will set a limit to the kind of policy changes possible, since it is likely that a policy change

disadvantageous to this group will be blocked. As a consequence, most reforms can be expected to be at the cost of the least organized groups, usually the patients.

- As for organizational changes of the HCS, the simplest result is that incorporated actors cannot be removed easily. Organizations of interests, just like public agencies, have a drive to survive. To put it more simple: the people working in the organization have the wish to retain their jobs. So, any organizational change which puts the survival of an organization in question will automatically create opposition from this organization.

## Part III: Hypotheses and Methodological Approach

### 6. Hypotheses: Delegation, Control and Health System Performance

The explanatory approaches presented conceptualize a) why and how the current institutional setting of the HCS impacts on its efficiency and performance; b) why the interplay among individual institutional features is important and c) why the HCS' political environment and also the interaction between the political system and the number of organized groups in the HCS impact on the "performance" of the HCS.

Before engaging in the empirical analysis, I want to summarize the hypotheses for achievement levels, efficiency, and institutional change of HCS. According to the theoretical approach to achievement and efficiency, three factors determining how the incentive problems inherent to the delegation relationships in the HCS and the HCS as a societal subsystem are controlled:

**Built-in control** - As a first aspect of control, there are the built-in mechanisms discussed in chapter 4. They aim at setting the "right" incentives; i.e. design the delegation relationship between principal and agent in a way which assures that the agent's behavior does not deviate from the principal's interests. These mechanisms cause actors to behave in a certain way – because it's in the actor's self interest to do so, without a third party actively exercising "visible" control.

Complementary, a second aspect of control is the control exercised by a politically accountable actor external to the HCS, as elaborated in chapter 5. External control is advantageous for the HCS overall performance because the societal actors running the HCS may share interests which diverge from the citizens and may collude at the expenses of the citizens. The government is politically accountable to the citizens as the original principals. It is in charge to avoid collusion in the HCS the very same way that the government enforces anti-trust regulations in the economic sector.

**External operative control** – As for the government's possibilities to exercise control from the outside, there are firstly those levers existing currently by which the government can interfere into the HCS' operation from outside. For example by determining the overall budget. These levers are operative in the sense, that the HCS under its current design allocates these competencies to the government.

**External structural control** – Apart from using existing levers to “operate” the HCS, there is the government’s formal power to change the HCS’ institutional setup. If the HCS in its current setup – including the built-in control mechanisms and the levers currently available for the government – performs poorly, consumes “too much” resource input, producing “too little” output and citizens are dissatisfied, the government might change it. It may “nationalize” the HCS, by integrating it into the public administration. It may privatize the HCS, by selling the infrastructure or by establishing them into autonomous entities. The point is that the government, the political system is not using the levers available under the current setting, but is changing the institutional setting itself, reassigning competencies, creating or abolishing organized actors etc.

The built-in and the external operative control indicators can be operationalized comparatively straightforward. One can derive structural features which indicate the degree to which the HCS is subject to agency problems. And one can count the parameters of the HCS, which are determined by the government as an external actor.

However, the third type of control is more difficult to measure, both for empirical as well as logical reasons.

(1) The study of health system reform showed, that the production of reform laws is quite a different thing from actual changes. For instance, in Germany many things are changed and often on paper, but the system operates pretty much along the same lines.

(2) Even in the absence of visible control activity by the external actor, in particular in the absence of institutional reforms but also in the absence observable intervention, external control might nevertheless be both present and effective. The very potential to do so, the credible threat to intervene, might be sufficient to keep the societal actors in line with public preferences.

The empirical question concerning the relationship of control and performance are then, whether these features - built-in control and external control - have an effect on HCS performance and if so, which of the three is most important to explain variation in performance and the reforms of HCS?

*General Hypotheses on Delegation, Control and Performance: Institutions matter*

Among most of health policy makers and also among those studying health policy making and health system design, the basic assumption is, that institutions matter. Issues like

demographics, life style and technological development may well matter for the achievement and the efficiency of the HCS, but there is some variation in both, which is not due to these factors, and thus presumably due to the institutional settings and thus subject to change by changing institutional settings. Given the institutional features in the focus of this study, the basic assumption is that the delegation relationships, the incentives set by the institutional design of a HCS, the built-in control mechanisms and the possibilities for external control are a relevant and moreover a genuinely institutional source of variation among HCS' achievement and efficiency. The general hypotheses regarding the impact of institutional features of the HCS and the political system, concerning achievement and efficiency of a HCS are the following:

1. The more delegation relationships, the more “Agency” exist in a HCS, the higher – *ceteris paribus* – the risk for opportunistic behavior by the agents which are basically independent and cannot be controlled, which increases resource consumption and presumably decreases the quality of the services provided.
2. The higher the remuneration-based incentives to provide more services and the fewer and the less effective the built-in control mechanisms (e.g. appropriate remuneration mechanism, competition) are implemented to avoid opportunistic behavior in delegation relationships, the higher the risk of opportunistic behavior and the higher the consumption of resources by the HCS

The general hypotheses concerning external control and reformability of HCS are

3. The more veto points exist in the political system, the lower its potential to control, and the less control is actually exercised.
4. The more societal actors exist, which are involved in running the HCS or at least have a stake in the HCS, the less external control is exercised. Whatever form the external control will take, at least some of the societal actors would be affected negatively and may try to obstruct the usage of existing instruments of control as well as the implementation of structural reforms.
5. The indirect veto potential, created by the (multiplicative) interaction of political veto players and societal actors, will determine the usage of existing instruments and the chances for institutional changes. The hypothesis is that the interaction among both will be a stronger factor than either one taken alone.

Given these hypotheses, the empirical questions are then: First, whether the institutional economics/delegation approach to HCS “performance” as a whole is empirically relevant or

not. Second, whether control mechanisms, be they built-in or external, are relevant for HCS performance.

Regarding the interaction among the political system and the HCS, a question of particular interest is, which of these factors is most relevant for the exercise of control: is the structure of the policy area, in particular the existence of organized groups, more relevant than the political environment or are both in isolation of not much impact, since it is, as I assume it to be the case, the interaction among both, which is most important?

### *Counter Hypotheses: No Genuine Effect of Institutions*

The counter hypothesis is “institutions don’t matter”, at least not in the sense, that they are the actual cause of the HCS’ achievement or efficiency.

The basic argument supporting this hypothesis runs as follows. Institutions and institutional settings like a HCS are endogenous, especially in the long run; see Freeman/Moran (2000 : 45). As such, they will reflect the preferences or restraints of the actors, which are creating them and also tolerate them. Certain institutions might be chosen because a society wants not or can not chose others. Newhouse (1977) argued that some states chose a NHS, because that makes it easier to ration health care. The reasons that health care is rationed might be either limited financial resources or a society which thinks that this level of health care is sufficient. HCE in such a country is then lower – albeit not because the HCS is more efficient, but because the funding allocated to health care is limited.

A society with a strong preference for much health care and a demand, that all ailments must be taken care of will install a HCS in which all incentives are set in a way that makes sure that the provider will look for and take care of every ailment.

The same is true for the development of the HCS. In the long run, a HCS will only oversupply services or produce “beyond-health”-services with no impact on health, if citizens are ready to accept the costs. A HCS producing only low levels of health status and services of poor quality will in the long run only persist, if the citizens are willing to accept this. So in any case, it is not actually the HCS which has the effects on the bundle of input and output, but the preferences of the citizens, who are willing to accept this bundle and install the HCS which produces this bundle.



## 7. Comparing Health Systems: Coping with Institutional Complexity

In my view, the main problem of health system research is that is predominantly case oriented, driven by the available data and in particular driven by the motive, to pay the HCS and its intricacies studied its “due” attention. While this strategy yields detailed insights in the operation of individual HCS and the politics of health in this HCS, the resulting research is fragmented and not cumulative. The possibilities of generalizable statements about HCS institutions and health care reform are limited<sup>32</sup> - often, such statements are not even the aim of the study.

The attempt undertaken in this study, which will be presented in this chapter, is complementary to the case study approach in the sense, that it explicitly abstains from going into the intricacies of every HCS. Instead, it looks only at certain features, which were identified as being relevant from a certain theoretical perspective, viz. the delegation approach. While a different set of problems arise from this approach, there are, hopefully, also different insights to be gained.

### *Comparing Complex Systems: Plenty Variation, Few Cases*

As is stated in the review on the comparative literature on HCS, the problem of comparing HCS is primarily a technical one, arising from high institutional complexity combined with a limit of the number of cases which can be handled in a feasible way. The problem is by no means specific to the study of HCS, but a general feature of small-n studies, and was most clearly stated by Charles Ragin:

‘Although simple and straightforward, this case-oriented research design is far from problem free. The most obvious problem is that the investigator’s confidence in the causal conditions that he or she has identified increases as the number of instances of the outcome increases. The greater the number of cases examined (...), the more impressive the fact that they share common antecedent conditions (...). But as the number of cases increases, so does the difficulty of knowing cases well, making it impossible to become familiar enough with each case to make sound judgments about causally relevant features. Besides, as the number of cases

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<sup>32</sup> Due to the usage of institutional features in quantitative studies by way of dichotomous variables, the situation is better for the impact of institutions on various elements of HCS performance. It is much more severe in the case of the study of health care reform, where there are no studies of reformability over several years or several HCS.

increases, the likelihood that they will share causally relevant feature declines. “more cases” almost always means “more heterogeneity”.’ Ragin (1999): 1226), see also Freeman (2000): 5).

Because HCS vary stronger than most other societal subsystems in their design, the number of institutional features and dimensions on which cases differ increases rapidly as more HCS are studied. One may look at two HCS which are very similar and differ only in very few features, and may try to study the effect of these differences on a certain dependent variable. But if really all aspects in which HCS differ are taken into account, the small-n-problem makes a statistical treatment, e.g. by regression or factor analysis, technically impossible. Moreover, conclusions and the attribution of outcomes to institutions difficult, since there are many institutional features which potentially have an causal effect on dependent variables to conclude that a change in a particular variable seen as independent causes a change in the dependent variable, for instance efficiency of the HCS.

The problem of high institutional variability persists when the research designs like comparable cases, most-similar/most-dissimilar cases, or Boolean algebra are used; see Lijphart (1971), King et al. (1994) and Ragin (1989) for the methods and Blake/Adolino (2001) for an application to HCS.

### *Methodological Approach and Implementation*

At the technical level, the problem to be tackled is hence, how to compare relatively few cases that differ with regard to many features? To cope with the problem several complementary strategies will be used.

As was said above, a crucial problem is the inclination of health system researchers to start from the cases, following an inductive research strategy. Looking at cases as they are, without a theory acting as a “filter”, leads to a kind of ‘drowning’ in case-specific facts and particularities. I want to go the other way around, starting from a theory and testing the theory, by applying it to several HCS. Instead of starting from the cases in their totality, paying attention to the specific features of each case that make up a HCS as a “total phenomenon”, I will start from a theoretical model, select what features are to be taken into account based on this theory and only collect only those features that are relevant according to the chosen theory; see for the method of a theory based comparison Kieser/Kubicek (1992: 53), King et al. (1994); Bailey (1994) and Landman (2000). The very diversity among HCS makes it necessary to select some features, while consciously ignoring others. As a consequence, this

comparative study of HCS will necessarily be confirmatory with respect to this theory only. Are there indeed systematic differences in HCS achievement and efficiency which correspond to differences in delegation and control?

Then, since even this selection yields a large set of institutional information, I will use data reducing methods which compress many individual institutional features into few latent dimensions. The basic idea is, not to use individual features (such as a certain remuneration mode for ambulatory services), but a summary measure, combining the information on how services are remunerated in all sectors of the HCS as combined feature. A single feature, e.g. the remuneration of ambulatory services, is one aspect of a latent dimensions which is capturing a remuneration style used in the HCS. The same is true for competencies. That the state has a competence is one piece of information. But I will use the fact that the state has a certain competence as an information on this state's location on a latent scale of state control. Furthermore, the HCS will not be analyzed as a whole, but on a sectoral basis, which reduces the number of feature to be used in each step of the analysis.

Based on this compressed information, the descriptive questions are, How are certain tasks organized in different HCS? Which HCS are similar to each other, and among which are the biggest differences? In which aspects is much variation among HCS in the way, a task is performed, and which tasks are performed in similar ways in most HCS?

The more analytical question is, How does the institutional affect efficiency and achievement? The analysis will be conducted in three steps:

First the variables which represent indicators of delegation, but also built-in and external control will be analyzed using the factor analytic method. This gives the answers to how many latent dimensions are underlying the institutional variability and what their content is.

Second, using the obtained factor scores, I will present graphical representations of where the HCS are located in this latent institutional space. Which HCS are similar to each other, when several institutional dimensions are taken into account?

Third, by correlating the factor scores obtained by compressing the directly observed institutional variables, I will look for relationships among latent institutional dimensions, and indicators of achievement and efficiency.

Regarding the occurrence of changes, the task is similar: what changes occurred, and do they correspond to certain features? The hypothesis is, that HCS which are performing well will be

under less pressure to be changed. It also states that HCS which are embedded into political systems which are unable to produce change are changed less often.

The Health Care System Inventory allows to measure change, by looking at how the HCS was organized at a certain point in time, the mid 90s, and how it was organized in 2004.

Given the argument, one has to acknowledge that reforms are conditional both on the need and the potential for change. A HCS might remain unchanged, because it is working so well that there is no need for changes. It might also remain unchanged, because the indirect veto power is too large that the political system cannot exercise control. Hence I will look at change and the setting in which change occurs.

To differentiate both situations, I will use the HCS performance, but also satisfaction, to derive the pressure for reform in 1995, then I will use the information on the autonomy of the HCS and the political systems capability to implement changes, in order to analyze, whether and how the HCS has changed between the two points in time.

### *Limits of the Approach*

Given the range of problems, this study has its limits, which I want to state here as an explicit caveat.

(1) Limiting the range of selected features makes the study subject to the problem of omitted third variables. It may after all be the case that all features included here are actually completely irrelevant for the way the HCS works, and that every variation in features I see as dependent on the variables I have chosen is actually due to variation in other variables unknown, and hence unobserved in the present study.

(2) The approach used cannot deliver an exclusive proof of causation among one or more institutional variables and a variation in a target variable (like efficiency in health care provision and reformability). Institutional features and certain levels of performance might go together, and the explanation might be convincing, but that is no proof. Does, as Newhouse (1977) argued, a state or a society choose a certain institutional setup, because this setup is the most effective way to ration health care and to limit HCE, so that both, a HCS' institutional set up and the HCE are actually caused by a third factor?

## **Part IV: Measuring Delegation, Control and Performance**

### **8. An Inventory of Institutional Structures of Health Systems**

Now that the concepts of delegation, built-in and external control are defined, the central task is capture how delegation and control are organized in various HCS.

Following the approach outlined in the above chapter, I developed an inventory of institutional features, which allows to describe HCS of any type and design in a directly comparable way by checking whether a defined institutional feature is present or not. The basic idea is to have one inventory applicable to all HCS. And the main task is to select those institutional features that make sense even if applied to HCS which are very different.

By this way, the institutional complexity and particularities of the HCS are translated in a standardized description. This description is based on individual features, not on the fixed constellations, which make up a “type” of HCS. For instance, a public integrated HCS is in this view not a different type “sui generis”, but a case in which certain features are present, while others are absent. A public integrated HCS may differ from another public HCS or a corporatist HCS with regard to any of the variables. The idea of the inventory is it to make this differences as well as the similarities quantifiable, to turn the difference into a question of degree rather than of assigning the HCS to incommensurable types.

In the first volume of this study, an inventory of delegation relationships, built-in and external control mechanisms was developed on the theoretical background presented in the above sections. The aim of this "Health Care Systems Inventory", HCSI, is it to describe HCS, whatever they may look like, using an identical framework, so that the resulting descriptions can be directly compared. Direct comparability refers to the existence or absence of defined features like a certain remuneration mode or a certain competence.

In this section, I will briefly describe the basic structure of the HCSI by giving a short overview on its content. The detailed template of the HCSI is given in the Appendix of this volume. The institutional data gathered using the HCSI can be found in first volume of this study; see Kotzian (2007b). The institutional data was gathered for two years, 1995 and 2004, by sending out the template, adapted for the country, to national experts from the academia

and the health system's administration, such as persons working in the Ministry of Health, Health Authorities, associations of providers, purchasers.

The data used for the analysis was taken from this database, but it was recoded; see chapter 10 for the exact content of the variables used in the descriptive and explanatory analysis.

Basically, the HCSI captures the existence and status of actors, the relationships among them, and in particular the allocation of tasks, competencies and control rights. The information concerns the content of the current settings and regulations, but also by whom and how these regulations and settings can be changed. E.g. what remuneration modes are currently in use, but also, how are these modes set and by whom? Are they negotiated by the suppliers and the purchaser, or set by the government?

#### *Part I: Occupational Status and Incentives of Providers, Consumers of Health Care*

Part I of the HCSI is about the providers and consumers of health services.

With regard to the providers of medical services, the HCSI captures information on the predominant occupational status and the predominant remuneration modes of the providers. But it also covers the "incentive at the margin", e.g. whether there is despite that the GPs get most of their income by a capitation or salary nevertheless the possibility - and hence the incentive - to increase their income by providing more services. The question, how the decision on the remuneration mode (e.g. by a budget or a fee) and remuneration amount (how high is the fee for a defined service?) is made is also collected; see also Part IV of this section.

Hospitals are, because of the substantial impact on HCE, treated in a more elaborated way. The HCSI asks for the status of hospitals, in particular about their administrative independence, e.g. whether it can decide on a potential surplus, e.g. reinvest it, respectively whether deficits would be covered, whether it has the competence to decide on questions of capacity (number of beds, staff employed), more general who decides on the closing or opening of hospitals in a region, the decision on investment in high technology, the remuneration modes and how the remuneration, mode and amount, is decided on.

In order to capture the situation of the individual decision maker in the hospital, the HCSI asks, whether hospital consultants and surgeons are paid by salary or whether their income depends on what and how much they do. There are cases in which, even though the hospital receives a case based remuneration, which sets an incentive to limit the expenditure per case, the physician deciding on what to do in an actual case may have an incentive to extend the

quantity of services provided because his income depends on this. In some cases, the hospitals are only the place where self employed providers using the hospital's equipment in exchange for a rent paid, provide services on their own account.

The exposition of a hospital to competition, the main incentive to provide quality and to contain costs, is captured by the question, whether several hospitals, offering the same kind of services (e.g. cover the same indications, the same degree of specialization etc.), exist in the same region. Quite often there is a layered specialization, but in some cases, there is competition, or no competition. The existence of several hospitals to choose from is supplemented by the question, whether treatment costs charged by the hospitals, e.g. the per diems or the price of a defined treatment episode, differ or are identical for all hospitals in a region, respectively the same degree of specialization.

With regard to the patients as the consumers of medical services, it was asked about co-payments to medical services and medical goods, the contributions to the HCS, the issue of covered services, i.e. whether all services are covered either by the HCS or by an supplementary/ complementary health insurance schemes or whether there are sectors, e.g. dental care, where there is factually a market in the sense that the patients themselves pay for a service. I also collected information on choice and access of the patient to In-Patient-Care, Hospitals and Specialists: are there alternative places to get treatment and if so, does the patient has a choice among them. The idea is that having a choice is a necessary precondition for a quality assuring competition among providers.

The issue of gatekeeping, the formal regulations as well as the factual handling of it, is a further element of competition among providers as well as a restriction on the consumption of more specialized services, which are usually more expensive than primary care. The HCSI asks about the existence of gatekeeping for hospitals and specialized services but also, whether it can be skipped and circumvented one way or the other.

One additional aspect of transparency is the question, whether the price of a medical service is at least known to the patient, e.g. by giving the patient a bill. The involvement can be even higher, by making the patient pay for the service in advance and get reimbursed by the purchaser later on. The motivational aspect is further captured by asking, whether the patient has to make a co-payment to a service or not. Since co-payments differ with regard to the incentive they set, the next aspect relevant to make an informed choice is whether prices are

relevant to the patient, e.g. co payments exist, which reflect the differences in prices or whether the co-payment is a lump-sum payment independent of the price of a service.

Last and most important is the question, whether the patient actually has a choice among agents in charge of different aspects of health care delivery: is there more than one hospital or HIF to choose, or is the citizen assigned to a certain provider or health authority by his place of living. Can the patient change the HIF/HA, or is he unable to do so because he is assigned by his occupational status to be – by law – member of a certain fund? The latter aspect is covered in more detail in Part IV.

With regard to the pharmaceuticals and the pharmaceutical industry as an agent, the HCSI collected information on regulation of market authorization, direct price control, positive and negative listings and evaluations of a drug's effectiveness and cost effectiveness as a basis for including it into the list of medicines reimbursed by the HCS, which is in turn the precondition for a larger market for a drug. The HCSI also covers the practices concerning generics – whether generic substitution is possible, who decides and whether the patient has an incentive to use a generic, i.e. can reduce a co-payment. Issues like the existence of limits for the prescribers, for instance a pharmaceutical budget for each GP or a overall budget of pharmaceutical expenditure are also included.

### *Part II: Quality Assurance in the Health Care System*

Part II is about measures to ensure quality of medical treatment. Usually, there are several treatment options for an illness, differing with regard to the cost effectiveness, the risks involved etc. The aggregated experiences made by the medical providers about which treatment is the best and most effective for a given indication is a valuable resource. This resource however can only have an impact, if the gathering and distribution of the information is organized. Possible ways to do that is by installing institutions in charge of doing this on a regular basis. For instance, there can be national/ regional level institutions, but oftentimes, this is done by the medical professional organizations themselves.

The HCSI asks, if such institutions exist and further, if such guidelines exist, for which sectors (pharmaceuticals, specialized care provided in hospitals, ambulatory care, usage of technology etc).

A further aspect of quality assurance is transparency, which is captured in the HCSI by asking, whether there is an institution gathering information on the quality of individual providers of medical services. An example of this is the star-ranking in the UK, but also



reports on the occurrence of medical failures, maltreatment in different hospitals. Since the information is only relevant if known, for instance for the decision of a gatekeeper or the patient himself, where to go for a treatment, it is further asked, whether this information is published one way or the other.

A further issue of quality is also the question how the transfer of newly arisen medical knowledge to the providers of medical services is handled. Given that most professional associations of physicians provide some kind of voluntary continuing education, the HCSI asked whether a provider, the individual GP/Physician has to renew his approbation or licence to provide medical services from time to time (recertification) ?

### *Part III: External control of the Health Care System: Governmental Control*

Part III is about the role of the state, understood as a politically responsible actor in particular the central government, for the HCS. As was stated earlier, the government - as an agent of the electorate - has the function to exert a kind of meta-control over the HCS.

The HCSI captures the level of government most important for the HCS, which can be either the national, regional or local level. The central government is the politically most visible actor and hence the actor primarily in charge of the institutional design of the HCS.

For the exertion of operative external control, i.e. using levers available the HCSI contains a list of possible instruments, asking for each sector of the HCS, whether the government can control issues like capacity, levels and modes of remuneration. E.g. when looking at the provision of ambulatory care, the government might explicitly set the catalogue of services covered, questions of capacity (e.g. number of GPs per capita or in an area), the overall budget for expenditure for ambulatory care, the way the providers of care are remunerated (e.g. fee for service or a per-capita budget etc.), the level of remuneration of medical services, e.g. the level of fees or capitation, the way the ambulatory care providers are organized, e.g. regional level or national-level organization and the determination of the top-level management of the of the organization of ambulatory care providers.

With regard to the question to which degree societal agents in charge of organizing the HCS can be controlled by the government, the HCSI captures by what means the government (i.e. the responsible level of government) can exert control and supervision on the activities of the purchasers, HA/HIFs. Possible mechanisms are the requirement of the purchaser to produce an annual report for the government or a government agency, in which all costs (administrative costs, expenditure for health services purchased) are listed. The requirement

that budget plans must be endorsed by the Government, the publication of the administrative costs of the purchaser, that the purchaser must apply for a formal approval of an increase of contribution/premiums and must deliver reasons for this. The control can also be exercised by determining the top-level administration of the – formally independent – HA/HIF. In some countries, e.g. Germany, the top-level administration in charge of conducting negotiation with the suppliers, is formally elected by the employers and the insured. In others, like France the state determines the administration or at least part of it.

#### *Part IV: Administration and Decision-Making in the Health Care System*

Part IV of the HCSI is about the administration and operation of the HCS, in particular the way decisions are made and the relationship among providers and purchasers of health services.

The "purchaser" is usually either a HIF, or a HA, but sometimes both, e.g. in Greece.

By Health Insurance Funds, the HCSI refers to for private or public, non-profit or for profit organizations which act as an insurance but which are not part of the state administration.

By Health Authorities the HCSI refers to organizations which are part of the public administration. Examples are local or regional Health Boards, local governments, county councils, Primary Care Trusts etc.

The HCSI asks about a factual characterization of the predominant status of the HIF/HA. For instance, whether it is really independent or only formally independent from the state and the public administration, like the HIFs in Germany, or a part of the public administration, like an integral part of the local government as it is the case in many Scandinavian countries.

Further, information on the situation of the purchaser was collected, the degree to which they are dependent on or autonomous from the state administration, whether there is a competition among them, i.e. whether they can compete by offering different contribution levels or catalogues of covered, how citizens are assigned to them, what possibilities they have to exercise control over the providers of medical services, both with regard to economic efficiency and quality of treatment.

The issue of the relationship between the purchaser and medical providers also encompasses negotiations on remuneration levels and remuneration modes. An important aspect here is the distribution of power among purchaser and provider: for instance in Germany, providers have local monopolies, in others, e.g. Luxembourg and Poland, there is but one HIF, acting as a nationwide monopsonist. One indicator of capturing this, is by looking at the fragmentation of

the demand side is capture by asking about how many purchasers there are, whether they can provide services themselves, or whether there is a strict purchaser provider split.

The competition among the purchasers, as the main incentive for them to act in the interest of the citizen, is captured by the free choice of the purchaser as opposed to the assignment of citizens to certain purchasers for instance by place of living or by occupation. In the case both of municipalities as well as insurance funds, voting by feet exerts a basic pressure on the provider to behave well. Factual competition is captured by asking whether it is possible that the citizen's contributions, be it premiums, percentage of income, tax rates to the HIFs/HA may vary, or whether the contributions are the same for all purchasers in a country. The same is asked for the catalogue of covered services. Further, the HCSI asked whether there is a financial equalization among purchasers, which limits the necessity to minimize administrative costs and allows a lax attitude in negotiations with providers.

With regard to the control exerted by the purchaser over the patients, the HCSI ask, it possible that the same purchaser offers different packages of contributions and covered services to the insured. Examples are that the patient agrees to go to the general practitioner first, before visiting a specialists or accepts that some services, e.g. dental care, are not covered. In return, the patient pays a lower contribution. This sets a kind of incentive for the patient to restrain the consumption. Further, it was asked whether the citizen can obtain a bonus by the HIF/HA, if they participate in preventive health checks on a regular basis. Examples of these are a reduced contribution rate, a repayment or lower co-payments.

With regard to the possibilities of control by the purchaser vis-à-vis the providers, the HCSI captures, whether the HIF/HA can identify individual providers, e.g. individual GPs or Hospitals, who overspend, and if so, whether the HIF/HA have the possibility to exclude these from the provision of services, if they significantly oversupply medical services, provide insufficient quality or work in an inefficient way. While this is a possibility in HCS with a purchaser-provider-split, where providers can be de-contracted, it is usually not possible in HCS where the provision of services is integrated. A factor in this aspect is whether the HIF/HA usually receive a detailed bill from an individual provider, e.g. a Hospital or a GP, in which lists all medical services and medical goods which were provided in an individual case? In some HCS, the Purchaser gets such a detailed bill, in others, the payment of providers is done by lump-sum payments, with no transparence on what was provided.

Finally, a question on the borderline to quality control, is whether the HIF/HA can by one way or other force the providers to abide by medical guidelines or standards of good medical practice.

In addition to the above information, the HCSI also asked about the existence of societal actors and their role for the HCS. HCS differ regarding the existence of societal actors, e.g. whether Health Insurance Funds, exist at all and are involved in the day to day operation and decision making of the HCS. If they do, the next question is about which issues they are involved in. For instance, employer organizations might have an interest and a say in the financial developments of the HCS, if employers are involved in financing, for instance in Germany, where they pay half of the contribution.

As will be outlined in the empirical chapters, the data gathered in the course of the project define the institutional setting of a country as the complete set of information on all the variables and features mentioned here. The institutional constellation is then described again for the second point in time, to obtain information about the direction and magnitude of institutional changes. The data is compressed using data reducing methods, and the compressed data will be the basis of the actual analyses of the dependent variables, to which I will now turn.

## **9. Evaluating Health System Performance: Achievements and Efficiency**

The “performance” of HCS is a central theme in health politics and the main aim of health policy. While the notion “performance” is next to omnipresent, the actual content and the implications of improving performance are left rather vague, leaving open the door for inconsistency in the objectives, see also Oliver (2007). This chapter is about the concept and measurement of health system performance.

As a point of departure, I assume that the central aim and *raison d’être* of a HCS is the production and restoration of health, which reveals itself in a long life, undisturbed by ailments and disabilities with a negative impact on the quality of life. The HCS is usually seen as an instrument, and its performance as an instrument can be evaluated in several respects:

First, it should achieve its aim to a sufficient degree. The term “achievement” refers to the levels of health system output reached.

Second, it should do so in an efficient way, since there is no sense in wasting resources which could be put in good use elsewhere. The term “efficiency” refers to the question whether the HCS reaches the levels at the lowest possible costs respectively reaches the highest levels of output given the resources dedicated to health care consumption. Efficiency is inherently based on the ratio of input and output.

These two independent questions will structure this chapter. They are independent, because 1) even the most efficient HCS is useless if it is not vested with sufficient resources to operate; 2) even the highest achieving HCS, reaching the highest levels of outputs, is not “good”, if it does so consuming inputs to a degree which is way beyond any appropriate level.

After discussing the various outputs and inputs of HCS in section 9.1, section 9.2. will cover the basic indicators of achievement used in this study. Section 9.3. introduces to measurement of health system efficiency, and section 9.4. will cover conceptual problems of these efficiency measurements and how they could be tackled.

### **9.1. Input and Output of Health Care Systems**

Any measurement of HCS efficiency requires the definition and the measurement of its input and output: what does the HCS produce and what resources does it need to do so? Indicators of both features are subject to several problems, which I will discuss in this section. After

discussing outputs and inputs in a general way, I will concentrate on the feasible indicators, viz.. indicators for which data is available for all countries in this study. While output of the HCS has many aspects, some of them are intangible insofar, as there is no indicator which could be used, neither on a country basis and much less so for an international comparison. The most obvious issue would be the quality of care, in the sense of due diligence and the rate of clear cut mistakes made by the medical staff. While of course being an important aspect, there is no available data – neither for quality understood as the incidence of non-lethal medical maltreatment, nor for other aspects like the frequency of misdiagnosis.

### ***9.1.1. Health System Outputs***

A HCS produces several things. Olsen and Smith (2001: 42/43) enumerate three broader categories of what a HCS produces: health outcomes, beyond-health-outcomes, and non-use values; see also Mooney (1998). Health outcomes are further differentiated into health state improvements, prolongations of the duration of a certain health state (e.g. length of healthy life) and increasing probabilities (e.g. of surviving, of recovering from an illness). In discussing HCS output with regard to achievement indicators, I will focus on the categories health and beyond-health outcomes, leaving aside the provision of an infrastructure independent of actual usage.

#### *Hard Performance: Health Outcomes and Health Status*

The production of health is the central aim of the HCS. The usual indicator for this production is some measure of outcome in the sense of health status, capturing length of life, quality of life, or a mixture of both (the latter measured in QALYs or DALE). Since this aspect of output is closely related to “hard”, biological facts, which can be recognized objectively by a physician and does not depend on subjective evaluations, I will call the HCS’ achievement in this aspect “hard performance”.

The immediate advantage of the indicator is its “objectivity”, in the sense that the duration of life, but also the presence or absence of illness can be recognized independent of the citizen’s opinion, expectations and wants.

The great disadvantage of using this indicator to compare HCS achievement is that the HCS is not the only factor relevant for health status. Neither long nor short lives, neither good nor bad health status of a population can be attributed to the HCS or health services only. Indeed, if the HCS was the only factor for a population’s health, or the providers activities were the only

and moreover deterministic factor for the individual's health, the principal-agent problem would not arise at all. The problem in the delegation relationship is the very fact that such a deterministic relationship among medical action and health outcomes does not exist and the outcome is not only determined by the agent's activities. This problem is basically the same if one looks at an individual patient delegating the task of restoring his health to a physician as it is if one looks at the society as a principal delegating the maintenance of the society's health status to the HCS as a complex agency.

The empirical research has shown that health outcomes, be it life expectancy as a general proxy or infant mortality as a more specific indicator, are dependent on a range of factors, many of them outside of the HCS:

The environment, in particular the air quality, water pollution, but also the climate in which the country is located; Filmer/Pritchett (1999).

Cultural traditions, like smoking and drinking habits - but also the famous "Mediterranean diet"; Newhouse/Friedlander (1980), Nordhaus (2002), Nixon/Ulmann (2006) or Cutler et al. (2006).

Education, since well educated people are more aware of their health and more informed and aware of the impact their behavior and diet has on their health and quality of life; see Leigh (1983) and Elo/Preston (1996).

Economic situation – richer people get less often ill, also because of the better access to food, living conditions etc.; see Feinstein (1993), Pritchett/Summers (1996), Meer et al. (2003) and Frijters et al. (2005).

Indicators of life expectancy are also influenced by factors, which would not immediately come into mind when thinking about health systems. Relevant are factors like regulations on vehicle safety, regulations on safety at the work place, politics concerning mass immunization etc.; see Nolte/McKee (2003). In some countries, the biggest health problems are civil war, terror or criminality, which are causing the biggest losses in life years. Indeed, both the study of Tengs/al. (1995) and Tengs (1997), who compares the costs of life years gained using health services to the costs of using alternative, also non-health policy, measures and the study of Filmer/Pritchett (1999) who find only little impact of health expenditure on health outcomes when other factors are controlled for, indicate that the HCS might not be the optimal instrument to achieve high levels of health outcome; see Navarro (2001) and Navarro/Shi (2001) for a comprehensive overview on the evidently small role of the HCS for

health status, or the study by Simonato et al. (1998) for the importance of preventive medical services and measures – as the complement to healing measures which come into play after the illness occurred – in reducing avoidable mortality.

Further, as a society develops over time, the factors influential for differences in health status among countries change. In an overall comparison of health outcomes, measured as infant mortality or life expectancy using all WHO member states, GDP and education are crucial. But once societies reached a certain level of development, these factors become almost irrelevant and other factors like life style gain more importance; see Le Grand (1987), Cutler et al. (2006) and the literature reviewed in Berger/Messer (2002).

Table 9.1 below illustrates the relative impact of several socioeconomic background variables on “hard” HCS outputs: infant mortality, life expectancy, and DALEs, the WHO’s measure of disability adjusted life expectancy, as health outcome measures, combining data from the World Bank and the WHO.



Table 9.1: Factors influencing health outcomes: life expectancy, infant mortality and DALE

a) All WHO countries

|                | Infant Mortality |          |           | Life Expectancy |         |           | DALE (WHO) |         |           |
|----------------|------------------|----------|-----------|-----------------|---------|-----------|------------|---------|-----------|
|                | Model 1          | Model 2  | Log-Model | Model 1         | Model 2 | Log-Model | Model 1    | Model 2 | Log-Model |
| GDP            | -0.001           | -0.003   | -0.339    | 0.001           | 0.001   | 0.109     | 0.001      | 0.001   | 0.133     |
|                | -7.14            | -5.28    | -2.91     | 8.64            | 4.79    | 3.9       | 9.48       | 4.9     | 3.36      |
| Literacy       | -117.629         | -118.065 | -0.637    | 30.00           | 30.10   | 0.208     | 33.14      | 33.21   | 0.27      |
|                | -12.46           | -12.49   | -4.02     | 13.65           | 13.74   | 6.63      | 12.7       | 12.71   | 6.8       |
| HCE            |                  | 0.016    | -0.317    |                 | -0.004  | -0.019    |            | -0.003  | -0.01     |
|                |                  | 3.49     | -3.37     |                 | -2.3    | -0.91     |            | -1.72   | -0.33     |
| constant       | 143.62           | 145.63   | 7.563     | 38.73           | 38.30   | 3.427     | 26.35      | 26.00   | 3.039     |
|                | 17.99            | 18.05    | 13.56     | 20.57           | 20.3    | 24.72     | 12.28      | 12.04   | 15.45     |
| R <sup>2</sup> | 0.73             | 0.74     | 0.81      | 0.70            | 0.71    | 0.74      | 0.68       | 0.68    | 0.68      |
| N              | 158              |          |           |                 |         |           |            |         |           |

b) OECD30 sub-sample

|                | Infant Mortality |         |           | Life Expectancy |         |           | DALE (WHO) |         |           |
|----------------|------------------|---------|-----------|-----------------|---------|-----------|------------|---------|-----------|
|                | Model 1          | Model 2 | Log-Model | Model 1         | Model 2 | Log-Model | Model 1    | Model 2 | Log-Model |
| GDP            | 0                | 0       | -0.194    | 0               | 0       | 0.032     | 0          | 0       | 0.041     |
|                | -2.73            | -1.8    | -0.5      | 3.89            | 1.88    | 1.03      | 4.16       | 2.26    | 1.14      |
| Literacy       | -174.06          | -174.22 | -7.266    | 19.10           | 19.24   | 0.147     | 17.35      | 17.59   | 0.138     |
|                | -4.33            | -4.24   | -3.28     | 2.23            | 2.21    | 1.67      | 1.9        | 1.89    | 1.26      |
| HCE            |                  | 0       | -0.266    |                 | 0       | 0.022     |            | -0.001  | 0.023     |
|                |                  | 0.29    | -0.77     |                 | -0.29   | 0.86      |            | -0.46   | 0.78      |
| constant       | 182.20           | 182.53  | 5.478     | 52.57           | 52.26   | 3.873     | 47.66      | 47.17   | 3.687     |
|                | 4.62             | 4.51    | 4.02      | 6.88            | 6.68    | 28.33     | 5.78       | 5.56    | 23.81     |
| R <sup>2</sup> | 0.79             | 0.79    | 0.79      | 0.64            | 0.64    | 0.74      | 0.60       | 0.60    | 0.69      |
| N=30           |                  |         |           |                 |         |           |            |         |           |

### **Remarks to table 9.1**

Entries are b- and t-Values, the latter based on robust Standard Errors

#### Dependent Variables

Infant Mortality: Infant deaths within one year after birth, per 1000 live births 1997 World Bank, World Development Indicators (1999; Table: 2.18)

Life Expectancy: Life expectancy of person 1997 World Bank, World Development Indicators (1999; Tables: 2.18).

DALE (WHO): Disability Adjusted Life Expectancy; total population at birth WHO (2000 Annex Table 5)

#### Independent Variables

GDP: GDP per capita, 1995,1996, or 1997 in \$

Literacy: Estimated literacy rate, data from Evans et al. (2000)

HCE: Total per capita expenditure in international dollars: WHO (2000)

The functional forms (linear vs. logarithmic) used for the regression equations represent different assumptions about the production process of health: the linear form assumes health to be an additive product, where more of a certain factor, e.g. a better access to clean drinking water, has an additional effect per se. The logarithmic form assumes health to be the result of a multiplicative production process: if citizens are well supplied with health relevant factors but one factor is missing, the overall outcome will still be zero, just like a firm cannot produce anything with only labor or only capital input.

Looking at table 9.1 above, the finding is that - independent of the functional model form (linear or a log-model) chosen - income, proxied by GDP, and education, measured as the literacy rate, are much more important for health status than HCE. The effect is particularly strong if one looks at all WHO members.

Looking only at the OECD sub-sample, differences in health status do not correspond to differences in HCE, a fact already stated by Newhouse (1977). While GDP and literacy as a measure of basic education are of no impact for health status in the log-model, they are important in the model which is based on a linear-additive production function for health.

One argument often stated with regard to the small impact of HCE is, that while HCE and GDP are closely correlated, it is still HCE which is the driving factor in health improvement;

see also Cutler et al. (2006) for the problem. Indeed, the causality among GDP and HCE may work in both ways. I would suggest that it is more likely that GDP is created first, which is then available to be spend, for health or other things; see Sachs (2001), Suhrcke et al. (2005) for a review of the literature on the effects of health status on economic performance, Bhargava/Jamison et al. (2001) and the contributions in López-Casasnovas et al. (2005) for a discussion of the mechanisms and issues of causality.

As a consequence of the results presented here, one important caveat arises: when looking for instance at the development of life expectancy over time, the observable health status level and also the improvement in the observable health status is not only due to the increased investments in the HCS. It is much more due to the improvement in the overall living conditions: access to food, clear drinking water, education, safety at the work place etc. Consequentially, one has to be very careful when attributing differences in health status among countries to the differences in the HCS and the level of HCE. In particular, when the countries differ substantially in socioeconomic development status. The same is true when looking at the development of health status over time. This is particularly true for the differences among developing and industrialized countries if these are seen as stages of a basically uniform development trajectory.

Given the impact of various factors not related to the health system, the health outcome indicators used for performance evaluations in various studies were refined in several ways, in order to obtain indicators which more validly capture the outcomes attributable to the HCS. Some of these measures aim at distinguish between what the HCS can achieve and what it cannot, looking at how good the HCS is in tasks which it could and thus should perform. Other approaches try to distinguish the overall health-achievement into those parts attributable to the HCS and those attributable to other factors outside of the HCS.

a) The concept of ‘mortality amenable too health care’, was developed in the 1970s and practically applied to HCS performance comparisons for instance by Nolte/McKee (2003); also Nolte/McKee (2004) for an extensive overview on the empirical literature on measurement and estimation of avoidable mortality; Newey et al. (2004) for a comparison of the EU countries. The idea underlying the approach is that a HCS should avoid those premature deaths which could be avoided given the state of medical knowledge, the technological and medical possibilities given at the current state of overall development. While a HCS cannot avoid deaths due to traffic accidents, it can avoid deaths due to certain

illnesses. The first step in an empirical application of the “avoidable mortality”-idea consist consequently in defining those illnesses which are currently treatable. Mortality due to these illnesses is then avoidable. This categorization depends not only of the kind of illness, but also on the age of the people suffering from it. While a death in course of a certain illness may be seen as avoidable in a given age-range, it may be unavoidable for older people. The idea is, that a person of a certain age should, if the HCS does its job properly, not die of a certain illness, since this death is avoidable; see Nolte/McKee (2003: 1130) for a list of illnesses seen as avoidable. The next step is the assignment of occurring mortality to either the unavoidable or the avoidable causes and to create a numerical measure of mortality, which could be avoided. A practical problem in using this indicator to evaluate HCS arises from having to define, what is an “illness amenable to health care”, a task which requires substantial medical knowledge on the side of the researcher. The task is aggravated by the fact that what is a curable illness and an avoidable death, in particular in relation to the age of the patient concerned, is also subject to debate in the medical community. The study of Nolte and McKee gives different results, if e.g. ischaemic heart disease is treated as an avoidable death or not. Second, mortality amenable to health care differs over time. An illness which was not curable ten years ago may today be curable. The same is true for the impact of the age structure, which is in a way an interaction effect among technological and demographic development. The death of a 70 year old person due to a certain disease may have been unavoidable ten years ago. Today, it is not acceptable but represents a clear cut failure for the HCS. To compare HCS efficiency over longer periods of time, and be it only a decade as in the present study, this indicator is thus problematic.

b) A second approach to correct health status indicators for the effect non-HCS factors is the ‘Minimum Possible Health Outcome’ approach. The basic idea of this approach is to use several of the determinants, which have proved to be important for health status, to predict health status, ignoring the effect of the HCS for the moment. Then one subtracts from the actual health outcome in a country the health outcome one would expect for this country given its development status in the absence of a HCS. For instance, one can predict life expectancy based on a regression model using GDP, HCE and educational levels as predictors. The margin of error is acceptable, so it is not just guesswork. The minimum life expectancy in a country can then be proxied by the predicted value for this country as obtained when inserting the country’s values for GDP and education in the regression equation, but setting the value of HCE equal to zero. The difference between the actual and

the predicted life expectancy is then not due to GDP and education, but can be attributed to other reasons, e.g. the HCS. It can be argued that this difference is a more valid indicator of health status attributable to the HCS than the overall health status. Because the regression line is, by definition, in the middle of the scatter plot of cases, there are cases with actual values above the regression line, but also cases below it. In later cases, actual life expectancy is lower than what one would expect for a country of this development level. The role of the HCS consists then in regaining the life years lost for unknown reasons. By shifting the regression line, one can correct for this, creating a kind of minimum health level for given values of GDP and education. A prominent example, the Minimum Health Outcome, was proposed by Evans/al. (2000a) and Evans et al. (2000b). It is used in the efficiency estimations in the 2000 World Health Report, which I will discuss later on in more detail. While the idea is attractive, the application requires certain assumptions, which may render the results questionable.

#### *Soft Performance: Beyond-Health-Outcomes, Process Utility and Satisfaction*

An implicit idea underlying the analysis of health production, beginning with Grossman (1972), is that health has not really a value per se but is a good which value is derived from being a necessary condition to enjoy other things. Hence, people should be expected to spend only what is necessary on restoring and maintaining health, and to spend the rest of their income for other utility generating activities and goods; see also Donaldson/Shackley (1997): 700). In this conception of health care, even when only little improvements of health status are purchased, every health service is nevertheless aiming at improving biological health. This perception resulted in health policy making being focused on the maximization of QALYs, i.e. quality adjusted life years, as the dominating criterion. When health programs or interventions are evaluated, the number of QALYs created is put in relation to the costs. The basic calculus is to choose of two measures the one with a lower price per QALY. In this framework, there is no place for criteria that are not based on changes in objective, physiological health<sup>33</sup>. However even if one agrees on using only QALYs as a criterion for deciding on behalf of the public, the QALY concept is based on certain assumptions about the nature of the public's preferences on health states, the discounting of future health states, the

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<sup>33</sup> Using the QALY criterion as the only basis for political decisions in health care might systematically bias the decisions made and diverge from the public's preferences. The willingness-to-pay approach is more appropriate to include also aspects like process-utility in the decision calculus; see Olsen/Smith (2001): 45).

valuation of how much less a certain illness makes a life year etc. Bryan et al. (2002) found that these assumption are met, but only to some degree. It is hence not granted that the political decision makers in orienting themselves at QALYs are in line with what the public wants. There are reasons to put into question, whether the public actually wants just QALYs at the lowest possible price in order to spend remaining resources elsewhere.

The degree to which the demand for and the production of beyond-health matters for citizens can be inferred from several findings. There is a very strong impact of these “soft performance” factors on the citizens’ satisfaction with the HCS, see Mossialos (1997), Murray et al. (2001) and Blendon et al. (2001). Kotzian (2003) found, that a HCS’ responsiveness, measured by the WHO’s indicator as a proxy of the actual production of various beyond-health outputs by a HCS, is much more relevant for citizens’ satisfaction with the HCS in advanced societies than the HCS’ ability to restore biological health, the level of resource consumption or its productive efficiency<sup>34</sup>. The public is definitely not satisfied by cheaply produced QALYs.

These findings strongly indicate that apart from biological health output, there is an additional output produced by HCS, which will be labeled ‘soft performance’. The production of these “beyond-health-outputs” requires resources, but has no effect on standard health status measures. How much of these outputs is produced is a question of preferences and these preferences may well differ among countries. As I will elaborate in section 9.4. below, this type of output rises a conceptual problem when measuring HCS efficiency. In studying what the HCS produces and in evaluating its achievements, this study will also include aspects and indicators of the ‘soft performance’ of the HCS, which will be discussed in more detail in the following paragraphs.

The idea that the HCS is not only about physiological health goes originally back to Newhouse (1977), who argued that advanced societies invest a large share of their higher health care spending in buying more ‘caring’. The idea was elaborated by Mooney (1998), who argued that a HCS produces health outcomes, but also ‘beyond-health outcomes’. Outputs which, while being produced by the HCS are not actually health services, and, while having no impact on health status, have an utility for which people are willing to pay for.

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<sup>34</sup> As people get richer, there is change in what they expect from the HCS and whether a HCS which is delivering efficient restoration of biological health is sufficient to make people satisfied. As for the reasons of this value change, i.e. the increasing relevance of soft performance aspects of the HCS, I would argue that the basic psychological mechanism is identical to the change in political values, where Inglehart (1977) found an equivalent shift from materialist (physical security and wellbeing) to post-materialist values (self-expression and political involvement). For the very reason that a high health status and the restoration of biological health are achieved by the HCS (or by other means) to a high degree, this is taken for granted and no longer relevant for the evaluation of the HCS.

Examples of such beyond-health outputs are for instance information, e.g. diagnostics, the definite knowledge that one is ill or healthy, even independent of whether something can be done about it; anxiety reduction, e.g. the assurance that the embryo is definitely well even though there was no indication of problems in the first place; communication, e.g. the elaborated explanation of the reasons and mechanisms underlying an illness, which also has the effect that the patient can change his behavior to ameliorate his condition. The border to health output is blurred since there are whole sectors of the HCS, e.g. dental care, which do not influence life expectancy.

Further, Mooney emphasizes that utility arises also from the process by which health is created. This process utility is independent from the outcome of a medical treatment. Biological health can be restored by medical personnel which is rude, does not pay any respect to the patient, his wishes and dignity, treating him more or less like mechanical object that is damaged in a certain way and in need of repair. While this might not affect the biological outcome of the treatment, people might be nevertheless be willing to pay for being treated in a respectful way. Another aspect of beyond-health output is responsiveness, e.g. the responsiveness of the HCS to the patient's wishes and the role the patient has in the medical decision making process. The patient can be treated like an object – or be involved in the decision making process by providing information for an informed choice. The implication of responsiveness for costs and outcomes become very obvious if one looks at the patients' wishes for the type of therapy and intervention used. The medical personnel might confront the patient with the most (cost-)efficient therapy on a “take it or leave it”-basis. The patient however might prefer a more convenient, albeit more expensive and/or less effective therapy. As Donaldson and Shackley (1997) argue, patients might be willing to pay for the usage of less invasive surgery methods or pharmaceuticals as an alternative. To be customer oriented and responsive to the patient's wishes might easily increase the costs substantially without increasing health outcome.

The reason to include soft performance in the analysis of HCS performance is that substantial resources are devoted to it, because citizens demand these outputs from the HCS. While the production of beyond-health sometimes seen as a questionable task of a HCS, it is, as Donaldson/Shackley (1997: 700) put it, ‘not for health care analysts to place restrictions on what enters people's utility functions’. If people want more of a different kind of services and are also willing to pay for this – and some of the willingness to pay studies reviewed by

Olsen/Smith (2001) indicate that they are<sup>35</sup> – the HCS should and will deliver this. Elections or competition will ensure that the HCS will do so, at least in the long run: In a state-operated HCS the electoral competition will serve as a instrument to adapt the HCS to the citizens’ preferences. If the HCS has market elements, such as competition among insurance funds or suppliers of medical service, this competition will equally lead to an adaptation of the HCS.

Table 9.2: Determinants of Health System Responsiveness

|                | All WHO members |        | OECD countries only |        |
|----------------|-----------------|--------|---------------------|--------|
|                | Model1          | Model2 | Model3              | Model4 |
| GDP            | 1.134           | 1.115  | 0.99                | 1.001  |
|                | 29.51           | 25.9   | 14.57               | 16.41  |
| PublicHCE      |                 | 0.002  |                     | -0.004 |
|                |                 | 1.11   |                     | -1.68  |
| constant       | 4.523           | 4.423  | 4.788               | 5.09   |
|                | 96.38           | 41.96  | 41.82               | 25.54  |
| N              | 158             | 158    | 30                  | 30     |
| R <sup>2</sup> | 0.81            | 0.82   | 0.93                | 0.94   |

**Remark**

Entries are b and t-values

Dependent Variable

Health System Responsiveness WHO (2000 Annex 6; Estimates for 1999)

Independent Variables

GDP GDP per capita, value of 1995, 1996, or 1997 in 10000 \$

HCE Public expenditure as % of total health expenditure, WHO (2000)

The left section of table 9.2 gives a short analysis of what determines the level of HCS responsiveness among all WHO member states. Just like it was argued by Newhouse (1977) “caring”, or in other words, responsiveness of the HCS is largely a luxury phenomenon. As societies get richer, more resources are invested in the responsiveness: GDP is by far the strongest determinant. Another hypothesis would be that in particular for “luxury elements of

<sup>35</sup> Olsen and Smith (2001) differentiate three kinds of benefits produced by the HCS: health outcomes, beyond-health outcomes and non-use values, i.e. the provision of health care infrastructure. In their extensive review on the literature on the willingness to pay for various services and products provided by the HCS, they find evidence of willingness to pay for each of these categories.



health care” it matters, to what degree health care is paid for from the “common pool”. The hypothesis would be that if the costs of medical consumption and consumption of beyond health outputs are spread among all members of society, the consumption of the good, in particular of an immaterial and arguably “unnecessary” product as responsiveness, is higher. Each individual consumer receives the full benefit of the consumption while having to pay only a fraction of the costs, respectively the consumption is not reflected in the contributions the consumer has to bear. However, including the share of public expenditure indicates that the “dissipation effect” does not matter in terms of explanatory power.

There is no difference in the mechanisms between the overall WHO sample and the OECD sample, albeit of course the levels of responsiveness are much higher among the latter cases.

As I will argue later on in the section on HCS change and reform, satisfaction is supposedly a crucial indicator also for the pressure for reforms. Given the strong impact of soft performance on satisfaction, one has to include the production of this type of output as well, in order to make a statement why citizens are dissatisfied or satisfied.

### *Satisfaction*

Satisfaction with the HCS is an important output, because the HCS in a democratic society – and all countries in the present study are democracies – will in the long run reflect the preferences of the citizens. A central reason why HCS are reformed is that given that the production of health alone is not sufficient to satisfy people, I will also include measures of satisfaction as an soft performance indicator; see Sitzia/Wood (1997), Mossialos (1997) and Kohl/Wendt (2004) for the determinants and the relevance of satisfaction with health care. The standard indicator is the percentage of people satisfied with the HCS, see Blendon et al. (1990) and Blendon/Kim et al. (2001) for international comparison of these values.

### *Coverage*

An output of the HCS, which is but seldom included into the output measurement of a HCS is coverage. *Ceteris paribus*, a HCS, which provides health services for all citizens is more achieving than a HCS which only supplies services to a limited number of citizens. A HCS can increase the average life expectancy or health status of the population in two ways. First, by intensifying the treatment of those with access to health care. Second by extending the coverage to groups having currently no access. Like the production of beyond-health outputs, the extension of coverage creates costs, and the decision to engage in extension of coverage is primarily a political one. Coverage has two aspects: who is covered, and what services are

covered. Historically, there was a strong trend to increase coverage in both regards, first by extending the coverage of citizens, later by extending the coverage of services. Now, there seems to be a reverse trend, viz. to transfer services from public coverage to private coverage, reducing coverage of services. The typical example is dental care, which is in many countries in the study now a private affair: in many countries, citizens have to buy a supplementary insurance, to cover the complete dental care or at least the substantial co-payments arising from dentures. Among the industrialized countries, the coverage is uniformly high, the only exemption is the US, which are not covered in the present study.

Coverage has also an impact on efficiency, when the latter is measured as an input/output-ratio. Assume that there are two groups in the country, one with access, the other without access to the HCS. Intensifying the treatment given to the first will at one point in time reach diminishing returns, lowering the efficiency of the HCS; see section 9.4. below. Extending coverage to the second group will yield larger returns in terms of health status, and the efficiency of the HCS will be higher.

### *Quality of Health Care*

Another element of “hard performance” is quality of health care. There are many definitions of quality in health care, see e.g. the review in Harteloh (2003). Interestingly, many of them concern the question of the overall achievement of the HCS, i.e. whether it achieves the maximum of what medically possible. I would argue, that quality is something different than the quantity of what is produced and rather concerns how care is delivered. In particular, quality concerns aspects such as the diligence with which the services are provided: whether the physician invests much or little time in the analysis and interpretation of a diagnostic test to avoid mistakes and does a good job in this; whether the surgeon makes avoidable mistakes; whether a laboratory conducts tests in way that mistakes like false-negative or false-positive results occur only to the degree that is technically unavoidable. Albeit quality and differences in quality are an objective, hard fact with relevance for an international comparison, there is no available international level data on this question. There is neither an ascertained set of indicators for quality, no data on these indicators. Up to now, there are only efforts; see Mattke (2004) and Mattke et al. (2006) for efforts at OECD level. Even with regard to the most immediate quality indicator, medical maltreatment, some countries report medical failures and maltreatment, others don't.

A further and general problem of outcome measurement, in particular quality but also more obvious outcome indicators, like the number of services performed, arises from the availability of data. As Smith (2002) argues, the researcher is to a high degree dependent on data delivered by the actors in the HCS – and there is no guarantee, that this data is correct. For this rather pragmatic reason, the present study has to renounce on using quality indicators as aspects of output.

### ***9.1.2. Health System Inputs***

The complementary aspect of HCS efficiency is the input used to produce the output. Just as in any other production, the two production factors are capital and labor.

#### *Money*

As an introductory remark, it has to be acknowledged that despite the slightly negative connotations of “expenditure” and “consumption”, one has to see health care expenditure also as an investment, which yields returns; see Sachs (2001), Aaron (2003) and Kotzian (2006). The issue is not the level of investment, but what the HCS achieves in exchange.

One of the simplest measure of input is HCE per capita. However, also here several problems arise, associated with measurement and also with the meaning of the level of consumption, two of which I will treat in some more detail.

Health care has to some degree economies of scale, which lowers the costs per capita if there are more citizens in the country. Take for instance a laboratory employing a device which has the capacity to conduct the number of tests which occur on average for a population of two million citizens. However, if the country, like Luxembourg, has less than that number of citizens, a share of the capacity kept available permanently will be unused, and the price per usage episode is higher. A country with more citizens will use the scale economies to its full extent. A country may for the reason of its size be more efficient than a smaller country. Albeit in most studies on health system efficiency the size of countries included varies from Luxembourg to the US, this factor is almost never taken into account.

Another problematic aspect of cost measurement are relative prices, in particular wages. Usually expenditure for health care, HCE, is standardized using purchasing power parities; typically the PPP\$ provided by the OECD Health Data. But, as Anderson et al. (2003) argue, the wage levels in the medical sector may be comparatively higher in one country compared to another one: people working in the health sector of country A may, for whatever reason,

simply earn higher wages relative to employees in other sectors of the economy than in country B. Since health care provision is labor intensive, this makes health care more expensive. So while more HCE is spent in country A, this does not mean that more resources (manpower, medicines) are consumed. The higher HCE may result from the fact that these resources are more expensive. Indeed Bhat (2005: 216) found just this for the US: the American HCS is not using higher quantities of input – technology or manpower – to produce its health level. But the prices for medical products and in particular the costs of medical staff are highest in his sample of OECD countries. Just correcting for the PPP as calculated for the whole economy of a country might not compensate for this effect of higher price levels in the health sector; see Gerdtham/Jönsson (1991), Berndt et al. (1998), Newhouse (2001) and Anderson et al. (2003), for a discussion of the problem of measuring prices over time and across countries.

### *Manpower*

In some countries, the HCS is employing a substantial share of the country's labor force. The share of employment in the health sector varies substantially, and so does the composition of the medical labor force. Some countries make extensive use of trained nurses, who can do a substantial share of the work arising during medical treatment at lower wages than fully trained doctors without loss of quality. While data on the usage of overall manpower employed in the HCS would constitute a second input factor, the statistical data is available for few countries only and much more heterogeneous in compilation than HCE.

## **9.2. Indicators of Health System “Performance”: Input and Achievement Levels**

Based on the classes of outputs and inputs of HCS, the empirical indicators discussed in the previous section, this section will describe the indicators actually used in the empirical application to capture current levels of HCS performance: the inputs consumed, and the achievement in various health outputs.

### ***a) Input to the Health System: Expenditure for Health Care***

The typical measure of input is health care expenditure, HCE, since in the end, everything, from manpower to medical devices, has to be paid for. Overall HCE is an indicator with clear advantages, but also with problems.

The first advantage is the availability of the information in a directly comparable form (PPP adjusted US\$). Second, HCE is also a highly relevant information which guides and stimulates health policy. Comparisons of institutional settings look for effects on resource consumption and institutional changes are motivated by the same criterion.

The problems begin when HCE is interpreted per se and in isolation of output. HCE is often seen as an indicator of how the HCS works in terms of efficiency. But HCE as it is cannot be interpreted in these terms. For instance, the HCS uses resources productive (to generate outputs) but also for its own operation, i.e. basically unproductive. The issue of resources consumed by the HCS for its own operation is relevant from the perspective of efficiency improvements, while the level of output produced is not actually a question of efficiency; see section 9.4. below.

From the viewpoint of the theoretical approach used, HCE levels are of interest because they are affected by the organizational design in many ways. Most statements and predictions of the delegation approach refer to HCE: how much resources are likely to be extracted by the actors in the HCS as a “rent”, i.e. by definition without effect on the health status. The typical examples are administrative costs and organizational slack. The figure capturing this aspect in an immediate way is however not HCE, but the level of administrative expenditure in the HCS, a figure which is available for only a small minority of cases. The delegation approach also makes statements about how many services are provided as a response to the incentive to oversupply services. But to cover this aspect, one would also need information on whether the service was necessary or not, an information which is also not available. Nevertheless, all these mechanisms affect to some degree the overall level of HCE.

In addition to the level of overall HCE, the study will look at the dynamics and the composition of HCE, because this captures another, complementary information.

A HCS might currently consume only few resource, which is acceptable, but still the dynamics of expenditure growth might be already out of hand. It might also be the case, that while the public expenditure for the HCS, in absolute figures, is under control, the resource consumption of the HCS as a whole is not, and as a result, the share of private funding for health care increases substantially, covering the additional demand of financial input; see Scheil-Adlung (1998). Regarding the composition of HCE, the share of private funding and the development of the share of private funding were included.

From the perspective of “practical” health policy and health policy makers, the absolute level of HCE as well as the increase of HCE in percent are the most visible figures, and indeed they

are the figures most often heard in the political debate about health care financing. But they may not actually capture whether the financial development of the HCS is a problem or not. To cover this, I included the change in the HCE relative to the overall economic development, i.e. the change in HCE relative to the change in GDP. The argument is that a constant share of GDP spent for the consumption of health care is justifiable, also because the level of wages in the health sector is coupled to the overall economic development. If the growth of HCE is out of proportion, the pressure to bring it back in line are higher because less income is available for other political aims.

### ***b) Hard Performance of the HCS: Gross Health Outcomes***

The HCS is primarily about the production of health. To measure hard performance, i.e. health outcomes of a HCS, I use the two complementary aspects: first, what the HCS is actively producing, second, what the HCS is avoiding or rather is failing to avoid.

**Life expectancy** - either in its pure form or adjusted for quality and disabilities, life expectancy is the standard indicator of health status. As stated above, it is heavily influenced by life style and the overall living conditions in a country, and has to be seen as a gross indicator: influenced by the HCS, but not reflecting the achievement of the HCS in a deterministic way. I used life expectancy at birth for both sexes.

**Infant mortality** - the choice this indicator is based on the idea, that it closer to the concept of mortality amenable to health care as used by Nolte/McKee (2003), than the life expectancy. It might also be influenced by the parents life style, but less so than the life expectancy of a person. Life style will exercise its influence in the long run, while the infant mortality is more based on the crucial after birth period, i.e. it counts the number of infants dying in the first year after birth per 1000 of life births. The baseline prediction is, that while child deaths occur for unknown reasons, like the phenomena of the ‘instant child death’, a newborn which is born alive, is to be expected to survive.

**Potential Years of Life Lost** - the number of life years lost is another indicator of health output provided by the HCS. The basic argument of this indicator takes into account the problem that life expectancy is not attributable to the HCS in a deterministic way, but is influenced by many other factors outside of the HCS. While the HCS is not the only reason why people live as long as they do, it is responsible to avoid that people die of certain illnesses. If such a death occurs, the HCS has failed. But just as with life expectancy, life years lost is too broad a measure to capture the HCS’ achievement; see the description of

health output given above and in particular the arguments underlying the mortality amenable to health care argument in Nolte/McKee (2003) and Newey et al. (2004). Furthermore, there is a serious shortage of comparable data. Prepared data is available, e.g. in Nolte/McKee (2003, 2004) or Newey et al. (2004), but not for all cases included in this study. While it is in principle possible to calculate the measures based on classified mortality data provided by the WHO's Health For All database, this would require medical knowledge. For pragmatic reasons, I have constructed a similar indicator using OECD data on life years lost. The OECD's definition of this indicator as given in the OECD Health Database is conceptually close to the idea of avoidable mortality: 'Potential Years of Life Lost is a summary measure of premature mortality which provides an explicit way of weighting deaths occurring at younger ages, which are, a priori, preventable. The calculation of PYLL involves summing up deaths occurring at each age and multiplying this with the number of remaining years to live up to a selected age limit'; OECD (2005). In the OECD Health Data, this age limit is 70 years of age. For instance, if a citizen aged 65 dies due to a preventable cause, five years of life are counted as lost. With the age limit of 70 years, the calculation is on the conservative side, because the average life expectancy in the OECD countries is actually above that. In its raw form, the indicator is problematic because it also contains all years of life lost due to factors which are beyond the reach of even the best HCS. These "external causes" encompass things like suicide, murder or traffic accidents. So, the total number of life years lost was adjusted by subtracting from it the number of life years lost due to external causes. The adjusted indicator, net number of life years lost, **LifeLostNet**, is a more valid indicator of the achievements the HCS fails to deliver.

### *c) Soft performance of the HCS: production of beyond-health-outcomes*

As argued above, citizens expect and demand services from the HCS in addition to those services aiming at restoring health in a biological sense. I use the responsiveness indicator provided by the WHO as a proxy of the explicit production of beyond-health outcomes and process utility. The indicator, calculated for the year 1997, captures the degree to which a HCS actually provides beyond-health output and process utility. These outputs are operationalized by elements like patient autonomy, prompt attention, access to societal support networks for patients but also explicitly 'client orientation' and the quality of the amenities, e.g. the accommodation standard in hospitals. The indicator is a weighted index, encompassing seven dimensions, each in turn covered by several questionnaire-items, which

where evaluated based on a survey of country experts; see Annex 6 in WHO (2000) and De Silva/Valentine (2000) and Valentine et al. (2000) for a detailed description of the survey and index construction.

Apart from the fact that this approach of evaluating HCS responsiveness was highly criticized for its subjectivity and other reasons – see e.g. Blendon/Kim et al. (2001) and Williams (2001) – the main problem associated with application is, that the responsiveness measurement is based on a one-time survey, with no comparable follow up survey. Given that HCS change over time, also with regard to the responsiveness, the measure cannot be extrapolated. Extrapolation would mean to extrapolate under the assumption that the current structure of the HCS was unchanged, which is not the case. The analysis of the effects of institutional features on responsiveness will be constrained to the first point in time.

#### ***d) Further Performance Indicators: Quality***

In addition to the indicators discussed above, there are further achievement indicators of the HCS which could be used. A first one would be quality. Quality shall refer to the question, whether the HCS does its job diligent or sloppy. Quality is not about the question of whether the HCS does everything that is possible. Whether everything what is theoretically possible is done is a question of the funds available, which is something beyond the control of the persons working in the HCS. But whether the staff in the HCS does its job careful or not within the limits set by the budget, that is something that the staff can control: while the question, whether a certain diagnostic test is available or can be paid for or not is beyond the control of the physician, a physician may invest much or little effort in analyzing the results of a diagnostic test. Potential indicators for quality defined in this way would be the frequency of errors in medical and diagnostic tests. For instance, a certain diagnostic test is conducted, e.g. by a free lance laboratory, and is later on interpreted by the doctor. Both, the laboratory by conducting the test and the doctor interpreting the test's results can make mistakes, interpreting the result in the wrong way, etc. Quality in my definition concerns the avoidance of such failures and mistakes. While it would be of interest, because it covers an aspect which is conceptually and empirically independent of “quantity”, there is no comprehensive information on the occurrence of this type of mistakes.

Consequently, I focus on another, albeit related issue. A quality indicator is the occurrence of medical maltreatment and the life years lost due to this: if the medical provider conducts his job in a sufficiently careful way, failures should not occur. If they do, something went



wrong which could have been avoided if due care was applied. In particular the issue of providers increasing their income by providing more service in the same period of time, i.e. with less time invested in each service episode, will have an impact on quality. And quality in turn will impact on the occurrence and frequency of fatal mistakes during medical maltreatment, for which there is data in the OECD Health Data. The empirical indicator used is mortality due to ‘Misadventure to patients during surgical/medical care’ measured standardized as deaths per 100,000 of overall population; see OECD (2005). The indicator, labeled further on as medical fatalities, **MedFatalities**, in particular refers to the quality of hospital care, because it measures deaths which are occurring most often during in patient care.

Table 9.3 below gives a short definition and the sources of the achievement indicators used in the empirical section.

Table 9.3: Indicators of Health System Performance

| Variable Label                    | Variable Content, Measurement Unit and Source   |
|-----------------------------------|---|
| <b>Input of the Health System</b> |   |
| HCE                               | Total expenditure on health per capita in 1995 and 2004, in US\$ PPP; OECD Health Data; OECD (2005) |
| dTHCE_abs                         | Change in Total HCE per capita 93/97 and 02/05; absolute in \$PPP; OECD Health Data; OECD (2005)    |
| dTHCE_per                         | Percentage Change in Total HCE per capita 93/97 and 02/05; OECD Health Data; OECD (2005)            |
| dTHCE_rel                         | Change in Total HCE relative to change in GDP for 93/97 and 02/05; OECD Health Data; OECD (2005)    |
| PrivateHCE                        | Private Expenditure on health in percent of Total Expenditure for Health; OECD (2005)               |
| dPrivHCE_per                      | Growth of Private HCE during the years 1990/5 and 2000/4 in Percent; OECD (2005)                    |

Table 9.3: Indicators of Health System Performance (continued)

Variable Label Variable Content, Measurement Unit and Source

**Health Outputs**

|               |  |
|---------------|--|
| LifeExpTotal  | LifeExpectancy of the total population at birth - in Years; OECD Health Data; OECD (2005)  |
| InfMortality  | Infant mortality - Deaths per 1000 live births; OECD Health Data; OECD (2005)  |
| LifeLostNet   | LifeYearsLost defined as Potential years of life lost (All Causes - External Causes); based on OECD Health Data; OECD (2005)             |
| MedFatalities | Potential Years of Life lost due Misadventures of Patients during medical care per 100000 pop., years <70; OECD Health Data; OECD (2005) |

**Beyond Health Outputs (for 1995 only)**

|            |   |
|------------|---|
| ResplIndex | Responsiveness of the HCS; World Health Report, Range from 0 to 10; 10 indicates maximum Responsiveness; (WHO 2000) |
| Satis      | Percent Citizens satisfied with HCS ( as % of all Citizens ); Data from Blendon et al. (2001: table 1)              |

**Efficiency of the Health System (for 1995 only)**

|     |   |
|-----|---|
| WHO | “Health System Efficiency and Performance” Index based on DALE production; WHO (2000); values are for 1997. The scale ranges from 0 to 1; where 1 indicates maximum efficiency of DALE production |
|-----|---|

**Remark**

If not stated otherwise, the data covers the years 1995 and 2004

**9.3. Health System Efficiency and Efficiency Measurement**

While the above indicators cover the levels of health system achievement, the next question is, how efficient these levels are reached. To measure efficiency of a productive system, several approaches exist. All of them share the basic concept of efficiency as a relationship among input invested and output achieved, but differ with regard to how the construct this relationship.

For the reason of presentation I distinguish among approaches measuring the efficiency of medical measures, and those measuring the overall efficiency of HCS in various countries. The approaches to measure cost-benefit-efficiency of several medical interventions are a typical application of efficiency measurement in health care. Cross country comparisons of efficiency often use statistical methods developed in econometrics, in order to measure the productive efficiency of firms or economic sectors etc.

### ***a) Efficiency of Medical Interventions***

A HCS may become efficient, either by producing all of its interventions at lower costs, or by producing only those interventions which have the largest impact at the lowest costs.

A prominent example of a study analyzing “efficiency” this way, in particular the question of health outcome achievable by investing a fixed budget in a defined medical intervention in one country, are the studies by Tengs et al. (1995) and Tengs (1997). Tengs et al. focus on the question of how much life years are gained by a certain medical intervention and at what costs. Combined, the efficiency indicator for a medical intervention is the cost per life year gained by this intervention. This measure varies substantially among medical (but also political) interventions, ranging from rather cheap, political measures with a price of one \$ per life year gained to 158.000\$, for heart transplants. Tengs et al argue that health policy should be more oriented on this measure, since it gains more life years than any other criterion. The idea of using costs per life year gained was also underlying the Oregon rationing approach; see Brown (1991) and Fox/Leichter (1991) and is a decision criterion in several European HCS, see Garber (2004) and Buxton (2005).

The relationship of this micro level efficiency to overall HCS efficiency is quite obvious: if the HCS produces only those measures, which are efficient in the “cost per life year gained” sense, overall efficiency will be high. If the HCS produces many services which have, for biological reasons, only a limited impact on health status, overall efficiency will be quite low. The costs of a defined medical service or a kind of average cost of services would be interesting data for international efficiency comparisons: how expensive is a defined medical services, e.g. a standard intervention, in one country as compared to another one? However, these approaches are requiring very detailed information, making them not usable for a cross-country comparison.

### ***b) Efficiency of the Overall Health System***

looking at the efficiency at the system level, one has to use other strategies. While yielding an estimate of efficiency, these techniques do not pin down what exactly causes this efficiency. The basic idea of HCS efficiency measurement on a cross-country basis goes back to Farrell (1957), and was most clearly proposed by Grubaugh/Santerre (1994). It proceeds as follows: one chooses one indicator of HCS performance, either output related, input related or both, as a dependent variable. For a sample of countries, usually at various points in time, this outcome variable is regressed on factors which are of potential relevance for the outcome

variable, but not related to the HCS structure<sup>36</sup>. For instance Grubaugh/Santerre regress infant mortality on various socioeconomic (income and education), and general environmental factors such as population density, female labor force participation, time as a proxy for technological development and life style (tobacco and alcohol consumption). But they also use country dummies as overall proxies for the non-observable features of the country, but also, and this is the actually interesting component, features of the HCS in this particular country. The resulting coefficients and regression equations can be used in several ways. In their original study, Grubaugh and Santerre use the resulting regression equations without the country dummies as a proxy for the ‘average’ OECD country – viz. the country which is the reference category. By inserting the values of the US in the regression equation and comparing the predicted value of the dependent variable with the actual value of the US, they obtain an estimate of what outcome level the US would have, if it had the HCS of the average OECD country. In a second comparison, they also use the country dummy obtained for a certain country but in combination with the values of the US for the other independent variables to obtain the estimated value of the dependent variable the US would have, if it had the HCS of this particular country. Both results are then compared to what the US is currently achieving.

Another use of the obtained regression equation is to take the case which is the best for a constellation of variables, i.e. has the best health outcome, as a benchmark, and compare, where other countries are positioned relative to this benchmark. This is the basic idea underlying the two following approaches.

### *Productivity Frontier Approaches*

This approach of efficiency measurement analyses the productive efficiency by estimating productivity frontiers: given the input, a perfectly efficient system – like a firm or a HCS – can produce a certain outcome level, which is more or less what is currently possible. In firms but also in health care, this level is determined by the available knowledge and technology. As systems differ with regard to their efficiency, they differ with regard to what they actually achieve with the input they use: an inefficient system will with equal input produce less output than an efficient one. The efficient one is on or close to the productivity frontier, while the inefficient one is below, i.e. efficiency is defined as closeness to the productivity frontier.

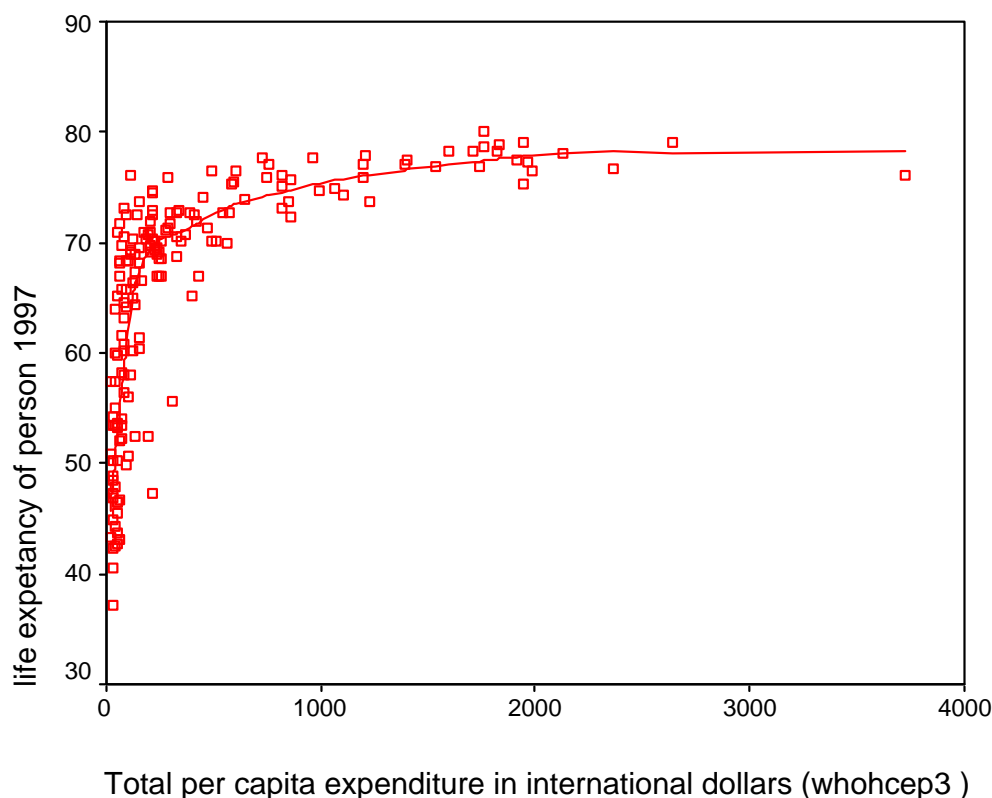
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<sup>36</sup> This is to take into account the substantial effect of factors outside of the HCS, see the above section on determinants of health status.

Figure 9.1 below illustrates the idea of the productivity frontier by plotting life expectancy on HCE, both taken from the 2000 edition of the World Health Report. The included smoother line indicates the productivity frontier. The distances of the cases to the frontier are assumed to be a mixture of systematic inefficiency and random factors. Cases might for random reasons scatter around the productivity frontier. For instance, a country's HCE might be higher and its outcome lower in one year due to a local epidemic. But there is also a systematic component in the distance, e.g. cases very far below the frontier are inefficient, in the sense that they are significantly underachieving given their input consumption, compared to the "average" respectively the "benchmark". Assume for instance, that in one HCS, the purchasers can extract a substantial share of the health budget for internal "on the job consumption". In a productivity analysis, like the one illustrated in figure 9.1., the overall HCE determines the country's position on the horizontal axis. But since not all money counted as HCE is actually spend to produce health, the output level will be lower, and thus the country will be below the productivity frontier.

While it is clear how certain problems in the HCS will show up in an analysis like figure 9.1, the inverse inference from the position to the problems is not possible. The focus of the productivity frontier analysis is, just as in the model of Grubaugh/Santerre (1994), on the distance to the production frontier. If the country is below the frontier, it is inefficient, but one cannot tell why.

Figure 9.1: Life expectancy and the diminishing returns of health care expenditure



The technical implementation of the approach is quite straightforward. While Grubaugh/Santerre use a country dummy to capture the country specific contribution to the output level, the productivity frontier approach estimates a country specific intercept. In the end, both attribute the output level to country specific features.

The statistical methods to estimate efficiency based on productivity frontiers are manifold, each approach has its advantages and disadvantages; see Farrell (1957), Schmidt/Sickles (1984), Cornwell et al. (1990) and Dorfman/Koop (2005) for the underlying statistical methods, and Evans et al. (2000b), Hollingsworth/Wildman (2003) and Greene (2004) for a more detailed discussion of several methods in their application to HCS efficiency measurement. For instance, one can draw a productivity frontier in a way that all cases are either on or below the frontier, i.e. one chooses a deterministic approach. Or one can draw the frontier in a way that the expected value for the output variable given the input is on the frontier, while the actual output value of a case might, for random reasons, be above or below this stochastic frontier. By imposing assumptions on the ratio of the systematic and the

random component of the distance to the frontier, one can estimate the systematic component of the distance.

As for the estimation of the productivity frontier, one can use OLS based regressions, panel regressions or cross-sectional regressions. The WHO efficiency estimation, see Evans et al. (2000b) for a detailed presentation, uses a fixed-effect panel approach. By using – where available – information on several points in time for a set of countries it is possible to distinguish the real inefficiency, i.e. the country specific intercept, from random fluctuations, which occur, but tend to offset each other if one has several points in time; see the argument in Schmidt/Sickles (1984). The obtained estimate will be the less influenced by random effects the higher the number of points in time. As an additional modification, Hollingsworth and Wildman (2003), following the approach by Cornwell, allow the intercept to vary over time, a method which is able to capture changes in efficiency. Statistical implementations of this approach, like the frontier routine in STATA, estimate the weights of different production factors in a production function, which describes the productivity frontier, in particular its shape. They also estimate the inefficiency of each case, i.e. the distance to the productivity frontier.

#### *Data Envelop Analysis Approaches*

The principle of Data Envelop Analysis, DEA, is also based on the productivity frontier approach. The idea is to set what a certain country can achieve with the inputs as a benchmark for the other countries. One can use two equivalent approaches.

The input-oriented approach minimizes the inputs holding the output constant, and the resulting score is a measure of how much the input could be reduced while achieving the same outcome level. The complementary output-oriented approach estimates, how much more output could be produced, given the input level. For health policy the implications are twofold, depending on the political decisions made: either keeping the output level, but reducing the resources required to produce it, or to abide by the chosen input level (e.g. HCE), and to increase what the HCS achieved with this; see Charnes et al. (1994) for the method, Retzlaff-Roberts et al. (2004) and Bhat (2005) for illustrative applications to OECD countries. The advantage of the DEA is, that one can use several outcomes simultaneously, and can take into account environmental restrictions which are not under political control, e.g. health

related behavior<sup>37</sup>. A practical problem of the DEA method is, that in a setting of only few cases, many countries are efficient, differing simultaneously in input and output. For instance a country produces little outcome with little input, while another one produces much output with much input. Both are efficient and obtain the same DEA score of 1.

## **9.4. Problems of Health System Efficiency Measurement**

In this section I will elaborate on several conceptual problems associated with these approaches to the measurement of health system efficiency.

### ***9.4.1. Types of Outputs and Types of Health System Efficiency***

The list of health system outputs enumerated in section 9.1. shows that the HCS produces quite a variety of outputs. Producing any of these outcomes creates costs and hence the degree to which the HCS is efficient has to be evaluated with regard to what the HCS is actually producing.

Acknowledging that money is spend for other things than biological health, it is quite clear that using only “hard” performance, i.e. biological indicators, as indicators of outcome may bias the evaluation substantially. But oftentimes, studies estimating HCS efficiency as an input/output-ratio do not take into account all outputs a HCS produces. While the HCS uses part of the resources to produce immaterial outputs like patient dignity or process utility, the approaches assume that all resources are used to produce health outcomes. While the former strongly influence the input/output-ratio, they have nothing to do with the efficiency of the HCS because they are the result of certain preferences. It is clear that if citizens want the HCS to produce these outputs and are moreover willing to devote money for the production, the HCS is not inefficient because it is producing this. To elaborate this problem, I will discuss the three types of efficiency, which are mixed up in the overall efficiency of a HCS.

#### *a) Technical Efficiency*

Technical efficiency refers to the question whether the given inputs – the combination of work force, medical equipment and funds – are used by the HCS to produce the maximum outcome possible with this input, see Retzlaff-Roberts et al. (2004), Evans et al. (2000b) for

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<sup>37</sup> Factually, applications of the DEA approach like Retzlaff-Roberts et al. (2004) use only one output at a time, e.g. infant mortality or life expectancy. Both belong to the same type of output, namely health outcome. A different one, representing a beyond-health outcome would be responsiveness.



the concept of technical efficiency in its application to health. This efficiency is basically what the approaches presented earlier want to measure: is the HCS producing as much health as it could, given the resources allocated to the HCS? Organizational slack, the extraction of rents by actors who engage in opportunistic behavior, all this will reduce technical efficiency. Money is spent, but not for producing something. Instead, it is extracted by actors in the HCS as rents (usually in the form of income) or is required to operate and administrate the HCS as such. Looking at this type of efficiency from the perspective of the institutional economics, reducing the rents the agents can extract either as profit or as on the job consumption increases technical efficiency. Either less money is needed to produce the same output, or more output can be achieved using the same level of input. At the level of the individual medical service, the service is produced efficiently, if it is produced at the least possible costs.

*b) Allocative Efficiency: Choosing the Optimal Mix of Production Factors*

Apart from technical efficiency, there are other notions and concepts of efficiency circulating in the literature on health system efficiency. Allocative efficiency is used in two slightly different variants. I will discuss the first here, the next in the following paragraph.

While technical efficiency estimation takes the current combination of input factors as given, allocative efficiency evaluates whether it would make sense to substitute one production factor for another one, e.g. substitute one treatment by another one even if both treatments are produced perfectly efficient for a technical point of view; see Evans et al. (2000b: 4) for this definition of allocative efficiency. It might for instance be better to rely on more ambulatory care than in-patient care, even where both is possible and equally effective from the pure medical point of view. It might be better to employ more nurses than fully educated physicians, and to assign all jobs the nurses can do to the nurses and to avoid that the physicians have to do jobs for which they are overqualified and also overpaid. This aspect of allocative efficiency concerns whether the HCS uses the HCE available to purchase the best mix of production factors.

*c) Allocative Efficiency: Preferences for Types of Health Output*

Efficiency of a HCS understood as the ratio of costs and health output has an additional aspect: a HCS might provide a defined service efficient and at the least possible costs, but the service as such might be completely or mostly useless for creating biological health for one of the following three reasons: 1) It might not be the right therapy for the illness at hand. 2) Its

impact might be so marginal that there is no or almost no measurable effect on any health status indicator; see Skinner/Wennberg (1998). 3) It might be useless for health outcome, because the service does not at all aim at improving health but is by nature a beyond-health-output.

Allocative efficiency in this sense refers to what services are purchased: 1) Are resources allocated to services which have a very limited impact on health status? 2) Are resources allocated to services which do not even aim at having an impact on health status? 3) Are resources allocated to services, which have an impact on health but for biological reasons can improve the health status of the patient receiving the service only to a minimal degree?

The answers to the three questions are determined by preferences, but will affect as how efficient or inefficient the HCS appears in an evaluation. The following three examples shall illustrate the meaning of the three questions.

1) A first example is the usage of technology in particular of usage of technology without impact on health. A pronounced example for this are diagnostics. Some diagnostics are highly sophisticated and aim at increasing the security of a certain diagnosis, sometimes only marginally, like from being 90% secure to being 99% secure, but do so at very high costs. Another point is the diagnosis of illnesses that are currently non-treatable. Investing money in the diagnosis of such an illness will not have any immediate impact on health status<sup>38</sup>. Deciding to purchase a medical service which may have no secure effect on health is also a preference based decision which affects the efficiency of the HCS. Societies may differ regarding their attitude: some may decide to purchase only medical services with a proven effect. Other societies might decide to purchase also those services, which might have a positive effect, but have no proven record of showing a defined effect. An example is, whether the society decides to have homeopathy covered by the HCS.

2) The second example concerns the production of outputs which do not aim at improving health. A society's preference for beyond-health-outputs influences the costs of the HCS. Producing beyond-health-outputs requires resources but does, by definition, not influence the biological health status. Looking at the ratio of resource input to health status-output of a HCS, a preference for beyond-health-outputs and a large production of these seemingly decreases the efficiency of the HCS measured as a HCE/health-status-ratio. Nevertheless, the HCS is not producing health inefficient nor is it as a whole inefficient. Instead it is producing

a type of output without impact on health measures. The HCS might appear to be inefficient, but it is nevertheless in accordance with the demands of the citizens. Thus, a comparison of HCS efficiency must pay attention to the question, how much and what health services are bought<sup>39</sup>.

3) The third aspect of allocative efficiency concerns the diminishing returns of investments in health. In the public discussion, there exists the idea of a perfect health, see e.g. the definition of health in the WHO preamble. There is also the idea and the demand, that virtually everything that is medically possible must be done, independent from whether the effect is in any relation to its costs. It is also argued that costs may, for ethical reasons, not be a criterion in health care and medical ethics; see Mooney (1992: chap. 7) on efficiency problems in medical ethics. The core of the decision problem is whether the production of the additional live year is worth its price. The fact of the diminishing returns of investing additional financial resources in health care is well established. It can be illustrated best by plotting HCE per head by life expectancy, as was done in figure 9.1 above, and is reported in the literature; see Newhouse (1977), Newhouse (1992), Newhouse/Friedlander (1980), Pritchett/Summers (1996); WHO (2000: 43) or Self/Grabowski (2003): 844). At the level of the overall health expenditure, preferences and their impact on efficiency concern the question, whether and if so, where a society 'draws the line' beyond which the costs of the additionally produced health outweighs the benefits of the health produced. The decision can also take the form of setting a limit for the costs per life year for a certain medical intervention, however efficient produced, i.e. exclude medical interventions which costs per life year gained by this intervention is above a certain level.

Many studies and debates in practical health policy on rationing and coverage of services implicitly are about this aspect of allocative efficiency. Is it an integral part of the HCS' task to provide high accommodation standards in hospitals? Should the HCS' catalogue cover medical treatments which have no established record of effectiveness? Given that health services differ substantially with regard to what they can achieve for medical and biological reasons and at what price, should the HCS, which is always operating under budget constraints cover them all, regardless? The problem becomes very obvious if the costs and

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<sup>38</sup> But since the techniques for diagnosis and those for treatment usually arise from the same research, the payment for a diagnosis for an yet untreatable illness can be seen as subsidization of research, which may eventually lead to a cure and health outcome in the long run.

<sup>39</sup> This concept is related to some concepts of allocative efficiency, which focus on the question of whether the right amount of money is allocated to the HCS, but also on whether the benefit returned by a health service is higher than the costs.

benefits of different treatments are standardized like “costs of a life year gained”<sup>40</sup>; see the study by Tengs (1997). Should health services addressing health problems which are basically under the control of the individual in the sense that they result from individual behavior be covered from the “common pool”? In particular dental care, with a lower incidence of medical problems due to better oral hygiene, the fluoridation of tooth paste and drinking water, and factually no impact on life expectancy, confronts societies and governments with the question, whether organizing dental care shouldn’t be left to the individual and the market. Rationing is virulent, and from a cross national perspective, the definition of what constitutes an acceptable health state or what requires treatment may differ substantially. Both, the overall rationing and the decision what services to cover, are not abstract questions, but urgent issues, and the choices are an integral part of health policy making.

#### ***9.4.2. The Conceptual Problem of Overall Efficiency***

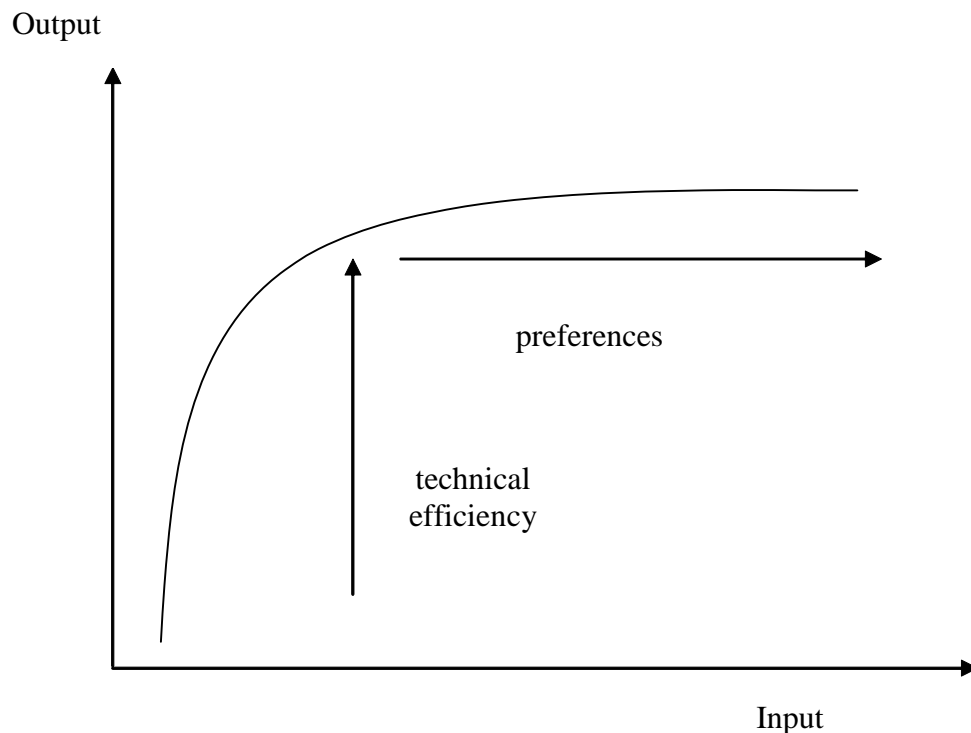
To summarize, one can say that the society makes decisions, which seemingly affect the efficiency. To evaluate the HCS’ efficiency per se and independent from the preferences it has to serve, one must think about how to isolate the effect of the HCS’ actual efficiency from the effect of preferences.

To do so, one would have to include preferences and all produced outputs in the analysis of the input/output ratio. A possible approach is illustrated in figure 9.2.

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<sup>40</sup> A consequence of this is an efficiency bias in simple cost / life year based international efficiency comparisons in favor of developing countries: to cure someone suffering from a uncomplicated illness in a developing country so that this person will be able to work again and live on its own, is much cheaper than to make a citizen living in an industrialized country who is already in good health perfectly healthy, by identifying and healing the last ailment.

Figure 9.2: Efficiency and the Effect of Preferences



The location of a HCS relative to the productivity frontier is influenced by three aspects:

1) Technical efficiency, under which I for the sake of simplicity subsume also allocative efficiency as the choice of a certain combination of input factors in accordance to their productivity, is indicated by the vertical distance to the productivity frontier. An increase in technical efficiency is a movement towards the productivity frontier, i.e. upwards. Most clearly this is the case in which more health outcome is achieved using the same resources. Situations in which small increases in HCE correspond to large increases in outcome are equivalent.

2) Societal preferences in the sense of how much health is bought in the setting of diminishing returns of health investment influence the HCS' positioning along the productivity frontier, i.e. how much to the left or to the right a country positions itself: countries may for political reasons decide to produce much or little health. To accept that a life year is produced at a price which is high or low is also a political decision. In either way, HCS can produce health care in a technical efficient or inefficient way.

3) The production of beyond-health-output also concerns the vertical position of a country relative to the production frontier. If the society decides to invest additional resources in the production of beyond-health-output, it will move to the right but not upwards. It will appear as inefficient because its distance to the production frontier increases.

Thus the actual measurement problem that would have to be solved is to distinguish a HCS which is truly inefficient from a HCS, which seems to be inefficient because it produces services irrelevant for health status, but are nevertheless expected and demanded by the population. If the evaluation is based on the assumption that the HCS is only producing health, any production of beyond-health will be interpreted as inefficiency. Because wealthier countries are more likely to produce beyond-health outputs, they are also more likely to classify as inefficient.

The WHO's approach using a composite index as output, which captures production of life years (in DALE) and also the production of beyond-health outputs (such as responsiveness, fairness) is despite several shortcomings in the implementation a more valid approach than taking only one output, and will thus be used here as an efficiency indicator.

#### *Excursus: Implications for Health Policy*

Regarding the implications of this conceptual discussion for of health policy, the problem of identifying a truly efficient or a truly inefficient health system is a direct reflection of the antagonism between overall efficiency and responsiveness of HCS embedded in the setting of democratic political systems which are responsive to the citizens' wishes. To express it in a more provocative way, a crucial problem in health politics arises from the contradictory preferences of the citizens who want at the same time perfect health, little spending, and a responsive HCS; see Weisbrod (1991) and Oliver (2007). As Dowie (2001): 247) argues, the production of one output, like process utility or other beyond-health outputs, goes necessarily at the expenses of another one, like health output. Resources used for one service or treatment cannot be used for another one. The reduction in the other output may remain unnoticed, but exists. However, citizens as patients nevertheless want both, a responsive HCS which effectively restores their health, and all that at low costs. Since they are also voters, the political system will create a HCS which is in line with their preferences in the long run. The same is also true in HCS which are more market based: they too will be oriented at the wishes of the customers. That is to say, a HCS might be an inconsistent thing, because the preferences of those who design it or whose preferences influence the HCS' structure, are inconsistent.

## Part V: Analysis

The data collected in the course of this project is detailed, making it hard to get a concise overview of the complexity involved. The first step of the analysis is to reduce this complexity. This data reduction is done in order to describe the HCS in a more concise way, but also as a preparation of the causal analysis.

When analyzing which of the independent institutional variables affect which dependent variable, the analysis is limited with regards to the number of independent variables which can be used. Given that the dataset covers only 22 countries and two points in time, an overall of 44 data points, this also constrains the number of independent variables to explain e.g. levels of HCE, even if no statistical inference is intended.

When analyzing changes – occurrence, magnitude and direction – in the HCS' institutional setting between the two points in time, the data availability limits the number of cases to the 22 countries.

Hence, I must combine numerous original variables to few latent dimensions, which will combine the information contained in several original variables. This will be done using Principal Component Analysis (PCA) as one of the most robust methods for data reduction. This description section will also look for similarities among HCS and for types of HCS by comparing where the HCS are located on the latent dimensions.

The second, analytical step will then use this condensed information to look at relationships between independent institutional features of the HCS but also of the political environment, and the dependent variables, i.e. measures of achievement and efficiency. With regard to this causal analysis, it must be remarked that the cases analyzed are not a random sample drawn from a larger population on which an probabilistic inference is to be made. Instead, the cases are the population for which the data is given and for which I want to make statements.

## 10. Institutional Settings in Health Systems: Descriptive Analysis

### 10.1. Latent Dimensions of Health Care Systems

In this step I will look at sectors, issues and functions of the HCS, which are described in the dataset, e.g. the occupational status of different providers, the issue of choice, pharmaceutical sector etc. Using factor analysis /PCA, I will get a first description of the HCS, but also the condensed information which can be used in later on in a causal analysis of how the institutional setting affects the health system's performance.

#### *Methodological Note: Data Reduction using Factor Analysis/Principal Component Analysis*

Factor analysis as well as Principal Component Analysis (PCA) are similar statistical procedures to compress the information contained in larger sets of directly observed variables; see Child (2006). Both use the correlation among many directly measured variables to extract few underlying "latent" dimensions, denoted factors or principal components, and to locate the cases on these latent dimensions. Throughout the remainder of the study, the term "factor/component" respectively "dimensions" will refer to the latent dimensions, while the term "variable" or "indicator" will refer to directly observable features.

a) The number of extracted factors/components indicates how many latent dimensions are underlying a certain institutional aspect or sector of the HCS. For instance the provision of services has many different elements and aspects, e.g. how (by self-employed providers or employed staff) primary care, dental care, outpatient secondary care, inpatient secondary care and medicines are provided. But it might be that despite these many features, there is basically only one dimension underlying the way the provision of services is organized. This is the case if features are correlated, i.e. if one feature most often goes together with other features. Assume for the sake of illustration that there are only two basic types of HCS. In the first one, the provision of services is predominantly done by independent, self-employed providers. In the second one, it is predominantly done by providers who are employed and organizationally integrated into the public administration. There might be services in both types, which are not provided the way the majority of services is provided in this type of HCS (dental care is the typical example), but most services are provided the same way in each of both types. In such a situation, there is only one dimension underlying all the individual features describing how care is provided. Individual features are systematically correlated, and one can infer from how



one feature is organized on how other features are organized: If one knows that GPs are self-employed, one can infer that so are dentists, pharmacists and providers of outpatient secondary care.

If individual features occur independent from each other, they represent different latent dimensions. In this situation, one cannot infer from the occupational status of GPs on the occupational status of out-patients specialists and the like. The technical criterion for deciding on how many factors to include is the Eigenvalue of a factor/dimension, which should be larger than 1. Using the Eigenvalues one can also calculate the fraction of variance in the observed variables explained by the factor/dimension. But apart from this technical aspect, the loading pattern is of interest for the decision. If some variables are loading high on a dimension, which is by its content not of interest for the present study (e.g. quality of pharmaceuticals) it will be excluded from the analysis. The primary aim of this step in the analysis is to compress the information contained in the individual variables, in order obtain a number of latent dimensions which is as small as possible but yet appropriate.

b) Once the number of latent dimensions is defined, the next task is to determine the content of the latent dimensions. Assigning a content, a substantive meaning to a latent dimension, is an interpretative step. The interpretation is based on the assignment of variables to the dimensions. The degree to which a certain variable is determined by a certain latent dimension is denoted as the loading of a variable on the factor. Technically, the loading is the correlation of a directly measured variable with a latent dimension. For interpreting the results and for assigning a content to a latent dimension, the loading pattern and the magnitude of the loadings are decisive. If a variable is loading with a high magnitude on a factor, irrespective of whether the loading is positive or negative, this variable is strongly determined by this latent factor. A variable is assigned to the factor on which the loading has the highest magnitude. The loading pattern shows which variables are going together, in the sense that they all are loading on a common latent dimension. The content of the various variables which are loading together on one factor, will indicate the content and the meaning of the latent dimension.

c) Based on the loadings of the variables on the factors/principal components and the values a case has for a certain variable, the PCA yields the PCA scores. These scores are the value a case has on the latent dimension – i.e. it the score obtained for a case will show, where this case is located on that latent dimension. If the latent dimension captures “control of the purchaser over the provider”, the score of a case on this latent will indicate, whether the control of a purchaser in a given country is high or low.

### *Input Data and Implementation of the Data Reduction*

The factor analysis as well as PCA use the correlation matrix of the observed variables as input data. Pearson's correlation, the standard method to generate the correlation matrices, assumes all variables to be metric. Given that the data used here is dichotomous, capturing the presence or absence of an institutional feature, the usage of Pearson's correlation is problematic. While very robust in many situations of categorized data, see Bollen/Barb (1981), and also often used in empirical research, there is the problem of a potential bias arising from the categorization, discussed for instance by Kolenikov/Angeles (2004). To avoid this potential bias, the correlation matrix underlying the PCA used here is the tetrachoric correlation as the technically appropriate; see Carroll (1961), and Flora/Curran (2004). It might however be remarked that the results differ in detail, but not substantially.

Given that the set of items by which the HCS are described and compared is identical for both points in time, the PCA will be done for using both points in time simultaneously. A case in the PCA is one country in a year. The main advantage is that the latent dimensions constitute a "common space" in the sense that the content, meaning as well as the scaling of the latent dimensions remain identical for both points in time. Thus, changes in the location of a country on the latent dimensions between 1995 and 2004 can be directly observed and evaluated with regard to the direction and the magnitude of the change.

The PCA was implemented using the `polychoricpca` procedure written for STATA by Kolenikov<sup>41</sup>. Table 10.1. below gives the Eigenvalues and the Eigenvectors, i.e. the loading patterns of the observed variables on the obtained factors/latent dimensions. The observed variables are grouped on a sectorial basis.

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<sup>41</sup> See the documentation at : <http://www.unc.edu/~skolenik/stata/>

Table 10.1: Latent Dimensions in the Institutional Setting of Health Systems

a) Agency and Delegation to Independent Actors

| Content of the Variable                         |                    | component1   | component2    |
|---|--------------------|--------------|---------------|
| OS1: GP Primary Care Provider -selfemployed?    | os1                | <b>0.475</b> | 0.022         |
| OS2: Specialized Care Provider -selfemployed?   | os2                | <b>0.416</b> | <b>-0.673</b> |
| OS3: Dental Care Provider - self employed?      | os3                | <b>0.476</b> | 0.049         |
| OS4: Pharmacies - private/selfemployed?         | os4                | <b>0.468</b> | -0.091        |
| H0: Hospitals formally in Non-Public Ownership? | h0                 | <b>0.394</b> | <b>0.732</b>  |
|   | Eigenvalue         | 4.61         | 0.76          |
|   | Variance Explained | 92%          |               |

b) Remuneration Modes and Incentives of Agents

|   |                    | component1   | component2    |
|---|--------------------|--------------|---------------|
| R1A: FFS Remueration Mode Primary Care / GPs                | r1a                | 0.297        | <b>-0.350</b> |
| R1B: GP Incentive to Increase Quantity of Services?         | r1b                | 0.337        | <b>-0.429</b> |
| R2A: FFS Remuneration Mode Specialists                      | r2a                | <b>0.346</b> | 0.039         |
| R2B: SPs Incentive to Increase Quantity of Services?        | r2b                | <b>0.383</b> | 0.191         |
| R4: FFS Remuneration Mode Surgeons in Hospitals             | r4                 | 0.351        | <b>-0.381</b> |
| R5: Remueration Mode Pharmacies retail margin?              | r5                 | <b>0.471</b> | 0.041         |
| H9: Hospital Remuneration based on quantity/length of stay? | h9                 | <b>0.347</b> | 0.328         |
| H10: Hospital Incentive to Intensify treatment?             | h10                | 0.257        | <b>0.633</b>  |
|   | Eigenvalue         | 5.86         | 1.93          |
|   | Variance Explained | 73%          |               |

c) Hospital Status

|   |                    | component1    | component2   |
|---|--------------------|---------------|--------------|
| H1: Hospitals Deficit Covered?  | h1                 | <b>-0.377</b> | 0.119        |
| H2: Hospitals decides on Surplus  | h2                 | <b>0.324</b>  | <b>0.496</b> |
| H3: Hospitals (co)decides on Capacity/beds                                  | h3                 | <b>0.580</b>  | -0.196       |
| H4: Hospitals (co)decides on TechnologyInvestment                           | h4                 | <b>0.478</b>  | 0.149        |
| H7: Hospital choice: Several Hospitals (in the same region) to choose from? | h7                 | -0.355        | <b>0.600</b> |
| H8: Hospital Treatment costs differ among hospitals?                        | h8                 | 0.248         | <b>0.564</b> |
|   | Eigenvalue         | 3.25          | 1.52         |
|   | Variance Explained | 54%           | 25%          |

d) Purchaser Status

|   |                    | component1   | component2    |
|---|--------------------|--------------|---------------|
| hif1: Purchaser status HIF/HA - independent from government   | hif1               | <b>0.484</b> | -0.272        |
| hif4: Free choice of Purchaser                                | hif4               | <b>0.431</b> | <b>-0.353</b> |
| hif5: Contributions differ among Purchasers (HIF/HA)?         | hif5               | <b>0.395</b> | <b>0.379</b>  |
| hif6: Catalogue of services differ among Purchasers (HIF/HA)  | hif6               | -0.031       | <b>0.500</b>  |
| hif10: Purchaser has control over own Surplus?                | hif10              | 0.270        | <b>0.401</b>  |
| hif11: Purchaser's Deficit covered?                           | hif11              | -0.301       | <b>-0.459</b> |
| hif12: Determination of Top Level Administration of Purchaser | hif12              | <b>0.509</b> | -0.190        |
|   | Eigenvalue         | 3.47         | 2.74          |
|   | Variance Explained | 50%          | 40%           |

Table 10.1 (continued)

## e) Patient Involvement in Payment of Medical Providers and Services

|   |                    | component1   | component2    |
|---|--------------------|--------------|---------------|
| CP1: CoPayment: GP                              | cp1                | <b>0.285</b> | 0.034         |
| CP2: CoPayment: Specialists                     | cp2                | <b>0.283</b> | 0.004         |
| CP3: CoPayment: LabServices                     | cp3                | <b>0.208</b> | -0.132        |
| CP4: CoPayment: Dentists                        | cp4                | <b>0.250</b> | 0.009         |
| CP5: CoPayment: Dentures                        | cp5                | <b>0.283</b> | -0.096        |
| CP6: CoPayment: Hospital                        | cp6                | <b>0.232</b> | -0.167        |
| CP7: CoPayment: Medicines                       | cp7                | 0.225        | <b>-0.583</b> |
| CP8: CoPayment: MedDevices                      | cp8                | 0.163        | <b>-0.228</b> |
| CR1: Payment/CostReimbursement: GPs             | cr1                | <b>0.295</b> | -0.039        |
| CR2: Payment/CostReimbursement: Specialists     | cr2                | <b>0.296</b> | -0.006        |
| CR3: Payment/CostReimbursement: Lab Services    | cr3                | <b>0.302</b> | -0.073        |
| CR4: Payment/CostReimbursement: Dentists        | cr4                | 0.224        | <b>0.430</b>  |
| CR5: Payment/CostReimbursement: Dentures        | cr5                | 0.225        | <b>0.392</b>  |
| CR6: Payment/CostReimbursement: Hospital        | cr6                | <b>0.313</b> | 0.071         |
| CR7: Payment/CostReimbursement: Medicines       | cr7                | <b>0.217</b> | 0.150         |
| CR8: Payment/CostReimbursement: Medical Devices | cr8                | 0.105        | <b>0.424</b>  |
|   | Eigenvalue         | 12.18        | 3.80          |
|   | Variance Explained | 76%          | 24%           |

## f) Control of Pharmaceutical Markets and Consumption

|  |                    | component1   | component2    |
|--|--------------------|--------------|---------------|
| PH1a: Pharmaceutical Price Control   | ph1a               | <b>0.595</b> | 0.109         |
| PH1e: Budgets for PharmaExpenditure? (Overall/Prescriber)                      | ph1e               | <b>0.425</b> | <b>-0.517</b> |
| PH2a: Inclusion of Pharmaceuticals: Price granted based on medical Evaluation? | ph2a               | <b>0.487</b> | <b>0.523</b>  |
| PH2b: Inclusion of Pharmaceuticals: Coverage based on medical Evaluation?      | ph2b               | -0.011       | <b>0.640</b>  |
| PH5: Generic Substitution: Reduction of Co-Payments by choosing generics?      | ph5                | <b>0.477</b> | -0.194        |
|  | Eigenvalue         | 1.91         | 1.52          |
|  | Variance Explained | 38%          |               |

## g) Government Control over Parameters of the Health Systems

|   |                    | component1   | component2    |
|---|--------------------|--------------|---------------|
| N1: Setting the Catalogue of Medical Services         | n1                 | <b>0.396</b> | -0.085        |
| N2: Setting the Levels of Remuneration / Budgets      | n2                 | <b>0.256</b> | <b>-0.400</b> |
| N3: Setting the Remuneration Modes for Providers      | n3                 | <b>0.360</b> | <b>-0.363</b> |
| CG involved/decides Hospital bed-capacity H3          | cghosj             | <b>0.391</b> | 0.031         |
| CG involved/decides Investment Hospital Technology H4 | cghosj             | <b>0.398</b> | 0.378         |
| CG involved/decides Building New Hospitals H5         | cghosj             | <b>0.379</b> | -0.142        |
| CG involved/decides Closing Down Hospitals H6         | cghosj             | <b>0.382</b> | -0.004        |
| CG6 CGov sets/negotiates prices for Pharmaceuticals   | cg6ph:             | 0.218        | <b>0.732</b>  |
|   | Eigenvalue         | 6.47         | 1.18          |
|   | Variance Explained | 81%          |               |

Table 10.1 (continued)

## h) Access to Secondary Medical Care

|   |                    | e1            | e2           |
|---|--------------------|---------------|--------------|
| GK1a: Gatekeeping Specialists                             | gk1a               | <b>-0.514</b> | 0.458        |
| GK1b: Gatekeeping Hospitals                               | gk1b               | <b>-0.486</b> | <b>0.539</b> |
| GK4a: Factual Choice after Gatekeeping: among Specialists | gk4a               | <b>0.513</b>  | 0.460        |
| GK4b: Factual Choice after Gatekeeping: among Hospitals   | gk4b               | <b>0.487</b>  | <b>0.537</b> |
|   | Eigenvalue         | 2.98          | 1.03         |
|   | Variance Explained | 74%           |              |

## i) Quality Assurance and Enforcement

|  |                    | component1   | component2    |
|--|--------------------|--------------|---------------|
| q1: Institution setting medical guidelines?                        | q1                 | <b>0.409</b> | 0.069         |
| q3: Institution evaluating Medical Efficacy of treatment options?  | q3                 | <b>0.413</b> | 0.076         |
| q4: Institution evaluating CostEffectiveness of treatment options? | q4                 | <b>0.330</b> | <b>-0.397</b> |
| q5: Institution evaluating Quality of Medical Providers?           | q5                 | <b>0.351</b> | -0.240        |
| q6: Quality Evaluations published?                                 | q6                 | <b>0.348</b> | -0.272        |
| q7: Recertification of Physicians?                                 | q7                 | <b>0.328</b> | -0.302        |
| Purchaser can enforce med guidelines vis-a-vis: Hospital           | co4a               | 0.325        | <b>0.518</b>  |
| Purchaser can enforce med guidelines vis-a-vis: GP                 | co4b               | 0.309        | <b>0.584</b>  |
|  | Eigenvalue         | 6.48         | 1.27          |
|  | Variance Explained | 81%          |               |

## j) Purchaser Control over the Providers of Medical Services

|  |                    | component1   | component2    |
|--|--------------------|--------------|---------------|
| Purchaser can identify overspending Provider: Hospital | co1a               | <b>0.443</b> | -0.150        |
| Purchaser can identify overspending Provider: GP       | co1b               | <b>0.410</b> | <b>0.422</b>  |
| Purchaser can exclude overspending Provider: Hospital  | co2a               | <b>0.468</b> | <b>-0.468</b> |
| Purchaser can exclude overspending Provider: GP        | co2b               | 0.340        | <b>-0.470</b> |
| Purchaser gets detailed bill from: Hospital            | co3a               | <b>0.413</b> | 0.153         |
| Purchaser gets detailed bill from: GP                  | co3b               | 0.361        | <b>0.579</b>  |
|  | Eigenvalue         | 3.52         | 1.66          |
|  | Variance Explained | 59%          | 28%           |

**Remark**

Loading obtained by a Principal Component Analysis based on polychoric correlations

*a) Agency: Delegation to Independent Actors*

The first aspect analyzed here is the issue of “agency”, the delegation of tasks to independent providers. According to the delegation / institutional economics approach, incentive problems are more severe in settings in which agents are formally independent and have more leeway for unobserved action. They may oversupply services for the reason of increasing their income. The delegation approach predicts that the level of HCE is higher in countries with high levels of agency. If the providers are independent agents, there is of course still no

guarantee that the services are delivered in high quality and sufficient effort. Independent providers equally can maximize their utility by reducing the effort. And the countermeasure is not the employment status but the degree of choice the patients have.

In the case of employed providers, i.e. low levels of agency, the incentives are slightly different. Usually, employment goes together with a remuneration by salary, and thus, instead of increasing income, which is not feasible in the setting of a fixed income, they may maximize utility by minimizing effort. While this does not increase HCE, it might affect the HCS' output negatively - either because there is too little of it or because there are quality problems due to lack of effort.

As for the operation of the HCS, high levels of agency imply that the system is more autonomous, because self-employed providers usually have a say in what is covered by the HCS and at what prices they are remunerated. They are also under a weaker control (or none at all) regarding what they are doing in a certain case. On the other hand, employed providers have a stake in organizational issues only as far as their salary is concerned, but oftentimes they are not involved in decisions about what health services are covered by the HCS, and what these services shall cost.

As defined above, delegation and "agency" is defined as existent to the degree that there are independent, usually self-employed providers, "agents", from which services are contracted or purchased. Agency is defined as absent, if the providers are part of the formal hierarchy of the public administration, i.e. employed.

The observed variables included in the PCA are the occupational, respectively the institutional status of providers of the following standard services: GPs / primary care providers, providers of specialized care (gynecologists, orthopedics and the like), providers of dental care, pharmacists and hospitals. All variables are coded alike, the value 1 stands for a self-employed/ independent whereas the value of zero stands for employed/ part of the public administration.

In each of these dichotomous variables, the original question was if the providers are predominantly employed, i.e. part of the hierarchical control extending from the state into the public health system. Or whether they are predominantly self-employed, i.e. private providers working on their own account. In the latter case, they are not subject to hierarchical control but are contracted. They voluntarily entered a contract in which both sides are at least formally equal and both sides have a say on the terms of the contract. With regard to hospitals, "independence" means that hospitals are predominantly independent, owned and operated by

an entity which is not part of the public administration. An example of this are hospitals operated by private enterprises on a for profit basis, hospitals owned and operated by charities or religious orders on a non-profit basis. The alternative, the most frequent setting in the sample of HCS analyzed here, is that the hospitals are owned and operated by a public entity. This entity can be the government (national, regional or local layer) or the Public Health Service, which is in turn owned and operated by the government.

The PCA yields a one dimensional solution: the Eigenvalue of the first component is 4.61, and it explains almost the complete – 92% – variation in the five variables. All five variables are loading positively on the extracted dimension thus the latent dimension will be labeled “Agency”. High scores on the latent dimension imply high levels of delegation, i.e. that the providers of services are more often self-employed and formally independent. In terms of the coding of the variables, a higher score indicates that in this country more variables have a 1. A low score indicates little delegation to independent agents respectively much integration of the provision of health into the public administration.

#### *b) Remuneration Modes and Factual Incentives*

This analysis concerns the institutional patterns in the predominant remuneration mode of providers and their incentive at the margin. The incentives set by the remuneration system are twofold, and conceptually independent from the provider’s occupational status.

The first aspect is how providers are predominantly remunerated. The predominant mode of remuneration might be a salary or some version of the fee-for-service mode. The coding is based on the distinction between modes, in which income depends on the quantity of services provided and hence set an incentive to extend this quantity. The alternative are all remuneration modes, which do not set this incentive. The value 1 is assigned to a case, if the predominant remuneration mode is based on the quantity of services provided, for which fee-for-service is the prototypical example. The coding is zero otherwise, e.g. if the provider obtains a capitation or is salaried.

But there is also a second aspect. The predominant remuneration mode may not capture the incentives fully, in particular not the incentive at the margin. In many HCS the providers receive mixed forms of remuneration. A provider might receive a basic salary making up the major share of income, but there may or may not be the opportunity to increase the income further by supplying more services. In this case, the incentive at the margin is to increase the quantity of services provided. Thus the HCSI also covered, whether the provider can increase

his income by increasing the quantity of services provided in a case. A possible option to do so is to provide services on private terms, a situation labeled as “revolving door effect”. It shall be noted that the provider’s motive to attract patients as customers is not per se a problem for HCS efficiency, since it may stimulate provider’s effort and quality. Gaining more clients goes at the expenses of other providers. The incentive to provide more services in a given case is a larger problem for efficiency, since here the issue of supply induced demand comes into play.

Regarding the variation of the input variables, there is no variation in the dental care: all dentists everywhere and anytime have the incentive to increase the quantity of services provided to the consumers. For this reason, the variable is excluded from the analysis.

The variables included in the PCA are the following:

Is there quantity-based/ fee-for-service based remuneration mode for Primary Care Providers/ GPs? And: Do GPs/Primary Care providers have an incentive to increase quantity of services? Is there a quantity-based/ fee-for-service based remuneration mode for specialists? And: Do specialists have an incentive to increase quantity of services?

Is there a quantity-based/ fee-for-service based remuneration mode for surgeons in hospitals? In many countries, surgeons are employed by the hospital and receive a salary. In some cases, the salary is supplemented by an activity based component. But in some countries, the surgeons working in the hospital, making the decisions and conducting the surgery, are paid directly by the purchaser or the health administration, while the hospitals receives payment for providing and operating the infrastructure necessary for treatment. So even if the hospital receives a budget, and hence has no incentive to increase the intensity of treatment, the actors actually deciding on treatment in a given case may nevertheless have such an incentive.

Is the remuneration mode for pharmacies a retail margin? Apart from Sweden, pharmacies are privately owned businesses, and thus turnover matters for the pharmacist’s income. The argument why the remuneration mode matters for HCE efficiency and costs is that pharmacists are relevant for the usage of generics, which in turn is relevant for pharmaceutical expenditure in the HCS. If the pharmacy receives a retail margin, i.e. a percentage of the price of the medicine, turnover and income increase if more expensive medicines are sold. This sets at the margin the incentive to recommend branded, original products, which are usually more expensive, and not to recommend generic substitution. If on the other hand, the pharmacist is a public employee receiving a salary which is independent from the turnover generated, or receives only a dispensing fee independent of the price, the pharmacists may be more open to recommend generic substitution because substitution has no financial implications.



Is the hospital's remuneration based on quantity of services or the length of stay? In many countries, a substantial share of the hospital's funding comes from allocated budgets. But there is usually a flexible component which is activity based. This component introduces an "incentive at the margin", which is different from the incentives set by an exclusively budget based remuneration. Thus, there is also the question, whether the hospital has an incentive to increase the quantity of services or to extend the length of stay. If the hospital is remunerated predominantly on a fee-for-service basis, the incentives are equivalent to those of individual providers. The quantity of services provided during the stay may be increased. If the hospital can increase the payment for the case by keeping patients longer, the average length of stay might be longer. Germany's per diem based funding of hospitals was a good example for this, and also for the over-capacity resulting from this type of funding in the long run.

In all variables, the value of 1 is assigned if the answer to the item is "yes", i.e. there is an incentive to increase the quantity of services for the provider, and zero, if there is no such incentive.

The PCA of the variables yields an one-dimensional solution; see table 10.1b. The first component has an Eigenvalue of 5.86, and reproduces 73 % of the total variance in the eight variables. All variables are loading positively on the extracted dimension, and thus the content of the latent dimension is the degree to which the remuneration modes implemented in the HCS set an incentive for the providers to increase the quantity of services provided. Higher scores for a case on this dimension indicate that the providers of medical services and products have an incentive to increase the costs of treatment, because their income depends on the costs.

### *c) Hospital Status*

Hospitals are the place where a substantial share of HCE arises. For this reason, controlling the hospital sector is of crucial importance for the overall expenditure, and it is worthwhile to study this sector in more detail. Looking at the hospital sector in the countries included in this study shows that ownership of hospitals is relatively homogeneous. They are, apart from Belgium, usually in public ownership, owned by counties, health authorities, municipalities or governments. But how and to what degree hospitals are factually controlled by their owner, respectively how autonomous they are in making decisions, and whether they are to some degree competing among each other for patients, differs largely among countries.

The hospital sector is described by six items of the HCSI. Again each variable is coded binary, with the value 1 standing for a “yes” to the answer respectively the existence of the feature. The items are the following:

Would the hospital have to bear potential deficits? In some countries, this is indeed the case, in others, the deficit is covered from other sources, e.g. the state or the owner step in. Given the rather probable occurrence of a deficit, it is an important feature whether the hospital is not only kept operative if the case arises but has to cover the deficits at some time in the future, or whether bailouts are done on a regular basis. It is in particular important, whether the hospital knows full well that the deficit will be covered anyway and immediately. If overran budgets and permanent discrepancies between allocated budgets and actual costs only mean that more funds are allocated in the next accounting period, the incentive intended by budgeting or any similar cost containment measures is completely eliminated. If on the other hand, the deficit is not covered, but has to borne by the hospital, there is a considerable pressure to engage in cost control.

Can the hospital decide on the usage of a surplus, if this case arises? If the hospital has to give away its surplus by default, the incentive to achieve a surplus is eliminated. In some countries, running a surplus implies less funding in the next accounting period, which sets the pervert incentive to spend all funds. If on the other hand the hospital is allowed to use the surplus, e.g. for hiring additional staff or investing in equipment, this sets an incentive for the hospital and its administration to actually create a surplus. While the hospital usually cannot realize profit in the economic sense, spending money for improving the hospital’s equipment is an equally strong motive.

Both items, deficits and surplus, cover the financial autonomy of the hospital. The variation in the way a deficit is handled is limited - usually, the deficit is covered one way or other, at least to the degree of keeping the hospital operative. The role of the hospital in deciding on how a surplus is used differs substantially among countries.

Apart from the financing, two items cover the hospital’s role in decision making:

Does the hospital has a say in the question of capacity (whether the number of beds will be increased or decreased)?

Does the hospital has a say in the question of investments in the medical high technology available in the hospital?

Hospitals have, as institutions, a self interest to grow, to become bigger (have more beds, more departments) and better equipped (with more and better technology). In some countries, the hospital factually decides on capacity issues, e.g. the creation of a new department for

treating a certain types of conditions, or the procurement of sophisticated equipment. In others, the owner or the government (the Ministry of Health), determines all those issues, maybe giving the administration of the hospital the possibility to state its opinion, but not necessarily giving them any say.

Finally, two items concern the hospital's role as a supplier of services, which is competing with others suppliers for clients. As stated above, competition is the main incentive to provide quality, effort and to work efficient in the provision of services but also in administrating the hospital. While hospitals are usually non-profit and are factually not threatened with "going out of business" for mere financial reasons, reputation, size and equipment are strong motives, which affect and drive competition. Two items cover the competition among hospitals:

Is there usually only one hospital in a region or several, which are offering the same services? In some countries, there is only hospital in a defined region, e.g. a hospital district, which provided services. Often there is a layered pattern, in which basic care hospitals cover the provision of basic services (like appendectomy and basic surgery) in a small area, while more specialized hospitals cover the provision of specialized services (like cardiac surgery) for a larger area. But on each level of specialization, the hospital is the sole provider of the service for a defined region, and all patients living in the catchment area are referred to the hospital. On the other hand, there are countries, where several hospitals cover identical or overlapping regions, all of which cover the same indications. If there is choice, at least in the sense of several possibilities to obtain treatment, there is also an at least rudimentary competition based on reputation.

Do the costs of treatments differ among hospitals? Competition may work by quality, but competition may also work by the prices for treatment charged by the hospitals for a defined treatment (e.g. the per diem, the cost per case etc.). In some countries, hospitals set and offer their own price for a certain treatment, in others, all hospitals in the country negotiate together the payment (national DRGs or a per diem) which is then identical for all.

The PCA yields a two-dimensional solution, see table 10.1c. The Eigenvalues are comparatively close in magnitude, 3.2 to 1.5, capturing 54% respectively 25% of the variance. But more important is the result that the two competition indicators are loading on a different dimension than the four indicator variables of hospital involvement in decision-making. The gap between the first and the second Eigenvalue is due to the fact that there are four variables covering basically the same thing, while there are only two covering a different dimension.

Based on the loading pattern, the first latent dimension of hospital will be labeled “HospitalAutonomy”. High scores on the this dimension imply that the hospital has a high degree of decision autonomy and has a say in issues which concern its size, equipment and also financial autonomy. The second dimension, defined basically by the two competition variables will be labeled “HospitalCompetition”. High scores of a case on this dimension imply that there is some competition among the hospitals.

#### *d) Purchaser Autonomy and Competition*

Even in public-integrated HCS, there is usually one designated actor in charge of purchasing of health services either by contracting or organizing their provision. These “purchasers” can be Health Insurance Funds (HIFs), public Health Authorities (HA), local governments, provincial government or authorities which are formally part of – and hence under the direct control of – the national Ministry of Health. Even in the latter case, there is usually a regionally-based organizational structure, with health authorities in charge of a certain region. Irrespective of the formal status or “label”, the interesting question is, how autonomous these purchasers actually are in setting parameters like prices, catalogues of services covered and whether there is any competition among them. Case studies showed that this autonomy is quite independent from the formal status or “label” of the purchaser. For instance, regional health authorities can be very autonomous, irrespective of the fact that they are formally part of the government hierarchy. At the same time, HIFs, while being formally independent, can be under strict control of the government, which determines the top-level administration, sets the contributions rates and the defines catalogues of services covered.

Purchasers – be they HIFs, HA or whatever organizational form – are crucial to the operation of the HCS and the exercise of control over the providers of medical services. Looking at them from the perspective that an effective competition among them might improve their operative efficiency, the question is, whether they are actually independent (i.e. able to act competitively) and whether they are under competition from other purchasers (i.e. motivated to act competitively). For instance, in Luxembourg, there are formally several HIFs, but basically they are all merged at the national level, acting vis-à-vis the providers as one entity, the UCM. Hence there is no competition among the different HIFs. In other countries, several HIFs exist, but are neither allowed to charge different contribution rates nor allowed to offer differing catalogues of services. Thus, they cannot compete for clients by offering “better” packages of contributions and services, nor do they have the motivation to do so. Consequentially, they have no incentive to minimize administrative costs or to hold a tough

bargaining stance with the providers. Both of which would enable them to offer more services / lower contributions as a mean to attract more clients.

The institutional status of the purchaser is covered by three items:

Is the purchaser organizationally independent from state administration? At the most basic level, the purchaser can be a formally independent entity, but it can also be an institution which is an integral part of the public administration and thus an element in the political “chain of command”. As argued above this is just one aspect, and often a rather formal one at that.

Does the purchaser has the control over the operational surplus? In some countries the purchaser can use a surplus to lower the contributions charged, or to increase its reserves. Even if the purchaser has some constraints on the usage, e.g. has to put it into reserves or has to lower the contribution levels, the purchaser has some advantage of running a surplus. In other countries, any surplus is automatically expropriated, and this implies that there is no incentive to run a surplus. The same is true for Health Authorities in particular in the case of regional or municipal governments acting as purchasers. Running a surplus may even imply lower allocations in future.

Is the purchaser’s deficit covered? In the case of independent HIFs, the possibility of going out of business, e.g. by being formally dissolved or taken over by a more successful HIF, is a powerful incentive given that HIFs – like all bureaucracies, or rather the staff working in them – have to a certain degree a “will to survive” as independent entities. The incentive to avoid deficits if they are not covered “by default”, is also present in the case of health authorities. In municipalities which are purchasing or providing health care, running a deficit which accumulates over time also creates pressure – not economic by nature and not in the form of going out of business, but political, and expressed by votes.

Is the top-level administration of the purchaser determined internally by the purchaser? In many social insurance systems the HIF’s top level administration is formally elected by the HIF’s members, usually by the employers and the trade unions, with a strong role for the top-level administration currently in place. In others, the top-level is determined or rather imposed by the national government, and can be removed by the government at will. In the case of HAs, the political determination of the top level administration is the typical case. If municipalities or counties are organizing the provision of health, the municipal council or the county council determines the administration of the authority in charge of health care provision. But here too there variation is observable. The national government might be in control of the topmost level of the health service administration, while the lower levels of

administration in charge of a regional HA are then installed and removed by the health service administration without intervention of the government.

But the institutional status per se is not sufficient to say something about the purchaser's behavior. For instance, Scandinavian municipalities are under more competitive pressure for citizens and inhabitants, who can "vote by feet", than are formally independent HIFs which neither need to nor can compete for clients.

The HCSI contains some items on the possibility of competition, which is crucial for the behavior of the purchaser. The purchaser is usually non-profit – and hence has no motive to produce a surplus in the sense of an enterprise' profit. But bureaucracy theory would still predict that it is interested in attracting clients, in order to grow and to have more resources available for on the job consumption. To compete, the purchasers must have several features, covered by the following variables:

Are citizens free to choose among HIF/HA? An instance of free purchaser choice is Germany, where now all "public" (i.e. non-profit) HIFs are open to each citizen. In other countries, the citizens are assigned by occupation to a HIF (e.g. Luxembourg) or by place of living to the HA acting as purchaser for them. If citizens cannot choose, they cannot leave either and thus the purchaser has neither the chance to attract clients by performing well, nor is it subject to the pressure arising from losing clients to other purchasers.

While the legal possibility to change a provider is a precondition, it is not sufficient to create competitive pressure. The option to change the purchaser must be supplemented by a motive to change. As for these motives, there might be some others too, like customer orientation, but the most basic parameters defining the attractiveness of a purchaser from the perspective of a client are the services offered and the contribution charged. Two additional features required for competition are thus the following:

Can the contribution of the citizens to the HIF/HA differ between them or not? And: Can the services covered by HIF/HA differ among them or not?

In some countries the HIF/HA charge different rates, incentivizing citizens, if possible, to change to the HIF/HA with lower contribution rates. This puts purchasers with higher operational costs under pressure to contain the costs, e.g. by increasing internal efficiency. In other countries the contribution to a HIF/HA must by law be the same, but the services offered may differ to some degree. While this is usually not the case for the basic care, it often concerns optional services, like dental care, spa treatments or coverage of "alternative treatments" like homeopathy. In the case of a HA, e.g. where municipalities are organizing

health care, the difference may take the form that, while there is a uniform official catalogue of covered services, factual access, availability and in particular waiting times differ.

The PCA yields a two-dimensional solution, in which two components of almost equal explanatory power (50% and 40% respectively) are extracted. The loading pattern obtained is not completely in line with what one would expect, but reflects some institutional inconsistency.

As one would expect, if purchasers are formally independent from the government, it is more likely (but not determined!) that there is also free choice. Independent purchasers are also more likely to determine their top-level administration.

But furthermore, one would expect that if a country gives citizens “free choice” of purchasers, it would also give the purchasers the means to engage in a competition, i.e. allow them to differ in both contributions and catalogues. But the first dimension, i.e. formal independence does not imply either of this. But it is actually less likely that purchasers differ in contributions or catalogues, in countries where citizens have free choice of the purchaser.

Assigning a clear cut content to the dimensions is difficult in these circumstances. Given the loading pattern obtained, see table 10.1d, and orienting myself on the variables loading strongest on each of the dimensions, the first dimension will be denoted as "PurchaserAutonomy", the second as "PurchaserCompetition".

“PurchaserAutonomy” covers the purchaser’s formal status and the government’s control over the purchaser’s administration. Both variables are loading strongly on this dimension. High scores on this dimension indicate that the purchaser is organizationally independent from the state administration and separated from direct hierarchical control by a political actor.

“PurchaserCompetition” captures whether purchasers have the necessary features and decision competencies to compete among each other for clients: may they differ in the catalogues of services covered, differ in the contributions charged, do they have to bear a potential deficit (note the negative loading!) and can they decide on the usage of the surplus. High scores on the second dimension imply that elements of competition are installed.

Both dimensions are independent, which is to say that the formal status of a provider does not determine whether there is a competition among providers. Neither does a system of HIFs guarantee competition, nor does a system of regional or local HA preclude competition.

*e) Patient's Involvement in Payment of Providers and Medical Services*

HCS differ with regard to the role the patient has in the payment of the providers. As was argued in the section on patients as consumers, consumption of medical services differs from the consumption of other goods and services by the almost complete exclusion of patients from the payment. Patients are ignorant of the costs their consumption incurs, and more over costs do not matter for them, because they are paid from by a common pool. The possible and even likely result is individual over-consumption, and consequentially, introducing transparency of costs and making them relevant might contain this problem and thus increase efficiency at the macro level.

A first aspect of this is the involvement of patients in the payment of providers. For a range of services the HCSI captures, whether these services / goods are provided “in kind” or whether there is some version of cost-reimbursement. In the “service in kind” setting, there is no involvement of the patient. The payment only takes place between the purchaser and the provider. In the case of cost-reimbursement the patient is given a bill for the services received, which lists the services provided. In some countries, the service is paid first by the patient who then passes the bill on to the purchaser for reimbursement (full or partial). This provides the patient on the one hand with a knowledge about the costs arising. On the other hand, it allows also a basic control of whether the services billed were actually provided. The incentive to check the bill even in a superficial way is much stronger, if the patient has to pay the bill first and is reimbursed later. This possibility, but also the awareness of the costs incurred, is completely absent in systems where services are predominantly provided in kind. Here, the patient never becomes aware of the financial aspect of getting treatment, and has no notion of the costs of even the most basic services. Thus, involving the patient in the payment might increase transparency and preclude fraud, a problem reported for some HCS.

A second aspect of patient involvement concerns the financial incentives set for the patient. A clear cut case are co-payments: if the patient has to make no co-payment, s/he is isolated from the costs of treatment. Even if the bill is transmitted via the patient, s/he does not necessarily has to care about it if s/he's not paying any of it. If medical services are factually free at the point of usage, there is no financial limit to individual consumption. If there is a co-payment the patient might consider the costs and benefits and may ask the provider, whether the service is actually necessary in the present situation. The effect is even stronger, if the co-payment varies with the price of the services, e.g. co-payments are percentages. This can be expected to make the patient sensitive to price differences of possible treatment options. A typical example are pharmaceuticals, where the patient often has the choice among a branded



original and a generic alternative. If there are no co-payments, the patient might habitually prefer the branded original. If there is a co-payment, in particular a flexible one, the patient might think about asking and shifting to a generic alternative where the co-payment is lower. At the same time, co-payments, as argued above, are an ambiguous instrument: often they are seen as just an additional source of funding, see Scheil-Adlung (1998), or to deter patients from obtaining necessary care now, at the price of even higher costs later on; see Newhouse (2004). The net effect of cost sharing on health system on expenditure but in particular on input/output-efficiency is thus not that straightforward.

The questions covering the involvement of patients are thus: Is there cost reimbursement for a service/product? And: Is there a co-payment for a service/product? The indicator variables cover the services of GPs, specialists, dentists, and hospitals, but also medicines and medical devices.

For the cost-reimbursement variables, the value of 0 is assigned, if the service is provided in kind, the value of 1 is assigned in the variable, where the patient first pays the bill, then gets reimbursed later. For the co-payment variables, the value of 0 is assigned, if there are no co-payments for this service or product. The value of 1 is assigned, if the price of getting services is relevant – i.e. either because there is a co-payment (fixed or varying with price) or the service not covered by the HCS and paid privately.

The PCA results given in table 10.1f, indicate that there are two independent latent dimensions. The loading pattern moreover shows that the involvement of the patient in the provider payment (service in kind vs. some form of cost reimbursement) and the usage of co-payments (the incidence, not the magnitude) show a similar same pattern.

Most of the variables are loading on the first component, which explains 73% of the variation in the original variables. It covers in particular the variation in all variables concerning “standard” services, i.e. the most basic services which are the core of health provision: GPs, specialists/specialized care, hospital treatment and the like. The dimension will used, and based on the content of the variables, will be labeled as “PatientInvolvement”. If the HCS has co-payments for GPs, it is very likely that there are co-payments for almost all other services as well. The same is true for the mode of payment: if services by GPs are provided in kind, most other services are usually also provided in kind.

High scores of a case imply that the patients are involved in the payment of providers and services. Involved in the sense that they are made aware of the prices (by a cost-reimbursement) and that prices are relevant for them (by co-payments).

*f) Control of Pharmaceutical Markets and Consumption*

Regulations on pharmaceuticals, in particular regulations of prices, are a common tool to contain pharmaceutical expenditure, and thereby overall HCE. Partly because it is possible to realize substantial savings without significant loss of quality, partly because it can be done without creating substantial unrest among the patients. In particular the usage of generics might reduce costs substantially, and moreover without loss of quality. Price regulations and other measures of cost containment might take a wide range of forms. The inventory items on which the analysis of this sector will be based are the following:

Are prices of medicines controlled? This control may come in many variants. It occurs in the form of a direct price setting by a national regulatory agency. The price may also be negotiated between a national institution and the producers. In some countries, prices are not controlled at all. Apart from the outcome (i.e. the price), the mode in use depends to some degree on the relative bargaining power of each side. In some countries, in particular where the pharmaceutical industry is in a weak position (few enterprises, little employment, small contribution to the economy), prices are set unilaterally, and usually on a low level by the government. In others, the pharmaceutical industry is free to charge whatever price it sees as appropriate.

Is there budget for pharmaceutical expenditure? Prescriber budgets as well as overall budgets directly limit consumption to a certain levels. It may not factually achieve this aim, but at least creates the awareness that the available means are limited. Frequently, prescribers are not involved in payment of medicines, and hence are indifferent to the usage of generics because the costs involved by their prescriptions are of no concern to them; see Hellerstein (1998) and Hassell et al. (2003) on this issue. The usage of generics is a convenient mean to limit the pharmaceutical expenditure, leaving resources for medical treatment in cases, where no generic alternatives exist.

A crucial point is the decision of giving the medicine *factual* access to the market. Factual market access means not only that the product has a market authorization. Authorization alone does not imply a large turnover, if patients have to buy the medicine out of pocket. Confronted with the often substantial price of innovative medicines, a medicine which is not covered by the HCS, i.e. where the HCS does not pay the major share of the price, will not actually have a market. Because, when confronted with the full costs of medicines, which are often substantial, most patients will shift to medicines which are covered. Factual market access refers to the fact that the medicine both available and paid for by the HCS. Market

authorization can be based on product safety only. But the institution granting factual market access can also require information on the medicine's effectiveness from the producer and evaluate this information: both, a new medicine's price and the coverage can be based on such an cost-benefit-evaluation. The evaluation can also take into account the value-added of this medicine compared to existing alternatives, filtering out "pseudo-generics"; see Hollis (2003) and Kong/Seldon (2004). As outlined above, the main incentive problem regarding the pharmaceutical industry is its incentive to introduce marginal modifications of existing drugs in order to prolong the factual length of the monopoly position and the associated profits. The industry is much better informed on the product's value added, but has the incentive to present it as a real innovation regardless of its value. It's up to the consumers, to close this informational gap. The systematic evaluation of a new product at the step of granting factual market access can be an instrument to control this problem. Either by identifying mere modifications and granting them no higher price. Or by signaling to the producers that mere modifications will not be treated as "innovative products". Two items of the HCSI cover this issue:

Is the price granted for a new medicine based on a medical evaluation of the product? And: Is the coverage of a new medicine by the HCS based on a medical evaluation of the product?

Using generics is a possible way to contain costs while maintaining the same level of treatment quality. Generics are allowed and available in most countries, and their usage is usually encouraged. However the actual motivation for the patients to decide to switch to a generic depends on, whether generic substitution is actively encouraged by setting of financial incentives. If the costs for a branded original is the same as for a generic, e.g. because there is a fixed fee per prescription, there is no incentive to use the generic. Potential savings for the HCS, arising from the possibility to obtain equivalent supply with pharmaceuticals at lower costs, remain unrealized. The item covering this issue is: Can co-payment for respectively costs of medicines be reduced if the patient decides for generic substitution.

In all five items underlying the analysis the value 1 is assigned to cases in which the feature is present (i.e. "yes" for the questions), and 0 if the feature is absent (i.e. "no").

The PCA results given in table 10.1f show the resulting loading pattern. Two dimensions are obtained, the first one with an Eigenvalue of 1.91, reproducing 38% of the variation in the variables. The second one with an Eigenvalue of 1.52, reproducing 30% of the variation. The variables concerning the control of prices and sales (viz. price control, budgeting, generics and to some degree evaluation of cost benefit in setting the price) are predominantly loading

on the first dimension. The second dimension is covering the issue of market access, viz. the items on whether price or coverage decision for new medicines are based on a medical evaluation. As was argued in the section on the incentives of the pharmaceutical industry, getting coverage by the HCS at an attractive price is the most important factor to reach a country's market and to achieve profits. The incentive is, bluntly put, to introduce a product which is formally "new", while being basically the same thing as existing ones. The challenge for the authorization authority is to identify such attempts and either to refuse coverage by the HCS altogether or to deny the price level which is granted for real innovations.

The first dimension will be labeled "PharmaControl1". High scores on the factor imply that the market for pharmaceuticals, in particular the financial aspects are under control of the government (which is usually the actor in charge of setting prices and budgets). High scores indicate the usage of price controls, budgets, a pricing based on quality and in particular that there are financial incentives addressing the patients to use generic substitutes where possible. The second dimension will be labeled "PharmaControl2". High scores on the factor imply that the prices granted and the coverage decision are based on an evaluation of the product in terms of efficacy. Low values indicate that to gain coverage by the HCS, the product just needs to be "new".

#### *g) Government Control over Parameters of the Health Systems*

The HCSI covers the involvement of the central government as a politically accountable actor in setting some of the most basic parameters of the HCS. With regard to the theoretical framework, the governmental control concerns the external control, i.e. the control exercised by an outside actor over the HCS and in particular over the decisions made by the actors directly operating the HCS. The focus is put on the central government, because it has the formal competence to implement large scale institutional changes. Lower levels of government may negotiate certain aspects, but they do so in a frame set by the central government. As elaborated in chapter 5 when discussing external control, the central government can be seen as a steward, representing the citizen's interest in the HCS and in particular vis-à-vis the actors in (and living of!) the HCS. This outside-control is particular important because both the supply-side and the demand-side share an interest in an ever increasing health budget, to keep the "cake" to be divided among them constantly growing. The interest in ever higher expenditure is obvious for the providers, for whom income is proportional to HCE. But the argument is equally true for purchasers, HIFs as well as HAs: As bureaucracies, both organizational forms share an interest in administrating ever larger

budgets, which allow larger bureaucracies, more staff and higher levels of “on the job consumption” in absolute terms.

To achieve larger overall budgets and higher expenditure levels, the two immediate strategies are a) to increase the prices for services and b) to increase the quantities of services. The former can be done by agreeing on higher prices for medical services, the latter by either providing more services or by covering more and also new services, like so called “alternative” or “unconventional” treatment methods. A constant increase may be “institutionalized” by setting a certain remuneration mode, like fee-for-service. Both sides, demand and supply, can collude to install an automatic growth of HCE by agreeing on certain remuneration modes. Remuneration modes, as outlined above, are important because they set incentives for the providers. Coupling income to the quantity or the costs of services provided creates a constant trend towards an extension of the quantity of services and thus a constant growth of expenditure. For instance, the HIF should - in the interest of its clients - insist on a remuneration mode which eliminates incentives for over-supply. However, setting a quantity based remuneration mode establishes a permanent trend towards higher expenditure levels, which is in turn in the interest of the HIF as a bureaucracy. Again, the state as an outsider to the system can represent the interests of the patients as a group and by enforcing a remuneration mode which removes the problem.

The original variables on which the analysis is based are covering the central government’s say in the following aspects:

Does the central government has a say in setting the catalogue of medical services?

Does the central government has a say in setting the levels of remuneration / budgets?

Does the central government has a say in setting the remuneration modes for providers?

Because of the significance of the in-patient sector for overall HCE, the central government’s role in this sector was covered in more detail by including the following items of the HCSI:

Is the central government involved, or does it decide on hospital’s bed-capacity?

Is the central government involved, or does it decide on the investment in hospital technology?

Is the central government involved, or does it decide on building new hospitals?

Is the central government involved, or does it decide on closing down hospitals?

The central government’s role in the hospital sector is covered in more detail for two reasons. Firstly, because the hospital sector is an expensive sector of the HCE, where a substantial share of the overall HCE is consumed. Second, because of the larger economies of scale

possible in the hospital sector. If the hospital is in the ownership of a regional government, this level of government will not have the national level picture in mind when deciding on investments in hospitals or even closing down a hospital. If two neighboring cities or regions have the same hospital capacity offering the same services, neither will be willing to close down its own and be responsible for the fact that citizens now have to travel to obtain treatment. Especially in the setting of a municipal ownership, running a hospital is a question of prestige, and closing down a hospital is politically costly. Thus, lower levels of government are often prone to retain hospital capacities, even if they are not used to their full extent. In the long run, the costs of the in-patient sector are higher. The central government is more likely to have the national level situation in mind, and may be more likely to enforce economies of scale, by bundling hospital capacities in one place – if it has the competence to do so.

As a last issue the central government's role for the pharmaceutical sector was included. Again, the central government is the crucial actor, because the approval of a new medicine is predominantly decided on the national level:

Does the central government has a say in setting or negotiating the prices for pharmaceuticals? Price setting is the most frequent and also by the magnitude of its impact on expenditure the most important instrument of government control in this domain

In all of these questions, the central government's role can range from being an outsider, to an actor which might approve or disapprove the terms negotiated between purchasers and providers, up to being able to decide all the issues unilaterally. The coding of the variables is 1, if the government has a say, i.e. it's approval is required or the government can decide unilaterally on the issue concerned. It is coded zero, if the government has no say in the issue.

As the PCA results given in table 10.1g show, there is basically only one dimension of governmental involvement underlying the items, reproducing 81% of the variation in the 8 variables, with an Eigenvalue of 6.47. High scores indicate that the central government in the country has much control over these aspects. The dimension is labeled "GovernmentControl". However, given the arguments made on the indirect veto power and the government's factual capability to act, the latent dimension of governmental control must be combined with an indicator of the political system's capability to control the HCS.

#### *h) Access to Medical Services*

The access of patients to health care is major issue in health politics, and it is also a crucial issue because of its effects on satisfaction with the HCS. As argued in the section on competition among providers, it is furthermore a possible method to contain costs and to assure quality via the competition mechanism.

In some HCS, formal gatekeeping rules are in place: the patient cannot access a specialist or any secondary care without a referral of the first contact GP. The same is usually true for hospitals. The idea underlying the usage of gatekeeping as an instrument of cost control is to ensure that patients consume care at a the lowest (and usually least costly) level of specialization. Services by specialists and hospitals are usually more expensive than services provided by GPs, also because of the increased usage of advanced technology and advanced diagnostics. By forcing the patient to consult first a GP, who has more expertise to evaluate whether there is the necessity of treatment in more specialized and more expensive settings, costs might be limited, without loss of quality. While many countries have formal rules on gatekeeping, the actual handling of these rules may differ. Access to hospitals in the case of an emergency usually doesn't require a referral by a GP, but even when this case is excluded, one can ask, whether gatekeeping is factually relevant or can be skipped easily.

Choice among providers is the main instrument to incentivize the providers to perform well. Even when not being an expert, a patient might still get an idea about how well and with how much effort a certain provider performs a task. If the patient has the feeling that a certain provider does a poor job, s/he might be inclined switch to another one. A question is hence, whether there is choice in the sense that there are usually several providers for a service to choose from. This is by no means identical to formal rules on gatekeeping. The GP might have a gatekeeping role, but after the GP has agreed to a referral to a higher level of care, there may or may not be a choice. In some HCS, the geographical situation – thinly populated rural areas with little medical infrastructure – or the exclusive provision of services by the health authorities, may substantially limit the choice. If there is only one hospital or health center, people will end up there to receive whatever treatment they need, unless they are either ready to travel a long distance or to purchase the services on private terms.

The HCSI contains four variables which concerning the existence of formal gatekeeping for specialized care and hospitals, but also the factual choice among providers of specialized medical services and hospitals. The coding of the variables is 1, if the feature is present (absence of gatekeeping, presence of factual choice), and zero otherwise.

The latent pattern obtained by the PCA that there is basically one latent dimension underlying the four variables, see table 10.1h. Formal gatekeeping and factual choice are basically one common dimension, which is labeled “Access” to medical care, in particular to secondary care. The loading patterns indicate, that gatekeeping to secondary (both specialized services and hospital services) usually goes together with limited factual choice of providers and vice versa (note the positive loading of the choice variables and the negative loading of the gatekeeping variables). HCS where patients have no choice, mostly because of the availability of providers, are typically also the ones in which there is gatekeeping. High scores on the dimension indicate free and unconstrained access to secondary care.

*i) Quality Assurance and Enforcement*

Health care delivery is plagued by the problem of unrecognizable quality; Weisbrod (1991) and Sari (2002). In particular the patient as the actual consumer has very limited chances to recognize good or poor quality. The patient might recognize whether the GP cares, listens and spends time with the patient – but this is not identical with quality. Nor is the usage of high-end technology a valid indicator. A further problem is that medical knowledge evolves constantly. Providers might be out of touch with the recent developments in their field, and continue to provide services based on the knowledge as it was at the time they obtained their medical degree. Many HCS have installed some kind of continual education, which is however usually voluntary and organized by the professional associations. Other HCS have formal recertification rules in place. Quality concerns also the provision of information to both, patients and providers. There are also systematic efforts to collect information on what therapy is best in what circumstances, subsumed under the heading of evidence based medicine. And there are systematic efforts to fill in the patient’s gap regarding the quality of potential providers.

The variables used in this section cover, how quality of medical care is assured in a HCS.

A first aspect is, how information is handled in a HCS. During the many individual treatment episodes a large amount of information arises decentrally, e.g. about what treatments are best in what circumstances, or which methods are worth their price and which aren’t. Quality and efficiency can be substantially improved, if this information is collected, evaluated and issued to the providers of care.

Regarding the establishment of a “best practice” for treating “standard cases”, there are in some countries institutions issuing guidelines. These are understood here as standard routines of how to treat certain medical conditions, when to use which procedure, which medicine to



prescribe, because it is the most cost effective, in short standard ways to act unless there are particular reasons in the case demanding a different approach.

A second aspect is the evaluation of the pure medical efficacy of different treatment options. Which one is “best”, when looking only at the physiological output achievable?

A third aspect is the evaluation of the cost effectiveness of different treatments. What is the costs of this treatment compared to similar treatments? Often, the costs of the usage of equipment are not calculated, and there is no information on the costs per application. The same is true for pharmaceuticals, where the different products for the same indication can be compared with regard to the costs per daily defined dose.

A different issue is how information on the quality of providers is handled in order to allow the patients an informed choice about where to obtain treatment. The idea is, that the quality is increased, if patients have information on quality and chose their provider based on this information. Patients are in a weak position regarding their chances to distinguish a good from a bad provider. First, because they lack medical knowledge, second, because they do not have experience with many providers to develop an idea of what high or low quality actually is. An institution, which systematically collects information on quality (e.g. re-admission rates, cases of malpractice, complaints by patients etc.) can close this gap. To achieve this, the information must be collected, but to stimulate competition it must also be distributed to the public. In some countries, quality information is gathered by “official agencies”, but only used internally, e.g. to inform providers. In others, quality is evaluated and made public, the typical example is the star ranking in the UK. Recently, the media in several countries engaged in filling the information gap, by conducting its own research and doing its own evaluation. This ad hoc provision was however not included.

An additional aspect of quality assurance is, whether the purchaser can enforce the usage of guidelines in the hospitals or by the providers. In some countries the contracting between the purchaser and the hospitals / providers contains an explicit section on quality assurance, where the providers are committed to abide to certain standards of treatment.

The last item on quality assurance used, is recertification: are individual medical providers, e.g. GPs or specialists, forced to keep up to date with the recent developments in their fields by being required to undergo a formal recertification? In most countries, there is some kind of continuing education, organized by the professional organizations. Often, this is done in a very informal way, e.g. on an attendance basis, where the provider has to prove, that s/he attended a certain number of hours in “educational events” organized by the professional organization.

The HCSI items included in the analysis of quality-related institutions are the following

Is there an institution setting medical guidelines?

Is there an institution evaluating medical efficacy of treatment options?

Is there an institution evaluating cost effectiveness of treatment options?

Is there an institution systematically evaluating quality of medical providers?

Are these quality evaluations of medical providers published?

Is there a recertification of physicians?

Can the purchaser enforce the application of medical guidelines vis-à-vis the Hospital?

Can the purchaser enforce the application of medical guidelines vis-à-vis the GP?

The PCA results indicate that there are two dimensions underlying the variables. The first dimension is clearly dominating, with an Eigenvalue of 6.48, reproducing 81% of the variation in the variables. However, based on the factor loadings given in table 10.1i, it suggests itself to include also the second dimension. While the variables loading on the first dimension all concern the collection and provision of information, the second dimension covers the two questions of whether the purchaser can actually enforce the usage of medical guidelines vis-à-vis the providers (GPs and Hospitals).

As for the content, the first dimension is denoted "Provision of Information"; the second dimension is denoted as "Enforcement of Quality Standards". On the first dimension, high scores imply that information is collected and distributed in a systematic way. On the second dimension, high scores imply that the purchaser or some other institution can enforce the usage of this information.

#### *j) Purchaser Control over the Providers of Medical Services*

The purchaser is the intermediate agent in the chain of delegation extending from the citizens to the providers. While the issue of quality was covered in section i) above, this section will cover issues of financial control. As was argued in the section on the tasks and functions delegated to the purchaser, the purchaser is also acting on behalf of the citizens as a controller of the providers. While exercising a control over the provider might be impossible for the patients (they neither have sufficient information, nor can they invest the effort to do so) the purchaser is in a position to engage in control. In the course of its work (administering the provision/procurement and in particular the payment of health services) the purchaser can acquire a lot of information: what is done in a case, what is charged for treatment of a certain condition on average and by a certain provider, what providers do in a typical case, if certain

providers constantly overspend, e.g. tend to use sophisticated and expensive procedures too often, even if there is no necessity etc. Regarding the efficiency of the HCS, the question is, what possibilities a purchaser has at hand, to exercise this control on behalf of its clients.

A purchaser's control can address individual providers, e.g. GPs or specialists, and also institutional providers, i.e. hospitals. It is in the interest of the patient that the purchaser precludes both over-supply of services and plain fraud by providers. To do this, the purchaser needs information and the formal right to act on this information.

Financial control was captured in the HCSI by three broad aspects:

The first aspect is, whether the purchaser can identify providers, who are systematically overspending. For instance, in Germany the GPs as a group receive a lump sum payment by the HIFs, and divide up the money internally. The billing and payment of services provided – as well as the control – takes place within the physicians' association. The HIFs have no chance to identify GPs who oversupply services.

A second, closely related aspect is whether the purchaser receives a detailed bill, in which the providers list all medical services provided during a certain treatment episode. This may take place directly between provider and purchaser. Or indirectly, with the provider handing the bill to the patient, who in turn hands in the bill at his purchaser.

A third complementary aspect is, whether the purchasers can exclude a certain provider, e.g. a hospital, for the explicit reason that this particular provider is constantly oversupplying services.

The HCSI covers financial control by the following items, which are also used in the analysis:

Can the purchaser identify overspending hospitals?

Can the purchaser identify overspending GPs?

Can the purchaser exclude overspending hospitals?

Can the purchaser exclude overspending GPs?

Does the purchaser get a detailed bill from hospitals?

Does the purchaser get a detailed bill from GPs?

In each of the variables, a "yes" is coded 1, a "no" – the absence of the feature - is coded as zero.

The analysis given in table 10.1j yields two latent dimensions. The first, with an Eigenvalue of 3.52, reproduces 59% of the variation, the second one, with an Eigenvalue of 1.66 accounts for another 28% of the variation in the indicator variables. Despite the dominance of the first dimension, both dimensions will be retained, because their contents are complementary.

The variables concerning the information the purchaser receives from the providers are strongly loading on the first dimension, which is thus denoted as “Purchaser can identify overspending Providers”. The second dimension is the possibility to “Sanction overspending Providers”, in the most extreme case, by the exclusion of providers. Given that information alone might not be sufficient to exercise control, it makes sense to capture this feature as well. High scores on the first dimension imply that the purchaser can identify overspending providers. This very fact may incentivize providers to abstain from opportunistic behavior, in particular the extraction of rents, and might work as a mean to control costs.

High scores on the second factor imply that the purchaser can not sanction overspending providers by excluding them from providing services to clients of the purchaser. Note the negative loading of the variables covering the possibility to exclude the provider.

Again, it is interesting to see that the variables constitute two independent dimensions. A purchaser might have information about which providers are systematically overspending, but this does not automatically go together with the possibility to do something about it.

## 10.2. Locating Health Systems on the Institutional Dimensions

To complement the analysis of which institutional dimensions are underlying the manifold organizational features of the 22 health systems, the descriptive analysis will be illustrated by discussing the location and the clustering of the HCS on the institutional dimensions. The figures presented in the following are based on scores obtained for each country by the PCA analysis. The situation presented and discussed is the setting in 1995. Changes will be described and analyzed later on in chapter 12. The descriptive analysis will cover the following aspects.

(1) The description will first look for a confirmation of presumed clusterings of HCS. Clustering refers to similarities in organization in the sense of HCS being similar in many aspects. One would expect – because HCS usually represent a certain, ideologically underpinned model of how health care should be provided, such as Bismarckian or Beveridge model – that the types and models to which HCS are usually assigned should also be easily observable when looking at the actual institutional settings. For instance, those HCS which are commonly assigned to a common type, e.g. public integrated, should be closer to each other than to HCS of the corporatist type. Some HCS are seen in the literature as being a very special case, and one would also expect them to stand out when locating them in the “institutional space”. Closely related to this is the question of whether the group of the public-integrated systems or the group of the purchaser-provider-split systems varies more? And, does that hold true for all aspects of the HCS? Or are all public integrated systems quite similar in only one regard, but differ substantially in many others?

(2) The description will also look for similarities in the sense of features typically going together. For example, the institutional economics approach would forecast that to achieve a certain effect, the feature A must be complemented with feature B. So, if one is for instance aiming at putting purchasers under competitive pressure, it necessary to enable them to differ in terms of what they charge and what they offer. It is also necessary to allow citizens to chose freely among purchasers. Allowing only one of both features is insufficient to achieve the intermediate aim of competition and thus the actual aim of increasing HCS “performance”.

(3) The description of what features are going together empirically will be followed by an analysis of how the institutional features should together in the sense of forming an efficient institutional syndrome. An institutional syndrome was defined in chapter 6 as the co-

occurrence of features, which in combination have a stronger impact on HCS performance than each of the features taken alone. An efficient institutional syndrome is a combination of features which – at least according to the theoretical basis of the institutional economics approach - increases the efficiency, because the features complement each other, rather than cancel each other’s effect. For instance, if purchasers are allowed to differ in what they charge and what they offer, but citizens are not free to change the purchaser, the net-effect is non-existent. Purchasers could perform well, could operate more efficient, but why would they put in this effort if they cannot attract more clients and their clients may not leave?

Looking at the constellations presented in the following, the question is: What constellations and combinations of features affect HCS efficiency? For instance, by disarming agency problems, by removing incentives for opportunistic behavior or by setting incentives for performing well.

*Similarities and Differences among Health Systems*

Figure 10.1 Agency and Incentive Problems



Locating the countries on the dimensions of agency and incentive problems, as given in figure 10.1, shows that the degree to which the HCS use delegation and agency as an organizational mechanism varies substantially. Delegation is more or less omnipresent, some tasks are

typically delegated, like the sale of pharmaceuticals or dental care. Sweden is the only case in which even the pharmacies are state-owned. It is also the case in which a large share of dental care is provided by employed dentists. The other extreme are the cases of Belgium and Luxembourg, in which all tasks related to providing medical services or products are delegated to independent agents. Irrespective of the degree to which the hospitals are autonomous, ownership is usually retained by some public body, and only in the case of Belgium even the ownership of hospitals is private, i.e. they are predominantly not in ownership of public entities like municipalities or local governments.

Contrary to what one would expect, there is no clear clustering observable. It is not the case that one has a cluster of public integrated HCS, in which most services are provided by medical staff which employed by the level of government in charge of providing health care. Neither is there a cluster of HCS in which a clear provider-purchaser split is implemented and all services are contracted from independent providers. Instead, the cases are spread along the main diagonal of figure 10.1. indicating that delegation is a matter of degree. The only case which is “a cluster of its own” is Sweden, for the reason mentioned above.

While there is no clustering of HCS which are similar to members of their own cluster but different to the members of the other cluster, it is even at this step interesting to see that both institutional dimensions are highly correlated. If the tasks are delegated to independent agents, it is likely that remuneration modes are in place, in which the providers can increase their income by providing more services. The underlying mechanisms is presumably, that when agents are independent, the remuneration level but also the remuneration mode is part of the negotiations with the purchaser (be they insurance funds or the public administrations). If agents are independent, they develop a higher professional autonomy and gain more influence on the HCS, also because they have a substantial potential to threaten by refusing to enter unfavorable contracts; see for instance the analyses of the behavior of professional associations in negotiations in Ryll (1993), Brooks et al. (1999) and Barros/Martinez-Giralt (2005). Under these conditions it is likely that they will insist in the negotiations on a quantity based remuneration mode which is in the interest of the providers because it more or less guarantees a constant growth of health expenditure. If the agents are “incorporated” by turning them into a organization, it is likely that they will use their influence in negotiations on the institutional aspects to introduce remuneration modes which are advantageous for them.

Looking at the above figure in terms of the interactive effect of both dimensions: what would be an efficiency increasing “institutional syndrome”?

The advantage of agency is that providers are independent and have to compete for the clients as customers by offering good treatment and showing effort. It is at times argued that in HCS which rely on employed providers, these incentives are absent, resulting in health care and a mode of delivering it which is neither qualitatively acceptable nor customer friendly. So agency per se is not the main problem. It becomes a disadvantage when combined with a remuneration based on the quantity of services respectively the intensity of treatment. Under these conditions, providers will engage in inducing demand to increase their income. As was argued in the chapter on agency in the patient provider relationship, remunerating on a fee for service basis does not guarantee quality. On the contrary, the incentive to produce more services might go at the expenses of the quality and the effort invested in each treatment episode. The incentives work equally on employed and self-employed providers.

The incentive problem induced by a quantity based remuneration is worse in the case of independent providers than it is in the case of employed providers, because the former have much more leeway to engage in extending the quantity of services and are much less under control than an employed provider who is member of a hierarchy. The incentive problem is *ceteris paribus* lower, where more providers are employed, and vice versa.

To capture this argument, the institutional syndrome “IncentiveProblem” was created by combining the dimensions “Agency” and “RemunerationIncentives” in a way that the score of IncentiveProblem increases if there is more delegation in the HCS, but decreases, if there is less quantity based remuneration in the HCS. High scores indicate a stronger incentive problems.



Figure 10.2 Purchaser Autonomy and Purchaser Status



Figure 10.2 shows the countries' location with regard to the dimensions of purchaser autonomy and institutional status. The observed clustering is again weak, there are roughly four clusters identifiable. A cluster of three countries standing out with both high levels of institutional autonomy and high levels of competition, Austria, Germany, and Switzerland. These are the corporatist systems, where the health insurance funds are most autonomous and have the largest role for operating the HCS.

A cluster of countries with high levels of purchaser autonomy but low levels of competition, the top-left group, ranging from France to the Netherlands. In France, the national government's influence (factual as well as formal) is highest, while in the Netherlands it is lowest.

A group of four countries with strong competition, but low autonomy of the purchasers, encompassing Canada, Sweden, Finland and Denmark, make up another cluster. While all four countries have high levels of state involvement (health care provision is organized by the provincial, regional, local or municipal government) there is nevertheless a strong competition among the purchasers in these countries. The purchasers are not independent, because they are more or less integrated into the respective level of government, which bears the political responsibility for the purchasing. But they compete for clients, because they may differ both

in terms of what they charge for providing health care (by way of local taxes) and what they offer, in particular in terms of factual access to services.

The last cluster consists of a fourth group of countries in which the autonomy of the purchaser is generally low, but the degree of competition among them differs between countries. Greece and Hungary have the lowest, Italy, Norway, Ireland and New Zealand have the highest levels of competition among purchasers in this group.

The clustering is only to some degree in accordance with the standard types of HCS. For instance, Switzerland, Germany and Austria are health systems with strong corporatist elements, where the purchasers, denominated “sickness funds”, are formally independent and can to some degree control features relevant for gaining or losing clients, in particular the contribution rate but to some degree also the catalogue of services covered. On the other hand, public HCS share a low level of purchaser autonomy, because purchasers are usually under formal control of the government. But within the latter group, there are also substantial differences regarding the degree to which the purchasers are under a competitive pressure. This pressure is absent in Greece and Hungary, but strong in Canada, and the Scandinavian countries apart from Norway.

Given the functions and the incentives of the purchasers – what would be an efficient institutional syndrome? The argument is, that if purchasers are autonomous, in particular in the sense that a deficit would not be covered, they are under more pressure to control costs. The argument is, that a deficit might endanger the institutional existence of the purchaser, which might be forced to merge with another, better performing purchaser or go out of business. But autonomy and even the pressure for cost-control does not necessarily lead to efficiency. To be effective and of impact for the internal operating of the purchaser, these features must go together with a functioning competition. This in turn requires that the purchasers can control the parameters which allow them to compete, e.g. contribution levels and the catalogues of services covered respectively factually offered. Given the inconsistent design in many HCS, the first dimension covers free choice as one necessary conditions, while the second dimension covers the purchaser’s control over parameters on which competition is based.

The efficient syndrome would be that both scores are high. The purchasers have to increase operative and administrative efficiency, where citizens have free choice and the purchasers can differ in contributions and / or services offered respectively covered. Only if both features

are given, there is the pressure and the incentive to perform well. If the HIF is efficient, it may offer a more attractive bundle of contributions and services. But this only matters for the number of clients, if the clients may change to this HIF.

To capture this combination, an interaction variable was generated “PurchaserSyndrome”. In this variable, the dimensions PurchaserAutonomy and PurchaserCompetiton were combined so that higher values on both institutional variables result in higher values of the PurchaserSyndrome variable. For instance, Greece and Hungary have low scores in this syndrome variable, because purchasers in both countries are neither autonomous nor have the means to engage in competition, because the branches of the NHS may not differ in terms of contributions and services offered. In other countries with a public integrated health system, the regional or local branches of the public health service may well differ, both in the contributions charged and in the services covered. Switzerland, Germany and Austria have high scores in the interaction variable, because the HIFs in this country are both autonomous, and to some degree have the possibility to differ in the packages of services and contributions offered to clients. Sweden, where the competition among the local purchasers of health is very strong, does not have high values in the interaction variable, because the autonomy of the is quite low.

Figure 10.3: Hospital Status and Competition

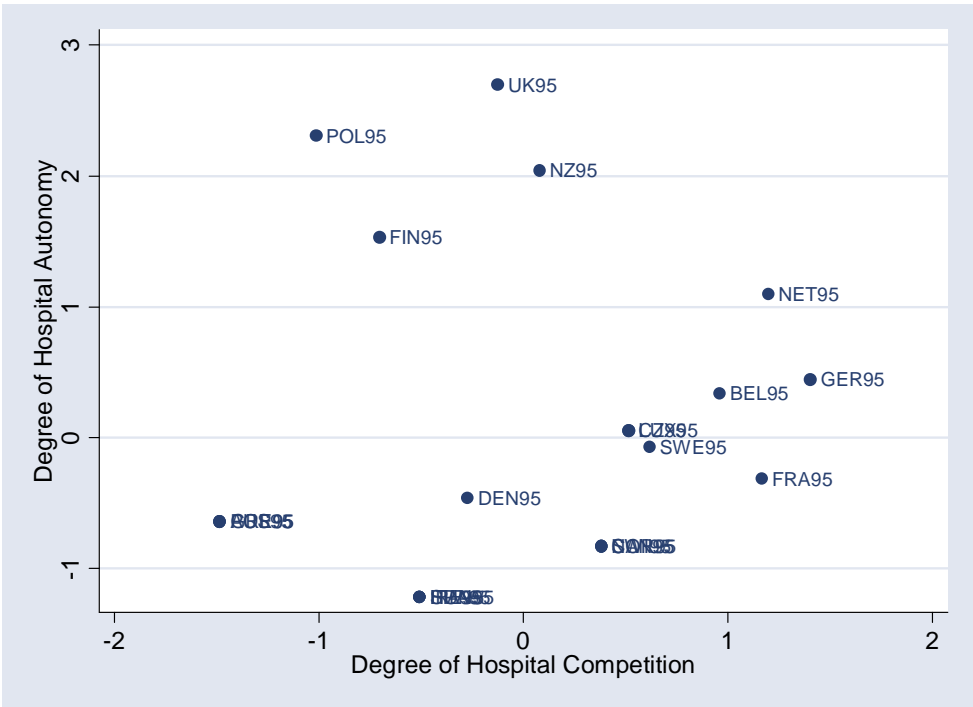


Figure 10.3 gives the location of the countries regarding the degree to which the hospitals are autonomous in terms of making relevant decisions and can compete among each other for patients. Localizing the organization of the hospital sector indicates two loose clusters: Four countries – the UK, New Zealand, Poland and Finland – have made their hospitals autonomous, basically by having them operated along the lines of an (semipublic) enterprise. The degree of autonomy is however quite continuous, with Ireland, Hungary, Italy and Spain constituting the lower end of the range and the UK's Hospital Trust model at the top of the scale. There is however a clustering observable, in the sense that the four countries which made their hospitals autonomous abstained from exposing them to strong competitive pressure. The level of competitive pressure is actually slightly below the average of all 22 countries. In Germany and in the Netherlands, the competitive pressure is higher, at least in terms of the institutional preconditions for it. Competition among hospitals is lowest in Austria, Portugal and Greece, where the institutional preconditions are not met.

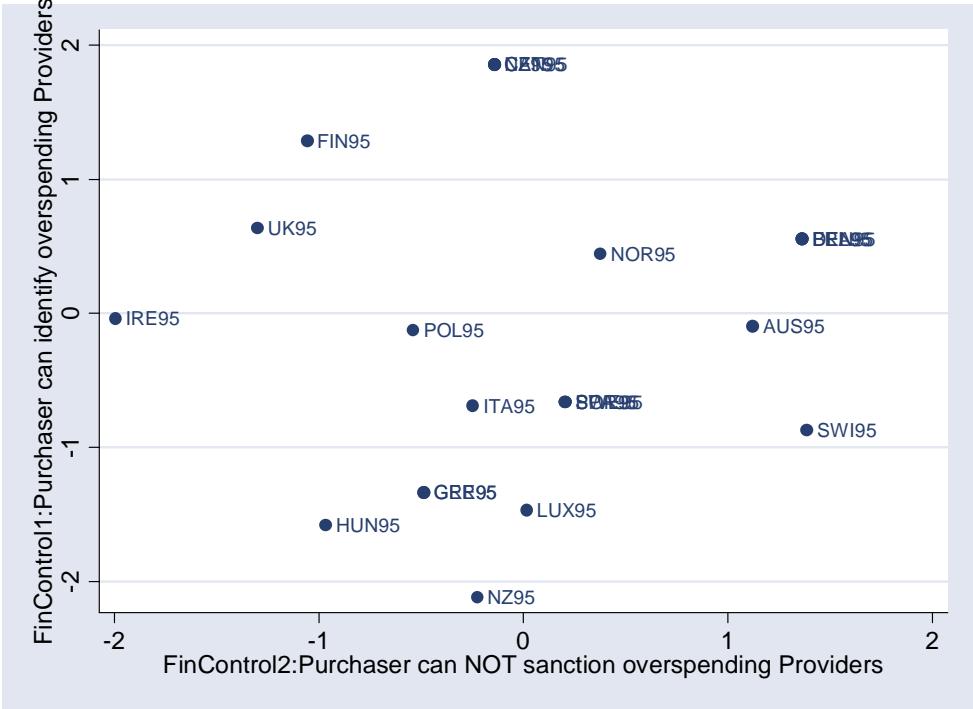
What would be an “efficient institutional syndrome” in the hospital sector? Thinking only about the implications for expenditure the institutional syndrome is defined equivalent to the purchasers: the efficiency argument is based on competitive pressure which induces efforts to increase internal efficiency of operation, leading to lower costs. This pressure in turn requires autonomy – the hospital must be in charge of its own affairs, to tackle the pressure and to improve its performance. But competitive pressure also requires that there are several hospitals offering the same services and that the treatment costs may differ between them. If the purchaser sent its clients to the less costly hospitals, this put the more expensive hospitals under pressure to contain their costs. If the hospital is not autonomous in the financial sense, neither running a surplus nor running a deficit will matter. Neither can the hospital, which might be best informed about what efficiency improvements might be achieved, actually do something to realize these improvements if all decisions – from what investments are made, what staff is hired, and what services are outsourced – are made by the public administration and only executed by the hospital.

But there is also a second aspect of competition, which may counteract the intended consequences for differences in treatment costs. Hospitals may compete not on the basis of costs, but on the basis of quality and reputation. A hospital might try to attract clients by offering the best service, irrespective of the costs efficiency aspects. It may for instance invest heavily in equipment and quality, even if this is no longer in an reasonable relation to the costs incurred.

But in both cases, if the hospitals cannot or need not compete for clients, e.g. because they basically have regional monopolies, they do not need to engage in increasing operative efficiency or quality.

The indicator variable “HospitalSyndrome” was generated by combining both institutional dimensions in a way that the resulting interaction variable has the highest scores for those countries in which hospitals are both autonomous and competition among them is installed. High scores of the HospitalSyndrome variable indicate that the hospitals are under pressure to work efficiently. Low scores indicate a situation, in which they are insulated from competition and have neither pressure nor incentive to increase internal efficiency.

Figure 10.4 Financial Control and Sanctioning of Providers



The locations of the countries on the two dimensions of financial control of the purchasers over the providers given in figure 10.4 show no clear clustering. The countries cover the institutional space completely, all combinations occur. Moreover, the absence of countries being close, which might be expected to be similar is a finding, which in itself indicates that this issue does not correspond to the classical types of HCS.

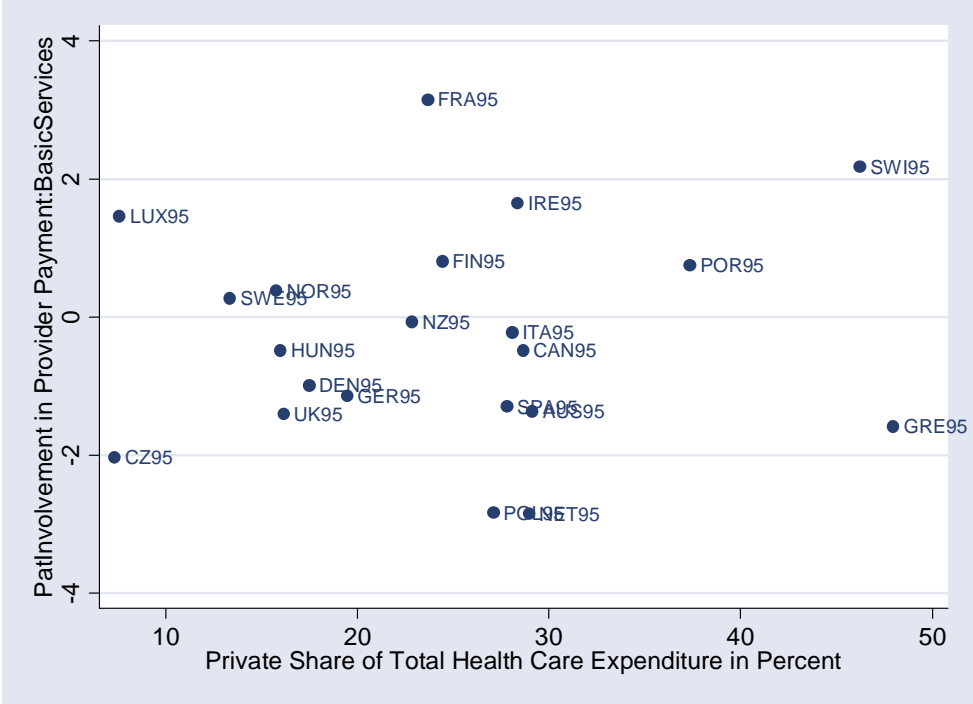
Note that low scores on the horizontal dimension imply that the purchaser can sanction the provider by excluding them. So this kind of sanctioning is strongest in Ireland, and lowest in Switzerland.

What combinations of these two variables are of a particular impact on efficiency? It is part of the task delegated to the purchaser to exercise control over the providers of services, in particular regarding the financial side of health procurement. As was elaborated in chapter 4, the patient is neither in the position, nor actually motivated to engage in an auditing of what the providers charge. In many countries, the patients are completely ignorant of the financial side of the health care consumption. To engage in control, the purchaser must obtain information about what was done in a case. The purchaser must be able to identify providers who are overspending. But information alone is not enough, to be able to exert a control, the purchaser should be able to sanction the provider. In the extreme case by excluding the provider from selective contracting. For instance, in Germany, the HIFs have contracts with the regional associations of the GPs. Each HIF pays a lump sum for its clients living in the catchment area of the GP association and the GP's association distributes the payment internally according to certain schedules. The HIF never receives a billing by a provider, nor does it control the providers billing, and thus cannot identify providers who are billing more and/or more expensive services on a regular basis. So if there is some kind of control, it is only exercised among the providers themselves. In this setting of collective contracting, the HIF can factually not threaten the individual provider, because the HIF does not formally have a contract with the individual provider. In other countries, the HIF contracts individual providers (e.g. by putting defined contracts out for tender) and can engage in selective contracting, also based on past experiences with individual providers. In other systems, there is a detailed billing, often involving the patient as an intermediary in a setting of cost-reimbursement.

The efficient syndrome in the issue of financial control over the providers is defined by the combination of high scores on both dimensions; i.e. effective control is given, when the purchaser can identify and sanction providers which are systematically overspending. Given the scaling of the dimensions, the "ControlSyndrome" variable was generated by combining both dimensions in a way that higher values of the first dimension imply higher values for the ControlSyndrome score, while lower values on the second dimension imply higher values of the ControlSyndrome score.

For the remaining institutional dimensions, the following figures serve illustrative purposes.

Figure 10.5 Patient Involvement and Composition of Health Funding



With regard to the degree of patient involvement and the composition of health funding, one would expect, that a HCS, which involve patients in the payment of providers, also has higher levels of private funding of health care. The above figure 10.5 plots the share of private funding for health care (data from the OECD Health Database) by the level of patient involvement in health care, i.e. the incidence (not the magnitude) of co-payments and the degree to which the patients directly pay for services and are reimbursed later on.

There is no relationship between the two features. There are countries, in which the involvement is high, e.g. France, but the share of financing borne by the patient is only moderate. There are also countries, in which the involvement is low, but the actual share of the costs borne by the patients is quite high.

There is no clustering of countries being similar to each other regarding these features nor is there an association between a “type” of HCS and the level patient involvement, be it in terms of the magnitude or the incidence of involvement. Private funding is highest in Switzerland and in Greece, and lowest in Luxembourg and the Czech Republic.

Figure 10.6 Regulations on the Pharmaceutical Market.

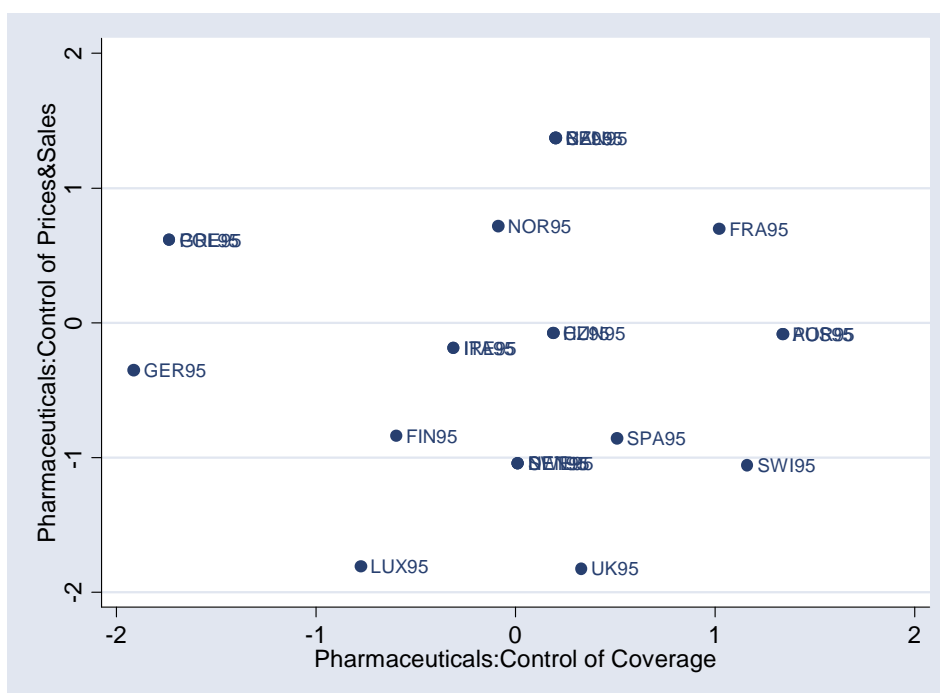


Figure 10.6 above shows the location of the 22 cases in the space defined by the two dimensions concerning the control of the prices and the sales of pharmaceuticals respectively the control of coverage of pharmaceuticals, i.e. whether either the price or the coverage decision (reimbursement by the HCS as a precondition to a larger market) are based on an evaluation of the medicines the quality and effectiveness, in particular to existing alternatives. The first dimension concerned the degree to which the state exerts control over prices and sales, by regulating prices of medicines or by setting a budget for pharmaceutical expenditure. The second dimension concerns the question whether the state does evaluate a medicine before granting coverage by the HCS. High scores on this dimension indicate that the price and the coverage is based on an evaluation of the product. This is indirectly relevant for pharmaceutical expenditure, because by excluding marginally improved medicines from coverage, the state may avoid unjustified grants of patent periods and thus paying patent period prices to the manufacturer.

Again, there is neither a clustering nor a clear assignment of HCS of a certain “standard type” to a certain location in the figure. The HCS are dispersed almost over the complete space, which indicates that things are handled differently in most of the HCS. As for the hypothesis that HCS which are seen as being similar in their basic features, the figure does not show



HCS of similar types as being close to each other. For instance, both Spain and Switzerland renounce direct price control but engage in a different degree on evaluation of medicine before the coverage by the HCS is granted. France, a corporatist HCS with substantial powers retained by the state, engages in evaluation as a precondition to the granting coverage, as well as price controls.

On the other hand, Germany, Greece and Poland do not evaluate new medicines as a precondition to granting them coverage by the HCS. The HCS with the strongest influence of the government on prices and sales are Belgium, New Zealand and Canada, where at least Belgium is usually not seen as a HCS in which the state heavily intervenes.

Figure 10.7 Provision of Information and Enforcement of Quality Standards



Regarding the provision of information and the enforcement of available information and quality standards, figure 10.7 above the countries show no clear clustering. If any clustering occurs at all, one could at most say that two countries stand out. Sweden, because of its system of quality registries and the Netherlands, because of the recertification system for GPs which is a singular feature among the cases included in the study. Both are also strongly engaged in providing information to the patients.

If these two countries are ignored for the moment, the picture observable is surprisingly that of a negative relationship between both features: countries which provide information and

counteract the patients' lack of knowledge by gathering and providing information, e.g. on the quality of providers, are usually less engaged in enforcing quality vis-à-vis the providers and vice versa.

What we see that apart from the two cases which take quality assurance seriously enough to create institutional settings, the countries either rely on informing the patients, enabling them to choose providers based on the improved knowledge they have. Or rely on enforcing the quality standards vis-à-vis the providers of services, leaving the patient out of the picture.

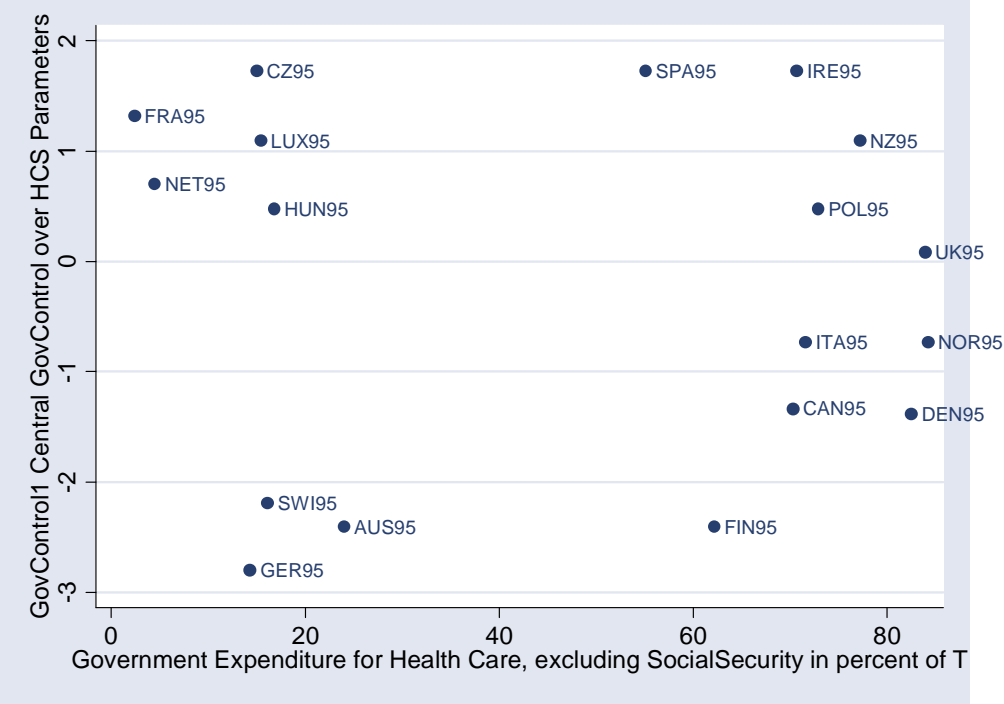
Interestingly, the countries relying more on the provision of information are the HCS in which many of the providers are employed by the state, i.e. the very systems in which the internal enforcement of quality standards by hierarchical control might be the method of choice. And, on the other hand, those systems in which the providers are agents independent from the public hierarchy rely on enforcing quality standards.

Efficiency in economic terms or cost control is not the predominant theme in the domain of quality. Rather, the issue and the problem is on the one hand, how to organize the collection, evaluation, and dissemination of quality relevant data on "best medical treatment". And, on the other hand, the problem is the enforcement of quality in an effective way. So, given the two dimensions, what is the effective syndrome, i.e. which combination of both dimensions is supportive for the assurance of quality?

Collecting and providing information alone is necessary, but not sufficient for an effective quality assurance. The providers, in particular self employed providers, value their professional autonomy highly and are not per se ready to be told what to do in certain conditions, see Moran (2004) and Larkin (1995). Providing guidelines and advice alone will not make them change their ways. So the effectiveness of control is increased, if the provision is supplemented with a regulation which makes abidance to quality standards binding. While the professional organizations also engage in an internal quality control, its effect is often seen as questionable, also because their neutrality is questioned. So effectiveness of quality control can be presumed to be much higher, if it is done from the outside, e.g. the purchaser, and also if it is linked to the possibility of excluding the provider from delivering services to the customer so the purchaser. In terms of the two dimensions identified, , the effectiveness of quality control increase, if both feature are present. The variable QualitySyndrome is a multiplicative combination of both dimension (which were adjusted, to compensate for the incidence of negative values on the scales). The value of the combined variable increases with both institutional dimensions. High values of the QualitySyndrome variable indicate that the

provision of quality relevant information is organized and that the lack of quality can be sanctioned by an actor external to the medical profession.

Figure 10.8 Governmental Control and Financing of the Health Care System



One would expect that if the government is highly involved in the HCS financing, it will also assure that it has control over what happens in the systems. Which is to say that one would expect the government to retain control over what happens with its money. But as figure 10.8. above shows, this is not the case. It plots the level of government control over the parameters of the HCS by the level of government expenditure for health care in percent of the total expenditure for Health; the data is from the OECD Health Database. Government expenditure refers to expenditure which is raised in the form of taxes. The figure excludes social security i.e. contributions which are levied by non-governmental actors, like social health insurance funds and the like.

There is a clustering observable, but not the expected relationship between both features. The observable clustering basically follows the standard categorization of social health insurance systems vs. public health systems. In the former most funding is raised by Health Insurance Funds, which are independent from the public administration and raise

contributions directly from the insured. The state is only subsidizing the HCS on an ad hoc basis, for instance by standing in for deficits of HIFs, funding hospital investments or subsidizing certain social groups unable to pay their own HIF contributions. Systems of this type constitute the first cluster, located to the left of figure 10.8.

The second cluster is made of those HCS in which the state – either the national or a lower level of government (regional or local) raises the majority of funds by taxation. The split between both clusters is quite pronounced: the social health insurance systems have on average a level of government funding of about 20% while the state-operated HCS are predominantly financed by the state.

Within each cluster, the range of central government involvement in the HCS covers the full scale. A noteworthy finding is a certain dichotomy in the social health insurance cluster, arising from the fact that seemingly, the state either assumes substantial control, up to the level comparable to a public-integrated type or almost no control, rather than having a control in the middle range. In Austria, Germany and Switzerland, the state has delegated the decision making to the societal actors and retained almost no control. In France, the Czech Republic, Luxembourg, the Netherlands and Hungary, the state has acquired (or retained) substantial control rights. The way this is done differs, in France the insurance funds are formally independent, but the state has many options and levers to intervene, contributions for instance are set by parliamentary decision. In the Czech Republic and Luxembourg, the largest fund is basically controlled by the government, which is determining the top-level administration of the fund.

### ***Summary: Institutional Syndromes and Types of Health Systems***

Looking at the figures presented above, two observations have to be stated

(1) Looking at similarities and clustering of HCS as they actually come up from the figures, the main finding is that there are surprisingly little “typical syndromes”, but instead there is high variability and little co-occurrences of features. The institutional variation, which was covered in this study in a very detailed way, also reveals that the HCS, even on a sectorial basis, vary substantially. Functions are organized differently in different HCS and there are no striking models or templates which would be consistently recognizable by HCS clustering in all of the above figures.

(2) Closely related is the finding that if one looks at the HCS in a detailed way, labels like “NHS”, “public-integrated” or “corporatist”, become next to meaningless. Irrespective of running in the public debate under labels, HCS might be very similar, at least in some sectors,

and vice versa. Regarding competition, as a “system feature”, which is because of its presumed advantages for health care a focus of the present study, public integrated systems might have many elements of competition, regardless of the status of many actors in the system. Systems which have installed both independent providers and autonomous purchasers which in turn are presumed to compete among each other may have next to no elements required for an effective competition. Moreover, a certain inconsistency of the designs is observable: to be working, competition needs several elements – but often, one element of competition is present, but not the complementary one, which would be needed to make the former effective. Or, the first element of competition is compensated by another element, which removes the competition from the picture.

### **10.3. The Political Environment and Indirect Veto Power**

Apart from the institutional structure of the HCS itself, two additional features are of importance for the HCS' achievement and efficiency, both concerning the potential for external control as a counter measure to efficiency-decreasing tendencies to the HCS. According to the argument developed in chapter 5, the availability of levers for external control, i.e. the Governmental Control as measured in the above section, is insufficient for the effective exercise of control. Nor is the possibility that the government implements reforms sufficient to hold these inherent tendencies in check.

The argument of the indirect veto power which might arise in the HCS, making it reform resistant, rests in turn on the number of veto players in the political system and the number of societal actors which might access the veto players to make at least one of them cast a veto against an intervention.

#### *a) The Political System*

The data on the political environment shall basically capture the capability of the political system to produce policy and institutional changes in a societal subsystem, like the economy or the HCS. As argued in chapter 5, the conceptual dimension of external control is itself constituted by two dimensions. First, the levers available to the government for directly influence the HCS, e.g. the formal authority to set an overall budget for health expenditure. This is captured by the "GovernmentControl" dimension described above. Second, external control is constituted by the government's capacity to act. This can be proxied by its internal composition: more parties in government make it increasingly likely that they cannot agree on implementing a certain policy or on the usage of a certain instrument of external control, with the result that nothing happens. Neither are existing levers used nor are reforms implemented and the HCS can go on as before. And moreover, it is also less likely that the actors in the HCS "behave well" in order to avoid an intervention. On the other hand, a government which is capable to act might not be required to act, because the actors anticipate government action and, fearing that it might be worse than self restraint, behave well to avoid government action. The indicator of the political system's capacity for action used is the number of "Parties in Government"; PiG. While there are more refined versions of the veto player concepts, the actual measurement for all cases would be another task, which is not the actual aim of the study. The argument is, that the parties in government are most important for deciding on the

policy and the usage of levers available. In particular for the usage of existing levers, institutional veto players like constitutional courts and referenda are of no concern. If the coalition members cannot agree, there will be no intervention in the HCS. According to the concept of indirect veto power outlined in chapter 5, few parties in government mean fewer points of access for societal actors and thus fewer indirect veto players. To capture the number of the latter, the number of PiG as points of access must be complemented by the number of actors interested in gaining and using access: the more organized actors exist in the HCS, the higher the chances that at least one of them will try to exert influence to block government action.

#### *b) Existence of Societal Actors*

The HCSI also gathered data on the existence of societal actors with a say respectively a stake in HCS and its operation. The argument is, that any government intervention will go at the expense of some actor in the HCS. HCE is cost to the patient, but income for the providers. Because the interest of the individual actors in the HCS are so opposed to each other, external interventions likely to create opposition from at least some groups – that is, if the respective group is organized and able to formulate and express the opposition. Groups in the HCS differ with regard to the degree to which they can be organized into an effective interest representation. For instance, if the government uses its power to limit pharmaceutical prices, the pharmaceutical industry is concerned, because its profit will be limited and most likely lower. The same is true if certain medical services (like acupuncture or homeopathy) are no longer covered by the HCS. In this case, the providers of these services are confronted with a drop in demand for their services, because patients have to bear the costs fully out of pocket or at least have to pay for a supplementary insurance.

The HCSI asked for a set of actors, whether they exist as organized entities. The term “organized entities” refers to professional associations who are also representing the interests of their members, trade unions of the medical professionals, or to associations of institutional actors (like hospitals) formally in charge of regulating issues of concern for these groups. The set of actors covered is the following: GPs, specialists, dentists, providers of laboratory services, patients, Health Insurance Funds or Health Authorities, hospital associations, pharmacists, employers and other actors.

The term “other actors” concerns a range of actors, such as organizations running hospitals, like the public charities or the church (a major actor in Ireland). It also covers trade unions (not the trade unions of the medical professionals, but the trade unions of professionals

outside the health system), who are in some countries, like Germany, involved in running the HIFs and have a substantial influence in governmental decisions on health policy.

The employers are counted as a societal actor in this regard, if the employer pays a share of contribution to the health system. In some countries, the contribution is fully paid by the employed, and the costs of the HCS are of no concern for the employers. But for instance in Germany, the employer pays half of the contribution going to the Social Health Insurance. If the contributions soar, non-wage labor costs soar too, and the employer has to bear higher costs. Consequentially, the associations of the employers (or more general, the associations of the industry) has a stake in health policy and is interested in exerting influence.

Given that the argument underlying the usage of this information rests on the number of societal groups involved, the resulting variable is an additive index running from 0 to nine. Low scores of the index represent low chances that some interested societal actor exists, which might be motivated enough to lobby an political actor in order to make the latter cast a veto or to water down the intervention.

### *c) Indicators of Indirect Veto Power*

Both, the number of Parties in Government (PiG) and the number of organized societal actors, SocActors, with a say and a stake in operating the HCS are preconditions for indirect veto power, but are – according to the hypothesis - not per se decisive for what actually happens. The PiG is the number of access points, which may or may not be used by one of the societal actors, to gain access in order to avoid certain policy measures.

In the absence of concrete information on particular connections between a party in government and a societal group, the indicator to capture the interaction is the chance – which in turn will be operationalized as the multiplicative interaction. The variable “IndirectVeto”, which will be used in the analysis, is calculated as the product of the number of societal actors and the number of parties in government; PiG.

High values indicate a high probability that a veto will be cast, because a connection was established between at least one societal actor and at least one party in government, which blocked the policy making process.



Figure 10.9 Potential Indirect Veto Power in the Health System

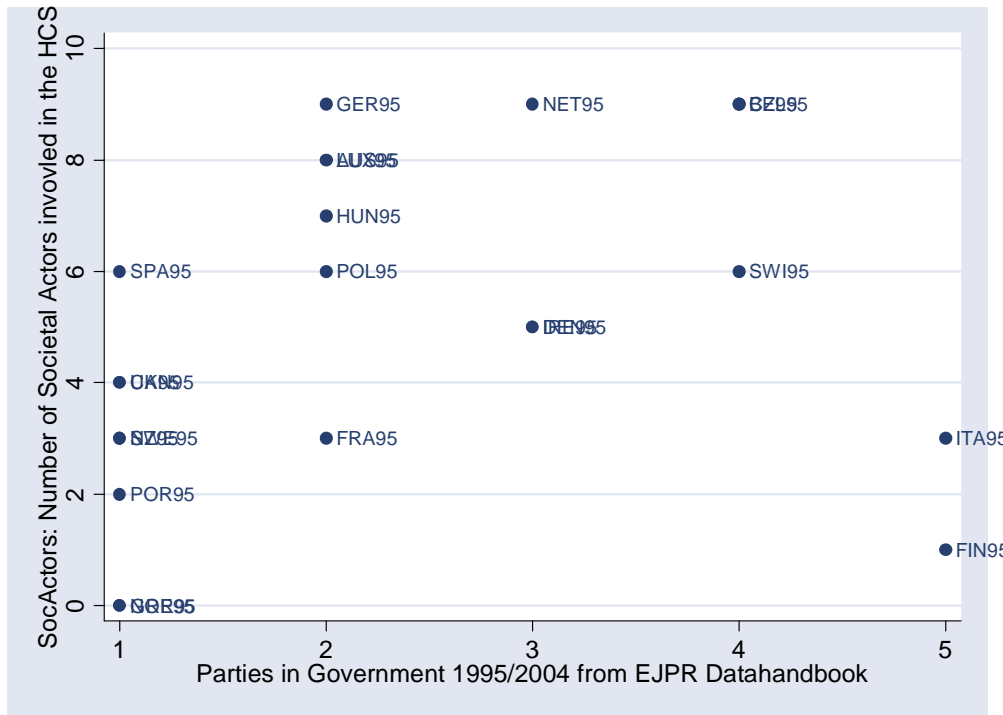


Figure 10.9. above plots the number of parties in government (PiG) and the organized societal actors involved in the operation of the HCS (SocActors). The lowest number of societal actors can be found in Norway and Greece, both public-integrated systems. The highest number of societal actors are found in the corporatist HCS, Germany, the Netherlands and Belgium. This is basically in line with the argument made in chapter 5, that by deciding for a corporatists HCS, implies the creation of incorporated actors, which then obtain a say, sometimes even factual control over the HCS. Interestingly there is a slight correlation between both, in the sense, that more organized societal actors occur in political systems in which the party system is prone to government coalitions. The two countries not fitting into this picture are Italy and Finland. The finding might imply a tendency of fragmented party systems to delegate the provision of health care to societal actors, which is equivalent with removing the policy area, or at least the day to day operation, from the political arena and thus to remove a source of potential conflict in the political negotiations. In countries, in which single party governments are the rule, e.g. the UK or Greece, and governance power is concentrated in the hands of the government, is more likely that the government will also take charge of the HCS. While this interpretation is to some degree in line with the findings of Lijphart (1999), there is not enough data to make a definite statement.

## 11. Institutions and Health System Achievement: Causal Analysis

The causal analysis will be based on looking at the relationships between institutional features, in particular delegation problems and implemented control mechanisms on the one hand and the indicators of health system “performance” on the other hand. The indicators of achievement and efficiency, as constituting elements of performance, are the following:

- (1) Health outputs, such as life expectancy, mortality, life years lost, and medical fatalities,
- (2) beyond-health outputs, such as satisfaction and responsiveness,
- (3) health expenditure levels, composition (public vs. private) and dynamics (absolute vs. relative)
- (4) the productive efficiency, based on the ratio of outputs to inputs.

The selection covers the two dependent variables of the study: the achievement levels, and efficiency in the sense of whether the achievement levels are reached at low or high costs. The indicators, both often used synonymously for “performance”, are the most prominent and are, so to speak, the parameters on which most of the public and political attention is focused.

The causal analysis will be guided by two questions:

- (1) What is the impact of the individual underlying institutional dimensions found in chapter 10 above? The factor scores obtained in section 10.1 will be correlated with the input, output and efficiency indicators. Do for instance, as institutional economics would suggest, higher levels of “Agency” actually go together with higher levels of health expenditure? Does, while it may have adverse effects on some input indicators, agency affect other indicators, in particular output, in a positive way, so that the overall effect of this institutional feature is positive?
- (2) Is there a particular effect of institutional syndromes, i.e. combinations of the institutional dimensions, which are supposed to be performance and efficiency increasing? For instance, “Agency” per se might not be so problematic, but it might be so if it is combined with remuneration incentives which set an incentive to oversupply health services. So if there are independent agents which are remunerated by modes which set at least a the margin, an incentive to supply more services, this together might have a stronger effect on efficiency or expenditure levels than each of the institutional dimensions taken alone.

The dataset encompasses at maximum 44 data points, defined by 22 countries and two points in time. For several analyses the actual number is somewhat below that, because data because

the dependent variables are available for only one point in time or are missing for some of the cases. Thus, given the small number of cases the chances to find statistically significant correlations are small.

However, what I am interested in here is whether there are actually institutional properties going systematically together with output and performance features. So, I will look at sets of indicators, which capture the HCS' performance and achievement in certain aspects, and study if they correlate with certain institutional features (section 11.1) and then, whether this correlation is stable if other institutional features are taken into account, (section 11.2).

The bivariate correlation reflects the certainly naïve perspective of a health-policy maker who is asking: Is there, when looking only at one institutional dimension, and a certain outcome-variable a stable relationship between both in the sense that if one changes the former one, one achieves a certain effect in the latter one? The multivariate regression analysis reflects the more sophisticated view of the health system researcher, asking are there – *ceteris paribus* – certain effects, which are stable, independent from the institutional setting in other sectors of the HCS?

Table 11.1. Overview on the Expected Effects of Institutional Variables

| <b>Institutional Dimensions</b> |  |  |
|---------------------------------|--|--|
|                                 | <b>High values indicate</b>  | <b>Expected Effects on HCE</b>   |
| pAgency                         | high levels of Delegation to independent agents who are providing services   | higher HCE, because a higher quantity of services is provided and agents have more leeway to extract rents |
| pRemuneration Incentives        | High incentives to increase the quantity of services provided  | higher HCE, because a higher quantity of services is provided  |
| pHospital_Autonomy              | Autonomous Hospitals, which have control over decisions about investment in equipment and capacities   | higher HCE, because a higher quantity of services is provided  |
| pHospital_Compensation          | Hospitals, which are competing among each other, based either on prices  | higher HCE, because of a doubling of hospital infrastructure   |
| pPurchaser_Autonomy             | Purchasers which are autonomous (in particular from government), can decide on parameters defining the relationships with the clients and are responsible for deficits | higher HCE, because purchasers can pursue their own agenda, also increase on the job consumption           |
| pPurchaser_Compensation         | Purchasers, which are competing for clients by offering different packages of contributions and  | lower HCE, because purchasers have to increase interne efficiency to be competitive                        |
| pPatient_Involvement            | patients are involved in payment of providers, either by having to pay for the services and getting reimbursement later on, or by having to make co-payments           | lower HCE, because the price mechanisms matters for consumption  |
| pPharma Access&Sales            | Control over Access and Sales of pharmaceuticals, high scores indicate the usage of price controls, budgets, and incentives to use generics                            | lower HCE, because the usage of generics is increased  |
| pGovernmental_Control           | the Central Government's control over parameters of the HCS, prices, coverages, overall budgets, and in particular the hospital sector                                 | lower HCE, because the interests of the public are represented by the government                           |
| pAccess                         | free access of the patients to secondary care, in out-patient as well as in-patient settings, also factual choice among several providers of secondary care            |  |
| pQuality_Information            | indicate the organized collection, evaluation and provision of quality relevant information to the providers of medical care   |  |
| pQuality_Enforcement            | imply that the purchaser or some other institution can enforce the usage of this information by the providers of medical services                                      |  |
| pFinControl_Identify            | purchaser which can identify providers which are overspending and oversupplying medical services   | lower HCE, because providers may restrain themselves from overspending                                     |
| pFinControl_NoSanctioning       | purchasers, which can sanction providers which are overspending and oversupplying services, e.g. by excluding them from providing services to the purchaser's clients  | lower HCE, because providers can be sanctioned for overspending  |

Table 11.1 (continued)

**Institutional**

| <b>Dimensions</b>              | <b>High values indicate</b>  | <b>Expected Effects on HCE</b>  |
|--------------------------------|--|---------------------------------|
| <b>Institutional Syndromes</b> |  |                                 |
| IncentiveProblem               | providers who have the incentive to and the possibility to increase their income by providing more services to patients                  | higher HCE, more growth         |
| HospitalSyndrome               | hospitals, which are autonomous (can control parameters relevant for competition) and are under competitive pressure to use the autonomy | lower HCE, slower growth of HCE |
| PurchaserSyndrome              | purchaser which are autonomous (can control parameters relevant for competition) and are under competitive pressure to use the autonomy  | lower HCE, slower growth of HCE |
| QualitySyndrome                | providers obtain information aiming at increasing the quality of care, and can be forced to use this information                         | lower HCE, slower growth of HCE |
| FinControlSyndrome             | purchasers which can both identify and sanction providers who are overspending   | lower HCE, slower growth of HCE |

| Table 11.1 (continued) <b>Expected Effects ....</b> |  |   |  |
|---|--|---|--|
| <b>Institutional Dimensions</b>                     | <b>... on quality / health output</b>  | <b>output / Satisfaction</b>  | <b>... on HCS efficiency</b>   |
| pAgency   |  |   | lower Efficiency   |
| pRemuneration Incentives                            |  | more responsiveness, because there is an incentive to react to any demand and wish of the patient | lower efficiency, because more services than actually indicated are supplied                       |
| pHospital_Autonomy                                  |  |   | lower efficiency, because hospitals tend to overinvest in medical equipment for reasons of status  |
| pHospital_Competition                               | higher quality, because of a reputation based competition  | higher satisfaction, because the citizens have a choice on where to obtain treatment              | higher efficiency, because hospitals also compete by prices offered for treatments                 |
| pPurchaser_Autonomy<br>pPurchaser_Competition       |  |   | higher efficiency, because competitive pressure lowers the administrative costs of the purchasers  |
| pPatient_Involvement                                |  | lower satisfaction, because the direct costs for the patients are higher                          | higher efficiency, because predominantly only cost-effective services are consumed                 |
| pPharma Access&Sales                                |  | lower satisfaction, because the patient's choice among medicines is limited                       | higher efficiency, because the usage of pharmaceuticals is more oriented on the cost-effectiveness |
| pGovernmental_Control                               |  |   | higher efficiency, because the tendency of the "insiders" to increase the HCE is held in check     |
| pAccess   |  | higher responsiveness and higher satisfaction, because choice is an important demand of           |  |
| pQuality_Information                                | higher quality, because new information is distributed rapidly among the providers of medical care |   | higher efficiency, because predominantly only cost-effective services are consumed                 |
| pQuality_Enforcement                                | higher quality, because quality standards are made binding for the providers of medical care       |   | higher efficiency, because predominantly only cost-effective services are consumed                 |
| pFinControl_Identify                                |  |   | higher efficiency, because oversupply of services of uncertain medical necessity is avoided        |
| pFinControl_NoSanctioning                           |  |   | higher efficiency, because oversupply of services of uncertain medical necessity is avoided        |

| Table 11.1 (continued) <b>Expected Effects ....</b> |  |  |                              |
|---|--|--|------------------------------|
| <b>Institutional Dimensions</b>                     | <b>... on quality / health output</b>                                    | <b>...on beyond health output / Satisfaction</b>   | <b>... on HCS efficiency</b> |
| <b>Institutional Syndromes</b>                      |  |  |                              |
| IncentiveProblem                                    |  | more responsiveness, because intensity of care is higher, and the providers react to all demands of the patients | lower Efficiency             |
| HospitalSyndrome                                    | higher quality, because of a reputation based competition                |  | higher Efficiency            |
| PurchaserSyndrome                                   |  | higher satisfaction, because the citizens have a choice among different purchasers                               | higher Efficiency            |
| QualitySyndrome                                     | higher quality, because quality standards are available and are enforced |  | higher Efficiency            |
| FinControlSyndrome                                  |  |  | higher Efficiency            |

Table 11.1 gives an overview on the institutional variables used and the hypotheses following from the institutional economics / delegation approach for various indicators of health system achievement and efficiency.

The assumption underlying the following analyses is, that if the institutional setting as a whole, respectively certain elements of the setting actually matter for performance and achievement, the relationships will show up and will also be quite stable, despite the small number of cases. Consequentially, the following analysis of associations will not so much look for a single correlation, but whether there are consistently correlations between features and properties, which confirm what one would expect given the underlying theory or contradict the theory, either by having no or by having an opposed effect. A single bivariate correlation as well as a single coefficient in the regression analysis is insufficient to make a statement, in particular if one has relatively few cases. But a systematical pattern in which institutional factors are correlated with HCS achievements the way one would assume them to be given the underlying theory, is a stronger support for the theory.

## 11.1. Correlates of Health System “Performance”

Table 11.2 gives the bivariate correlations between the institutional dimensions, i.e. the factor scores obtained for a country at each of the two points in time, calculated as described in chapter 10 and the chosen indicators of health system performance. The idea at this step is to look at whether individual institutional features, e.g. a high level of agency, goes together with certain levels of HCS achievement or efficiency. I am fully aware, that the results are bivariate association only, without statistical inference nor the clear cut proof, that the correlation between the institutional feature and the achievement/efficiency indicator is valid or only spurious and actually caused by a third variable.

Table 11.2 Correlations among Institutional Features and Indicators of HCS Performance

|                                 | Output side of the Health System |                  |                       |                    | "Beyond Health" |         |
|---------------------------------|----------------------------------|------------------|-----------------------|--------------------|-----------------|---------|
|                                 | "Health"                         |                  |                       |                    | Resp. Index     | Satisf. |
|                                 | Total Life Expectancy            | Infant Mortality | Life Years Lost (Net) | Medical Fatalities |                 |         |
| <b>Institutional Dimensions</b> |                                  |                  |                       |                    |                 |         |
| pAgency                         | -0,17                            | 0,17             | 0,14                  | 0,03               | 0,23            | 0,25    |
| pRemuneration_Incentives        | 0,03                             | 0,02             | -0,07                 | 0,16               | 0,30            | 0,05    |
| pHospital_Autonomy              | -0,14                            | 0,17             | 0,06                  | -0,16              | -0,03           | 0,40    |
| pHospital_Competition           | 0,25                             | -0,30            | -0,26                 | -0,31              | 0,52            | 0,40    |
| pPurchaser_Autonomy             | 0,20                             | -0,28            | -0,32                 | 0,08               | 0,59            | 0,63    |
| pPurchaser_Competition          | 0,29                             | -0,28            | -0,33                 | -0,07              | 0,47            | 0,26    |
| pPatient_Involvement            | 0,31                             | -0,34            | -0,27                 | 0,12               | 0,41            | 0,09    |
| pPharma_Access&Sales            | 0,01                             | 0,10             | 0,08                  | 0,31               | -0,24           | -0,32   |
| pPharma_Coverage                | 0,21                             | -0,28            | -0,11                 | 0,27               | 0,11            | 0,08    |
| pGovernmental_Control           | -0,24                            | 0,28             | 0,27                  | -0,05              | -0,54           | -0,41   |
| pAccess                         | 0,05                             | -0,17            | -0,17                 | 0,34               | 0,37            | 0,12    |
| pQuality_Information            | 0,06                             | -0,21            | 0,00                  | -0,29              | -0,08           | 0,20    |
| pQuality_Enforcement            | 0,19                             | -0,11            | -0,34                 | 0,31               | 0,35            | 0,19    |
| pFinControl_Identify            | 0,03                             | -0,18            | -0,15                 | -0,10              | 0,08            | 0,45    |
| pFinControl_NoSanctioning       | 0,31                             | -0,30            | -0,26                 | 0,34               | 0,43            | 0,23    |
| <b>Institutional Syndromes</b>  |                                  |                  |                       |                    |                 |         |
| IncentiveProblem                | 0,18                             | -0,15            | -0,28                 | 0,09               | 0,46            | 0,13    |
| HospitalSyndrome                | 0,09                             | -0,10            | -0,15                 | -0,27              | 0,29            | 0,44    |
| PurchaserSyndrome               | 0,28                             | -0,33            | -0,36                 | 0,13               | 0,63            | 0,50    |
| QualitySyndrome                 | 0,24                             | -0,31            | -0,27                 | -0,10              | 0,16            | 0,25    |
| FinControlSyndrome              | -0,19                            | 0,19             | 0,10                  | -0,36              | -0,30           | -0,16   |
| <b>Political Features</b>       |                                  |                  |                       |                    |                 |         |
| PiG Parties in Government       | -0,07                            | -0,10            | 0,00                  | -0,11              | 0,15            | 0,29    |
| Societal Actors                 | -0,31                            | 0,18             | 0,26                  | -0,07              | 0,05            | 0,45    |
| Indirect Veto-Power             | -0,26                            | 0,11             | 0,19                  | -0,07              | 0,08            | 0,39    |
| <b>Economic Environment</b>     |                                  |                  |                       |                    |                 |         |
| GDP                             | 0,65                             | -0,62            | -0,67                 | -0,19              | 0,95            | 0,58    |
| N                               | 44                               | 44               | 44                    | 44                 | 22              | 16      |



Table 11.2 (continued)

|                                 | Input side of the Health System        |               |               |               |                |                 | Efficiency<br>WHO1 |
|---------------------------------|--|---------------|---------------|---------------|----------------|-----------------|--------------------|
|                                 | Health Expenditure Levels and Dynamics |               |               |               |                |                 |                    |
|                                 | HCE                                    | dTHCE<br>_abs | dTHCE<br>_per | dTHCE<br>_rel | Private<br>HCE | dPrivate<br>HCE |                    |
| <b>Institutional Dimensions</b> |  |               |               |               |                |                 |                    |
| pAgency                         | 0,22                                   | 0,32          | 0,21          | -0,10         | -0,03          | 0,11            | -0,21              |
| pRemuneration_Incentives        | 0,28                                   | 0,29          | 0,13          | 0,01          | 0,21           | 0,00            | 0,00               |
| pHospital_Autonomy              | -0,21                                  | -0,17         | -0,05         | -0,12         | -0,21          | 0,16            | -0,35              |
| pHospital_Competition           | 0,48                                   | 0,21          | -0,17         | -0,24         | -0,41          | -0,08           | -0,02              |
| pPurchaser_Autonomy             | 0,46                                   | 0,18          | -0,11         | -0,15         | -0,01          | -0,06           | -0,01              |
| pPurchaser_Competition          | 0,16                                   | -0,09         | -0,18         | -0,04         | -0,05          | -0,29           | -0,01              |
| pPatient_Involvement            | 0,43                                   | 0,32          | 0,07          | 0,13          | 0,04           | -0,29           | 0,28               |
| pPharma_Access&Sales            | -0,05                                  | -0,13         | -0,01         | 0,15          | 0,26           | 0,07            | -0,10              |
| pPharma_Coverage                | 0,17                                   | 0,23          | 0,15          | 0,23          | 0,07           | -0,15           | 0,27               |
| pGovernmental_Control           | -0,24                                  | 0,11          | 0,28          | 0,16          | 0,01           | 0,29            | 0,06               |
| pAccess                         | 0,38                                   | 0,38          | 0,18          | 0,06          | 0,06           | 0,03            | 0,22               |
| pQuality_Information            | 0,05                                   | -0,28         | -0,43         | 0,08          | -0,29          | -0,23           | -0,04              |
| pQuality_Enforcement            | 0,06                                   | 0,03          | 0,00          | -0,19         | 0,16           | 0,07            | 0,20               |
| pFinControl_Identify            | 0,08                                   | -0,15         | -0,17         | -0,12         | -0,16          | 0,11            | 0,03               |
| pFinControl_NoSanctioning       | 0,44                                   | 0,30          | 0,07          | 0,10          | 0,07           | -0,09           | 0,29               |
| <b>Institutional Syndromes</b>  |  |               |               |               |                |                 |                    |
| IncentiveProblem                | 0,38                                   | 0,31          | 0,06          | -0,03         | 0,07           | -0,04           | 0,05               |
| HospitalSyndrome                | 0,17                                   | 0,01          | -0,14         | -0,19         | -0,36          | -0,27           | -0,20              |
| PurchaserSyndrome               | 0,37                                   | 0,05          | -0,18         | -0,11         | 0,04           | 0,00            | -0,02              |
| QualitySyndrome                 | 0,11                                   | -0,22         | -0,39         | -0,05         | -0,16          | 0,07            | 0,12               |
| FinControlSyndrome              | -0,37                                  | -0,25         | -0,06         | -0,08         | -0,03          | -0,18           | -0,20              |
| <b>Political Features</b>       |  |               |               |               |                |                 |                    |
| PiG Parties in Government       | 0,09                                   | -0,09         | -0,24         | -0,03         | 0,03           | 0,10            | -0,08              |
| Societal Actors                 | -0,02                                  | 0,05          | 0,01          | -0,15         | -0,20          | 0,19            | -0,30              |
| Indirect Veto-Power             | 0,01                                   | -0,01         | -0,06         | -0,11         | -0,07          | 0,27            | -0,23              |
| <b>Economic Environment</b>     |  |               |               |               |                |                 |                    |
| GDP                             | 0,87                                   | 0,76          | 0,12          | -0,02         | -0,15          | -0,40           | 0,38               |
| N                               | 44                                     | 44            | 44            | 44            | 42             | 42              | 22                 |

The analysis will first look at the correlations between the individual institutional dimensions and then carry on for the institutional syndromes. A supplementary section will consider the impact of the political and economic environment of the HCS. The content and description of the dependent variables is given in table 9.3 above.

### ***11.1.1. Institutional Dimensions and Health System Achievement***

#### *Agency*

Regarding the health outputs of the HCS, Life expectancy, Infant mortality and Years of life lost, high levels of agency in the HCS are associated with underperformance; lower life expectancy, higher infant mortality and more years of life lost. There is no association with the number of medical fatalities, probably because these mostly occur in hospitals, which are more or less public respectively at least in public ownership in all systems. Regarding the expenditure levels and dynamics, agency increases the level and the growth of overall expenditure in absolute terms, albeit not in relative terms. It is not related to the level or the increase in Private HCE. Agency correlates with lower levels of efficiency of the production of DALE, as measured in the WHO1 efficiency indicator, but it strongly increases the responsiveness and the satisfaction with the HCS. So, while agency is either not at all or even negatively impacting on the health output production and makes the production of health more expensive, it strongly increases the production of beyond-health outputs of HCS. Which would suggest that independent agents produce responsiveness, an output which was found to be of substantial relevance for the satisfaction of citizens with their health system; see Mossialos (1997).

#### *Remuneration Incentives*

The picture obtained for this institutional feature is ambiguous: the expectations regarding the effect of this institutional dimension concern in particular the levels of HCE, because the dimension captures the incentive to oversupply services. Whether these services (which are presumed to be unnecessary from a medical viewpoint and primarily provided for the sake of increasing the provider's income), have an impact on a health output, is unclear. And indeed, when looking at the second row of table 11.2, the only clear cut effect actually found concerns the level of HCE. This is higher in absolute terms and it also grows faster, again only in absolute terms, but neither in relative nor in percentage terms. It is also associated with higher levels of private expenditure, albeit not with higher growth rates of private HCE.

Regarding the health outputs, the presumption that the incentive to provide more services does not increase the health status, seems also to hold, because neither of the health output

indicators is affected in a positive way. It has to be remarked, that no indicator of the actual quantity of services is available, which is to say that HCE proxies also the quantity.

But, despite the increased input and the unchanged output, the institutional dimension is virtually unrelated to the overall efficiency of the system (as measured by the WHO1 indicator).

Looking at the composition of the financial input, quantity based remuneration modes increase the share of private expenditure, a finding which could indicate that at least part of the services supplied by the providers are directly paid for by the patients or their private / supplementary insurance. On the beyond-health output side, remuneration incentives do strongly increase the HCS' responsiveness but this does not go together with higher levels of satisfaction.

Taking both institutional dimensions, Agency and Remuneration, together suggests, that if there is a difference between systems, which rely on employed providers, and systems, which rely on self-employed providers, it is that independent providers tend to produce more responsiveness, at least more so than employed providers. The higher costs they cause are not actually due to lower efficiency, but due to the increased production of a different output, namely responsiveness.

### *Hospital Autonomy and Competition*

The institutional dimensions underlying the hospital sector have quite opposing effects, and it has to be recalled, that both dimensions are, by construction, statistically independent from each other. Regarding health output, autonomy of the hospital decreases health output, while the competition among hospitals increases it. Both however decrease the number of medical fatalities, but competition much more so than autonomy. Again it has to be remarked that this indicator might be the one with the highest relevance as an evaluation criterion for the hospital sector, because medical fatalities occur most often during a medical intervention which requires a stay in the hospital. With this in mind, both institutional dimensions indicate that giving hospitals some leeway, but also giving citizens a choice among competing hospitals, is a possible way to increase quality of hospital treatment.

The both dimensions exert on resource consumption is also inconsistent: competition increases, autonomy decreases overall expenditure for health. From the standpoint of cost containment, reducing hospital's say in issues of financial relevance, such as investment in medical equipment, is a probate mean to control the costs. The overall efficiency indicator

used yields the same message: while the WHO1 indicator is uncorrelated with competition, it decreases substantially with higher levels of autonomy, indicating that hospitals tend to either oversupply services or to invest in (and to use much more) equipment than would be efficient. Responsiveness as the typical beyond health output is increased in particular by the competition among hospitals, most likely because competition implies the existence of several hospitals offering the same services and thus that patients can choose where to obtain treatment. Whether the hospital is autonomous or not, seems not to matter for the responsiveness. However, satisfaction with the HCS is increased by both institutional dimensions alike. The policy recommendation, if is willing to infer one, would be that it is the patient's choice among hospitals, which fuels a quality increasing competition.

#### *Purchaser Autonomy and Competition*

The hypotheses would be that purchaser competition decreases the costs, because competition force them to operate more efficient. To some degree this might be countervailed because several competing purchasers imply a doubling of certain administrative tasks and that administrative economies of scale remain unrealized. Contrary to the expectation, making purchasers autonomous and putting them into competition does not decrease the HCE. A setting of many competing and autonomous purchasers actually increases the level of HCE, probably because the redundancy in the administration dominates the savings by competition. Every purchaser has a administration and this too require resources. So the level of fixed administrative costs is higher when there are several competing purchasers. This is more a question of the level, because the growth of HCE is less affected. This higher level of expenditure, which is likely to be due to operation costs of the purchaser's administration, does however not affect the HCS' overall efficiency as measured by the WHO1 indicator. Regarding the health output, both institutional dimensions are almost identical in the direction and magnitude of their impact. Both have positive effects on health output indicators, and moreover installing autonomous and competing purchasers also increases the responsiveness of the HCS and the satisfaction citizens express vis-à-vis their HCS.

#### *Patient Involvement*

The analysis focuses on the first dimension extracted from the original indicators of patient involvement, with the most explanatory power regarding the institutional particularities of patient involvement in payment of health services.

With regard to what “involvement of patient” implies for health system achievement and efficiency, one would expect that this dimension affects in particular financing and consumption and thereby the overall efficiency of the HCS. The argument is firstly, that involving patients makes them aware of the prices, which to some degree limits their consumption to what is justifiable from a cost benefit evaluation. Services with a poor cost benefit ratio are not or at least less often consumed, so the average cost-benefit ratio for all services provided in the HCS improves. The argument is secondly, that by giving patient a bill, the temptation for the provider to cheat are limited, because the patient is able to recognize incidences of unjustified billing, i.e. the billing of services which were not actually provided.

Contrary to this expectation is the finding that higher patient involvement goes together with higher levels of overall HCE and also with higher levels of growth in HCE. Given the background information about why and when patient involvement was introduced, the explanation is thus that patient involvement works not actually as a cost control but rather that patient involvement opens up an addition source of funding which is needed to cover the higher costs and the higher levels of growth. Regarding the magnitude of the involvement in financial terms, the finding is that the level of patient involvement – which is qualitatively measured – does not actually go together with higher levels of private funding. Patients may be involved in the form of paying providers first and get reimbursement later or in the form of having to make a co-payment, but that does not say anything about the magnitude of what they actually have to pay for the services.

While patient involvement does not make explicit statements about the health outputs, there are some interesting findings, which do not offer a clear cut or easy explanation: Higher patient involvement goes also together with both higher levels of health and beyond health output, but has no effect on the citizens’ satisfaction with the HCS. One could argue that the additional funding coming from private sources is used to pay for the higher level of responsiveness, which increases the satisfaction, but that the very fact of having to pay an contribution in addition to what is already going into the HCS by way of taxes or pay-roll-based contributions lowers the satisfaction, so that the net effect is zero. Why additional private funding is increasing health output, is however not amenable to an easy explanation. Overall, involving patients in the financing of health care has a positive effect on the HCS’ efficiency as measured by the WHO indicator.

### *Pharmaceutical Control*

Pharmaceutical control has two independent dimensions, first the control of market access and the issue of how sales are controlled and how much the usage of generics is enforced. Second, the issue of whether the coverage of a medicine by the HCS, or the price by which this is done, is based on a medical evaluation of the new product.

The first dimension is basically uncorrelated with all performance indicators, the only noteworthy correlations are with responsiveness and satisfaction. Given that high scores on the first dimension imply that patients are involved in the payment of medicine and that they are encouraged, also by financial incentives, to use generics more often instead of the branded original they might be used to, this is little surprising. Introducing sales control does however nothing to improve the efficiency of the HCS.

The second dimension, control over the coverage by the HCS, differs in its impact, because it exerts its impact in a much less visible way and moreover before the patient gets involved. Introducing such measures does not affect the citizens evaluation with the HCS. The institutional dimension concerns the evaluation of the product before it is actually available to the patients. Basing coverage and prices on a medical evaluation of the value added has positive effects: it goes together with a higher health output and also increases the efficiency of the health system. Supposedly, because some medicines are weeded out earlier and also marginal improvements are identified as such and do not obtain the price granted for an actual innovation. So while there is an effect on quality, the actual aim which is most often underlying the introduction of such evaluations, viz. the control of pharmaceutical expenditure, is not achieved, as the slightly higher levels of HCE indicate. But still, the overall effect on the HCS' efficiency is, at least when regarded based on the bivariate relationship, positive.

### *Governmental Control*

Regarding the role of the central government as the "superordinate steward" which is representing the preferences of the electorate, the presumption is that more government control, which was operationalized here as more control by the central government in the form of say or unilateral control over HCS parameters, has positive effects on the efficiency of the HCS. First, external control sets limits for the agents operating the HCS, both on the supply and the demand side, and holds them and their shared interest in an ever increasing health budget in check. The government as an outsider may enforce regulations and rules, which are neither in the interest of the purchasers nor of the providers of services.

The correlations found contradict this view. The level of resource consumption is only slightly reduced by higher levels of governmental control, and indeed the growth of HCE is higher in systems which feature more governmental control. What is affected, and negatively so, is the output of the HCS, both the health and the beyond-health output. HCS with high levels of government control underperform in three out of four health output indicators and produce significantly less of both-beyond health outputs: Life expectancy is lower, while the infant mortality and the loss of life years is higher. Moreover in particular the responsiveness of the system and the citizen's satisfaction with the system is lower. The latter observation might be due to the strong relationship between responsiveness and satisfaction, because state operated HCS are typically less responsive.

The countervailing effects found for health outputs and input consumption are reflected in the finding that HCS efficiency as measured by the WHO indicator is not improved by governmental control.

#### *Access and Choice in Secondary Care*

Regarding the regulations on access and choice to secondary care, the predominant element of the regulation is gatekeeping: Is the access to secondary care channeled by the gatekeeper or not. The existence of gatekeeping usually goes with the absence of factual choice after gatekeeping. By design, this implies a certain degree of redundancy, because access is limited where patients don't have a choice. In the alternative design, there is no gatekeeping, but the patient can go directly to a secondary care provider (apart from hospitals) and furthermore can also chose freely and in particular factually among several providers of secondary care.

Looking at the health outputs, granting access and choice does not affect the indicators, the only exemption being medical fatalities. As was argued above when discussing the hospital sector, this finding indicates that competition and choice among hospitals has a positive effect on the quality of hospital care, which is presumably the most important factor for the number of medical fatalities.

Granting choice among secondary care providers goes together with higher levels of expenditure, presumably because choice is usually only possible in health systems in which many providers of secondary care (in-patient as well as out-patient) exist, and thus also a certain redundancy is present: the availability of are several providers to chose from, implies in practice that not all of them are strictly necessary, and economies of scale remain unrealized. Forced to attract patients in a situation, where there are "not enough" patients to grant a living for all providers, the latter are subject to the incentive to supply more services,

engage in a more intense treatment and to recur to more sophisticated forms of treatment, including the more intense usage of technology. On the upside, it also means that the providers are incentivized to compete for clients by showing effort and by delivering quality.

A possible hypothesis about the correlation between access and the composition of health care financing would be that limiting access officially leads to a higher share of private funding, because the patients have to pay an additional fee to skip the gatekeeping or to purchase “choice” understood as the option to obtain treatment elsewhere, not in the region or county they are living in. The latter phenomenon occurs in countries with strong regional differences in availability and quality of care, like Italy. However, granting access is not financed from private funding, because there is neither a correlation between access and the level of private HCE nor a correlation between access and the dynamics of private HCE.

The strongest effect of choice and access concerns the responsiveness of the HCS. Granting choice and access makes the HCS more responsive, indicating that having choice is an important issue for the patients. But interestingly it does not increase the satisfaction with the system to a substantial degree. Noteworthy is also the fact that while choice and access have a clearly increasing effect on expenditure, while leaving most health output indicators unchanged, it nevertheless increases on the whole the efficiency of the HCS as measured by the WHO1 indicator.

### *Managing Quality: Providing and Enforcing Information*

The analysis of the institutional regulations on quality management yielded two latent dimensions. First, the organized collection respectively provision of information to the providers. Second, the enforcement of quality standards, i.e. whether the providers can be forced, in the extreme case by excluding them from providing services to the patients, to abide to quality standards. Correlating them with indicators of HCS achievement and efficiency, both dimensions show very different effects, and it has to be recalled that both are, by construction, statistically uncorrelated.

Both dimensions affect health outputs in an inconsistent way. Quality management has not significant effect on overall life expectancy, a finding which can possibly be attributed to the fact that the overall life expectancy is influenced by many factors outside of the HCS. The outputs which are more attributable to the HCS do react to quality management, however in an inconsistent way. On the one hand, providing information in an organized way goes together with a decrease in medical fatalities and also a decrease in infant mortality. But on the other hand, having installed the possibility of enforcing quality standards, has an adverse



effect on medical fatalities: there are actually more medical fatalities in systems where such a binding quality enforcement is installed. This effect is surprising and hard to explain.

Both institutional dimensions are neither associated in a noteworthy way with overall health expenditure nor with the dynamics of HCE growth. Only for the level private expenditure an effect can be found. The level of private funding is lower in countries with organized provision of information and while it is slightly higher in countries with quality enforcement. Regarding the overall health expenditure this implies that installing quality management does not come at a substantially higher price per se. Installing quality control might cause costs in the first place, but in the end the savings realized, e.g. by abstaining from providing unnecessary or inappropriate services, does equalize these costs.

Despite the adverse effects on medical fatalities, quality enforcement goes together with higher levels of efficiency, while providing information in a noncommittal way does nothing to improve efficiency of the HCS. The evidence for the effects on the beyond-health outputs is mixed: both quality dimensions increase satisfaction, while, on the whole, lowering the responsiveness of the HCS.

#### *Financial Control: Identifying and Sanctioning Providers*

The first dimension of financial control concerns the possibility of the purchasers, whatever their organizational status or character, to identify providers which are systematically overspending, i.e. are supplying more or more expensive services. This dimension does not affect any of the performance indicators in a substantial way. The only exemption is satisfaction, which is significantly higher in systems where such regulations are in place. As for the reasons of the absence of the presumed effects on expenditure, it can be argued that the knowledge that a certain provider is overspending alone does not matter. As for the effects on satisfaction, an underlying mechanism is not obvious.

The interpretation that knowledge alone, without the possibility to act on this knowledge is, is meaningless is substantiated by the finding that the possibility of a sanctioning the providers has strong effects on many performance indicators. Note once again, that the orientation of the scale is such that high values indicate the absence of the possibility to sanction the provider.

Regarding health output, the effect of installing sanctioning power is adverse. It is the absence of binding control which goes together with higher life expectancy, lower mortality, but then again with higher incidence of medical fatalities.

The expenditure side of the health production is influenced in line with the expectation; the absence of effective financial control goes together with higher levels of expenditure. Affected is however only the overall level, because the institutional dimension does neither matter for the share of private expenditure nor the dynamics of expenditure growth.

Despite the mixed evidence, the overall efficiency of the health system is higher – by the WHO measurement – in cases where financial controls are implemented. Regarding the beyond-health-outputs, satisfaction and responsiveness, the establishment of an effective control goes together with lower responsiveness, and also lower satisfaction. The causal connection might again work intermediated by the pressure exercised on the providers, which react by acting less responsive to their “customers”, who in turn are less satisfied with the care they receive and in particular the way it is provided to them.

### ***11.1.2. Institutional Syndromes as Correlates of Health System Achievement***

#### *Institutional Syndromes: Concept and Operationalization*

As argued in the first volume of this study and in section 4.4. of the present volume, the conditionality of institutional effects is a potentially relevant factor for HCS achievement and efficiency. For this reason the compilation of the institutional data covers more issues than just the delegation relationships and the control mechanisms in these relationships. The underlying argument is that the effectiveness of the control mechanisms is conditional on the wider environment in which the delegation relationship is embedded. Two examples may show why.

Self employed providers are working autonomous, by themselves and for themselves, and are under little control regarding what they do in their practice. They have the potential to increase their income, because they have leeway to do so. But do they have the incentive? According to the agency theory, there are only problems to be expected, if the remuneration is based on the quantity of services provided. But even then: does the combination of possibility and motive, the incentive problem actually decrease the efficiency of the HCS? Or is it rather the case that output increases in proportion to the input consumed, and thus the overall efficiency remains the same? In this case, the incentive is no problem in terms of efficiency, only a problem in terms of higher costs, which are however justified.

Underlying the analysis of the effects of institutional syndromes was the question, whether certain combinations of institutional dimensions, certain constellations going together, exert a stronger, weaker or altogether different impact on HCS' performance than the individual dimensions. The lower sections of table 11.2 give the bivariate correlations between the institutional syndromes and the indicators of health system achievement and efficiency.

### *Incentive Problem*

The syndrome capturing the presence of an incentive problem – in the sense of independent, self employed and thus: uncontrolled in their behavior, providers whose income depends on the quantity of medical services they provide – shows effect which are similar to the underlying features, but also effects which were not to be expected given the impact of both the status as well as the remuneration of providers.

Installing an incentive problem actually has positive effects on health output; it increases life expectancy, decreases both the loss of life years and the infant mortality. It is however irrelevant for the incidence of medical fatalities. One could argue, that the reason for this is that the incentive problem-variable is dominated by the organization and remuneration of outpatient care, while medical fatalities occur most often in the inpatient setting.

On the downside, the presence of incentive problems goes together with exactly what the delegation approach predicts: HCE is higher in systems which are characterized by a strong incentive problem, and lower in systems which have removed the problem – either by removing the incentive (by changing the remuneration mode) or by putting providers under hierarchical control ( e.g. by employing them or integrating them into the public administration). The financial consequences are a question of the level, not of the dynamics of HCE: while the level of HCE per capita is significantly higher it is a structural difference, not something which is getting more problematic over time. While HCE growth is stronger in absolute terms, this implies neither a stronger dynamic (in % ) nor that the HCS is progressively consuming more resources (growth of HCE in relation to growth of GDP).

The positive effects (on output) and the negative effect (on input consumption) seem to cancel each other out, because the incentive problem does not affect the efficiency as measured by the WHO's indicator,

With regard to the beyond-health outputs, installing (or tolerating) an incentive problem increases the HCS' responsiveness significantly. This however does despite the strong correlation between responsiveness and satisfaction, not increase overall satisfaction with the HCS. The absence of this correlation might be the consequence of another equalizing effect.

The HCS is more respondent, which is something citizens like, but it is also more expensive, which is something citizens dislike.

Finally, with respect to the value added of combining both institutional dimensions, it has to be remarked, that at least in the bivariate analysis, the effect of the combination, the incentive problem syndrome, is usually stronger than the effect of either of the individual dimensions.

### *Hospital Syndrome*

The indicator variable “HospitalSyndrome” was generated by combining both institutional dimensions found to be underlying the hospital sector in a way that the resulting interaction variable has the highest scores for those countries in which hospitals are both autonomous and competition among them is installed. High scores of the HospitalSyndrome variable indicate that the hospitals are – from a delegation perspective – under pressure to work efficiently, by providing quality and by engaging in cost control. Low scores indicate a situation, in which hospitals are insulated from competition and have neither pressure nor incentive to increase internal efficiency or the quality of treatment. They will get their share of “customers” because these have no choice, and they will get reimbursed for whatever they consumed.

While the syndrome-variable does not increase the standard health outputs (life years and infant mortality) it decrease the number of medical fatalities – an event which is most often happening in the setting of a hospital. This finding indicates that this syndrome, in particular competition among the hospitals, is appropriate to improve the quality of in-patient treatment and increase the health output of the hospital sector by reducing the “life years lost” in this particular sector, which are lost mainly due to medical fatalities. Moreover, in the issue of what kind of health outputs are actually attributable to the HCS (avoidable mortality vs. gross life expectancy) this finding indicates, that the hospital sector contributes, not by producing something, but by avoiding something, especially medical fatalities.

Installing the efficient hospital syndrome does not come at a significantly higher costs for the HCS. It also increases the responsiveness of the HCS, most likely intermediated by the choice patients have about where to obtain treatment in systems where there is competition among hospitals. And thereby, it also increases overall satisfaction with the HCS. However, despite the positive effects on output and the absence of negative effects on resources consumption, the syndrome actually decreases the overall efficiency as measured by the WHO.

### *Purchaser Syndrome*

The two institutional dimensions underlying the “Purchaser Syndrome” concern the degree to which the purchasers are autonomous from the political control exercised by the central government, able to decide on the parameters defining their relationship with the clients, and are under competition from other purchasers.

Purchasers – irrespective of their organizational form and formal status – which are autonomous can make their own decisions, which are relevant for their attractiveness from the viewpoint of potential clients and also influence how the HCS works. In particular they have some control about how efficiently they operate internally. But to steer their behavior in the right, which is to say: the efficient direction, these decision making capacities must be used in a certain way and the idea is that putting purchasers under competitive pressure will make them use their competencies to increase their efficiency.

The efficient syndrome would be that both scores are high. In this constellation of autonomy and competition, the purchasers have to increase operative and administrative efficiency to remain or become attractive for citizens, who in turn have free choice among the purchasers, and can leave expensive ones or those who cannot cover certain services. The competitive pressure is particularly high in a situation, where purchasers can differ in packages offered to the clients, viz. the contributions charged and / or services covered.

Only if both features – autonomy in determining the packages offered to the clients and free choice for the clients – are given, there is the possibility, the pressure and the incentive for the purchaser to perform well. If for instance a HIF is efficient, it may offer a more attractive package of contributions and services covered. Even if the catalogue of services is defined by law, the HIF may offer some extras, or offer the package at lower contributions rates. But this only matters for the number of clients, if the clients may change to this HIF. If each HIF has a fixed pool of clients assigned to it by law, it may of course still operate efficient, limit the number of people working in its administration to what is necessary and hold a hard bargaining stance with the providers – but there is no incentive to do so. The same is basically true for public purchasers, which are an immediate part of the government’s administration or by character a public administration, like municipalities, counties or Regional Health Administrations. The idea, as outlined in the methodological section, was to differentiate the agent “purchaser” into a set of features which can be used to describe purchasers which are not part of the public administration but just as well purchasers, which are part of the public administration. The idea is it, to turn the qualitative, dichotomous distinction in the “type” – public vs. non-public-purchaser – into a more gradual difference which can be expressed as

the absence or presence of some predefined features, such as competition, decision making competence over the package of services offered and the contributions charged.

How does the institutional syndrome of competing and autonomous purchasers affect the outputs, inputs and the efficiency of the HCS?

With regard to health output, the evaluation of the “Purchaser Syndrome” is positive. Making purchasers autonomous and putting them under competitive pressure by clients voting by feet goes together with higher life expectancy and lower mortality, both in terms of life years lost and in terms of infant mortality. There is only a weak adverse, i.e. increasing, effect on the incidence of medical fatalities. In the case of formally independent purchasers, HIFs, the mechanism is, arguably, that the purchasers use their bargaining power to assure that the providers abide to quality standards, by making for instance the applicability of medical guidelines part of the contract. In the case of public purchasers, which employ the medical providers, the control is hierarchical. But in both cases, the competition induces the motivation to exercise control.

On the input side, the existence of an efficient purchaser syndrome increases the level of HCE, albeit only structurally: the difference between systems with and systems without purchaser syndromes is static and does not affect the dynamics of HCE growth. A possible reason is that, similar to the hospital sector, competition requires redundancy on the side of the purchasers. In the case of independent HIFs, competition necessitates several HIFs, each with its own administration, which leaves (administrative) economies of scale unrealized. But the same is true for “public” purchasers. Where municipalities are in charge of organizing health care, a doubling of functions is inevitable, and this is costly. Locating the public purchasers at a higher level, for instance on the regional instead of the local level, would reduce some administrative doubling of functions, but would also reduce or completely remove the competitive pressure. People may move to a neighboring municipality, but moving to a different region poses a higher threshold.

Regarding the production of beyond-health outputs, the purchaser syndrome not only increases the responsiveness of the system, presumably again by giving people a choice, this time on the demand side, but also increases the citizens’ satisfaction with the system, probably for the same reasons.

The overall efficiency of the HCS is, just like in the case of installing redundancy, competition and choice on the supply side, unaffected: the higher output – in terms of health

and beyond-health output – is obtained at higher costs. There is not actually a waste in the system.

### *Quality Syndrome*

As outlined in chapter 10, the problem in terms of quality is how to organize the aggregation and evaluation of quality relevant information which arises at the level of the individual providers and how to disseminate the essence of this information back to the providers of medical services. The first dimension of quality also covers the creation and factual usage of guidelines which concern cost effectiveness, e.g. recommend a certain treatment as standard, because it has proved itself to be the most cost effective treatment in the standard situation. This informational problem is accompanied of how to induce the providers, all of which highly value their professional autonomy, to abide by the quality standards and to take into account aspects like cost effectiveness in their decision making.

It was argued that providing information, e.g. issuing guidelines and the like, alone is necessary, but not sufficient for an effective quality assurance. To achieve effectiveness of quality control, the provision of information must be supplemented by mechanisms which make abidance to quality standards binding for the providers. The variable QualitySyndrome was constructed as a multiplicative combination of both dimension (provision of information and the possibility of the provider to enforce abidance to quality standards by excluding the provider). High values of the QualitySyndrome indicate that the provision of quality relevant information and guidelines is organized and that the lack of quality on the provider's side can be sanctioned by an actor external to the medical profession, usually the purchaser.

The quality syndrome has effects, which are different in some regards from the effects of the individual institutional dimensions constituting the syndrome.

Looking at the health output side, the effects are positively throughout. Installing quality increasing measures and regulations goes together with higher life expectance, lower losses of life years, lower infant mortality and also fewer medical fatalities.

Assuring quality does not increase the costs of the system, i.e. has only little impact on the input side. On the contrary, some indicators of the expenditure dynamics are lower in systems in which quality control is organized in a sensible way. A possible mechanism underlying this finding is that the usage of sophisticated procedures with a relatively low value added when compared to cheaper alternatives is more restrained.

On the beyond health output side, the health system's responsiveness level is basically unaffected and maybe this is the reason why the – objectively – better performance in health production is not appreciated by the citizens: their satisfaction is not higher in systems which implement quality assurance. Nor does an effort to organize quality go together with higher efficiency of the HCS.

### *Financial Control Syndrome*

Financial control as defined here is a control exercised by the institutions financing the services over those actors who are providing medical services. Again the control relationship is not bound to a purchaser-provider-split with contracting and a formal billing taking place between purchaser and providers. Indeed in some “public integrated” HCS, the financial control may be higher than in systems in which the purchasers and the providers are different organizations and negotiate a contract. But there are also the opposite cases, where the contracting specifies prices and an explicit billing takes place, at times even combined with auditioning and the like.

Two institutional dimension were found to be underlying the financial control of the HCS: First, the chances of the purchasers to identify providers which are overspending.

Second, the possibilities of the purchaser to sanction the provider for reasons of overspending, which is something different than the sanctioning because of quality concerns discussed above.

The efficient syndrome in the organization of financial control over the providers is defined by the combination of high scores on both dimensions; i.e. effective control is given, when the purchaser can identify and sanction providers which are systematically overspending. Given the scaling of the second dimension, which indicates the absence of sanctioning, the “Financial Control Syndrome” variable was generated by combining both dimensions in a way that higher scores on the first dimension imply higher values for the Financial Control Syndrome variable, while lower scores on the second dimension imply higher values of the syndrome.

As for the effects, installing “optimal” financial control is presumed to contain expenditure and the negative correlation among the syndrome and the HCE levels indicates, that at least this effect is achieved. Just as it is the case for many of the other institutional variables, it is a static feature insofar, as it affects the levels, not the dynamics of expenditure. The HCE levels are lower, but the growth of the expenditure does not differ from systems without that type of control. But, in a nice illustration of the double-edged relationship between cost containment,



inputs and outputs of the HCS, cost-containment comes at a price: the syndrome has to some degree adverse effects on the health output, with the exemption of medical fatalities.

With regard to the level of beyond-health outputs, effective financial control reduces the responsiveness of and thereby also the satisfaction with the HCS. A finding, which indicates that providers tend to use leeway to be responsive to patients. Maybe not for purely altruistic reasons, but because “customer orientation” (caring about the patient) and self-interest match each other. Interestingly, it also reduces the overall efficiency of the health system to a degree which is comparable to the magnitude of the agency dimension.

In principle, one could refine this approach of combining specific institutional information, e.g. by deriving certain conditions and constellations of the original variables, which should go together on very different institutional dimensions, and by going together, indicate an “efficient system”. For instance one could argue that purchasing in a HCS is organized efficiently, if each and every of the following conditions are met: the purchaser are autonomous, there is no financial equalization among the purchasers, the purchasers can differ in both contributions and catalogues, and the citizen have free choice of the purchaser. But doing so would be equivalent to classify the overall institutional setting in one HCS, at least of a sector, as being efficient while the overall institutional setting in another HCS is no efficient. Looking at the underlying information, it also becomes quite clear, that there are no HCS, in which all these conditions are met, and all HCS in the study would classify as inefficient. While this strategy could be justified, it would no longer be possible to make a statement about individual features. It would also run into technical difficulties because of the small number of cases.

### ***11.1.3. The Health System's Political and Economic Environment***

While the interaction between the political system and the health system is most relevant for the occurrence of institutional change in the latter, one can also derive some hypotheses on the effects of the political environment on the HCS' current efficiency and achievement. Based on some of the arguments made in chapter 9 on the outputs produced by the HCS, one can make statements about the effect of the country's economic situation on the HCS.

#### *The Political Environment*

According to the argument made in chapter 5, the central government as an external actor, which is accountable to the electorate and responding to the electorate's preferences and demands, can act as a superordinate steward in charge of exercising a "control of the controllers". As was argued in chapter 4, the preferences of the actors inside the HCS systematically diverge from the preferences of the electorate, because the supply side (individual providers and Hospitals) and the demand side (purchasers such as HIFs or bureaucracies) are both making their living from the system's financial input. The government can exert a disciplining effect vis-à-vis these actors, it can hold both sides in line with the electorate's preferences and it can also balance the dynamics and developments in the HCS with the necessities and the dynamics in other societal sectors. To be able to do all this, the government must have levers at hand, e.g. formal competencies to intervene by setting unilateral decisions or changing negotiated agreements between the demand and the supply side ex post, if the implications of the agreement are objectionable from an overall view of the state of affairs in the country. This point, i.e. the levers, was discussed when looking at the government's control in section 11.1.1 above.

But in addition to the formal rights and the potential levers given by the HCS' constitution, the government must be able to act, to use the levers, to create operative health policy, able to arrive at and able to implement decisions - even against the opposition of the well organized groups in the HCS. This opposition and resistance to intervention originates from two sources:

First, it has to be remembered that the professional organizations value their autonomy highly, both in issues like pricing and even more so in issues of medical decision making; see Larkin (1995), Hassenteufel (1996) and Gray/Harrison (2004). The same is true for purchaser, be

they independent organizations or part of the public administration. Both organizational forms are bureaucracies and as such value autonomy, influence in many issues, and in particular factual control over many issues. So irrespective of the content of the intervention, the actors currently running the HCS have an institutional interest in retaining their autonomy, their control over the system; see Glaser (1991) and Greß (2002).

Second, purchasers and providers, despite all distributional conflicts, share an interest in increasing the “cake” which is their income, respectively from which they can extract rents. In particular the extraction of rents, either in the form of oversupplying services or in the form of “on the job consumption” or “administrative slack”, diminishes the cost/benefit-ratio and thereby the efficiency of the health system.

Consequentially, if the government perceives the necessity for an intervention, it is because these rents are too high respectively the health system’s efficiency is too low. It follows implicitly, that increasing efficiency by intervening either ad hoc or by reassigning decision competencies, goes directly against the material as well as the institutional interests of the actors in the health system, which will oppose the intervention.

I have argued, that the impact of the opposition by the societal actors depends on the relationships and the interactions between the government and the societal actors, in particular the societal actors involved in operating the HCS. The theoretical framework underlying this interaction is the indirect veto player concept: the idea that an organized group will strive to get access to a formal veto player, in particular a political party in government, to make this veto player cast its veto on behalf of the group.

So the prediction is, that if the HCS has many organized actors, and many points of access in the government, which is the origin of institutional and operative health policy as well as of ad hoc interventions by way of using existing levers, the probability of an indirect veto player will increase, and this will block efficiency-increasing interventions, resulting in a HCS, which is achieving less in terms of outputs and also less efficient in the production of these outputs. The empirical implication is, that three factors matter for the HCS “performance”: the number of access points in the political system, the number of societal stake holders, who might strive for access to the veto players, and the interaction among both as a indicator of indirect veto power in the HCS.

Does the mechanism underlying this hypothesis actually matter for the performance and achievement of the HCS? The bivariate correlations among indicators of HCS

achievement/efficiency and the environment variables given in table 11.2 above support the hypothesis only to some degree.

With regard to the political environment as the addressee of societal stakeholders, the number of parties in government does not matter for any of the achievement indicators. In the framework of the above explanatory approach, this finding indicates that the mere number of access points does not matter for operative health policy. It indicates further, that the number of parties in government, the number of actors who would have to agree on a efficiency increasing intervention or policy change matters neither for the individual components of achievement (input, outputs) nor for the efficiency of the HCS as a whole.

If there is an effect, it is originating from the number of stakeholders. While the number of stakeholders is closely related to the number of agents which directly received tasks, it differs from the latter in that it contains also stakeholders which are not making a living from the HCS, but like the associations of employers, have to bear a share of the financial burden.

Looking at the impact of stakeholders, which to some degree also reflects the degree of societal involvement in the operating of the HCS, the effects are not positive. In particular for the health output, more societal involvement goes together with lower achievement: lower life expectancy, higher infant mortality and more years of life lost. The number of medical fatalities is once more less affected, because it is an output attributable not to the overall organization of the HCS, but to the organization of the hospital sector. This “underachievement” on the output side affects the overall efficiency of the HCS, which is also substantially lower. The number of stakeholders does on the whole not matter for the input side, i.e. the level and dynamics of expenditure for health. The only effect noteworthy is a lower share of private funding in HCS where societal involvement is higher, this effect is however offset by higher rates of increase of this source of funding during the period under observation.

Interestingly, more stakeholders and more societal involvement in the HCS does not go together with increased responsiveness, but yields nevertheless a higher level of satisfaction. Taken together, one could conclude, that having a say is per se an aspect valued by the citizens, irrespective of the positive or negative effects of this. Because, more societal actors with a stake do not make the HCS any better, on the contrary.

Coming to the “indirect veto power”, as the combination of both environment variables, its effect on achievement and efficiency reflects mostly the difference on the societal side of the

HCS, and has very similar effects as the number of societal actors. There is no genuine value added in terms of explanatory power.

Summing up the evidence of the role of the political environment for the HCS, the three findings indicates, that if indirect veto power is actually used, it works by the mechanism that groups have established contacts to specific political veto players and use this contacts. The sheer number of formal veto players as potential points of access does not matter. It is sufficient for the societal actors to gain access to only one of the formal veto players to obstruct external interventions.

### *The Economic Environment*

Given the strong theoretical arguments about the role of wealth for the types of health outputs and the quantity of health services demanded by the public, it is of interest to look at how the HCS differ in their “performance” by levels of GDP. The starting point of this short excursus is the established finding, that GDP is the best and most stable predictor of health expenditure, see the review of the quantitative studies in section 2.2.1 above.

The mechanisms underlying this statistical relationship are however not that clear. There is a range of mechanisms presented, often with different consequences for different aspects of HCS achievement and efficiency, by which GDP affects the operation, the outputs and the efficiency of the health system.

For instance, richer countries may have better access to advanced technology and medication, which may, for technical reasons, be more efficient in producing health. In particular, because once the technology is available, the costs of each additional usage episode may be quite low. But apart from such technical issues, I would argue, that wealth changes the preferences of the citizens. Health production has diminishing returns, i.e. the production of an additional life year comes at higher prices if the level of life expectancy is already high. So, in terms of an input/output-based efficiency measure, HCS become ever more inefficient over time. More money is spent in addition to what is already spent, but that additional amount buys only little additional health. I have argued elsewhere, that in wealthy societies paying an ever higher price for the additional life years, makes still sense, because the GDP generated per capita in this country, as a rough indicator of the financial value of a life year in this country, is also high; see Kotzian (2006).

There is also a change in the expectations citizens hold with regard to the health system and its outputs. First, wealthier citizens are not willing to accept certain ailments and are willing to pay for the cure of conditions, which - while not critical - are an inconvenience. Second,

wealthier citizens demand other things, in addition to the health output, from the HCS, which also come at a price, namely responsiveness. More money is spent - not for producing “biological health”, but for producing responsiveness; see Kotzian (2003).

Looking at the health system’s economic environment, proxied by GDP per capita, and its effects on the performance indicators used in the present study reveals that this factor is clearly the most important for all aspects of the health system:

GDP has the strongest positive effect on health levels, not only on life expectancy, but on the other more refined health output indicators like medical fatalities. The mechanism may be that people in wealthier societies live longer anyway for reasons outside the HCS, but also that more resources are available to cure illnesses, if they occur.

GDP has the strongest effect of all explanatory factors used on the level of health expenditure, albeit not on the dynamics and not on the increase of HCE in relation to the GDP itself. With regard to the composition of health financing, wealthier societies spend more funds on health systems but tend to see the financing of health as a public task. The share of private funding decreases at higher levels of GDP. According to the findings, one can say that in the wake of economic development, health care is not privatized but on the contrary socialized, the share of private funding is lower and grows slower in wealthier societies.

GDP explains almost all variation in responsiveness, i.e. the more wealthy a country, the more responsiveness is produced by the country’s HCS. I would argue, that the underlying mechanisms is the change in the preferences: citizens demand this output, it is produced, and money is spent for it. This interpretation is supported by the finding that GDP and in particular responsiveness go together with higher levels of satisfaction, an effect which can also be supported using micro level data; see Kotzian (2003).

GDP, while increasing the output of a product which has nothing to do with health, actually increases the overall efficiency of the HCS, measured by the WHO1 indicator. Even if health care is bought at an ever higher price, this does not go together with lower productive efficiency. The WHO’s efficiency indicator used here is adapted for the increasing technical and medical difficulty of producing health in a situation where the health level is already high. So while it may seem that “health” is getting expensive, this is not actually the case, when the conditions under which it is produced are considered.

The finding is also interesting because the countries include in the study are all industrialized, with high levels of wealth. And even among this quite homogenous group, GDP explains much of the variation in the health system's input, output and the system's efficiency.

Moreover, the fact that GDP is trended indicates that certain developments are to be expected, in particular a change towards more production of beyond-health outputs.

## **11.2. Factors for Health System Achievement: Institutional Interplay**

A critical question is, whether the associations found when analyzing the bivariate correlations also hold, when the institutional variables are taken into account jointly, i.e. the overall institutional setting and with this, also the institutional interplay is included in the analyses. The effects found in the bivariate analyses might change because – while the institutional variables describing individual sectors are statistically independent by construction – there is a co-occurrence of certain combinations across sectors.

To compare the degree to which the individual institutional dimensions, respectively the institutional syndromes explain the differences in the levels of HCS achievement and efficiency, the empirical indicators of HCS output, input, as well as the efficiency were regressed on the sets of institutional variables. Wherever possible, all institutional variable were included, to avoid spurious effects due to omitted variables.

For each of the dependent variables, two regressions were conducted:

The first variant used as explanatory variables the individual institutional dimensions. The second variant used the institutional syndromes, as described in chapter 10 above, instead of the two institutional dimensions, on which each of the syndromes is based. Those institutional variables which are not combined into syndromes were also included. The specific question is, whether combining the institutional dimension in a way that is – according to the theory - more influential for the variable actually more influential.

The variables on the political environment (Parties in Government, PiG), the number of societal actors (SocActors), and the interaction effect among both, operationalized by the indirect veto power; IndVetoPower, were excluded in the regression for two reasons:

Firstly, because of the high correlation between the Agency, Societal Actors and the Indirect Veto Power variables. In a situation of a limited data base, 44 cases defined by country-year, a high correlation between several independent variable makes regression estimates instable. For instance, the effect of each of the three political environment variables may be small, while from the explained variance it is clear that there is an effect.

Secondly, neither of the three environment variables correlated to a noteworthy degree with any of the efficiency or achievement indicators in the bivariate analyses conducted in section 11.1.1 above. Regarding the influence of the political environment on the operation of the HCS, the evidence obtained so far indicates, that this influence is weak at best, and what



influence is observed, is due to the number of independent actors, agents, in the HCS, which is covered by the agency variable.

They will be included when the institutional change is analyzed, because they are, according to the model of institutional changes developed in this study, relevant as intervening variables for the occurrence of changes.

In the framework of the study, the effects are a preparation for the following chapter M, which will analyze the institutional changes. In order to derive the expected impact of a certain change on an institutional dimension, it is necessary to know, how a institutional dimension affects the levels of outputs, the consumption of inputs or system's efficiency, respectively, how the various achievement indicators are affected by the institutional variables.

Table 11.3a Institutional Determinants of Expenditure Levels and Dynamics

| Variable            | HCELevel |        | HCEAbsChange |        | HCE%Change |        | HCERelChange |        |
|---------------------|----------|--------|--------------|--------|------------|--------|--------------|--------|
| zpAgency1           | 0.118    |        | 0.327        |        | 0.444      |        | -0.107       |        |
| zpRemIncentives     | 0.113    |        | -0.140       |        | -0.498     |        | -0.146       |        |
| zpHospitalStatus1   | -0.175   |        | 0.076        |        | 0.223      |        | 0.105        |        |
| zpHospitalStatus2   | 0.277    |        | 0.058        |        | -0.274     |        | -0.283       |        |
| zpPurchaser1        | 0.119    |        | -0.160       |        | -0.113     |        | 0.017        |        |
| zpPurchaser2        | 0.175    |        | 0.233        |        | 0.239      |        | 0.092        |        |
| zpPatInvolvement'   | 0.255    | 0.353  | 0.207        | 0.196  | 0.154      | 0.032  | 0.123        | 0.163  |
| zpPharma1           | -0.091   | -0.068 | -0.193       | -0.243 | -0.003     | -0.085 | 0.106        | 0.130  |
| zpGovControl1       | -0.092   | -0.009 | 0.173        | 0.292  | 0.352      | 0.439  | 0.228        | 0.264  |
| zpAccess1           | -0.151   | 0.142  | 0.321        | 0.194  | 0.532      | 0.248  | 0.286        | 0.157  |
| zpFinControl1       | 0.076    |        | -0.150       |        | -0.204     |        | -0.093       |        |
| zpFinControl2       | 0.203    |        | 0.139        |        | -0.023     |        | 0.073        |        |
| zIncentiveProblem   |          | -0.018 |              | 0.043  |            | -0.154 |              | -0.272 |
| zPurchaserSyndrome  |          | 0.314  |              | 0.209  |            | 0.188  |              | 0.188  |
| zHospitalSyndrome   |          | 0.168  |              | -0.026 |            | -0.129 |              | -0.129 |
| zFinControlSyndrome |          | -0.166 |              | -0.092 |            | 0.051  |              | 0.042  |
| N                   | 44       | 44     | 44           | 44     | 44         | 44     | 44           | 44     |
| R2                  | 0.485    | 0.408  | 0.308        | 0.244  | 0.271      | 0.143  | 0.162        | 0.098  |

Remark:

Coefficients are beta-coefficients

Table 11.3a to 11.3c give the findings of the regression analyses, regressing the dependent variables covering the various types of HCS input, output, but also the efficiency of the HCS on the institutional dimensions as well as the institutional syndromes. The description of the findings will be based on the dependent variables, asking, which of the institutional

dimensions respectively the syndromes has – ceteris paribus – the strongest effect on each of the achievement indicators, respectively the strongest effect on the consumption of inputs or the overall efficiency of the system. The analysis will refer to the beta coefficients listed in the following table, and focus on the stable ones with the highest magnitude. As in the case of the bivariate correlations presented earlier on, there are on the whole next to no statistically significant effects, which is to be expected given the small number of cases.

Table 11.3a (continued)

|                     | PrivateLevel |        | PrivateDynamics |        |
|---------------------|--------------|--------|-----------------|--------|
| zpAgency1           | -0.320       |        | 0.017           |        |
| zpRemIncentives     | 0.787        |        | -0.322          |        |
| zpHospitalStatus1   | -0.280       |        | 0.184           |        |
| zpHospitalStatus2   | -0.634       |        | -0.036          |        |
| zpPurchaser1        | 0.546        |        | 0.071           |        |
| zpPurchaser2        | -0.498       |        | 0.035           |        |
| zpPatInvolvement1   | 0.132        | -0.011 | -0.286          | -0.363 |
| zpPharma1           | 0.061        | 0.182  | 0.120           | 0.021  |
| zpGovControl1       | -0.148       | 0.150  | 0.384           | 0.252  |
| zpAccess1           | -0.857       | 0.003  | 0.404           | 0.132  |
| zpFinControl1       | 0.037        |        | -0.009          |        |
| zpFinControl2       | 0.266        |        | -0.064          |        |
| zIncentiveProblem   |              | 0.005  |                 | 0.011  |
| zPurchaserSyndrome  |              | 0.236  |                 | -0.060 |
| zHospitalSyndrome   |              | -0.348 |                 | -0.007 |
| zFinControlSyndrome |              | 0.099  |                 | 0.029  |
| N                   | 42           | 42     | 42              | 42     |
| R2                  | 0.487        | 0.179  | 0.237           | 0.196  |

Remark:

Coefficients are beta-coefficients

Table 11.3b Impact of Institutional Factors on Health-Outputs

| Variable            | LifeExpectancy |        | InfantMortality |        | LifeYearsLost |        | MedFatalities |        |
|---------------------|----------------|--------|-----------------|--------|---------------|--------|---------------|--------|
| zpAgency1           | -0.617         |        | 0.594           |        | 0.758         |        | 0.085         |        |
| zpRemIncentives     | 0.892          |        | -0.362          |        | -0.772        |        | -0.458        |        |
| zpHospitalStatus1   | -0.035         |        | 0.005           |        | -0.128        |        | -0.014        |        |
| zpHospitalStatus2   | 0.340          |        | -0.215          |        | -0.316        |        | -0.537        |        |
| zpPurchaser1        | -0.234         |        | 0.038           |        | 0.256         |        | 0.228         |        |
| zpPurchaser2        | 0.159          |        | -0.193          |        | -0.314        |        | -0.467        |        |
| zpPatInvolvement1   | -0.002         | 0.297  | -0.098          | -0.417 | 0.062         | -0.254 | 0.392         | 0.123  |
| zpPharma1           | -0.222         | -0.032 | 0.236           | 0.067  | 0.309         | 0.071  | 0.329         | 0.229  |
| zpGovControl1       | -0.082         | -0.089 | 0.066           | 0.043  | -0.019        | 0.039  | -0.476        | -0.052 |
| zpAccess1           | -0.374         | -0.228 | -0.242          | -0.222 | -0.133        | -0.036 | 0.367         | 0.574  |
| zpQuality1          | 0.041          |        | -0.141          |        | 0.042         |        | -0.225        |        |
| zpQuality2          | 0.148          |        | 0.102           |        | -0.171        |        | 0.114         |        |
| zpFinControl1       | 0.104          |        | -0.207          |        | -0.239        |        | 0.017         |        |
| zpFinControl2       | 0.442          |        | -0.218          |        | -0.264        |        | 0.002         |        |
| zIncentiveProblem   |                | 0.209  |                 | 0.166  |               | -0.183 |               | -0.516 |
| zPurchaserSyndrome  |                | 0.111  |                 | -0.204 |               | -0.152 |               | 0.233  |
| zHospitalSyndrome   |                | 0.016  |                 | -0.059 |               | -0.057 |               | -0.124 |
| zFinControlSyndrome |                | -0.142 |                 | -0.022 |               | -0.029 |               | -0.087 |
| zQualitySyndrome    |                | 0.214  |                 | -0.304 |               | -0.283 |               | -0.124 |
| N                   | 44             | 44     | 44              | 44     | 41            | 41     | 38            | 38     |
| R2                  | 0.386          | 0.248  | 0.439           | 0.336  | 0.444         | 0.278  | 0.536         | 0.335  |

Remark: Coefficients are beta-coefficients

Table 11.3c Impact of Institutional Factors on Beyond-Health-Outputs and Efficiency

| Variable            | ResponIndex |        | Satisfaction |        | Efficiency |        |
|---------------------|-------------|--------|--------------|--------|------------|--------|
| zpAgency1           | 0.100       |        | -0.112       |        | -0.948     |        |
| zpRemIncentives     | 0.835       |        | -0.226       |        | 1.240      |        |
| zpHospitalStatus1   | 0.138       |        |              |        | -0.062     |        |
| zpHospitalStatus2   | 0.440       |        | 0.145        |        | 0.281      |        |
| zpPurchaser1        | -0.784      |        |              |        | -1.230     |        |
| zpPurchaser2        | 0.277       |        | 0.134        |        | -0.383     |        |
| zpPatInvolvement1   | 0.329       | 0.357  | 0.212        | 0.417  | -0.053     | 0.285  |
| zpPharma1           | -0.482      | -0.187 | -0.760       | -0.390 | -0.574     | -0.129 |
| zpGovControl1       | -0.457      | -0.077 | -0.291       | 0.886  | -0.409     | 0.234  |
| zpAccess1           | -0.286      | 0.013  | 0.591        | -0.042 | -0.067     | 0.316  |
| zpQuality1          | 0.066       |        | -0.528       |        | -0.085     |        |
| zpQuality2          | 0.585       |        | 0.110        |        | 0.371      |        |
| zpFinControl1       | 0.101       |        | 0.950        |        | 0.367      |        |
| zpFinControl2       | 0.353       |        |              |        | 0.608      |        |
| zIncentiveProblem   |             | 0.175  |              | -0.081 |            | -0.156 |
| zPurchaserSyndrome  |             | 0.405  |              | 1.376  |            | 0.105  |
| zHospitalSyndrome   |             | 0.238  |              | 0.332  |            | -0.209 |
| zFinControlSyndrome |             | -0.147 |              | -0.132 |            | 0.017  |
| zQualitySyndrome    |             | 0.157  |              | 0.134  |            | 0.345  |
| N                   | 22          | 22     | 16           | 16     | 22         | 22     |
| R2                  | 0.894       | 0.723  | 0.807        | 0.7    | 0.469      | 0.244  |

Remark: Coefficients are beta-coefficients

### *Level of Health Expenditure*

The level of HCE, see the leftmost column of table 11.3a, is strongest affected by the competition among hospitals, and the absence of the possibility of a sanctioning of providers by the purchasers.

Agency and remuneration incentives, which would be the factors the delegation approach would see as most relevant, are not among the major determinants of the HCE levels.

Putting hospitals under external control and limiting their autonomy reduces expenditure, while introducing competition among them goes together with higher costs. As was argued above, a requirement for competition in the hospital sector is that there are several hospitals for the patients to choose from which implies that there is a certain – costly – redundancy in the system. Looking at the coefficients, it seems, that the redundancy effect dominates the effect of competition.

HCE is also strongly influenced by patient involvement, albeit the causality most likely works the other way around: higher levels of expenditure lead to a higher involvement of patients as an additional source of funding.

Governmental control, i.e. the control of the HCS by an outside actor, who has the preferences of the electorate in mind, is of no effect on the level of HCE.

Access, the content of which encompasses both unrestrained access to secondary care and choice among several providers of secondary care, which is usually thought to be limiting the costs by assuring that care is obtained on the level where it can be produced at least costs, has no stable effect on the expenditure variable.

Financial control in the sense that the purchaser obtains information about what the provider has been doing in a certain case has no effect on the level of HCE. Information alone is not effective, if not combined with the power to sanction. In this regard, FinancialControl2 refers to a situation where high values indicate the absence of the possibility to sanction providers in the case of overspending, and has a strong effect on HCE, i.e. where the providers can be sanctioned in the case of overspending, the HCE tends to be lower.

Of the syndromes, only the purchaser syndrome, i.e. purchasers which can compete and are under competitive pressure, has an effect on HCE. The effect is an increasing one, which is straight against the prediction. One would have expected that a working competition among purchasers lowers HCE, but this is not the case.

### *Health Expenditure Development*

Apart from the level of HCE, its development – factually: its growth rate – is of interest to policy makers. Conceptually, the expenditure level might reflect a one-time decision, e.g. about the coverage of services, the financial consequences of which are a one-time increase of the HCE. Dynamics is a different aspect, because of its consequences for the future. From a fiscal politics viewpoint, a one time increase, coupled with a lower rate increase is more “controllable” and preferable to a low level of HCE associated with a high rate of growth.

Expenditure dynamics was captured using three related indicators, all of which use the growth of HCE in the years surrounding the point in time for which the institutional structure was surveyed: the change in HCE between the years 1993 to 1997 for the 1995 survey, and the change between 2002 to 2005 for the second survey in 2004. The implicit assumption is, that the institutional structure is associated or rather causally connected with the growth rate not only for the actual survey date but also for the period immediately around that date. Given the occurrence of changes, this is basically true. The HCS in the survey did not change, respectively not change fundamentally directly at the point of the survey time. Thus, the assumption is both justifiable and reasonable that the dynamics of expenditure increase for the period around the point in time is affected by the institutional setting at this point in time.

The growth of total health expenditure in absolute terms,  $dTHCE_{abs}$ , gives an illustrative hint about the amount of money which is going into the health system, i.e. the money which is available in addition to what was available a few years before. It has to be kept in mind, that the indicator “absolute change” is biased in the sense that a HCS, in which the level of HCE is already very high, the absolute changes tend to be higher too, while they won’t necessarily be perceived as a problem by the public or health policy makers.

The dynamics of health expenditure in absolute terms is primarily affected by two of the institutional variables: the degree of agency and the degree of access granted in the HCS, both of which increase the absolute growth.

The effect of agency is in line with the argument of the delegation approach: independent providers tend to cause higher costs. However, the negative coefficient found for the remuneration incentives clearly contradicts this argument.

For access, the argument would be that the overall technological development, in particular the trend towards more sophisticated and more expensive treatments and diagnostics – which is a major driver of HCE, see Newhouse (1992), Okunade/Murthy (2002) and Moise (2003) – has a larger impact on the costs and the dynamics of costs, if the access to these treatments is

more freely granted. Limiting access to sophisticated care by installing a gatekeeper who decides about the necessity of a certain advanced treatment in any given case may hold the costs in check. The coefficient found seems to confirm the mechanisms.

The degree of control exercised over pharmaceutical sales slows down the growth of HCE. The underlying argument may be similar to the role of innovation in medical technology which is arguably underlying the effect of “Access”. New medicines are usually significantly more expensive, but the improvement compared to existing ones is not always of a magnitude which justifies this mark up. Thus, limiting the usage of new medicines may have a stabilizing effect on HCE, i.e. lowers the rate of expenditure growth.

Contrary to the argument about the role of the government as an actor from the outside who holds the actors running the HCS, all of which share the interest in a constant growth of HCE, in check, high levels of governmental control actually increases HCE growth. The argument may be that in many of the transformation countries, e.g. the Czech Republic, Hungary or Poland, governmental control was (and often still is) high but the HCS was vested with more resources during the post-transformation period.

Patient involvement has a stable and increasing effect on HCE. But again, the effect of patient involvement raises the question about the direction of causality: higher levels of patient involvement may allow higher levels of HCE and higher growth rates, but the levels of HCE and the growth rates are not actually caused by the patient involvement. Rather, and this is in line with the circumstance under which patient involvement is introduced, it is the other way around: the patients are involved, because more funding is needed.

Of the institutional syndromes, only the purchaser syndrome has a noteworthy effect, but as with the level of HCE in the previous paragraph, the direction is contrary to the expectation. As already the coefficients found for the two underlying dimensions indicated, installing the preconditions for an effective competition on the demand side does not slow down the growth rate of HCE. An argument may be that competition requires several purchasers, which implies that functions are doubled and administrative economies of scale remain unrealized. If in this situation, the multiplicity of purchasers is not supplemented by an incentive for them to actually engage in competition, the net effect will be that the redundancy will predominate.

The percentage change of HCE,  $dTHCE_{per}$ , indicates the magnitude of the growth of resources consumed in a more comparable way. The results obtained are roughly comparable to those obtained the absolute change and there are four effects of substantial magnitude.

Agency increases the rate of expenditure growth, while the prevalence of remuneration incentives decreases it. Both observations taken together casts serious doubt about the mechanism which is presumed to be underlying the relationship between the provision and remuneration of services on the one hand and health expenditure on the other. The absence of a stable coefficient for the IncentiveProblem casts further doubt. Again, access has an increasing effect on the dynamics, and the same is true for governmental control. HCS, in which the government has substantial influence, tend to show higher growth rates than HCS which are more autonomous from outside, or rather: political influence.

Introducing elements of competition among purchasers does not contain the growth of expenditure, but on the contrary rather tends to increase it. Granting hospitals autonomy also increases expenditure dynamics, while competition among hospitals decreases it – the hospital syndrome as the “optimal” combination has only a rather weak effect. Similar to the results obtained for the absolute change in HCE, institutional syndromes are only of minor relevance for the dynamics of HCE, apart from the purchaser syndrome, which just as was the case for absolute growth, tends to induce higher percentual growth rates of HCE.

The indicator of relative growth of total expenditure for health – proxied by the development of HCE in relation to GDP,  $dTHCE_{rel}$  – was included in order to get an impression whether the financial development of the HCS got out of hand or not. In most countries, the development of HCE – that is to say: the universal and one-way trend towards more expenditure – is tolerated, if the increase in HCE is proportional to the development of GDP. There is not actually a stringent argument why more money should be spend just because more money is available for spending - the very finding that this obviously happens indicates that health is a luxury rather than a necessity. However, even if quantities and types of services are left out, the public and the political debates about health expenditure argue for instance, that because incomes of the persons working in the HCS are roughly related to the GDP, an increase of HCE in the magnitude of the increase of GDP is to be expected and also tolerable. If the share of HCE relative to the GDP increases disproportional, this tolerance comes to an end. Indeed, looking at the context of health reforms, one can say that as long as the rates of economic growth were quite high and stable, the development of HCE was perceived as a minor concern. HCE growth came into focus, and was seen as a problem, as the rates of economic growth decreases and became much less stable.

Compared to the analyses of indicators of expenditure dynamics, there are fewer noteworthy effects. Or rather, the institutional variables on the whole exert a weaker effect. A finding which is also due to the fact that the dependent variable is a mix of two factors, namely the development of the HCE and the development of the economy, i.e. of GDP. As for the findings, they are comparable to the findings regarding the other two dynamic indicators: Granting free access to secondary care accelerates the relative dynamics of HCE growth, hospital autonomy does so too, while hospital competition slows it down. Governmental control increases it, and of the syndromes, only the incentive problem matters, albeit here too, in an unexpected way, because it decreases the relative growth rate.

### *Private Expenditure for Health Care*

Just as total HCE, private funding for health care has two aspects, a static one, i.e. the level of private funding, and a dynamic one, i.e. the development of private funding over time.

The static aspect results from a one-time decision about what shall be funded by private contributions, e.g. by supplementary insurance or out-of-pocket payments. The decision is also a very basic political or rather ideological one in that it determines the border between solidarity and personal responsibility in the country's HCS. Some countries have traditionally a smaller catalogue of services covered from the "common pool". Indeed, some, as the US, seemingly have no common pool at all. As chapter 12 will show, the decision is a stable one: many countries have not altered the basic decision, what is to be paid for "from the common pool" and what is paid for privately. But many countries have increased the level of private contributions within the basic decision made earlier on. An instance of this are cases where there were always co-payments, but the level of each co-payment is now higher than it was earlier on. A possible exemption is the handling of so called "alternative treatments" like homeopathy, which are not covered in this study.

The dynamic aspect reflects, at least to some degree, the tendency of health policy makers to pass on the burden of growing HCE to the patients, by either extending or intensifying the latter's involvement.

The questions underlying the two regression analyses discussed in this section are: are there institutional settings which induce higher shares of private HCE? And, are there institutional settings which induce higher rates of growth of the private HCE? A hypothesis implicit to many studies on private funding is that private funding is introduced respectively increased as an additional source of funding. If the state, confronted with the problem of raising costs, is not (or no longer) willing to pay for certain services, be it because the service in question is



seen as a luxury or is of uncertain effectiveness, the services are excluded from public coverage and are left to be purchased and paid for by the patients themselves. Looking at the practice of how private funding is organized, one sees that the funding is done most often via a supplementary insurance rather than out-of-pocket. This again separates payment from consumption. At least in the short run, because the patients pay not the price of each service, but pay a premium, which is independent from the short term consumption. So, while the argument is that involving patients in payment introduces the price mechanism and limits consumption to what is cost effective, the way this strategy is implemented is a mere opening up new sources of funding. Involving patients is thus, in practice, not as a measure of overall cost containment, but as a measure to contain the public share of the costs.

With regard to the share of private funding (measured as the percentage share of private funding of the total expenditure for health on a \$PPP per capita basis), there are a number of strong institutional effects:

First of all, agency does in fact reduce the level of private funding. On the other hand, the prevalence of remuneration incentives which increasing the quantity of care are a very strong factor for the private share of HCE, increasing it substantially. Probably indicating that a part of the increase in the quantity of services - which are provided because of the incentive arising from quantity based remuneration modes - is financed by private payments. And, because agency does matter much less, this mechanism is seemingly independent of the status of the providers.

Installing competition between autonomous hospitals decreases private funding substantially, and the same is true for the hospital syndrome.

Autonomous purchasers go together with higher levels of private funding, while competition among them reduces this kind of financing. A possible interpretation is, that the purchasers compete by including services into their coverage which would otherwise be covered by private funding. The effect for the purchaser syndrome is weak when compared to the two institutional dimensions on which it is based.

Interestingly, patient involvement is of little relevance for the level of private funding. This feature does, as was found in chapter 10 above, not primarily concern elements of the HCS' service catalogue which are excluded in almost all countries, such as dental care and medicines. Instead, it concerns how the patients are involved in the payment and the funding of basic care, e.g. visits to GPs or specialists. It is also more of a qualitative measure, indicating in which sectors the patients are involved, either by co-payments or by cost-

reimbursement. It is not a quantitative measure indicating the magnitude of the co-payments. A consequence is that knowing in how many domains the patients has to make co-payments does not tell us something about how large an amount of the funding is raised by this mean. There are systems, in which there are few sectors with patient-involvement, and high levels of private funding, but also systems with similar involvement, where the level of private funding is low.

Interestingly, the control exerted over pharmaceutical sales does not matter for the level of private funding, a finding which may indicate that the savings realized by this form of regulatory intervention relieves the public sources of financing and are not realized as savings by the patients.

Freedom of access to secondary care is not financed from private funding. On the contrary, systems in which access to specialized care is granted freely are also systems, in which the level of private funding is comparatively low. This is contrary to the expectation, because access is most often controlled for in public integrated systems, for which the basic assumption is that they are funded from public sources, e.g. general taxation. Governmental control has no substantial effect on the share of private health funding.

The dynamics of private funding is operationalized by the percentage increase of the private financing (measured in \$PPP per Capita) during the years 1990 to 1995 and 2000 to 2004. Again, the assumption is that the institutional setting, which was more or less stable during these 5-year intervals, affects the dynamics by which the patients are burdened with the costs of health care consumption. The set of factors relevant for the development of private funding are different from the factors relevant for the level of private funding. And, basically, only two factors matter.

Remuneration incentives for increasing the quantity of care have a negative coefficient, i.e. in systems where such incentives are in place, the level of private funding grows slower. In systems, where patient involvement is high, the growth of the private share tends to be lower. The effect might be an artifact, due to the effect that the growth measured in percentages is smaller if the level of private funding is already high in absolute terms.

Governmental control increases the rate by which the HCS is funded from private contributions. According to this finding, HCS characterized by more governmental control are also relying progressively on private funding as an additional source of funding. This effect may however be due to lower levels of private involvement in public integrated systems at the

time of the first survey, where even small increases in the absolute magnitude of private funding are a significant share on a percentage basis.

None of the institutional syndromes matters for the development of private funding. Overall, the explanatory power of the institutional variables used is very low, accounting only for about 20 % of the variation.

### *Health Outputs*

Regarding the health outputs, the quality syndrome was included as an additional factor of potential relevance. Because the hypotheses of the delegation approach for the health outputs are not as strong, as for the expenditure, the findings presented in the following do not suggest an incentive based causal mechanism which is as clear cut as for the expenditure related performance indicators. The delegation based explanations of the findings is thus weaker than above. As for the validity, it has to be remarked once more that of the four indicators of health output used, life expectancy is the least valid one. As was elaborated in chapter 9 above, life expectancy is an often used, but questionable indicator of health system “performance”. Even in industrialized countries levels of life expectancy are influenced by range of factors outside of the HCS, such as life style, road safety or the incidence of suicide.

Life expectancy is strongly affected by four institutional factors: the first and strongest one the level of remuneration incentives, which goes together with higher levels of life expectancy. Agency, lowers life expectancy, and the access to secondary care also diminishes life expectancy. Competition among hospitals on the other hand increases life expectancy. Of the organizational features the possibility of the purchaser to sanction overspending providers of services reduces life expectancy. Taken together one could surmise that the higher quantity of services, which is provided for the reason that it is also a mean of the providers to increase their income, is not completely wasted, but increases life expectancy. The positive effect of competition among hospitals indicates that hospitals which have to compete for clients increases the quality of the services provided, which is beneficial for life expectancy. As the following paragraphs will show, this mechanism holds true for all four health output indicators.

Of the institutional syndromes, the incentive problem shows a weakly increasing effect, a possible indication that providing many services might have an effect on health status. The quality syndrome also increases this health output, while the individual quality dimensions do not.

In the case of infant mortality, as well as the other two mortality based indicators, negative coefficients indicate a beneficial effect of an institutional variable on the health output (defined as avoided loss of life and health).

Infant mortality is seen in the methodical debate on health system outputs as a more valid indicator, because it is, in principle, avoidable if the medical care before, during and after birth is appropriate.

As was found in the case of life expectancy, the degree of agency has an adverse effect on this health output. More agency strongly increases infant mortality. On the other hand, the presence of remuneration incentives which stimulate an increased supply of services reduces infant mortality, albeit the effect is less strong than that of agency. The direction of the effect is in line with the incentive based reasoning: if there is in general an incentive to provide more services respectively more consultations the providers will respond with providing more and also more sophisticated services and diagnostics. A pregnancy is – in this perspective – an opportunity to provide intensive care, which also will be demanded by the mother-to-be. All of this, more diagnostics, more services, and more consultations, presumably have a positive effect on this particular health output.

Just as one would expect, granting access to specialized care affects infant mortality beneficial, i.e. less constrained access to specialized care leads to lower rates of infant mortality. The mechanism suggesting itself is that granting access to specialized care, in this case to gynaecologists, is an important factor for infant mortality. If this mechanism holds true, it would put cost saving efforts based on a shift of medical care during pregnancy from the specialists to GPs, in a critical light.

However, strong effects are also found for pharmaceutical control, which increases infant mortality, and both indicators of financial control, both decreasing infant mortality. Again the mechanisms underlying both relationships are unclear.

Of the syndromes, the purchaser syndrome has to some degree a positive effect, but the quality syndrome has the only noteworthy effect on this health system output, which is higher, if quality is organized in a stricter way. Given the coefficients found for remuneration incentives, one would have expected a stronger effect for the incentive problem.

The net number of potential life years lost in a country is an indicator of the health output the HCS fails to produce. By construction, the indicator is the number of those years of life lost

for people with less than 70 years of age, which are not lost due to “external” reasons such as accidents and suicide. The figure is standardized per 100.000 citizens. While the figure still contains losses of life years which are unrelated to the HCS, the correction for external causes leaves within the residual number of life years lost a higher share of life years which are lost due to illnesses and medical reasons, i.e. factors the HCS could tackle, if it works properly.

The indicator is affected by the institutional variables in a similar way as the infant mortality and the life expectancy. Agency increases the figure substantially, while the incentives to provide more medical services decreases the figure, also substantially. Competition among purchasers as well as among hospitals reduces the loss of life years.

Further noteworthy effects are found for pharmaceutical controls. The more pharmaceutical consumption is constrained, i.e. by limiting consumption and by fostering the usage of generics, the more years of life are lost. Given that in particular the usage of generics has no reputation for adverse effects, this finding is surprising.

Of the institutional syndromes, the incentive problem affects this output positively, but only slightly, while the quality syndrome again has a strong and positive effect on this output.

The incidence of medical fatalities during medical treatment, again measured in life years lost due to this specific reason and standardized per 100.000 citizens, shows a slightly different pattern. The difference in the pattern is likely due to the fact that such fatalities are more likely to occur in hospitals than outside, because the interventions conducted in hospitals are more severe.

This particularity might be the reason that the degree of agency, which reflects the organization of out-patient care, does not affect this output. Hospitals are in public ownership in all countries (apart from Belgium), and thus this feature does not vary over the countries and does not induce variation in the level of agency.

Competition among hospitals substantially lowers the incidence of such fatalities, and the mechanism might work as follows: existence of competition in the in-patient sector implies that citizens can choose among hospitals to some degree. If there is choice, the patients themselves or the GPs advising them, are likely to base the decision on the hospital’s reputation. Thus, the reputation of a hospital has an effect on the number of patients treated and thus also on the institutional survival of the hospital. This may create an incentive to engage in assuring quality, which lowers the incidence of medical fatalities. While this sounds convincing, the finding that giving patients free access and also choice in consuming secondary care increases the number of medical fatalities clearly contradicts this mechanism.

Higher incentives to provide more services decrease the incidence of medical fatalities, and the same is true for a stronger role of the government in the HCS. Given that the remuneration incentives also mostly refer to out-patient care, this effect is to some degree contradictory with the finding that agency has no effect. With respect to the organization of the demand side, the beneficial effect of competing purchasers has to be noted.

Of the institutional syndromes, the incentive problem and the quality syndrome are both influential, both with a positive effect on the health output. The purchaser syndrome however has, according to the data, an adverse effect on this output.

To summarize the stable effects of institutional structures on health outputs, agency per se usually lowers health output, while remuneration-based incentives to provide more services, competition respectively patient's choice among hospitals and the quality syndrome increase the levels of health outputs produced by the HCS.

### *Beyond Health Outputs*

The indicators of beyond health outputs are first the responsiveness of the HCS (measured by the WHO's score of responsiveness, which is in turn based on aspects such as access, support, information and also amenities while receiving health care) and second, the satisfaction of citizens with their HCS (measured directly in public-opinion surveys).

The variation in the levels of responsiveness can be explained very well by the different institutional settings of the HCS.

On the supply side of health care, agency per se does not matter for responsiveness, i.e. there is no evidence that employed providers are less responsive to the patients than are self-employed providers. However, the difference between public-integrated type systems and other types of health systems comes into play when the remuneration incentives are considered: these are to some degree, albeit not perfectly, correlated with the occupational status, which is one of the defining criteria for a public-integrated system. Self-employed providers are remunerated by a quantity-base remuneration mode more often, and this, not their employment status, is the actual reason why they are more responsive. So, irrespective of the occupational status, a remuneration mode which sets an incentive to provide more services increases the responsiveness of the HCS. Possibly indicating that responsiveness also means to show some effort, to do something in response to the patient's complaints about her state of health.

Hospital competition, which implies the possibility of choice among hospitals, also increases the responsiveness. The prediction on the relationship between access and responsiveness clearly would have been that having free access and choice is one of the main components of responsiveness. But, as can be seen from the weak and negative coefficient of access, the data is contradicting this interpretation.

On the demand side, autonomous purchasers reduce the responsiveness and the magnitude of this effect is not compensated for by the competition among purchasers, which makes the system slightly more responsive. However, taken together, the effective competition defined by autonomous purchasers which are under competitive pressure, increases the responsiveness of the system, see the beta-coefficient for the PurchaserSyndrome. It has to be remarked that the responsiveness of the health system, as measured by the WHO's indicator, is not directly under the control of the purchasers. It covers issues as diverse as prompt attention, amenabilities during the treatment etc, which are properties of the supply-side of health care. If the purchasers want to increase the responsiveness, they must address the providers themselves, who in turn are in direct contact with the patients.

Governmental control as well as the constraints on pharmaceutical consumption are lowering the responsiveness. An interesting point is that measures to enforce quality, proxied by the Quality2 indicator, also lead to higher responsiveness, while they factually aim at constraining what the provider of medical services can do, and how the provider can respond to the patient's wishes about therapy. The patient might wish to obtain certain treatments, which are no longer "allowed" under the current quality regime. The provider would then have to deny these services to the patients, which is a clear-cut case of being un-responsive. The effect of the quality control is thus difficult to explain.

Satisfaction is the second and much more "subjective" beyond-health output of a HCS. Because of the limited availability of data for this variable, which is compiled from surveys (see in particular Blendon et al. 1990), the number of explanatory variable had to be reduced, using only those variables which yielded the strongest effects.

Neither the basic organizational form of the supply side (agency and remuneration incentives) nor the basic organizational form of the demand side (purchaser autonomy and competition) seem to matter for satisfaction.

Instead, satisfaction is strongly decreased by a comparatively peripheral feature, namely the intensity of pharmaceutical regulations, a finding which is likely to be due to the fact that it is a regulation which immediately concerns the citizens in the form of medicines which are no

longer funded (in the case of measures promoting the usage of generics) or no longer provided free of charge (in the case of cost control by co-payments or exclusion from coverage).

Granting free access and choice of secondary care is a strong factor which increases satisfaction, a finding which is in line with the strong preference of citizens for having a choice in health care consumption.

The quality dimension which covers the creation and propagation of guidelines, which in turn factually aim at influencing what medical services the provider can offer to the patients, reduce the satisfaction. The effect may be due to the mechanism, that the provider cannot deliver certain services, which the patient would like to obtain, because the guidelines preclude this service as inappropriate or not cost-effective. This finding is in clear contradiction to the finding made in the above analysis of responsiveness, where quality enforcement was found to increase the responsiveness, while the existence and propagation of guidelines alone had no effect.

Of the syndromes, only the “PurchaserSyndrome” has an effect, and a substantial one at that. An effective competition among autonomous purchasers, with the free choice of the purchasers, strongly increases satisfaction of the citizens. This is also a rather counter-intuitive result, because one would assume that the satisfaction with the HCS is primarily defined by the patient’s contact with the supply side, not by the administrative side of the HCS.

All results for this output have to be seen subject to the caveat that the number of countries covered by surveys on satisfaction with health care is rather small.

### *Health System Efficiency*

The “WHO1” efficiency score used as an efficiency measure indicates whether the HCS produces to the fullest possible extent the life years which can possibly produced by the input consumed; see WHO (2000) and chapter 9. The score reflects, whether the health output level is as high, as it could be, given the input levels used. The health output level is corrected for the Minimum Health Outcome, i.e. the level of life expectancy one would observe in the country even in the absence of a HCS and which is thus considered to be attributable to factors like living standards and the like. The study by the WHO describes the situation in the year 1997, so the data is available for only the first wave of the survey. High values indicate high levels of productive efficiency, i.e. that the HCS is very close to what can be achieved with the input available.



Two institutional variables stand out as the main determinants of efficiency. Interestingly they represent the supply and the demand side of the HCS.

The incentive to oversupply services, *RemunerationIncentives*, does not reduce the efficiency of the HCS, while the autonomy of purchasers does. Just as it was the case with many other outputs analyzed in this chapter, the effect of agency is opposed to the effect of the remuneration incentives, and in this case, agency per se reduces the efficiency. None of the syndromes, not even the *IncentiveProblem*, has an effect of comparable magnitude. Only the *QualitySyndrome* exerts a positive effect on efficiency, albeit weak.

### *Comparing Explanatory Power*

How well do the different versions (institutional dimensions vs. institutional syndromes) explain the variation in the achievement and efficiency variables? The bottommost rows in tables 11.3a to 11.3c give the  $R^2$ , the share of variation in the dependent variable explained by the different regressions. The resulting overall picture shows consistently certain features:

1) The individual institutional dimensions explain variation much better than the institutional syndromes. Using fewer variables, i.e. the combined syndromes, might be a more parsimonious explanation, and the values for the adjusted  $R^2$  (not reported in the table) are supporting this. But using the institutional syndromes is clearly not sufficient to account for the variation in the dependent variables on health system “performance”. The explained variation is only of about half the magnitude for the individual dimensions.

2) The degree to which variation in the different dependent variables can be explained differs substantially: It ranges from 10% in the case of the increase of HCE relative to the development of GDP; *dTHCE\_rel*, as the least explained variable to 90% in the case of responsiveness, as the best explained variable. Differences in the health outputs can explained quite well: for all four output indicators, about half or more of the variation can be accounted for by including the institutional setting. Differences in the level of responsiveness as the primary beyond-health output can be explained almost completely by the institutional setting of the HCS. The explanation of the levels of satisfaction has to be considered with care, because of the few cases for which data on the dependent variable is available. Efficiency can also be explained quite well, more than half of the variation can be accounted for by institutional dimensions.

## **12. Direction, Magnitude and Causes of Institutional Changes**

The analysis of institutional changes in HCS will proceed analogous to the previous two chapters. First, the institutional setting in the 22 HCS included in the study will be compared descriptively between 1995 and 2004, commenting on the changes observable. The descriptive section will also cover the measurement of changes, their direction and magnitude. The analytical section will be looking into the reasons of the overall institutional change.

### **12.1. Description of Institutional Changes**

The first task consists of measuring institutional change. As described in chapter K, the latent dimensions were obtained using the institutional setting of the 22 HCS in both years as input data in the data reduction procedure. Thus for each case - which is the institutional setting of a country in a year - a position in the latent institutional space was obtained. This approach has the advantage of allowing direct comparisons between countries and also of both points in time. Looking at the coordinates of a country, one can immediately answer the two descriptive questions: Did one country introduce more substantial change than another country? And: In what direction did the HCS change? Did all countries change in the same direction, so one could say there is an uniform trend in health reforms? Looking at the cases studies on reforms, one might expect that more elements of competition were introduced.

So the description of the changes uses the latent institutional dimensions and their content, as these were derived in chapter 10 above.

With regard to the interpretation of the changes, it must be remarked that because the institutional dimensions were calculated on a sectorial basis, one cannot compare the degree of changes between the dimensions in the sense of "The change on the Agency dimension is more important than the change on the Hospital Status dimension". Nor can one say that a change of 0.5 on the "RemunerationIncentives" dimension is a more substantial change than a change of .25 on the "FinancialControl" dimension. What one can say is that for instance the Netherlands has increased the involvement of patients in the payment of provider four times as much as Switzerland; see table 12.1 below.

To evaluate the impact of the institutional change occurring in a country, the direction and the magnitude of the change on a certain dimension must be combined with the effect of the dimension as given in chapter 11.

### *Change on Institutional Dimensions*

Institutional changes are illustrated in the following figures by giving the location of the HCS in the institutional space for both, 1995 and 2004. It is noteworthy that throughout the sample and the sectors covered, the institutional stability is relatively high. There are some sectors, where many things, many individual institutional regulations changed, and moreover did so in many countries. Consequentially, some countries moved quite a distance in the institutional space. In other sectors, there are no changes at all. For the sake of clarity, the following figures only include those countries, where changes occurred.

Figure 12.1 Changes in Agency and Incentives

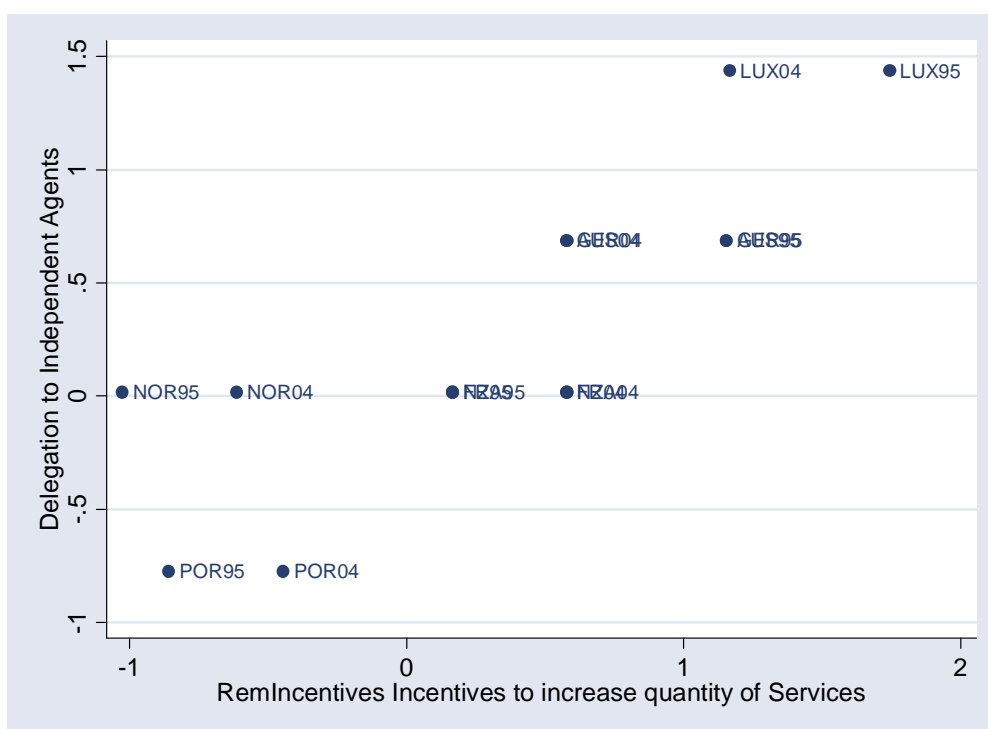


Figure 12.1 above plots the changes on the agency dimensions by changes in the remuneration modes. The first observation is, that there are no changes in the agency. In none of the 22 countries, a task which was previously predominantly integrated in the public administration was delegated to independent, self-employed actors. There are however cases, in which the predominance of a certain mode of provision increased, because the remaining employed providers opted for self-employment, e.g. in some of the transformation countries. Nor were tasks integrated in the public administration, which were up to then delegated. This is in itself an important point, because agency is one of the most crucial and defining factors for the

classification of the HCS. So at the most basic level, the organization of the HCS studied remained stable during the observation period. Apart from the organizational principle, it also implies that the number of system internal stakeholders, understood as the number of societal actors involved in running the HCS, remained stable. The changes observable in the following are thus more like changes within structures than changes of structures.

What is observable in figure 12.1 is a change in the remuneration modes and thereby in the incentives set by the remuneration modes. All the changes in this sector, the connection between the quantity of services and the income, and thus the incentive to increase the former for the sake of the latter, was reduced. The magnitude of all changes is also similar, indicating that usually, only one incentive was removed, or in other cases like Luxembourg introduced. Often, the change concerned the introduction of DRG and other case-based remuneration modes in the hospital sector.

Figure 12.2 Changes in Purchaser Autonomy and Competition



Regarding the role of the purchasers, the two latent institutional dimensions as identified in chapter 10 above are autonomy of and competition between the purchases. Can the purchasers, whatever their organizational character (in particular regarding formal independence and formal status) autonomously make decisions relevant for their relationship with the citizens and are the purchasers in a situation, in which they have to compete among

each other for clients (citizens insured with them or citizens living in the purchaser's catchment area). Figure 12.2 gives the changes in both institutional dimensions.

In France, the formally independent mandatory Health Insurance Funds are under close supervision of the state, and many decisions concerning the relationship between the HIF and the insured are made by political actors. The HIF can neither decide on the usage of a surplus, nor decide on the contribution rates. These are formally set by act of parliament and it is also the state which decides on the usage of surpluses, while also standing in for deficits. Further, the citizens were and still are assigned to the HIFs based on their occupation, having only little choice. The lack of choice among HIFs is complemented by a lack of reasons for a choice: Medical catalogues are not allowed to differ in terms of the core services but they may differ in respect to "optional" services, like coverage of homeopathy or spa treatments. The main change is that the contributions to the HIF differed among HIFs in 1995, but are no longer allowed to do so in 2004. So even if in 1995 there was at least an incentive to change the HIF, this incentive was removed by now. HIF autonomy and the level of competition between HIFs are and were low.

In Germany, the levels of autonomy and competition among the HIF, the "sickness funds", was and still is very high. The members of the HIFs decide on the top-level administration by elections, the HIF can single-handedly decide, with reference to the economic situation of the fund, on the level of contributions, and also decide on the usage of the surplus. The latter can, within limits set by the law, be used to bolster the reserves, to lower the contribution rates, or to equalize deficits. The state has little say in what the HIFs do. The German Social Insurance Law as it is, leaves many options for the HIFs. There is no defined catalogue in the sense of an enumeration of services, and the degree to which the HIFs are differing in coverage, for instance by excluding some of the more "optional" treatments (e.g. spa treatments, "alternative" treatments) is increasing. The main change in the demand side of the German HCS was the introduction of free choice among the HIFs. Up to 1996, only the white-collar employees were allowed to change the HIF; usually by leaving the regional branch of the General Sickness Fund, AOK, and becoming member with the General Employees Fund.

In Norway, the purchasers were and still are the county councils and the municipalities. However, the role of the central government increased, reducing both the leeway of the local purchasers to make autonomous decisions and the degree to which they differ in what they can offer to clients, and thus the degree to which they differ in attractiveness from the perspective of the clients. Because the assignment to a purchaser is based on the place of living, changing the purchaser can only be done by moving into another area. A fact, which in

itself limits the competition the purchasers are confronted with, because it is a step which forces the citizen to consider many aspects and consequences (working place, access to schools, etc), not only the health care.

In New Zealand, the purchasers are the Regional respectively District Health Boards, which were and still are under close control of the central government – a fact, which shows up in the low level of purchaser autonomy. Citizens are “assigned” to the DHB of the district they are living in, a fact which makes it costly to change the purchaser. Purchasers are now somewhat more autonomous, for instance they have to bear and equalize deficits, which were formerly covered by the central government. But even back in 1995, the purchasers differed substantially in what services they factually offered, in particular in terms of availability and waiting times.

Poland also reduced the autonomy and the competition among purchasers. As a residual of communist times, the municipalities and regions were still in charge of providing health care in 1995, and they differed somewhat in how well they managed to do the job, also because of local situation (urban vs. rural areas). In 2004, a single National Health Insurance Fund was created, which on the one side has a monopoly, but on the other side is under governmental control.

In Switzerland, the citizens have more choice now, but the reasons to change the HIF were removed too. By 2004, HIFs no longer differed in the contribution levels or the catalogues, as it was the case back in 1995. Regarding the autonomy, this was and still is high. The HIFs can decide on the top-level administration, the usage of the surplus (usually by putting it into the reserves), but are also forced to cope with deficits (usually by covering it with reserves).

Figure 12.3 Changes in Hospital Status and Competition

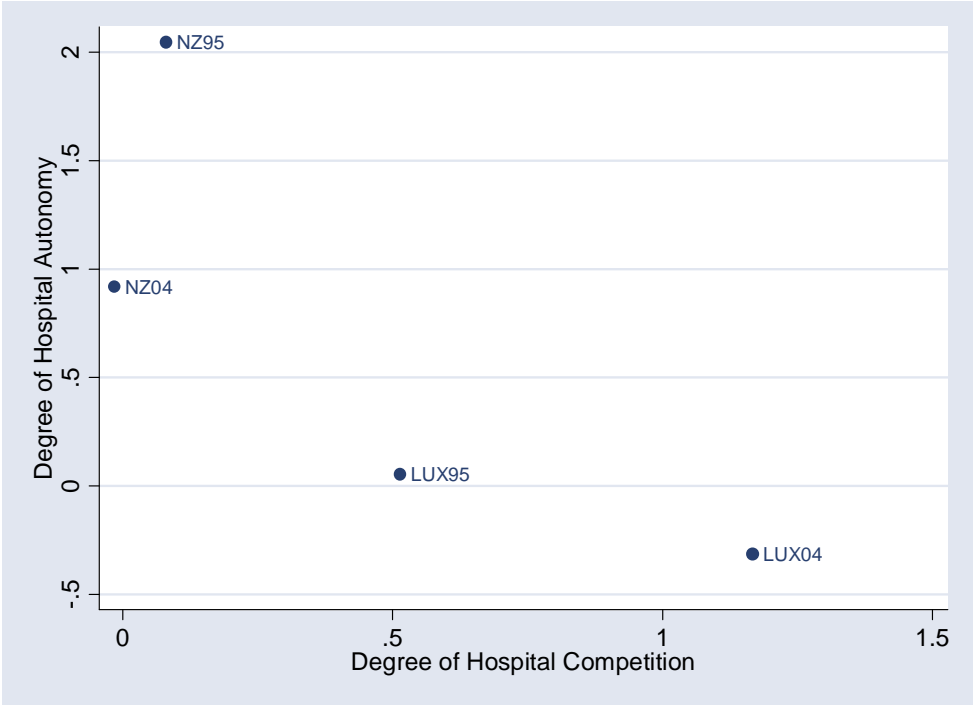


Figure 12.3 illustrates the institutional changes in the hospital sector for the observation period and the variables which were used in this study to describe the organization of the hospital sector. Only in two of twenty two countries, there were changes regarding the hospital status and the degree to which the hospitals can compete for clients, namely in New Zealand and in Luxembourg. It has to be kept in mind, that this is not to say that there was no change in the other twenty country, it only means, that there were no changes in terms of the organization of delegation.

In Luxembourg the national government has gained more influence on investments in medical technology and equipment. In 1995 only major investments in medical equipment required the government’s approval, and the hospital had substantial leeway regarding what it could purchase.

Regarding the competition among hospitals, Luxembourg was characterized by factually free choice among hospitals already back in 1995. But the competition was stimulated by the Ministry of Health, which is now issuing lists of what services can be obtained where. But of more importance is that the hospital treatment costs differ now, at least from the perspective of the purchaser. In 1995, the main source of hospital financing was a per diem, which was identical for all hospitals. While the per diems were complemented by extra charges for services, the major share of hospital funding came in the form of per diems. Now, in 2004, the

remuneration has the form of a prospective budget, negotiated between the individual hospital and the Association of Health Insurance Funds, UCM. Because the budget is of different size for each hospital, the hospitals are more or less expensive from the perspective of the UCM, and it matters at least for the UCM, where treatment is obtained.

New Zealand also changed its hospital system, and quite strongly so. Deficits are no longer covered by default but are loans, which have to be repaid in the future. In 1995, hospitals could invest surpluses in medical equipment without having to obtain outside approval. In 2004, this was no longer possible. Instead, the central government has acquired substantial influence on what equipment is available and where: Now, the government controlled District Health Board operating the hospital, decides in agreement with the central government about investment decisions, in order to avoid expensive redundancies. Regarding competition, the choice between different hospitals was and still is, limited. Hospitals are factually not competing, but have their assigned catchment areas. Patients are referred to the hospital which is in charge of the region they are living in. The costs of hospital treatment differed in 1995 and still do so. However, because these differences in treatment costs are not relevant for the patients and because of the allocated catchment areas, there is no competition.

Figure 12.4 Changes in the Financial Control and Sanctioning of Providers





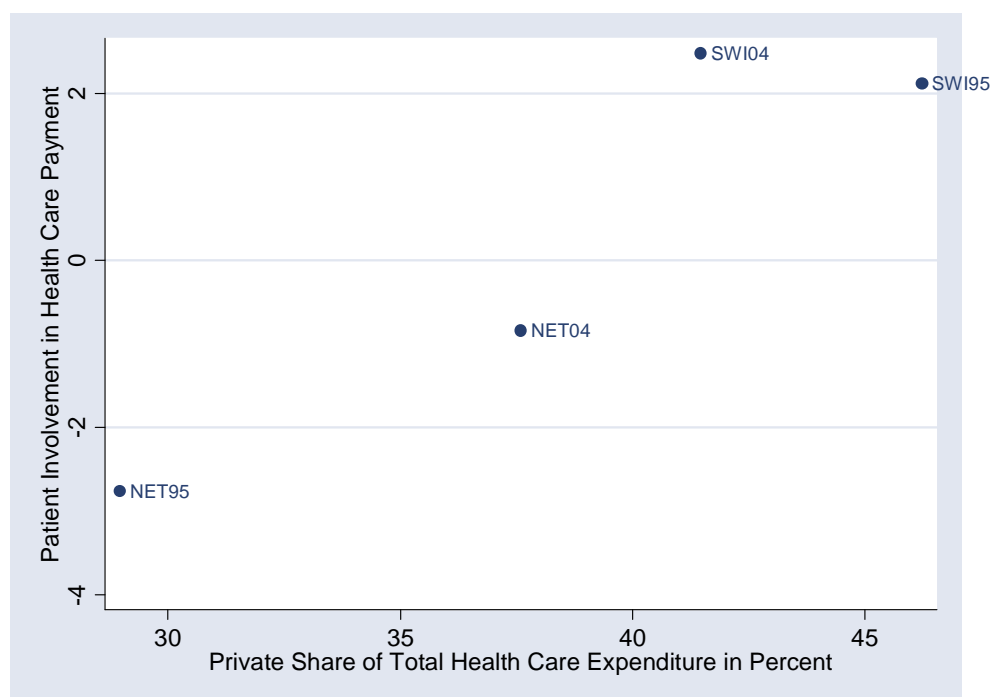
There are only three countries with changes in the way the control over the provider of medical services changed in the observation period.

The largest change regarding the control occurred in Poland. In 1995, the purchasers, municipalities, could already identify hospitals which were more expensive than others. Now that GPs are almost completely independent and contracted, they too can be identified if they constantly cause higher costs for the National Health Insurance Fund. Regarding the possibilities of sanctioning providers for overspending, both, in-patient as well as out-patient providers, are now contracted and can in principle be de-contracted. Control was also extended by changing the way the remuneration is paid: GPs were and still are predominantly remunerated on a capitation basis, which makes it difficult to control what was done in any given case. For hospitals, the remuneration by a budget was replaced by the remuneration by way of billing.

In Norway overspending GPs and overspending hospitals could and still can be identified. As far as the GPs are contracted, they can be de-contracted or at least be threatened with de-contracting. Hospitals are basically owned by the Regional Health Authorities. These may try to exert some cost-containment, but they factually cannot exclude their own hospitals from providing services. Nevertheless, the Regional Health Authorities get the information about what was done by the hospital in a case.

Luxembourg on the other hand, reduced the possibilities to exercise financial control over providers of medical services. While the country created the possibility to identify GPs which overspend, this was not accompanied by any mechanism to sanction them for doing so. Furthermore, in 1995, the hospitals had to hand in a bill to obtain reimbursement from the HIF for extra services which supplemented the per diem. This is no longer the case, because the remuneration mode was changed from a basic per diem combined with a billing of extra services to a fixed prospective budgeting.

Figure 12.5 Changes in Patient Involvement and Composition of Health Funding



While the private share of HCE was increased in many HCS, only two of the twenty-two countries increased the involvement of the patients in the payment of the services, i.e. either by introducing (as opposed to merely increasing) co-payments or by shifting from service-in-kind to cost-reimbursement.

Switzerland, which already had a very high level of patient involvement in 1995, has introduced cost-reimbursement for medicines, which were at least to some degree provided in kind in 1995.

The strongest change occurred in the Netherlands. While there is no shift from service-in-kind provision of medical products and services to the cost-reimbursement mode, the incidence and magnitude of co-payments was greatly increased. While formally, co-payments were already in place back in 1995, they were not factually used, because of encompassing exemptions. The significantly increases share of private funding in the Netherlands' HCS reflects this.

Figure 12.6 Changes in Regulation of the Pharmaceutical Market

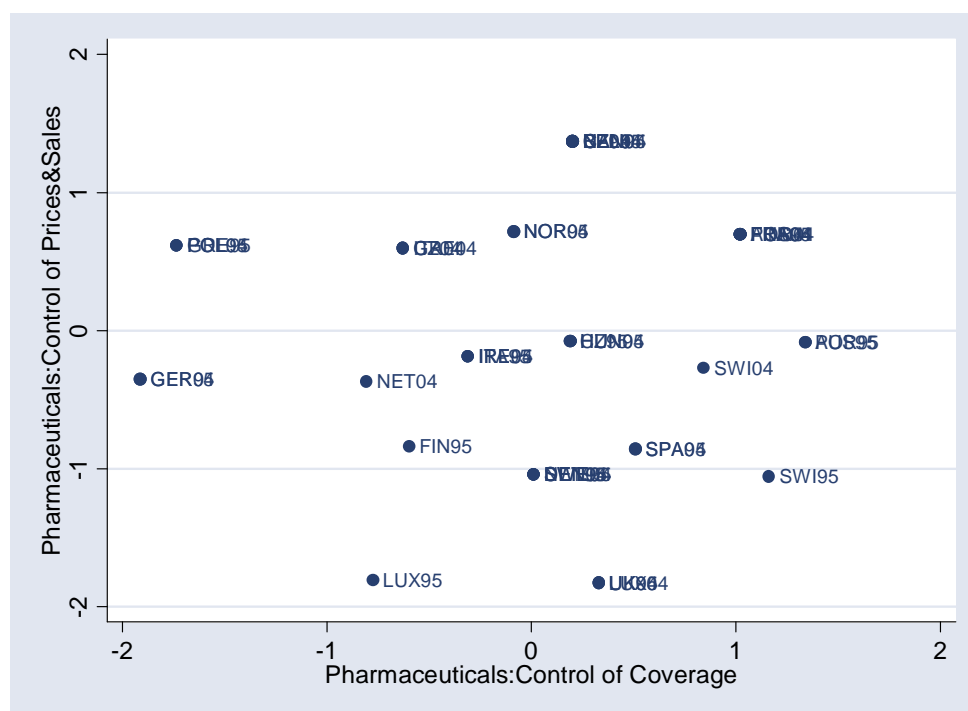


Figure 12.6 above illustrates the changes in the regulations of the pharmaceutical markets, i.e. the control exercised over the sales and the coverage of pharmaceuticals by the HCS.

Looking at pharmaceutical policy in the OECD countries, the picture is a quite consistent one. The movement is quite uniformly one towards more control over pharmaceutical sales and more control over the coverage of new medicines by the HCS.

Roughly half of the cases show changes in the regulations on pharmaceuticals during in the observation period. In many cases, price controls were introduced, the usage of generics was allowed in the first place, respectively if existent, the factual usage of generics was increased by setting financial incentives, i.e. by making the price difference between the branded original and the generic substitute relevant for the patient.

This observation also shows up in the above figure. Many countries have introduced an evaluative step in the market authorization, which connects the price and/ or the coverage of the new product to its medical efficacy.

Figure 12.7 Changes in Provision of Information and Enforcement of Quality Standards



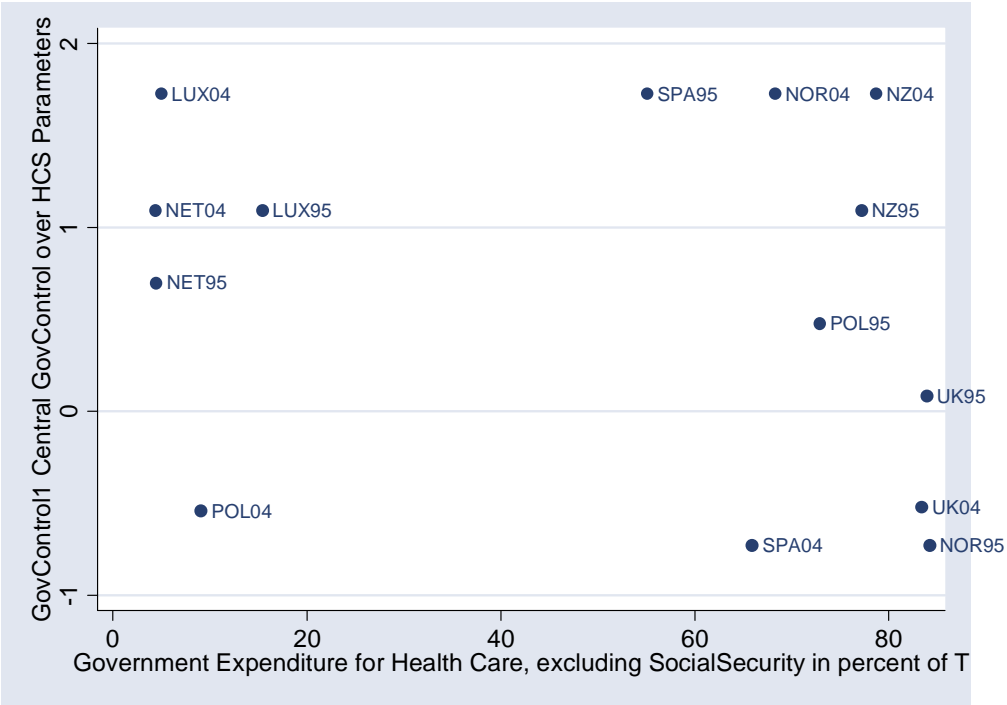
Figure 12.7 above shows the changes in the handling of quality-related information and quality assurance. It reveals first that quality has become an issue in health care, and secondly that the problem of lacking information on the side of the patient was tackled. As was said earlier on, the crux of the delegation problem is the lack of information on the patient's side: the patient does not know what is appropriate in his condition, does not know how to recognize a competent provider, has no information about what risks are to be considered etc. At the same time, a lot of information arises all the time decentrally: Doctors learn (by doing) what treatments work but this information is not spread in an organized way. The purchasers can aggregate this information from analyzing the incoming bills, which are documenting what was done to treat what conditions, whether what was done solved the problem or whether there were follow-up treatments and so on. Information is there, and one challenge is to gather this information, to analyze it and to hand it back to the providers. The next issue is then, whether the providers accept using this information, e.g. by abiding to guidelines imposed on them from "outsiders".

As figure 12.7 indicates, much has happened in this regard. In many countries, the collection and dissemination of information was introduced or at least systematically organized. This is confirmed if one looks at what happened in this regard in more detail, for instance in the

extensive case study literature on quality assurance efforts involving the providers; see Davis et al. (1995) and Patridge (2003). Concerned are basically all kinds of information: information arising during the treatment was collected in order to identify effective and also cost-effective treatments, medical guidelines were compiled by medical experts, which condense the “state of the art”, but it the issue also concerns the gathering and publication of quality related information allowing the “customer” an informed choice where to get treatment. The information is also published much more widely than in the past, when it was, if published at all, only circulated in internal publications of the providers.

The second, complementary theme is the enforcement of quality standards. While providing information and guidelines about how to treat certain conditions is already an encroachment into professional autonomy, enforcement is much more so. And thus it is not that astonishing that here has been less change, presumably due to the stronger opposition of the providers. Nevertheless, the concern with quality assurance is reflected in the fact that quality is now frequently at least mentioned in the contracts between the purchasers and the providers.

Figure 12.8 Changes in Governmental Control and Public Financing of the Health Care System



Looking at the evolution of governmental control, i.e. the external control over the HCS by an actor which has both the formal stewardship role and also the role of having the common good in mind, figure 12.8. above plots the changes in the governmental control by changes in the share of financing which is coming from general taxation.

There are no changes in the most basic features: who determines the catalogue of medical services covered by the HCS, who sets budgets and remuneration levels, and who determines the remuneration modes. So the changes which can be observed are again changes within structures rather than changes of structures. Competencies were gradually extended or limited, but not fundamentally changed.

In some cases, the control of the central government was reduced and there are several “devolution” effects showing up. For instance, in Spain, which has the most pronounced change, the competencies held formerly by the central government were now shifted to the governments of the “autonomous communities”.

Norway has the most significant change in the opposite direction, with the central government acquiring substantial competencies from the regional and local health authorities, in particular the hospital sector, see also figure 12.3 above.

In the other countries, the changes in the role of the central government are comparatively small in magnitude. Often, competencies for specific issues in the hospital sectors or in the pharmaceutical sector were acquired by the central government. Looking at the direction of the changes, the extension of central government control clearly dominates. The state extended its control, while the share of financing raised by taxation remained constant.

Regarding the issue of access, there are no changes observable apart from France, where the access to secondary and specialized out patient care was limited by introducing gate-keeping.

### ***Changes in Countries and Changes in Sectors of the Health System***

What is the magnitude of institutional change which can be observed, in what countries, in what issues is change more pronounced and what can explain the magnitude of change observable? Regarding the first two questions, table 12.1 below gives an overview about the changes occurring during the observation period in the 22 countries included in the study, for the individual institutional dimensions and as well as summarized.

The changes are calculated as the Euclidian distance between a country’s location for the two points in time in the institutional space defined by the institutional dimensions presented in

the above section. The values were then rescaled to a scale of 0 to 1, where 0 stands for no change and 1 for the maximum change occurring on this dimension.

The TotalChangeN variable, given in the right most column, which is used in the analysis of change was obtained by rescaling the amount of change to a scale from 0 to 1, to allow adding up the individual changes. The Total Change is now equivalent to a movement in a space defined by all individual dimensions obtained in the PCA analyses earlier on.

Table 12.1 Institutional Changes in 22 Health Systems 1995 / 2004: An Overview

|               | <i>pAgency</i> | <i>pRemIncentives</i> | <i>pHospital</i> | <i>pPurchaser</i> | <i>pPatInvolvement</i> | <i>pPharma</i> | <i>pGovControl</i> | <i>pAccess</i> | <i>pQuality</i> | <i>pFinControl</i> | Total Change in country |
|---------------|----------------|-----------------------|------------------|-------------------|------------------------|----------------|--------------------|----------------|-----------------|--------------------|-------------------------|
| Austria       | 0              | 1,000                 | 0                | 0                 | 0                      | 0,197          | 0                  | 0              | 0,810           | 0                  | 2,007                   |
| Belgium       | 0              | 0                     | 0                | 0                 | 0                      | 0              | 0                  | 0              | 0,731           | 0                  | 0,731                   |
| Canada        | 0              | 0                     | 0                | 0                 | 0                      | 0              | 0                  | 0              | 0,502           | 0                  | 0,502                   |
| Czech Rep.    | 0              | 0                     | 0                | 0                 | 0                      | 0,505          | 0                  | 0              | 0,977           | 0                  | 1,482                   |
| Denmark       | 0              | 0                     | 0                | 0                 | 0                      | 0              | 0                  | 0              | 0,502           | 0                  | 0,502                   |
| Finland       | 0              | 0                     | 0                | 0                 | 0                      | 1,000          | 0                  | 0              | 0,759           | 0                  | 1,759                   |
| France        | 0              | 0,716                 | 0                | 0,427             | 0                      | 0              | 0                  | 1,000          | 0               | 0                  | 2,144                   |
| Germany       | 0              | 1,000                 | 0                | 0,434             | 0                      | 0              | 0                  | 0              | 0,721           | 0                  | 2,155                   |
| Greece        | 0              | 0                     | 0                | 0                 | 0                      | 0,684          | 0                  | 0              | 0               | 0                  | 0,684                   |
| Hungary       | 0              | 0                     | 0                | 0                 | 0                      | 0              | 0                  | 0              | 0               | 0                  | 0,000                   |
| Ireland       | 0              | 0                     | 0                | 0                 | 0                      | 0              | 0                  | 0              | 0,252           | 0                  | 0,252                   |
| Italy         | 0              | 0                     | 0                | 0                 | 0                      | 0,197          | 0                  | 0              | 0               | 0                  | 0,197                   |
| Luxembourg    | 0              | 1,000                 | 0,662            | 0                 | 0                      | 0,684          | 0,258              | 0              | 0               | 0,300              | 2,904                   |
| Netherlands   | 0              | 0                     | 0                | 0                 | 1,000                  | 0,505          | 0,160              | 0              | 0,502           | 0                  | 2,167                   |
| New Zealand   | 0              | 0,716                 | 1,000            | 0,520             | 0                      | 0              | 0,258              | 0              | 1,000           | 0                  | 3,494                   |
| Norway        | 0              | 0,716                 | 0                | 0,457             | 0                      | 0              | 1,000              | 0              | 0,502           | 0,461              | 3,136                   |
| Portugal      | 0              | 0,716                 | 0                | 0                 | 0                      | 0,197          | 0                  | 0              | 0,977           | 0                  | 1,890                   |
| Poland        | 0              | 0                     | 0                | 0,457             | 0                      | 0              | 0,414              | 0              | 0               | 1,000              | 1,871                   |
| Spain         | 0              | 0                     | 0                | 0                 | 0                      | 0              | 1,000              | 0              | 0               | 0                  | 1,000                   |
| Sweden        | 0              | 0                     | 0                | 0                 | 0                      | 0              | 0                  | 0              | 0               | 0                  | 0,000                   |
| Switzerland   | 0              | 0                     | 0                | 1,000             | 0,188                  | 0,197          | 0                  | 0              | 0               | 0                  | 1,385                   |
| UK            | 0              | 0                     | 0                | 0                 | 0                      | 0              | 0,246              | 0              | 0               | 0                  | 0,246                   |
| Sector Change | 0              | 5,864                 | 1,662            | 3,294             | 1,188                  | 4,166          | 3,337              | 1,000          | 8,236           | 1,761              | 30,509                  |

Remark: Entries are Normalized Change

### *Changes in Countries*

On the whole the amount of institutional change is substantial, only two countries, Hungary and Sweden show no change in the institutional aspects which were covered in the study. The change with the highest magnitude is found in Norway and in New Zealand, in both systems substantial transfers of competencies occurred. The directions in both countries are very different, albeit not directly opposed.

In Norway, the central government increased its say in many aspects of the HCS, in particular in the hospital sector. The hospitals per se have neither gained nor lost competencies, which were in the hand of the counties and municipalities before, but the central government took the competencies from the municipalities.

Contrary to this, New Zealand substantially reduced the - up to then - substantial autonomy of hospitals. In 1995, most hospitals were publicly owned but operated by one of the 23 formally independent "Crown Health Enterprises". In particular, hospitals were independent from the then four Regional Health Boards, which contracted the hospitals. This gave the hospitals and the Crown Health Enterprises substantial say on the internal operation of the hospitals. While deficits are no longer covered by default but are loans, the hospitals have lost the control over the usage of surpluses and the purchase of medical equipment. Factually, the hospitals are now owned and operated by the government controlled District Health Boards.

Another institutional dimension, which contributes substantially to the change in both countries is the role of the purchasers. In Norway the central government reduced competition among purchasers, the counties and municipalities by extending its influence, while in New Zealand the central government increased it. In both cases, the purchaser are public entities, which are tax funded and in charge of regions: the counties and municipalities in the case of Norway and the District Health Boards in the case of New Zealand. In New Zealand, the District Health Boards now have to bear and cover equalize deficits, which are no longer born by the central government as they were in 1995. The number of boards was increased substantially, and they boards can differ substantially in what services they factually offer, now even more so because the financial pressure is higher.

Norway also increased the financial control the local purchaser can exert over the providers.

### *Changes in Issues*

Looking at the themes of institutional change, i.e. what issues were changed, three themes stand out.

The control over pharmaceutical sales and consumption was increased in many countries. It has to be remarked, that the degree of intervention was already high in 1995. Many countries have introduced measures to increase the usage of generics and have resorted to price regulations. The finding reflects what many observes on pharmaceutical politics remark: it is a sector where, without public protest, substantial savings can be realized without an associated loss in quality of care.



The degree of central governmental control changed in only few countries, but where it did, it did substantially. The biggest changes occurred in Norway and Spain: in the case of Norway, the central government has acquired competencies from the lower levels of government, as was discussed already above. In Spain, the development is the opposite: the central government handed over competencies to the regions, the autonomous communities, in the overall process of regionalization.

The third, and by far most important theme in change is the issue of quality, i.e. the collection, evaluation and provision of treatment related information, e.g. medical guidelines, the provision of information to the patients to enable them to make an informed choice, and also, at least in some countries, supplementary efforts to enforce quality guidelines. Almost all countries have introduced such regulations, addressing the quality aspect of the delegation relationship. The magnitude of change observable reflects the dominance of the issue in the public debates and in health politics.

#### *Changes: Winners and Losers?*

One hypothesis is, that certain groups are more likely than others to obstruct changes. The argument is basically Olson's theory of interest groups, which in application to the HCS implies the following:

Providers, such as GPs, are much more likely to build an organization and are also much more likely to obstruct changes they perceive as disadvantageous. The group is quite small, the stakes are high, the interests basically congruent, aiming at a bigger "cake" to be divided among them. The patients on the other hand, are the prototypical latent group: the group is too large and the stakes too low. If there is pressure to do something, the providers will resist and noticeably so, the patients will be discontent, but unable to organize an effective opposition to the plan. Thus, the development of the HCS will more likely respect the interests of the organized groups (in particular the providers) than the interests of the un-organized groups, such as the patients.

Looking at the changes, can this be confirmed? Are the changes going (literally) at the expenses of the patients?

A case in point is surely the increase of the involvement of patients in financing. While the structural component (in what sectors are patients involved in payment?) underestimates this, the magnitude of involvement (the amount of money coming from private sources such as out of pocket payments) is a clear indicator that the financial burden is not limited (by controlling

prices demanded from or quantities supplied by the medical providers) but shifted, and shifted to some degree to the patients.

A clear counterexample is pharmaceutical regulation. Many countries have introduced or intensified pharmaceutical regulations all of which are basically aiming at cost control. Cost control implies losses for the pharmaceutical industry. While some practitioners argue, that the pharmaceutical industry is, because of its rather bad image and little support in the public, a good target when aiming at realizing savings, the fact that this is happening is a refutation of Olson. The group is small, the stakes are high, and the resources available to exert influence are substantial, not only in terms of money for “campaigning”, but also in terms of employment and tax payments.

Looking at the changes depicted in the above figures, there is no consistent support for the conjecture that changes occur against the interests of the patients as the weakest group. Nor is there a uniform trend in the changes.

## **12.2. Factors for Institutional Changes**

Having described the content and the magnitude of the institutional changes, the follow up question is: What determines the occurrence and the magnitude of institutional change? While the explanatory model presented in chapter 5 makes statements about the likelihood of obstructive opposition to changes, it says nothing about the original reasons, or rather: the need for institutional change. This “need” is the other explanatory factor in the analysis of change.

First of all, the pressure for institutional change is – so the basic assumption – “performance” related: Things are not going well, and the public demands changes. “Performance” can refer to the health system’s achievement in terms of outputs, both health outputs (mortality) and beyond-health outputs (responsiveness). The need for change is also driven by the input side, i.e. the level and also the growth of health expenditure. Both, input and output, are to some degree “objective” reasons for change, but there is also the citizens’ satisfaction as the “subjective” reason for change. Even if the HCS works quite well by objective standards, citizens may still demand changes. Low achievement levels and high dissatisfaction create (public) pressure for institutional changes. If, on the contrary, achievement in all regards, and also satisfaction are high, there is factually no need for reforms. Things are going well, and one would expect little or no changes. The operationalization of “pressure” is given by the

achievement levels, which were discussed in chapter 9 above: the consumption of financial resources, the production of health as well as beyond-health outputs and the efficiency of the HCS as measured by the WHO. Low values in all achievement indicators indicate low levels of performance, and underachievement.

However, even if system “performance” and satisfaction are low, and there is the perceived need for changes expressed by the citizens or by other actors (in the HCS or maybe even outside actors like the WHO or the OECD), this does not necessarily imply that institutional change actually occurs. As was argued in chapter 5, it depends on the HCS and the political system, whether such reforms actually occur. As was shown in chapter 4 on the problems inherent to delegation relationships, inefficiency of the HCS implies that some actors extract rents. Institutional change aiming at an increase of efficiency implies that these actors either lose the rents (have to deliver the same levels of output at lower costs) or have to put in more effort (have to produce more output at the same levels of input). In any case, the utility for the actors decreases, and the expectation is that they will use their influence to avoid such pressure. It was argued that organized actors are more likely able do this, which implies that certain groups are more likely to block changes than others. But furthermore it was argued, that the chances to block institutional changes also depends on the possibilities to obtain access to the political system, in particular parties in government, and to make a direct veto player cast its veto against an institutional change.

The operationalization of the feasibility of institutional changes is done using three intervening variables of the potential reform resistance in the HCS: 1) by the number of Societal Actors, i.e. the stakeholders which might be concerned by the changes, 2) by the number of Parties in Government, as the access points in the political environment which can be used to obstruct changes and 3) by the Indirect Veto Power indicator, combining both features.

Apart from the number of stakeholders, which could have an interest in obstructing reforms, the possibilities of institutional changes might also be influenced by the current design of the HCS. To control for this possibility I have also used a selection of the institutional dimensions defining the institutional setting in each of the HCS in 1995 as explanatory variables.

The analysis is done using a regression analysis, regressing the magnitude of total change, given in the rightmost column of table 12.1 above, on the explanatory variables. As elaborated

above, the dependent variable, TotalChange, used in the analysis of institutional change is the sum of the normalized change, which was obtained by rescaling the amount of change on each institutional to a scale ranging from 0 to 1, and then adding up the individual changes over all sectors.

The explanatory institutional variables were described already in the above chapters. The small number of cases required to exclude some of the variables. The results of the regression analysis using the performance and the individual institutional dimensions are given in table 12.2 below.

Table 12.2. Factors affecting Institutional Change in Health Care Systems

|                                    | Performance1 | Performance2 | Setting1 | Setting2 |
|------------------------------------|--------------|--------------|----------|----------|
| HCE                                | -0.666       | -0.629       |          |          |
| dTHCE_rel                          | 0.481        | 0.506        |          |          |
| LifeExpTotal                       | 0.146        | 0.273        |          |          |
| InfMortality                       | 0.076        | 0.102        |          |          |
| LifeLostNet                        | 0.064        | 0.105        |          |          |
| Med. Fatalities                    | -0.022       | -0.026       |          |          |
| RespIndex                          | 0.913        | 0.847        |          |          |
| WHO1                               | -0.244       | -0.291       |          |          |
| SocActors                          | -0.064       |              | -0.625   |          |
| PiG                                | -0.108       |              | -0.108   |          |
| IndVetoPower                       |              | -0.075       |          | -0.661   |
| Agency                             |              |              | 0.463    | 0.365    |
| Hospital_Autonomy                  |              |              | 0.375    | 0.328    |
| Hospital_Competition               |              |              | 0.022    | 0.021    |
| Purchaser_Autonomy                 |              |              | 0.615    | 0.612    |
| Purchaser_Competition              |              |              | 0.176    | 0.095    |
| GovernmentalControl                |              |              | 0.398    | 0.414    |
| Financial_Control (Identification) |              |              | -0.317   | -0.211   |
| Financial_Control (No Sanctioning) |              |              | 0.117    | 0.186    |
| R2                                 | 0.295        | 0.286        | 0.491    | 0.483    |
| N                                  | 21           | 21           | 22       | 22       |

Remark:

Dependent Variable: Normalized Total Change

Coefficients are beta-coefficients

### ***Health System Performance as a Factor for Institutional Change***

The models Performance1 and Performance2 use as explanatory variables the health and beyond-health outputs, excluding satisfaction, which is available for too few cases only. The two model variants are differing in that either the SocActors and PiG or the combination of both, the IndirectVetoPower, was used to cover the political environment as the intermediating variable.

The basic hypotheses are: 1) that a low achievement in the outputs leads - *ceteris paribus* - to more institutional changes, 2) that a political and societal environment which is not amenable to reforms is characterized by less institutional change. The analysis of the effects refers to the magnitude of the effect of each explanatory variable for the change, measured by the beta-coefficient. The effects are not significant, which was to be expected given the small number of cases.

The coefficients found are to some degree surprising. Of the four health outputs, only life expectancy – which is, as will be remembered, the least reliable indicator of the health system's performance in producing health – matters, and strikingly, the direction of the effect is contrary to what one would have expected: there is more institutional change in HCS where the life expectancy – whether attributable to the HCS or not – was already high in 1995.

The less efficient a HCS scored in the WHO's evaluation in the mid 90s, the more this HCS was changed afterwards. This is of course not to say that the HCS changed as a reaction to the WHO's report. However, the finding indicates that countries, with HCS that are less efficient in producing health outputs, engaged in stronger efforts to change their system, presumably in order to increase efficiency.

Despite the fact that the issue of cost control and cost containment dominated health politics in the period studied, higher levels HCE actually reduced the incidence of institutional change: in HCS in which the level of expenditure was higher in 1995, less institutional change occurred in the following decade. What lead to change was not the level of HCE but rather, whether it its development was out of proportion to the growth of GDP. The indicator of the change of HCE relative to the change in GDP;  $dTHCE\_rel$ , exerts a strong an effect on the incidence of change. When HCE increased at about the same rate as GDP, the growth was tolerated, irrespective of the levels of HCE. Only when HCE increased at a higher rate than GDP, it lead to changes, presumably to limit the growth to the rate of GDP growth. Taken

together, this indicates that the “target variable” health policy makers have in mind is the percentage of HCE relative to GDP, not the absolute figures of HCE per capita. Whether this makes sense from the viewpoint of health politics is questionable, because it implies that HCE may increase for no other reason than that GDP increases. While this makes sense to the degree that salaries in the health sector increases in line with GDP, the argument that countries are ready to spend more money in absolute terms on health for the only reason that more income is available puts the idea that health is a necessity in question.

Given that research on the determinants of satisfaction showed that the level of responsiveness is so important for citizen’s satisfaction and that the demand for more responsiveness is observable in the public debate about the health system in many countries, see Mossialos (1997) and Kohl/Wendt (2004), the effect of the responsiveness indicator is surprising. The coefficient obtained contradicts the presumption that HCS with low levels of responsiveness changed more, presumable to increase responsiveness. The opposite is true: health systems, which were already responsive in the mid90s, when the WHO evaluated HCS responsiveness for the first time, underwent more institutional change than systems which were less responsive at that time. Because unfortunately there is no data on the level of responsiveness for a later date, closer to 2004, it is not possible to say, whether the changes aimed or actually increased responsiveness.

Including the political environment to the performance indicators matters only little for institutional change: neither the SocActors, the PiG, nor the combined IndirectVetoPower variable matters much, when compared to the impact of the performance variables. The direction of the coefficients found is however in line with the original hypothesis as formulated in chapter 5. The effects are however so weak, that they can be ignored, at least when used a model which included the performance.

The explanatory power of the performance variables in combination with the political environment variables is low: only 29% of the variation in the overall institutional change can be accounted for. While not reported, it was tested whether there is an explanatory contribution when only the environment variables (SocActors and PiG in a first variant, and IndirectVetoPower in a second one) are used to predict the magnitude of change. The findings indicate, that there is no explanatory contribution of either one of the variables.

### *Institutional Settings as Factors for Institutional Changes*

The institutional setting might be a determinant of institutional change, because of the high degree of path-dependency found in the development of complex systems; see Pierson (2000) for the argument and Altenstetter/Busse (2005) for the German example. Indeed, case studies on health reforms showed for many HCS, that if there are certain structures already in place, it becomes increasingly difficult to implement certain changes. Other changes might be implemented because they are more compatible with the system as it is or because they create less opposition from actors in the HCS. It might also be that certain institutional features prohibit any “real” changes at all, which means that if changes are observed, they are nothing more than “window dressing”. The institutional features used in the analysis reported in table 12.2 above, are primarily those structural features, which concern the existence and the competencies of agents. Not the incentives for the actors, nor issues which concern the patients, like for instance cost-sharing.

As the models Setting1 and Setting2 show, the institutional setting as it was in 1995 explains the occurrence of institutional change during the period of 1995 to 2004 much better than the “objective“ performance in 1995. The version Setting1, using societal actors and parties in government, accounts for 49 %, the version Setting2, with the indirect veto power, accounts for 48% of the variance in the total institutional change. The most important variables are the following:

Agency – generally, the existence of actors as autonomous, state-independent entities strongly affects the occurrence of changes. The relationships between these actors, e.g. whether one type of actor has some kind of control over another type of actor (e.g. whether a purchaser can audit a provider) or whether actors of the same type (e.g. hospitals or purchasers) are competing among each other for clients does not matter; see the coefficients of the competition dimensions. The level of agency increases the magnitude of institutional change.

Purchaser Autonomy – systems with autonomous purchasers and, to a lesser degree systems with autonomous hospitals, have experienced more change. The underlying mechanism might be that independent actors are more active in demanding changes, than providers, who are “part of the hierarchy”, an explanation which is supported by the research on professional organizations; see for instance Schulenburg (1987) and Moran (2004).

Governmental control – Because the state is doing the changing, one would expect that in health systems in which the central government’s control was already high in 1995, more change occurs. This does not imply that there is a change towards a stronger role of the state.

It just implies that the state is already a player in the system and no outsider and thus is seen, also by itself, as being in charge of the operation and the institutional design of the HCS. Government involvement matters, the coefficient confirms the hypothesis, but not as much as one would expect.

Regarding the interaction with the political environment shows, that including the political environment per se does not improve the explanatory power. It is, again, the number of Societal Actors – which includes the number of organized providers of medical services but also other societal stakeholders with different interests, like employers – not the number of parties in government, which matters most for the occurrence of change. The direction of the effect is in line with the hypothesis: the more stakeholders, the less change. Combining both to the IndirectVetoPower variable captures the same effect as the societal actor variable.

The interpretation of this finding is, that political system in the narrow sense of a fragmented political system characterized by multiparty governments, which offers many access points for organized societal actors to induce at least one of the governing parties to block change on their behalf, does not matter for the occurrence of institutional changes. The number of organized actors with a stake in the HCS' operation matters much more, indicating that the connection between the societal domain and the political domain is not probabilistic by nature, but that it is sufficient to gain access to one party.



Table 12.3. Factors affecting Institutional Change in Health Care Systems

|                     | Syndrome1 | Syndrome2 | Environment1 | Environment2 |
|---------------------|-----------|-----------|--------------|--------------|
| IncentiveProblem    | 0.154     | 0.193     |              |              |
| PurchaserSyndrome   | 0.389     | 0.318     |              |              |
| HospitalSyndrome    | 0.421     | 0.427     |              |              |
| FinControlSyndrome  | -0.183    | -0.228    |              |              |
| GovernmentalControl | 0.449     | 0.429     |              |              |
| SocActors           | -0.289    |           | 0.060        |              |
| PiG                 | -0.103    |           | -0.150       |              |
| IndVetoPower        |           | -0.378    |              | -0.057       |
| R2                  | 0.256     | 0.277     | 0.028        | 0.003        |
| N                   | 22        | 22        | 22           | 22           |

Remark:

Dependent Variable: Normalized Total Change

Coefficients are beta-coefficients

To test in particular for the effect of multicollinearity in the setting of few cases and many variables, which is for the analysis of change an even more severe problem than for achievement and efficiency, the Normalized Total Change variable was also regressed on the institutional syndromes and on the environment variables. The results are given in table 12.3.

As in the previous analyses, the first version contains SocActors and PiG, the second version contains Indirect Veto Power.

As for the findings, they are as far as the direction of the coefficients is concerned, similar to the above findings, and to some degree in line with the hypothesis.

Systems with more societal stakeholders experienced less change, a finding which can be interpreted as a confirmation of the argument that change will necessarily be disadvantageous to some actor, and this actor will try to gain access to the political system to obstruct this change. SocActors and Indirect Veto Power basically measure the same thing, viz. the number of stakeholders. The number of parties in government, i.e. the number of access points does not matter.

As for the institutional variables, combined here to the syndromes, autonomous purchasers and autonomous hospitals matter for change, and so does in particular the role of the government: the stronger the role of the government, proxied by the levers it had at hand in 1995, the more change.

However, the findings have to be seen skeptical, because, while the coefficients are more often than not in line with the expectation, the explanatory power is low and in the case of the environmental variables, it is virtually zero.

To summarize the findings of the analysis of institutional change, the overall picture is also inconsistent.

Regarding the “pressures” for change, performance of the HCS seemingly does not affect the occurrence of institutional changes. There is no evidence that HCS which are “underperforming” by any objective measure are changed more than the better performing ones.

Regarding the proposed explanation of changes or rather the obstruction of changes, the evidence is equally inconclusive. Societal actors are not blocking changes by default. While the overall involvement of stakeholders (in particular of stakeholders outside of the HCS) decreases the magnitude of change, more “Agency” in the HCS itself goes together with more change. This is counterintuitive, because the overwhelming theme in HCS reform during the period studied was cost-control respectively the increase of HCS “performance”. Both themes imply institutional changes, which are a disadvantage for the actors in the HCS, putting them under more pressure to “perform” well, to show more effort and to renounce chances of extracting financial and non-financial rents. In short, one would have expected opposition and efforts to obstruct such changes, in particular by the agents in the HCS. Thus, the finding that a) health systems with more “Agency” and more agents underwent more changes and b) the level of “Agency”, the number of agents, was not changed could imply that the changes came about with the consent of the agents. And this in turn put the changes one could observe in a different light, viz. one could speculate, that despite the public rhetoric, the changes made life actually easier for the agents.

Regarding the most relevant determinants of change, the finding is that the institutional structures as they were in 1995 determined the magnitude of institutional change in the decade following, indicating that path-dependency is most important for understanding changes.

## **Part VI: Summary and Conclusion**

### **13. The Delegation Approach and the Comparative Analysis of Health Systems**

The motivation underlying the present study arose out of two observations “from the field”: First, the substantial variation in health system achievements and efficiency, the inputs consumed and the outputs produced by health systems which are organized in very different ways.

Second, the equally substantial variation in the manner and degree to which politically accountable actors respond to the first variation, by either intervening within a HCS’ given institutional setting or by reforming the HCS’ institutional setting.

The purpose of the study was to investigate to what degree an institutional approach, in particular the delegation approach as a descriptive and explanatory instrument, is able to contribute to accounting for both variations.

At the theoretical level, the working program of the study consisted of conceptualizing a) why and how the current institutional setting impacts on the health system’s achievement levels and efficiency; b) why and when the interplay among certain institutional features may be important and c) why the health system’s political environment and also the interaction between the political system and the number of organized groups in the HCS impact on the system’s “performance” - i.e. on the achievement and the efficiency of the HCS.

At the empirical level, the working program consisted of gathering institutional data followed by a descriptive and explanatory analysis of the institutional data and its effects on health system achievement and efficiency.

Regarding the comparison of complex systems, which HCS undoubtedly are, the delegation approach can be used as a descriptive tool. A delegation-based comparison proceeds by differentiating the HCS into a network of relationships between principals and agents, in which tasks are delegated from the former to the latter. Contrary to descriptive and often narrative case studies, this information can then be gathered in a straightforward way: is a certain delegation relationship given or not? Is a certain control mechanism implemented in

this relationship or not? Having institutional information in this easily “comparable” form also allows to investigate the effect of institutional constellations by combining features.

Based on the delegation approach and a detailed analytical description of the HCS in terms of principals, agents, delegated tasks, incentives and incentive problems, a list of institutional features, an Health Care System Inventory was derived; see chapter 8 for a brief description. Using this inventory, institutional data on 22 OECD health systems was gathered in the first phase of the overall study; see Kotzian (2007).

Regarding the first question, the explanation of variation in HCS achievement and in particular efficiency, the delegation approach allows predictions about the effect of institutional settings at system level, which are assumed to be the explanatory variables, on those system level features, which are assumed to be dependent variables, like achievement and efficiency. Both are linked by the intermediate step of rational individual behavior, which is oriented at the incentives set by the institutions and then is aggregated, yielding certain system-level effects.

Basically, the delegation approach predicts that agents will use leeway to extract rents, financial ones as well as non-financial ones, and this will lower achievement and in particular efficiency of the HCS. The more delegation and the more severe the incentive problems, the stronger the adverse effects on achievement and efficiency. For all delegation relationships in HCS, control mechanisms can be implemented, and the prediction and hypothesis is, that implementing appropriate control mechanisms will reduce the severity of the problem, increasing both achievement and efficiency.

Regarding the second question on the factors influencing institutional change, the study used, in addition to the delegation approach, a broader, institutionalist framework to explain certain forms control, exercised from outside the HCS, and also institutional change. With regard to the effect of the political and societal environment in which the HCS is embedded, the explanation proposed used the leeway of the government, and the interaction between the political system and the societal actors with a stake in the health system’s operation. The prediction and hypothesis is, that the more able the government is to act, the fewer societal stakeholders exists, and in particular the lower the chances for an indirect veto power, the higher achievement and efficiency of the HCS. The assumed mechanism is in all three cases that external control holds efficiency decreasing tendencies inherent to the HCS as a subsystem in check. But to be effective the external controller, viz. the government, must be

able to impose its will onto the health system – this gets more difficult, the more parties are in government, the more societal actors have a stake in the HCS and the more likely it is that a certain societal actor has enough influence to make at least one party in government cast its veto against such an intervention.

The explanation of HCS achievement and efficiency is based on the following three broad concepts:

**Built-in control** – these aspects of control are the built-in mechanisms as discussed in chapter 4. They work by at setting the “right” incentives; i.e. design the delegation relationship between principal and agent in a way which assures that the agent’s behavior does not deviate from the principal’s interests, and they work by making actors behaving in a certain way because it is in their well understood self-interest to do so. In particular, this form of control works without a third party actively exercising control activity. The main institutional dimensions operationalizing this concept are Agency, Remuneration\_Incentives, Hospital\_Autonomy, Hospital\_Competition, Purchaser\_Autonomy, Purchaser\_Competition, Patient\_Involvement, Pharma\_Access&Sales, Access to medical services, Quality\_Information, Quality\_Enforcement, FinControl\_Identify and FinControl\_NoSanctioning.

For the built-in control mechanism as well as for the problem of incentives, the idea of the institutional syndromes implied that certain combinations of features exert a more pronounced effect than does each of the individual features. The most straightforward example is, that delegation per se is not so much of a problem but becomes one, if it co-occurs with the incentive to increase the quantity of services for reasons of income maximization. Independent, self-employed actors are in a better position to act self-interested than are employed actors who are subject to hierarchical control. The syndromes created were IncentiveProblem, referring to the combination of agency and remuneration incentives, HospitalSyndrome and PurchaserSyndrome, both referring to the combination of actor’s autonomy to respond to competition and the actual degree of competition, the FinancialControlSyndrome and the QualitySyndrome, both combining the availability of information about a certain actor’s behaviour with the option to sanction this actor.

**External operative control** – As for the government’s possibilities to exercise control from the outside, there are firstly those levers existing currently by which the government can interfere into the HCS’ operation. For example, operative control comes in the form of determining the overall budget or to replace decisions made by the societal actors if the

government believes them to be inappropriate. These levers are “operative” in the sense, that the HCS under its current design allocates these competencies to the government. This institutional dimension was covered by the GovernmentalControl variable, which covers the degree to which the government can intervene by determining parameters of the HCS, such as prices or catalogues of services.

**External structural control** – is a mode of control which refers to the government’s formal power to change the HCS’ institutional setup, if the HCS in its current setup – including the built-in control mechanisms and the levers for external operative currently available for the government – performs poorly. The capacity to exert external structural control was operationalized by three variables: the number of Parties in Government, the number of Societal Actors and the Indirect Veto Power, as the multiplicative interaction among both. External control is policy making, and all three factors lower the government’s capacity for this.

Mind that the external control, the threat to exercise competencies, and even more the threat to change the constitution of the health system, to reallocate competencies or to put decisions under political control, may exert an efficiency increasing effect even without actual exercise of the capacity. The threat alone may be sufficient.

For both modes of external control, the focus was put on the central government, as the actor which is seen as in charge of the constitution of the HCS. The argument, in particular with regard to external structural control is that it may well be the task of the local municipality’s administration to manage the provision of health care in the municipality, but it is the central government’s task to design the system and if the system, including all the lower tiers of administration, does not work, it is the central government’s task to intervene.

As for the statistical implementation, the study’s comparative design combined quantitative and qualitative elements. The original variables were gathered in a dichotomous way, is a feature given or not. Then this data was subjected to data reduction using polychoric principal component analysis which yielded the latent institutional dimensions underlying the organization of a certain HCS sector, and the location of the individual HCS in this “institutional space”. The relationship between indicators of achievement efficiency on the one hand and the scores obtained on the other hand, were then analyzed using quantitative methods, in particular regression. The data base was comparatively small, with only 44 data

points, defined by a country in a year. Following the strategy proposed by King et al. (1994), the design tested many implications of the explanatory model, deriving implications for inputs (levels and dynamics), outputs (health and beyond-health) and efficiency.

How well does the chosen approach, the delegation and the institutionalist approach, perform? The performance of the approach has to be evaluated with regard to two aspects: first, its utility as a descriptive instrument, which allows to describe and compare a larger number of HCS, a task which is in itself of interest. But secondly, the utility of the approach is measured by its explanatory power. Explanatory power, established causal relationships between certain institutional features on the one hand and levels of achievement and efficiency on the other, would be the precondition of “institutional engineering”, which is, in the end, the ultimate driver of research in this domain.

#### *Delegation as a Framework to Compare and Describe Health Systems*

Regarding the description of HCS, the delegation framework was found to be a reasonably useful tool. The basic strategy of the delegation-based comparison consisted of renouncing an a priori typologization into system types in favor of looking at how delegation, the autonomy and independence of agents are handled in the various systems, irrespective of their formal status, “type” and “label”.

The most important finding is that the formal status or “label” of an agent does indicate little of the actual role of this agent and the same is true for the basic functional principles of the system.

At the level of actors, agents may be formally independent, but factually be under close supervision of the government with little or no decision making competencies. This is particularly the case for purchasers, which can be public entities like county councils or municipalities but also formally independent insurance funds, which are in some countries factually just as politically controlled as a NHS bureaucracy. The degree to which health insurance funds are autonomous in defining contractual relations with their clients varies substantially and is largely independent from their formal status. Another instance is the hospital sector. Hospitals are, apart from Belgium, in public ownership in all countries included in the study. However, within the label “non-profit public-ownership”, the hospitals’ factual say about issues concerning it directly, like the investment in capacity or in medical technology, as well as the financial pressures a hospital is under, in particular the budget

constraint, all these features which affect how a hospital as an institution behaves, differ substantially among countries. And again there is no association with a certain type of health system. There are public health systems, in which hospitals are operated as “enterprises”, bearing the full financial responsibility, and there are hospitals in corporatist health systems, where the state is known to stand in for the hospitals and they act in full awareness of this fact.

At the level of the health system and its functional principles, the delegation approach focuses on the degree of competition, which is seen as the main institutional mechanism counteracting the problems inherent to delegation relationships. Putting actors under competitive pressure is seen as the main lever to incentivize them to perform well in their assigned tasks, be these the provision of medical services or the administration of health service provision. The overall setting in a health system – denoted most often as either purchaser-provider-split or public-integrated types – does say very little about the factual competition in the HCS. On the demand side, the argument is that putting purchasers under competition will induce them to behave as a “good agent” on behalf of their clients. One precondition for competition among purchasers is that citizens have the choice among different purchasers. But in particular the choice among purchasers does not depend strictly on their status. A health insurance system with several formally and factually independent health insurance funds and free choice of the funds by the citizens does not imply, let alone guarantee competition among them. Nor does a regionally based public health system, in which public entities such as local governments or municipalities fulfill the purchaser function, preclude competition. Even if municipalities are not officially allowed to differ what medical services they cover, their internal efficiency and management quality may well affect what they can factually offer and in particular the waiting times. The resulting competition is based on “voting by feet”, i.e. by citizens moving into municipalities with better access, and may be stronger than in systems where a formal competition is installed and purchasers are formally allowed and even actively encouraged to differ in contribution and services, but do not.

Renouncing a priori typologizations in favor of looking for single properties, which can basically occur in all health systems, is a fruitful way of engaging in a comparison. To summarize, there is an undisputable value of the delegation approach for a structured comparison of very diverse health care systems under a single theoretical framework.



### *Delegation as an Explanatory Factor in Health System Performance*

Do the analyses based on the structured description tell us something about the relevance of the organization of delegation and control for the “performance” of the health systems? Does the organization of delegation and control actually matter for the performance of the HCS?

To test for such relationships, two strategies were chosen. First, the approach of studying bivariate correlations, which reflects the perspective of a naïve health-policy maker who is asking health system researchers, whether there are stable relationship between institutional variables and outcome variables which allow a tailored intervention in the sense that health policy makers change the institutional setting in a particular sector and as a result achieve a certain effect in the outcome variables. The multivariate regression analysis, which was conducted as a second approach, reflects the more sophisticated view of the health system researcher, asking are there – *ceteris paribus* – certain effects, which are stable, independent from the institutional setting in other sectors of the HCS.

To report the main insight first, the results are obviously dissatisfying. There are no consistent associations of institutional features, isolated or combined to syndromes, with indicators of achievement and efficiency. To successfully confirm a theory, one must derive hypotheses, concrete statements about what to expect in what regards, and the empirical analyses must confirm these expectations. The approach chosen turned out to pose substantial problems in both regards.

a) In the step of defining what relationships to expect at the empirical level, a serious problem arises from the fact that the delegation approach focuses on the financial impact of institutional structures, i.e. on levels of HCE and growth rates of HCE, and much less on the overall efficiency in the sense of input/output ratios. The derivation of statements in particular for the variables covering the input side is straightforward: More delegation and less control should cause higher levels of expenditure, because uncontrolled delegation allows the agents to extract rents. But this is only one side of the coin. The other side is the effect of delegation and control on the outputs of the HCS. Making statements about the effect of delegation and control on the health system’s outputs (health output as well as beyond-health output) is not that straightforward. The basic mechanism is that delegation and control operate via the incentive to provide more services. The assumption is that a share of these services is basically unnecessary (from a medical point of view) and provided only for the sake of increasing the provider’s income. But the overall effects of this “incentive to oversupply” are not unambiguously adverse. More services may well imply more health output, because in the

end, they may have an effect of health. In particular, they may respond to a demand by the patients. Supply side measures aiming at reducing or removing the incentive or demand side measures limiting the access to services may have a counterproductive effect in the sense that the achieved cost control actually lowers the output, leaving the overall efficiency of the HCS as such unchanged. Equally, it is possible that the readiness to provide more services and the incentive to be responsive to the patient's wishes does not automatically imply that the quality is high and that the health output levels increase. More services may be produced but at the same time the effort and diligence put into each service may be lower, for the very reason that the provider is providing so many services.

Thus it is difficult to derive unambiguous statements about the overall HCS efficiency, which is the combination of input and output of the HCS. While it is possible to deduce hypotheses from the delegation approach for the health outputs, these are not as strong, and not as stringent as those deduced for the expenditure. One would presume that in particular expenditure and expenditure dynamics react to the organization of delegation and control. For HCS achievement, proxied by output variables such as life expectancy and infant mortality, and efficiency, proxied by the WHO's efficiency score, the predictions are ambiguous, because of positive as well as negative consequences. With regard to the interpretation of effects found or rather not found, this poses the awkward situation that there is either no effect at all, or simultaneously a positive and a negative effect, canceling each other out.

b) Given the evidence found in the empirical analyses, what can be said about the relevance of the institutional economics respectively the delegation approach as a factor for explaining differences in the achievement and efficiency of health systems? Regarding the empirical evidence, the problems of the delegation approach get even more serious. To summarize the findings, there are, on the whole, only very few stable relationships between institutional dimensions respectively institutional syndromes on the one hand, and indicators of HCS achievement on the other. One of the more stable ones is that Agency adversely affects health outputs, and that installing remuneration incentives to provide more care affects health outputs positively.

In particular regarding the institutional syndromes, which should capture efficient combinations and settings, the effects found are inconclusive. In only very few cases a specific combination of certain institutional dimensions, which should be more relevant from a theoretical point of view, is empirically more relevant than individual variables. Compared to the individual institutional dimensions, on which the institutional syndromes are based, the

magnitude of the correlations found does not indicate a substantial value added in terms of explanatory power. Combining two dimensions, each of which has a certain effect, in a way which according to the institutional economics approach is particularly optimal (or particularly detrimental) for achievement or efficiency, does not prove to have a more substantial effect. Regarding the direction of the effects, i.e. whether a certain institutional variable increases or decreases a certain output indicator, these are at times in line, but at times also clearly diverging from what was predicted. An example is the degree of agency in the HCS, which usually goes together with lower levels of health output (lower life expectancy, more life years lost). The remuneration incentive – i.e. the fact that there is an incentive to oversupply services – does usually affect the achievement in terms of health outputs positively. But combining both to the IncentiveProblem-syndrome – independent agents who have the incentive to increase the quantity of services – has an erratic effect on various health outputs.

Thus, one important result of this study is, that even detailed knowledge about how delegation and control are organized in a range of health systems does not tell us something about the “performance” of these health systems. This observation can be interpreted in several ways. First, the lack of stable relationships can mean that the institutional variables chosen and the latent institutional dimensions extracted from these are invalid in the sense of lacking construct validity. In this case, the institutional dimensions obtained measure the wrong thing or nothing at all. The “inventory”-approach to data gathering as such was designed to look for and to capture differences beyond the mere typologization of health systems into the “standard types”. In particular, the data gathering effort aimed at capturing the common as well as the distinctive features between public-integrated systems and systems with a purchaser-provider-split. An illustration of this validity problem would be that the agency dimension, which is a summary indicator of the frequency with which tasks are delegated to actors which are self-employed and hence independent agents, may not measure delegation, but something else entirely. But in this regard, the descriptive sections and the findings presented in chapter 10 make sense. It is unlikely that all the institutional variables and all the latent dimensions obtained from compressing these are completely out of touch with the institutional features in the health systems included in the study. But even those institutional dimensions, which are prima facie of high validity, do not exert consistent effects.

Second, the lack of stable relationships can mean that the institutional data is valid, but describes the HCS for a point in time, which is not sufficiently close enough to the available achievement data. While the achievement data is quite close to the points in time, for which institutional data was sampled, it might be nevertheless be the case that the achievement levels have changed in the meantime. Looking at the achievement data, for which time series are available, indicates that the levels of the indicators used, for input consumption as well as output achievement, are quite stable in the short run and in particular the differences between the HCS regarding the indicators used are also quite stable: A health system which is notorious for its lack of responsiveness and “customer”-orientation will not change for the better within the two years between 1995 (for which the institutional data was gathered) to 1997 (the year for which the responsiveness indicator was gathered in the WHO survey).

Third, it may be the case that the institutional variables are valid, but that there exists for the countries and for the period covered by this study no substantial relationship between the institutional setting and the HCS’ achievement or efficiency. However, against this interpretation stands the finding that the explanatory power of all institutional variables combined seems to matter for the achievement levels. There are typically co-occurrences of features, but it is, given the limitations arising from the small data set, difficult to differentiate which institutional feature has which effect. Many institutional features are correlated, but what can also be said is that the combination of individual institutional features into the syndromes does not work.

Fourth, the lack of stable relationships (correlations as well as regression coefficients) may be due to the small size of the data set and multicollinearity among the institutional variables. A typical observation was, that the inclusion of different variables, e.g. when two variables are replaced by the institutional syndrome which covers a certain combination of both, changes the coefficients obtained for the other institutional variables substantially. This instability is a strong indication of a small-n-problem, aggravated by the risk that there could be a substantial correlation between different dimensions obtained by compressing the institutional information in certain sectors. All this hints at multicollinearity. As a first test for the problem of multicollinearity, the correlations between the individual institutional variables and the institutional syndromes were calculated. The highest occurring correlation among the institutional dimensions is the one between agency and the remuneration modes (.79), and the highest occurring correlation between the IncentiveProblem and the remuneration modes

(.85). All other correlations between individual institutional dimensions and institutional syndromes are way below that level, usually .25 or lower. And even in the case of agency, remuneration modes and IncentiveProblem, no analysis included the three of them simultaneously. The problem persisted, when the syndromes rather than the individual variables were used. If multicollinearity was the source of the problem, the situation should have improved, because the correlations among the syndromes are much lower and also the ratio of cases and independent variables used is better. An additional attempt to counter the problem by conducting a PCA using only the most “typical” institutional features of each sector yielded a solution, which was too complex to be of any practical value. Furthermore, it was tested whether combining all control syndromes into one dimension, would yield an improvement. The idea was, that the IncentiveProblem captures the problem, and that an additive index of all control syndromes captures the countermeasure, a kind of “overall control”. But this did also nothing to change the fact that the effects found are erratic. It has to be mentioned, that this “erratic” pattern of supporting, contradicting or absent relationships was also obtained when using the bivariate correlations.

Whatever the reasons, the main problem of the delegation approach is that the empirical findings are inconclusive at best: While the theory – delegation, if uncontrolled lowers efficiency – and its application to health care organization and delivery makes perfect sense, some of the empirical findings – i.e. the coefficients obtained in regressions of indicators of HCS achievement and efficiency on institutional variables – make, at least at times, no sense at all. Some coefficients are perfectly in line with the theory. In other cases, the finding is not actually in line with the prediction, but there exists a reasonable argument to account for the finding by a mechanism, which is outside of the delegation respectively institutionalist approach, but known from other studies. But in the case of many other coefficients, they clearly contradict the theory. Respectively, it is very hard to come up with a causal mechanisms by which this finding can be accounted for, unless one is willing to engage in ad hoc explanations and conceptual stretching of a truly degenerative kind. Finally, some findings just don’t make any sense at all but are contradicting the findings made in other analyses of achievement indicators.

An implicit general methodological assumption underlying this study is, that if a theory, a causal mechanism is strong and robust enough, it will show up even if there is little data and problems of measurement. There are several small-n-studies in comparative politics, many of

which are confronted with similar problems, and a common strategy to counter this consists of deriving many testable implications and predictions: If the argument is true, what empirical indicators will be affected in what ways? cf. King et al. (1994). Such a strategy and thus the “test” is, if anything, biased to find confirmation of the theory. In the empirical sections, many dependent variables were used, but still, there is no consistent pattern. It is not the case that there are few contradictions mixed with many confirmations. Rather, there are few confirmations mixed with many contradicting findings and a lot of “white noise”. By this standards, the delegation approach is no strong theory for explaining health system performance in industrialized countries.

### *Delegation, Institutional Settings and Institutional Change*

Just as in the case of the institutional correlates of health system achievement and efficiency, the utility of the approach developed for the analysis of change is ambiguous. The approach’s utility as a heuristic tool is offset by the fact that the evidence regarding the effect of institutional structures, in particular delegation to independent actors, on institutional change is mixed at best.

On the descriptive level, the systematic survey of many specific aspects of the institutional setting for two points in time allows to capture and to describe institutional change in a way which is highly illustrative. The latent institutional dimensions define a property space in which the HCS can be located and where institutional changes show up as movements. Both, the magnitude and directions of changes can be easily detected and analyzed. Instead of looking at dozens of individual features, one can look for both universal trends and national particularities. The sum of all movements a HCS made during the observation period yielded the total change, which was explained in the next step, using performance, and institutional features as explanatory variables.

On the explanatory level, that is when analyzing the causes of total institutional change, three findings stand out:

a) The first finding is that institutional change seems not to be driven by the objective “performance” of the HCS. One would have expected that the health system is primarily evaluated in terms of its health production and thus is primarily changed if not producing enough health or failing to avoid losses of life years which could be avoided. This is obviously not the case. Nor is change driven by high levels of HCE. Despite the rhetoric and the dominance of cost containment as a theme, the health systems surveyed were not changed

because they were consuming too many resources. On the contrary, health system which consumed more resources underwent less change in the observation period.

b) The second finding is that the institutional setting of the HCS is a much stronger determinant of institutional change, explaining twice as much of the variation in the degree of institutional change than the performance of the institutional structure. Together with the finding from the analysis of the achievement levels in chapter 11, this finding indicates that health system development is a path-dependent process, largely independent from the “objective” performance of the system. Institutional settings seem to allow or prohibit changes. However, while there are some stable effects, such as that the number of stakeholders reduces change, it is largely unclear, what the exact contribution of a particular institutional feature is and how the effect works.

c) The third finding is that the political environment, understood in the narrow sense of a political system which offers many or few access points for organized societal actors to obstruct change, does not matter for the occurrence of changes. The number of organized societal actors with a stake in the HCS’ operation matters much more, indicating that the connection between the societal domain and the political domain is not probabilistic by nature, but that for obstructing change it is sufficient to gain access to one political party. It also indicates that it is more likely that groups have established, traditional contacts to certain parties rather than engaging in ad hoc contacting – a finding which is in line with many case studies on health system reforms.

As an overall conclusion, one has to state that despite their theoretical attractiveness, neither the delegation approach nor the idea of indirect veto power empirically live up to the expectations in terms of actually explaining what is happening in the health care systems of industrialized countries.

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**15. Appendix**

## 15. APPENDIX : Health Care Systems Inventory

**Remark:** Institutional data was asked for each country for 1995 and 2004

### Part A: Providers and Consumers of Health Services

#### 1. Primary Care / Outpatient Care

##### Occupational Status of the Providers of Primary care / Outpatient Care

Please indicate the predominant occupational status of the providers of medical services in [country] for the following groups of medical providers.

**OS1** Primary Care Physicians /General Practitioners (GP) are predominantly

- Self employed
  - Employed
  - Employed, but with the possibility to provide additional services on own account
- Primary Care is predominantly provided by Hospitals (out-patient departments etc.)

**OS2** Specialists (Orthopedics, eye doctors, radiologists etc) are predominantly

- Self employed
  - Employed
  - Employed, but with the possibility to provide additional services on own account
- Specialized medical care is predominantly provided by Hospitals

**OS3** Dentists are predominantly

- Self employed
  - Employed
  - Employed, but with the possibility to provide additional services on own account
- Dental care is predominantly provided by Hospitals

**OS4** What is the prevailing distribution channel of medicines and pharmaceuticals for **out-patient use** in [country]?

- Privately owned pharmacies
- Publicly owned pharmacies
- Physicians
- Hospitals



**OS5** What is the predominant occupational status of providers of laboratory services, like analysis of blood samples, tissue analysis. Are they

- self employed /independent firms
- employed and salaried by Hospitals
- laboratory services are predominantly provided by Hospitals
- other (please specify)

### **Remuneration Modes in Ambulatory Care / Outpatient Care**

**R1A** Could you please indicate the predominant remuneration mode for the majority of services provided by **general practitioners / primary care physicians**

- Capitation per inscribed patient
- Capitation for patients in the area
- Fixed prospective budget (independent of numbers of patients inscribed)
- Budget based on past costs
- Coverage of all costs arising
- Fundholder Model
- Salary
- Fee for service with fixed fees
- Fee for service with variable fees
- Other (please specify)

**R1B** Can the provider of primary care increase his income one way or the other by extending the quantity of services provided in a given case, i.e. for a patient?

- Yes, (please specify how)
- No, the GP's income is fixed

**R2A** Could you please indicate the predominant remuneration mode for the majority of services provided by **specialists/providers of specialized ambulatory services (eye specialist, Orthopedists etc.)?**

- Capitation per inscribed patient
- Capitation for patients in the area
- Fixed prospective budget
- Budget based on past costs
- Coverage of all costs arising
- Fundholder Model
- Salary
- Fee for service with fixed fees
- Fee for service with variable fees
- Other (please specify)

**R2B** Can the provider of specialized medical services increase his income one way or the other by extending the quantity of services provided in a given case, i.e. for a patient?

- Yes, (please specify how)
- No, the provider's income is fixed

**R3A** Could you please indicate predominant remuneration mode for the majority of services provided by **Dentists**?

- Capitation per inscribed patient
- Capitation for patients in the area
- Fixed prospective budget
- Budget based on past costs
- Coverage of all costs arising
- Fundholder Model
- Salary
- Fee for service with fixed fees
- Fee for service with variable fees
- Other (please specify)

**R3B** Can the dentist increase his income one way or the other by extending the quantity of services provided in a given case, i.e. for a patient?

- Yes, (please specify how)
- No, the dentist's income is fixed

**R4** How are the physicians (like surgeons, anesthetists etc.) working in a hospital remunerated?

- Fixed Salary
- Fee for service
- Other (please specify)

**R5** How is the income of pharmacists related to the quantity of medicines sold?

- A percentage of the total value of the medicines sold
- An amount per package sold
- A fixed remuneration, independent of the quantity of sold
- Difference between the price at which the Pharmacy buys the medicine and the retail price

**R6** How are laboratory services (analyses of tissue samples etc.) predominantly remunerated in [country]?

- Budgets
- All costs arising are covered
- Cost plus allowance
- Fee for services
- other (please specify)

## 2. Hospitals and In-Patient Care

**H1** Would deficits of a Hospital be covered by the state or some other institution?

Yes, deficits of Hospitals are covered

- completely by another institution, e.g. the state, health authority, insurance funds
- partly by another institution

No, deficits of Hospitals are not covered

**H2** In the case that a Hospital realizes a surplus – who decides how this surplus is used?

- the Hospital itself, e.g. can use it for investments
- Purchaser (e.g. Insurance Funds, Health Authorities)
- Municipality /Local- or Municipal Government
- Region / regional government
- National / central government

**H3** Which of the following actors is the most influential decision maker in questions of investments in capacity, i.e. the number of beds in existing Hospitals?

- the Hospital itself
- Purchaser (e.g. Insurance Funds, Health Authorities)
- Municipality /Local- or Municipal Government
- Region / regional government
- National / central government

**H4** Which of the following actors is the most influential decision maker in questions of investments in the medical technology available in the Hospitals (e.g. procurement of new medical devices)?

- the Hospital itself
- the Purchaser (e.g. Insurance Funds, Health Authority)
- Municipality /Local- or Municipal Government
- Region / regional government
- National / central government

**H5** Which of the following actors is the most important for deciding on the creation of new Hospitals?

- Purchaser ( Insurance Funds, Health Authorities)
- Municipality /Local- or Municipal Government
- Region / regional government
- National / central government

**H6** Which of the following actors is most influential for deciding on closing of existing Hospitals?

- Purchaser ( Insurance Funds, Health Authorities)
- Municipality /Local- or Municipal Government
- Region / regional government
- National / central government

**H7** In some countries, several Hospitals offering the same kind of services (e.g. cover the same indications, the same degree of specialization etc.) exist in the same region.

In others, a Hospital is typically the only provider of in-patient care in a region.

What is the prevailing situation in [country]?

- There is usually only one Hospital for in-patient care in a certain region
- There is usually more than one Hospital in a region offering in-patient care
- There are many Hospitals offering basic in-patient care in a certain region but only one offering specialized in-patient care, e.g. cardiac surgery

**H8** If there is more than one Hospital to chose from, do the costs of treatment (e.g. cost per case, the per diem etc.) differ among these Hospitals, or are the costs of treatment the same for all Hospitals in a region / for a similar degree of specialization?

- Costs differ among Hospitals
- Costs are the same for all Hospitals, independent of the specialization
- Costs are the same for all Hospitals of similar degree of specialization

**H9** What is the predominant mode of remuneration for in-patient services and Hospitals?

- Case based remuneration (e.g. DRG)
- Cost reimbursement / ex-post budget: all costs are covered
- Prospective fixed budget
- Global capped budget
- Fee for service
- per diem
- per capita enrolled in a list
- per capita in the area assigned to the hospital
- other (please specify)

**H10** Can the Hospital increase the remuneration received for a case one way or the other by extending the quantity of services provided to a patient or extending the length of a patient's stay in the Hospital?

- Yes, (please specify how)
- No

### 3. Pharmaceuticals

**PH1** Which of the following regulations concerning pharmaceuticals are in place in [country]?

- Negative Lists (pharmaceuticals that not covered by the Health System, i.e. are excluded from reimbursement by the Health System)
- Positive Listing (a list, from which the prescriber can choose)
- Pharmaceutical budget for individual prescribers, like physicians or hospitals
- Overall Pharmaceutical budget
- Grouping of Pharmaceuticals. In some countries, medicines are grouped to classes of equivalent medicines for similar illnesses. Sometimes, the Health System reimburses or pays only for the cheapest medicine in a such a class of medicines. If the patient wants another medicine, he has to pay the difference.

**PH2** Is the price or the coverage by the Health Care System of a new medicine based on a evaluation of its medical efficacy and degree of innovation compared to existing medicines?

- Yes, the **price** is based on an evaluation of medical efficacy
- Yes, the **coverage** is based on an evaluation of medical efficacy
- No

**PH3** Generic products are medicines which are chemically identical to a branded medicine, but sold in a different dosage, form and under a different name. In some countries, branded medicines can be substituted by cheaper generic products, in others, this is forbidden.

How is generic substitution regulated in [country]?

- Generic substitution is forbidden
- Generic substitution is encouraged
- Generic substitution is allowed but voluntary
- Generic substitution is compulsory

**PH4** If generic substitution is possible, who decides actually, whether a generic substitute of a branded medicine is used or not?

- Prescriber, e.g. physician ( e.g. by indicating that the pharmacists may substitute or by prescribing a certain active chemical entity, no product name)
- Pharmacists
- Patient can tell whether he wants a generic or not

**PH5** Can the patient reduce his costs, e.g. the co-payment for medicines, by choosing a generic medicine or the cheapest product of a therapeutic class?

- There are no co-payments for medicines
- Co-payments can be reduced by choosing a less expensive but equivalent product
- Co-payments cannot be reduced by choosing a less expensive but equivalent product

## 4. The patients

### 4.1 “Cost-Reimbursement” and “Services in kind”

**CR** In some countries, medical providers are first paid by the patients, who are later reimbursed by the Purchaser (e.g. Insurance Funds / Health Authority). In others, patients are not involved in the payment of the provider.

Under **service in kind**, the patient is not involved in the payment of providers, **in particular the patient does not receive a bill**.

Under **cost reimbursement** the patient receives the bill from the provider, which is handed in for reimbursement to the Purchaser, e.g. the Insurance Fund or Health Authority.

Which is the prevailing mode of payments in the Health Care System in [country]?

|   |   |  |
|---|---|--|
| General Practitioners,<br>Primary Care Physicians           | Cost reimbursement...<br>bill passed on <input type="radio"/><br>bill paid and reimbursed later <input type="radio"/> | Services in kind <input type="radio"/> |
| Specialists   | Cost reimbursement...<br>bill passed on <input type="radio"/><br>bill paid and reimbursed later <input type="radio"/> | Services in kind <input type="radio"/> |
| Laboratory services,<br>e.g. measurement of lipid<br>levels | Cost reimbursement...<br>bill passed on <input type="radio"/><br>bill paid and reimbursed later <input type="radio"/> | Services in kind <input type="radio"/> |
| Dentists  | Cost reimbursement...<br>bill passed on <input type="radio"/><br>bill paid and reimbursed later <input type="radio"/> | Services in kind <input type="radio"/> |
| Dentures  | Cost reimbursement...<br>bill passed on <input type="radio"/><br>bill paid and reimbursed later <input type="radio"/> | Services in kind <input type="radio"/> |
| Hospital /<br>In-patient services                           | Cost reimbursement...<br>bill passed on <input type="radio"/><br>bill paid and reimbursed later <input type="radio"/> | Services in kind <input type="radio"/> |
| Medicines   | Cost reimbursement...<br>bill passed on <input type="radio"/><br>bill paid and reimbursed later <input type="radio"/> | Services in kind <input type="radio"/> |
| Medical devices, like<br>spectacles                         | Cost reimbursement...<br>bill passed on <input type="radio"/><br>bill paid and reimbursed later <input type="radio"/> | Services in kind <input type="radio"/> |

## 4.2. Co-payments to medical services and medical goods

Thinking about medical services and medical products which are covered by the health system in [country].

**CP1** Do patients in [country] have to pay a co-payment for the medical services and products listed below? If so, is it a certain amount, independent of the costs of the service or is it a percentage of the costs of the service?

|  |                                     |  |
|--|-------------------------------------|--|
| Services of General Practitioners / Primary Care | <input type="radio"/> no co-payment | <input type="radio"/> yes a certain percentage<br><input type="radio"/> yes a certain amount |
| Specialists/Specialized Services                 | <input type="radio"/> no co-payment | <input type="radio"/> yes a certain percentage<br><input type="radio"/> yes a certain amount |
| In patient services / Hospitals                  | <input type="radio"/> no co-payment | <input type="radio"/> yes a certain percentage<br><input type="radio"/> yes a certain amount |
| Laboratory tests, e.g. analyses of blood samples | <input type="radio"/> no co-payment | <input type="radio"/> yes a certain percentage<br><input type="radio"/> yes a certain amount |
| Dental care / Dentists                           | <input type="radio"/> no co-payment | <input type="radio"/> yes a certain percentage<br><input type="radio"/> yes a certain amount |
| Dentures / “false teeth”                         | <input type="radio"/> no co-payment | <input type="radio"/> yes a certain percentage<br><input type="radio"/> yes a certain amount |
| Medicines  | <input type="radio"/> no co-payment | <input type="radio"/> yes a certain percentage<br><input type="radio"/> yes a certain amount |
| Medical devices e.g. spectacles                  | <input type="radio"/> no co-payment | <input type="radio"/> yes a certain percentage<br><input type="radio"/> yes a certain amount |

**CP2** Are there exemptions from co-payments?

No, there are no exemptions from co-payments

Yes,

- there is a upper limit for the total sum of co-payments payable per period
- people under a certain income are exempted from co-payments
- people with a certain health status (e.g. chronically-ill-status) are exempted from co-payments
- certain groups - e.g. students, children or elderly - are exempted

**CP3** Can the patient cover the costs of the co-payments by an Supplementary Insurance?

No, an insurance covering the co-payments is forbidden

Yes, a Supplementary Insurance may cover co-payments,

- .... usually it covers the complete co-payment
- .... usually it covers only a share of the co-payment
- ... it may not cover the complete co-payment

#### 4.3. Gatekeeping, Choice and Access to In-Patient-Care, Hospitals and Specialists

In some countries, the patient can directly visit a Specialist or a Hospital (no gatekeeping).

In other countries, the patient has to visit his General Practitioner / Primary Care Provider before going to a specialist or a Hospital (gatekeeping).

| <b>Formal regulations on Gatekeeping</b>  |                                 |                                  |
|---|---------------------------------|----------------------------------|
| Is there gatekeeping of General Practitioners for   | Hospitals <input type="radio"/> | Specialist <input type="radio"/> |
| If there is gatekeeping - how strict is the gatekeeping factually handled in [country]?   |                                 |                                  |
| a) Gatekeeping to specialists, like orthopedics, eye specialists etc.,  |                                 |                                  |
| ... cannot be skipped   | <input type="radio"/>           |                                  |
| ... can be skipped, but it incurs higher costs  | <input type="radio"/>           |                                  |
| ... can be skipped, but the service is not covered  | <input type="radio"/>           |                                  |
| b) Gatekeeping to Hospitals and inpatient services  |                                 |                                  |
| ... cannot be skipped   | <input type="radio"/>           |                                  |
| ... can be skipped, but it incurs higher costs  | <input type="radio"/>           |                                  |
| ... can be skipped, but the service is not covered  | <input type="radio"/>           |                                  |
| <b>Actual choice of providers</b>   |                                 |                                  |
| Apart from formal gatekeeping, has the patient (after the gatekeeper has agreed to the referral)...   |                                 |                                  |
| ... free choice of the Specialist (eye doctor etc.)?  | Yes <input type="radio"/>       | No <input type="radio"/>         |
| ... free choice of the Hospital ?   | Yes <input type="radio"/>       | No <input type="radio"/>         |
| ... free choice of the Dentist?   | Yes <input type="radio"/>       | No <input type="radio"/>         |
| Independent of gatekeeping regulations: Do patients actually have the choice in the sense that there are several providers offering services? Do patients have the choice among |                                 |                                  |
| ... different Specialists ?   | Yes <input type="radio"/>       | No <input type="radio"/>         |
| ... different Hospitals ?   | Yes <input type="radio"/>       | No <input type="radio"/>         |
| ... different Dentists ?  | Yes <input type="radio"/>       | No <input type="radio"/>         |



## Part B: Societal Actors and their Role for the Health Care System

Health Care Systems differ with regard to, whether societal actors, e.g. Health Insurance Funds, exist at all, are organized and involved in the day to day operation of the Health Care System.

This section is about the existence of organized groups in the Health Care System and their involvement in the Health Care System in [country].

| Is there a organization of the following groups and actors?                                 |   | If existent, in which of the following questions is the group involved or has a say?  |
|---|---|---|
| General practitioners / Primary Care Physicians   | <input type="radio"/> yes<br><input type="radio"/> no | <input type="checkbox"/> Catalogue of Primary care services covered by the health system<br><input type="checkbox"/> Level of remuneration of Primary care services (budgets, fees etc.)<br><input type="checkbox"/> Determination of how Primary care services are remunerated (e.g. whether by fee-for-service or budgets etc.)<br><input type="checkbox"/> Determination of the top-executive level of their organization                  |
| Specialists (e.g. eye doctors, orthopedics)   | <input type="radio"/> yes<br><input type="radio"/> no | <input type="checkbox"/> Catalogue of specialized medical services covered by the health system<br><input type="checkbox"/> Level of remuneration of specialized medical services (budgets, fees etc.)<br><input type="checkbox"/> Determination of how the specialized services are remunerated (e.g. whether by fee-for-service or budgets etc.)<br><input type="checkbox"/> Determination of the top-executive level of their organization |
| Laboratory services (e.g. Laboratories conducting analyses of blood and tissue samples etc) | <input type="radio"/> yes<br><input type="radio"/> no | <input type="checkbox"/> Catalogue of laboratory services covered by the health system<br><input type="checkbox"/> Level of remuneration of laboratory services (budgets, fees etc.)<br><input type="checkbox"/> Determination of how laboratory services are remunerated (e.g. whether by fee-for-service or budgets etc.)<br><input type="checkbox"/> Determination of the top-executive level of their organization                        |
| Dentists  | <input type="radio"/> yes<br><input type="radio"/> no | <input type="checkbox"/> Catalogue of dental services covered by the health system<br><input type="checkbox"/> Level of remuneration of dental services (budgets, fees etc.)<br><input type="checkbox"/> Determination of how dental services are remunerated (e.g. whether by fee-for-service or budgets etc.)<br><input type="checkbox"/> Determination of the top-executive level of their organization<br><input type="checkbox"/> Others |

| Is there a organization of the following groups and actors? |               | If existent, in which of the following questions is the group involved or has a say?   |
|---|---------------|--|
| Hospitals   | O yes<br>O no | <input type="checkbox"/> Catalogue of inpatient services covered by the health system<br><input type="checkbox"/> Level of remuneration of inpatient services<br><input type="checkbox"/> Determination of how inpatient services / hospitals are remunerated (e.g. whether by fee-for-service or budgets etc.)<br><input type="checkbox"/> Determination of the top-executive level of their organization<br><input type="checkbox"/> Others  |
| Health Insurance Funds                                      | O yes<br>O no | <input type="checkbox"/> Catalogue of services covered by the health system<br><input type="checkbox"/> Level of contributions to the Health Insurance Fund<br><input type="checkbox"/> Mode of how the contribution is levied ( as a fixed premium, percentage of income etc.)<br><input type="checkbox"/> Level of remuneration of medical services (amount of the budget, fee etc.)<br><input type="checkbox"/> Determination of how medical services are remunerated (e.g. whether by fee-for-service or budgets etc.)<br><input type="checkbox"/> Determination of the top-executive level of their organization<br><input type="checkbox"/> Others |
| Patients  | O yes<br>O no | <input type="checkbox"/> Catalogue of medical services covered by the health system<br><input type="checkbox"/> Level of contributions to the health system<br><input type="checkbox"/> Mode of how the contribution to the health system is levied (e.g. by a fixed premium, percentage of income etc. )<br><input type="checkbox"/> Level of remuneration of medical services<br><input type="checkbox"/> Determination of how medical services are remunerated (e.g. whether by fee-for-service or budgets etc.)<br><input type="checkbox"/> Determination of the top-executive level of their organization<br><input type="checkbox"/> Others        |

| Is there a organization of the following groups and actors? |               | If existent, in which of the following questions is the group involved or has a say?  |
|---|---------------|---|
| Employers   | O yes<br>O no | <input type="checkbox"/> Catalogue of medical services covered by the health system<br><input type="checkbox"/> Level of contributions to the Health System<br><input type="checkbox"/> Mode of how the contribution is levied (fixed premium, percentage of income)<br><input type="checkbox"/> Level of remuneration of medical services<br><input type="checkbox"/> Determination of how medical services are remunerated (e.g. whether by fee-for-service or budgets etc)<br><input type="checkbox"/> Employers pay a part of a citizen's contribution to the Health Care System<br><input type="checkbox"/> Others |
| Pharmacists   | O yes<br>O no | <input type="checkbox"/> Retail prices of pharmaceuticals<br><input type="checkbox"/> Lists and catalogue of pharmaceuticals covered by the health system<br><input type="checkbox"/> Determination of how much pharmacists earn, e.g. profit margins<br><input type="checkbox"/> Determination of how pharmacists are remunerated (e.g. a percentage of the retail price, a fixed amount per prescription etc.)<br><input type="checkbox"/> Determination of the top-executive level of their organization<br><input type="checkbox"/> Others  |
| Pharmaceutical Industry                                     | O yes<br>O no | <input type="checkbox"/> Prices of pharmaceuticals<br><input type="checkbox"/> Overall expenditure for pharmaceuticals<br><input type="checkbox"/> Lists and catalogue of pharmaceuticals covered by the health system<br><input type="checkbox"/> Determination of the top-executive level of their organization<br><input type="checkbox"/> Others  |
| Other Actors and Groups: .....                              | O yes<br>O no | <input type="checkbox"/> Catalogue of services covered by the health system<br><input type="checkbox"/> Catalogue of specialized services covered by the health system<br><input type="checkbox"/> Level of remuneration of services<br><input type="checkbox"/> Determination of how the services are remunerated (e.g. whether by fee-for-service or budgets etc.)<br><input type="checkbox"/> Determination of the top-executive level of their organization<br><input type="checkbox"/> Others  |

In some countries, there are traditionally good links among some groups in the Health Care System, as the ones listed above, and some political parties.

Are in [country] such links among a party and a societal group of those mentioned above?

## Part C: Measures to ensure quality of medical treatment

**Q1** Is there in [country] an institution which sets clinical guidelines?

- Yes, a national level institution
- Yes, a regional / local level institution
- No

**Q2** For which of the following sectors do clinical guidelines exist in [country]?

- Usage of Pharmaceuticals
- Hospital treatments
- Usage of High Technology (CAT Scans, MRI etc.)
- Out patient treatment

**Q3** Is there an institution gathering and distributing information on **medical efficacy** of different treatments for the same illness?

- Yes, a national level institution
- Yes, a regional / local level institution
- No

**Q4** Is there an institution gathering and distributing information on the **cost effectiveness** of different treatments for the same illness?

- Yes, a national level institution
- Yes, a regional / local level institution
- No

**Q5** Is there an institution gathering information on the **quality of providers of medical services**? (E.g. a ranking of hospitals like the star-ranking in the UK, reports of the occurrence of medical failures, maltreatment etc.)

- Yes, a national level institution
- Yes, a regional / local level institution
- No

**Q6** Is the information on the **quality of providers** published or made available?

- Yes, but only to the providers themselves
- Yes, published to everybody
- No

**Q7** Do General Practitioners / Physicians have to renew their approbation or licence to provide medical services from time to time (**recertification**) ?

- No, once GPs / Physicians have obtained their licence, they don't have to renew it
- Yes, but recertification is voluntary
- Yes, medical providers are obliged to renew their licence periodically

## Part D: Role of the Central Government for the Health Care System

In some countries, the National or Central Government has fundamental direct control over the Health Care System or can intervene substantially by other means.

In other countries, the Central Government restrains itself more, leaving the day-to-day operation of the Health Care System to societal, Non-State-Actors, like Health Insurance Funds, and Organizations of Medical Providers.

Which level of government is most important for control and interventions of the state in the Health Care System in [country]?

- Central government
- Regional / Provincial government
- Local government (Municipality /County/ Community)

**Thinking about the Central Government in [country]:**

**If the competence is held by another level of government, e.g. regional or local, please indicate the appropriate level**

**CG1** If there are negotiations among Providers of medical services on the one side and Health Authorities/ Health Insurance Funds on the other side, in which e.g. issues of level of remunerations, fees or coverage are negotiated.

What is the timing and the role of the Central Government's participation in these negotiations?

- There are no Negotiations, the Government controls all aspects of the Health System
- There are Negotiations, but the Central Government has no role in the negotiations
- The Government participates **during** the negotiations
- The Government participates **after** the negotiations, it can
  - approve or disapprove the result, but without consequences for the negotiation results.
  - unilaterally change the results reached
  - set results unilaterally, if the negotiations failed to reach an outcome

## Unilateral competencies of the Central Government

The following questions concern the competencies of the central government: Which elements of the Health Systems can be set by the central government unilaterally?

Unilaterally refers to whether the Central Government has currently the legal possibility to determine the aspect, e.g. by making directive or issuing a decree etc.

Not, whether the Central Government actually does exert the competence, but has the formal right to do so under the current laws.

**If the competence is not held by the Central Government, please indicate the appropriate level of government**

**CG2** Which elements of the **Primary Care Sector** can be controlled by the Central Government unilaterally?

- Catalogue of Primary Care services covered by the health system
- Questions of capacity (e.g. number of physicians per capita or in a region)
- The overall budget for expenditure for Primary Care
- The way Primary Care is remunerated (e.g. fee for service or a per-capita budget etc.)
- The level of remuneration of Primary Care services, e.g. the amount of fees
- The way, the providers of Primary Care are organized, e.g. regional level or national-level organization.
- Determine the top-level management of the organization of providers of Primary Care

**CG3** Which elements of the sector providing **specialized medical services** ( orthopedics, eye doctors, radiologists etc) can be controlled by the Central Government unilaterally?

- Catalogue of specialized medical services covered by the health system
- Questions of capacity (e.g. number of specialists per capita or in a region)
- The overall budget for expenditure for specialized medical care
- The way specialized medical services are remunerated (e.g. fee for service or a per-capita budget etc.)
- The level of remuneration of specialized services, e.g. the fees or budgets
- The way, the providers of specialized care are organized, e.g. regional level or national-level organization.
- Determine the top-level management of the organization of providers of specialized care

O Specialized medical services are provided predominantly by Hospitals

**CG4** Which elements of the sector providing **dental care** can be controlled by the Central Government unilaterally?

- Catalogue of dental services covered by the health system
  - The overall budget for expenditure for dental services and dental care
  - Questions of capacity - e.g. number of dentists per capita or in a region
  - The way dental care is remunerated - e.g. fee for service or a per-capita-budget
  - The level of remuneration of dental care, e.g. the amount of fees, the budgets etc.
  - The way, the providers of dental care are organized, e.g. a regional level or national-level organization.
  - Determine the top-level management of the organization of providers of dental care
- Dental services are provided predominantly by Hospitals
- Dental services are predominantly paid by the patients themselves

**CG5** Which of the following elements of the **in-patient / Hospital sector** can be controlled by the Central Government unilaterally?

- Catalogue of in-patient services covered by the health system
- The national overall budget for in-patient services
- The number of Hospitals in a region
- The size of Hospitals in a region (number of beds)
- The investments in medical technology in Hospitals
- Employment decisions in Hospitals (number and type of staff employed)
- Actual remuneration level (e.g. level of fees; hospital's overall budget)
- The mode how in-patient services provided by Hospitals are remunerated (e.g. remuneration by per-diem instead of DRG)
- Organizational / administrative questions (e.g. how the Hospitals are organized and administered)
- The usage of medical technology in Hospitals

**CG6** Which of the elements of the **pharmaceutical sector** can be controlled by the Central Government unilaterally?

- Inclusion of new drugs into reimbursement by the Health System (positive/negative lists)
- Price of a medicine
- Overall Budget for expenditure for pharmaceuticals
- Pharmaceutical budget for individual prescribers (Hospitals, Physicians)
- Number of Pharmacies in a region

**CG7** Which of the following elements of the **Health System** as a whole can be controlled by the Central Government unilaterally?

- Catalogue of medical services covered by the health system
- The overall budget for health expenditure
- The level of citizen's contributions to the health system ( e.g. amount of premiums or the percentage of income going into the Health financing)
- The way negotiations among the Societal Actors in the Health System, like Medical Providers, Insurance Funds, Health Authorities, are conducted (e.g. whether negotiations take place at national or regional level etc.)

**CG8** In some countries, the organizations of Medical Providers and Health Insurance Funds/ Health Authorities internally decide on the composition of the top level administration (the executive board etc.) of the organization. In other countries, the head of these organization is determined externally by the Government.

How are these positions determined in [country]?

Top-level management of the Medical Provider(s) organization(s) is (are) determined by...

- the Central Government
- the provider organization

Top-level management of the Health Authority(s) is determined by...

- the Central Government
- the Health Authority

Top-level management of the Health Insurance Fund(s) is determined by...

- the Central Government
- the Health Insurance Fund

**CG9** By what means does the Central Government exert a control and supervision on the activities of the **Health Authority**?

- Health Authorities are obliged to produce an annual report for the government or a government agency, in which all costs (administrative costs, expenditure for health services purchased) are listed.
- Budget plans must be endorsed by the Government
- Publication of the administrative costs of the Health Authorities
- Health Authorities must apply for a formal approval of an increase of contribution/premiums and must deliver reasons for this.
- The government can replace the administration of the Health Authority
- Others (please specify)



**CG10** By what means does the Central Government exert a control and supervision on the activities of the **Health Insurance Funds**?

- Health Insurance Funds must submit an annual report to the government or a government agency, in which all costs (administrative costs, expenditure for health services purchased) are listed.
- Budget plans must be endorsed by the Government
- Publication of the administrative costs of the Health Insurance Funds
- Health Insurance Funds must apply for a formal approval of an increase of contribution/Premiums and must deliver reasons for this
- The government can replace the top level administration of a the Health Insurance fund
- Others (please specify)

## Part E: Administration and Operation of the Health Care System

### 1. Purchasers of Health: Health Insurance Funds and Health Authorities

By **Health Insurance Funds** I refer to for private or public, non-profit or for profit organizations which act as an insurance but which are not part of the state administration.

By **Health Authorities** I refer to institutions which are part of the public administration.

Examples are local or regional Health Boards, local governments, county councils, Primary Care Trusts etc.

If there is more than one level of administration, think about the level that is in direct contact with the providers, i.e. negotiates contracts etc.

**HIF1** Could you please characterize the predominant status of the Health Insurance Funds in [country]?

Health Insurance Funds are

- non-profit Insurance Funds like public Insurance Funds, mutualities etc
- for-profit insurance companies
- only formally independent from the public administration
- other (please specify)

**HA1** How would you characterize the status of the Health Authority mainly financing / organizing the provision of health care in [country]?

- the Health Authorities are under direct control of the Central Government (e.g. by the Ministry of Health)
- the Health Authorities are part of the national administration
- the Health Authorities are part of the regional government
- the Health Authorities are part of the local government
- the Health Authorities are institutions independent of the local or national government

**HIF2** How many Health Authorities or Health Insurance Funds, that can offer the full coverage of a health insurance, exist in [country]?

Can you give the approximate number?

Or, Can you indicate the approximate number?

One / up to 5 / up to 10 / up to 50 / more than 50

**HIF3** Which of the following medical services can be provided by the Health Insurance Fund / Health Authority itself?

- None, all services are contracted with independent medical providers
- ambulatory care for minor treatments like immunization against influenza
- ambulatory care also for substantial treatments
- in-patient services by Hospitals operated by the Health Insurance Funds / Health Authority

**HIF4** In some Health Care Systems, citizens are free to choose the Health Insurance Fund/ Health Authority. In others, they are assigned by law, e.g. all self employed / public employees are members of a certain Health Insurance Fund, all people living in a certain area are members of a certain local Health Authority.

How is the situation in [country]?

- Citizens have a free choice
- Citizens are assigned by occupation
- Citizens are assigned by income level
- Citizens are assigned by place of living

**HIF5** Is it possible that the citizen's contributions (premiums, percentage of income, tax rates) to the Health Insurance Funds / Health Authorities vary, or are the contributions the same for all Health Insurance Funds / Health Authorities in [country]?

- Contributions actually differ
- Contributions may differ, but factually all charge the same contributions
- Contributions are not allowed to differ

**HIF6** Is it possible that the catalogues of benefits and medical services covered or offered vary among different Health Insurance Funds / Health Authorities?

- The medical services covered actually differ
- The catalogues of services covers may differ, but factually all cover the same medical services
- The catalogue of medical services covered is not allowed to differ

**HIF7** Is it possible that the same Health Insurance Fund / Health Authority offers different packages of contributions and covered services to the citizens? Examples are that the citizen agrees to go to the general practitioner first, before visiting a specialists or accepts that some services, e.g. dental care, are not covered. In return, the citizen pays a lower contribution.

- Yes, a citizen can chose among different packages
- No

**HIF8** In some countries, the citizen can obtain a bonus, if they participate in preventive health checks on a regular basis. Examples of these are a reduced contribution rate, a repayment or lower co-payments.

Is that the case in [country]?

- Yes, there is a bonus if the patient participates in preventive health checks etc.
- Yes, there is a malus if the patient does not participate in preventive health checks etc.
- No, neither bonus nor malus in relation to the participation to preventive health checks etc.

**HIF9** Is there a financial equalization among the different Health Insurance Funds / Health Authorities, e.g. risk equalization among different Health Insurance Funds / Health Authorities where Funds are taken from one Health Insurance Fund/Health Authority and given to another one or subsidies are allocated according to need?

- Yes, there is a substantial financial equalization
- Yes, but not substantial
- No, there is no financial equalization among the Health Insurance Funds / Health Authorities

**HIF10** If a Health Insurance Fund / Health Authority realizes a surplus, who decides on what is done with the surplus?

- The Health Insurance Fund / Health Authority itself
- The state
- Others .....

**HIF11** If a deficit arises for a Health Insurance Fund / Health Authority, is this deficit covered?

- No, the deficit is not covered
- Yes, it is covered by the state
- Yes, it is covered by (please specify) .....

**HIF12** How is the top level administration of the Health Insurance Fund / Health Authority determined?

- by the Health Insurance Fund / Health Authority itself
- by the state
- by other means ( please specify) .....

## 2. Purchasers and Providers of Medical Care

**CO1** Can the Health Insurance Fund / Health Authority identify individual providers, e.g. individual GPs or Hospitals, who overspend?

- Yes, for Hospitals
- Yes, for GPs
- No

**CO2** Do the Health Insurance Funds / Health Authorities have the possibility to exclude individual providers of medical services (individual physicians, Hospitals etc.) from the provision of services, if they significantly oversupply medical services, provide insufficient quality or work in an inefficient way?

- Yes, Hospitals can be excluded
- Yes, Physicians can be excluded
- No

**CO3** Do the Health Insurance Funds / Health Authorities usually receive a detailed bill or statement from an individual provider, e.g. a Hospital or a GP, which lists all medical services and medical goods which were provided in an individual case?

- Yes, from Hospitals
- Yes, from GPs
- No

**CO4** Can the Health Insurance Funds / Health Authorities force the providers (Hospitals / Physicians) to abide by clinical guidelines?

- Yes, Hospitals can be forced to abide by clinical guidelines
- Yes, GPs can be forced to abide by clinical guidelines
- No

### 3. Parameters of the Health Care System

**N1** How and by whom is the catalogue of medical services covered by the Health System determined? (Which medical services are covered in the Health System, and which have to be purchased by the patients themselves)

O Unilateral decision

- by the State (e.g. by law or decree)
- by the Purchaser (Health Insurance Fund, Health Authority)
- by the Providers of medical services

O Negotiations among the ....

- State and Providers
- State and Purchaser (e.g. Health Insurance Fund, Health Authority)
- State, Purchaser and the Providers of medical services
- Purchasers and Providers of medical services

**N2** What describes best the way the level of remuneration for medical services, e.g. the fees, budgets etc, are set in [country]?

O Unilateral decision

- by the State (e.g. by law or decree)
- by the Purchaser (Health Insurance Fund, Health Authority)
- by the Providers of medical services

O Negotiations among the ....

- State and Providers
- State and Purchaser (e.g. Health Insurance Fund, Health Authority)
- State, Purchaser and the Providers of medical services
- Purchasers and Providers of medical services

**N3** Apart from the amount of remuneration, the mode in which a provider is remunerated can differ. Services can be remunerated by fee for service, capitation etc..

What describes best the way the mode in which a provider of medical services is remunerated is determined in [country]?

O Unilateral decision

- by the State (e.g. by law or decree)
- by the Purchaser (Health Insurance Fund, Health Authority)
- by the Providers of medical services

O Negotiations among the ....

- State and Providers
- State and Purchaser (e.g. Health Insurance Fund, Health Authority)
- State, Purchaser and the Providers of medical services
- Purchasers and Providers of medical services