



# Working Paper

## **Modes of Regulation and their Effects on Financing and Service Provision in OECD Health Care Systems**

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## Abstract

In this paper, changing modes of regulation (hierarchy, self-regulation, and market) in health care systems are analyzed as well as how these changes affect health care financing and health care provision. The study shows that modes of regulation in different types of health care systems become more similar, for example with respect to the level of coverage, type of remuneration, the access of service providers to the health care market, or the benefit package. The empirical analysis of financing and service provision demonstrates that the mode of regulation matters above all with regard to the level of health care financing. Market-based systems as in the US show the highest level and the most dramatic increase of total health expenditure, SHI (social health insurance) systems as in Germany show also major problems in stabilizing costs while NHS (national health service) systems as in the United Kingdom proved to be most successful in keeping relative health expenditures in check. Comparing an index of health care provision with the level of health care expenditure, we find only a weak correlation. While some countries are able to provide an above average package of health care services with below average health care spending, some high spending countries are only able to offer a benefit package at or below the OECD average. Different modes of regulation can help to explain why some countries were more successful in translating monetary inputs in a high level of health care services than other countries.

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## 1 Introduction<sup>1</sup>

Health care systems in advanced welfare states are facing major challenges. The most notable pressures are related to the processes of economic globalization, socio-demographic change, and persistent unemployment. Also, due to medical-technical innovations the scope for medical treatment is expanding while the financial resources have reached their limits to grow in most OECD countries. Reforms aiming at retrenchment or recalibration in health care systems have multiplied in recent years. Therefore, it is important to study the effects of these reform processes.

In this paper, we analyze the impact of different modes of regulation on the structure and level of health care financing and service provision in OECD countries. While there are numerous cross-national studies of the structure of health care systems, of financing and expenditure (e.g. Culyer 1990; Schieber and Poullier 1990; OECD 1995; Evans 1996; Jönsson and Musgrove 1997; Chinitz, Preker and Wasem 1998; Kanavos and McKee 1998), and of health care service provision (e.g. McPherson 1990; Hsiao 1995; Freeman 2000; Figueras et al. 2004; Wendt and Thompson 2004), the comparative analysis of regulatory models is a more recent topic in health care system research (see Wendt 2006).

Tuohy (2003), for instance, differentiates between 'agency', 'contract', and 'governance' as modes of regulation in the health care arena, while Giaimo and Manow (1999) draw a distinction between a 'state-led', a 'corporatist-governed', and a 'market-driven' health care system, and Rico, Saltman and Boerma (2003) between 'market', 'hierarchy', and 'networks'. Based on these and further concepts (e.g. Marmor and Okma 1998; Moran 1999, 2000; Bambra 2005; Rothgang et al. 2005), we focus on three types of regulation and contrast a hierarchical (state-led) model with a model of self-regulation by non-governmental organisations, and a market model. The more specific question, however, is whether these models are changing and how these changes might affect the financing of and service provision within health care systems.

## 2 The interrelation between regulation, financing and service provision

The question of how financing and service provision is regulated in different health care systems is analysed in three steps: First, we map different health care systems that can be characterized by their specific *regulatory mechanisms*: hierarchy, self-regulation, and market. With respect to regulation, we ask whether health care systems increasingly 'borrow' ideas from alternative types of systems, for

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example by implementing market mechanisms in hierarchical models or bargaining elements within market-based systems as a reaction to financial and further pressures. And if this is the case, we ask whether regulation in health care systems is becoming more similar. According to Enthoven, the implementation of market principles turned out to be necessary in hierarchical health care systems because these public systems were 'unresponsive to consumer preferences regarding times and places and modalities of treatment' (Enthoven 1990: 67). Yet when a major political goal is to include the vast majority of the population, even market-based systems must be regulated by the state to a relatively high extent (Evans 1996). 'In what may seem counter-intuitive, the more a health system relies on market mechanisms, the more it decentralizes to lower levels of either public or private service delivery, the greater is the need for the state to regulate that activity, to ensure that it is in fact socially responsible, economically efficient, and clinically effective, and to prevent fragmentation in the continuity and quality of health care services' (Saltman 1997: 451).

Secondly, we examine the *financing* of health care services. The method of financing is highly related to the respective mode of regulation. While the hierarchical model is in general combined with (central) government financing (taxes), the model of self-regulation is strongly connected with social insurance financing, and the market-based model with financing by private funds. Discussing both the respective model of regulation and the method of financing, we ask how these influence the development of total health expenditures (see as well Tuohy, Flood and Stabile 2004). For example, while central government financing enables the state to control the growth of health expenditure to a large extent, self-regulation and social insurance financing generally make cost control for state agencies more difficult to achieve. In addition, though market mechanisms and private financing are generally believed to increase efficiency, the influence of the state on the development of total health expenditure is limited.

Thirdly, we analyze *health care provision*. Again we ask how the respective mode of regulation might influence the level and structure of service provision. Can, for instance, the level of health employment or the number of in-patient beds be changed easier within a hierarchical, a self-regulated or a market-based system? And are such developments correlated with changes in the level and structure of health care financing? To analyze these processes, we construct an 'index of health care provision' which provides us with more precise information on the level of health care services than, for instance, the number of total health care personnel or the number of doctors (see as well Kangas 1994; Kohl and Wendt 2004).

Within the limits of this paper, it is not possible to provide information on the regulation of health care systems for a larger number of countries. We therefore selected three countries, each representing one of the three models of regulation: the United Kingdom (state hierarchy), Germany (self-regulation), and the United States (market) (see Giaimo and Manow 1999; Tuohy 2003; Rothgang et al. 2005). While Moran (2000) argues that the US should not be labelled as 'market system' but as a 'supplier-dominated health economy', other authors support our argument that the US health care system is

dominated by consumer choice and market competition (Marmor, Mashaw and Harvey 1992; Hsiao 1995; Hacker 2002, 2004).

With respect to financing and service provision, the analysis is expanded to further cases. For these quantitative parts of the analysis, our sample includes all countries with an advanced welfare state that were members of the OECD already in the 1970s. On the basis of the first criterion we exclude Turkey, while on the basis of the second one we exclude Mexico, the Czech Republic, Hungary, Korea, Poland, and the Slovak Republic. Hence, our study includes 23 of the currently 30 OECD countries (OECD 23). Concerning the period under observation, we focus on the years from 1970 to 2000 to capture the effects of the oil price shocks of the 1970s as well as the possible effects of the accelerating globalization in the 1990s. However, reliable data are not provided by the OECD for all time points, thus the analysis is partly based on less than 23 countries. This 'embedded design' provides us with the opportunity to combine a qualitative analysis of certain reform processes in the UK, Germany, and the US with a quantitative analysis of health care financing and service provision in a larger number of countries.

### 3 Regulation of health care systems

Our country sample includes a hierarchical, a self-regulated, and a market-driven health care system. To analyze changes in regulation, we focus on the three major stakeholders: financing agencies, service providers, and (potential) beneficiaries (Hsiao 1995; Jönsson and Musgrove 1997; Chinitz, Preker and Wasem 1998; Kokko et al. 1998). With regard to the bilateral relationships between these stakeholders, six major areas of regulation can be identified (Rothgang et al. 2005). These relations can either be regulated and controlled by the state, by market mechanisms, or by self-regulation of other non-governmental actors, such as social insurance institutions.

**Table 1 Relationships between financing agencies, providers and (potential) beneficiaries**

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*Between patients and financing agencies:*

1. Coverage: Inclusion and exclusion of (potential) beneficiaries
2. The system of financing

*Between financing agencies and service providers:*

3. Remuneration of service providers
4. Access of service providers to health care markets

*Between service providers and patients:*

5. Access of patients to health care services
  6. Content of the benefit package
- 

Source: own perception



In our analysis of the six areas of regulation outlined above (see for details Moran 1999; Freeman 2000; Giaimo 2002; Rothgang et al. 2005), we observe changes within each of the three health systems. In terms of population coverage, statutory regulation in the British National Health Service (NHS) includes the total population. The German Social Health Insurance (SHI) system, on the other hand, focuses on the working population, which is included on the basis that employees and employers pay compulsory contributions to social insurance funds. Today, however, the German system has broadened its membership base to non-employed groups of the population. Membership can only be made compulsory by state regulation (law), but the detailed conditions of inclusion (level of contribution rates etc.) are a matter of self-regulation within social insurance institutions. In the US market-based health care system, patients are mainly covered by private insurance funds under conditions regulated by state agencies. For certain risk groups that are not able to pay private insurance premiums, the state provides additional public programmes (such as Medicare and Medicaid). Our analysis shows that in terms of covered beneficiaries of health services, there has been an *increase of public coverage* by state regulation in Germany and the US. In Germany, even more groups of the population were included in the social health insurance, and therefore this non-governmental institution was strengthened by state regulation. In the US, responsibilities of the state to cover further parts of the population increased as well, mainly because of a growing share of pensioners and because private coverage of working-age population decreased. Hacker (2004), however, argues that public programmes failed to fill the gap which was left through the erosion of private insurance. At the same time, private (supplementary) coverage was increased in the UK.

In terms of health care financing, regulation targets different sources of funds in the three types of systems. In addition, while the method of financing in the British NHS is mainly regulated by the state, in the German SHI system social law provides only a regulatory framework, with detailed regulation of the health care budget left to negotiations between sickness funds and service providers. In the US health care system, state authorities regulate the insurance business, for example by reserve requirements or by tax policy. Our analysis of changes in regulation, also detected a convergence across systems in the area of *health care financing*. In Germany, the already high share of SHI financing increased further, while at the same time a higher level of direct state interventions can be observed in private and in social health insurance. In the UK, the central cost control system was strengthened by the introduction of cash limits. But by introducing 'internal markets', the UK government reduced direct state regulation and increased competition between service providers for contracts with purchasers. In the US we observe some de-regulation in favour of private insurance by The Employee Retirement Income Security Act (ERISA). On the other hand, more hierarchical control has been introduced within Health Maintenance Organisations (HMOs) and Managed Care plans.

With respect to *remuneration*, changes basically took place in US Managed Care systems from a previously dominant fee-for-service method to payments by salary, discounted fee-for-service, or capitation. In Germany, the fee-for-service method of remuneration was maintained for self-employed medical doctors, but a flat-rate component was introduced for family doctors in the 1990s. General practitioners (GPs) in the UK are still mainly paid on a per capita basis. As GP fundholders, however,

self-employed doctors in the UK gained a higher influence over their income. We therefore observe a development from highly diverse methods of remuneration in the three health care systems to a more common 'mixed model of remuneration.' With respect to hospital financing, a first prospective payment system based on DRG (diagnosis related groups) was introduced in the US in the 1980s. Germany is currently now following the US example, and in the UK, hospital trusts are negotiating with health authorities and GP fundholders on the number and prices of hospital treatment. More recently, Health Care Resource Groups (HRGs), the British equivalent to DRGs, have been introduced in the UK.

Concerning the regulation of *access of service providers to the health care market*, we observe a strengthening of state control in Germany by restricting the number of doctors, and in the US by introducing control mechanisms to channel the access of medical doctors in Managed Care systems. In the UK, the government still controls the number and location of general practitioners, but state restrictions were eased by the introduction of Fundholding models and Primary Care Trusts.

As far as the regulation of the *access of patients to service providers* is concerned, developments towards a similar model in all three countries can be detected. In the UK, general practitioners are the first-contact service providers since the introduction of the NHS. In Germany, however, patients still have free access to general practitioners as well as to specialists, but sickness funds are encouraged to implement gate-keeping models and other forms of Managed Care. In the US, access of patients to services and the choice of providers has also been restricted – by state regulation (in the case of Medicare/Medicaid) or by self-regulation measures in Managed Care programmes. The role of the state varied in bringing about those changes: in Germany, sickness funds were given more control through legislation; in the UK, the state introduced internal markets; while in the US, markets were the driving forces in bringing about more collective bargaining.

While up to the 1990s, issues regarding the *benefit package* were only discussed with respect to cost control, in the last decade there is an increasing interest in this issue from an efficiency point of view. The dawning of health technology assessment has led to the establishment of new institutions in all three countries. The criteria and procedures for determining benefit packages have thus become more similar. In the UK, the power to decide which services are to be financed was taken away from the providers and given to an independent institute representing all stakeholders. In Germany, we once again observe state intervention, but it aimed at the strengthening of corporatist self-government. The US case is more difficult to evaluate due to the high level of fragmentation.

Other comparative studies (Moran 1999; Giaimo 2002; Rico, Saltman and Boerma 2003; Kangas 2004; Wendt, Grimmeisen and Rothgang 2005) have also indicated a convergence of the way in which different health care systems are regulated. By introducing 'internal markets', the UK government has for example reduced direct regulation and increased the role of competition between hospitals for contracts with health authorities and fundholding GPs. In Germany, instead of regulating by decree which part of the working population has to be a member of which sickness fund, employees today have a free choice of sickness funds. The resulting competition is, among other things, targeted at making funds more responsive to insured persons. In the US, Managed Care

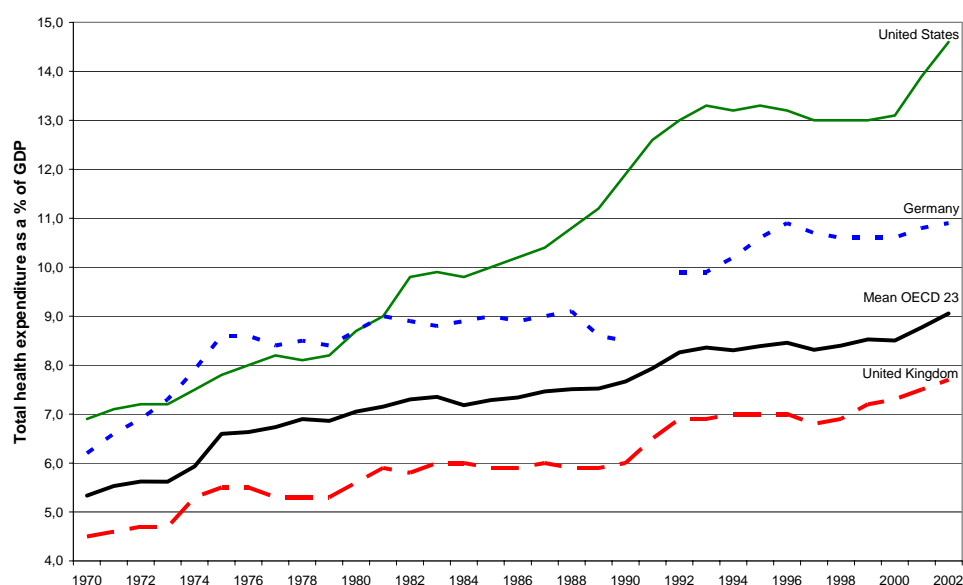
models have become increasingly important, and those models contain certain hierarchical elements such as more direct control of the method of remuneration for service providers. With respect to benefit packages, another 'meta-trend' can be observed: the heralding of health technology assessment as a standardized procedure for the determination of benefit packages. 'Gate-keeping' and DRG models are further remarkable examples that suggest health policy might increasingly be oriented to adopting 'best practices' even when the respective solutions are beyond the traditional path of reforms.

Even if the UK, Germany, and the US still represent three different types of health care systems, their specific modes of regulation have become more similar in recent years. In the following sections, we analyze whether processes of convergence are also mirrored in developments of financing and service provision. By including further OECD countries we try to detect typical trends with respect to the change of health care systems.

#### **4 Financing of health care services**

The control of health care expenditures seems to be a perennial problem in all types of welfare states and health care systems (Culyer 1990; Schieber and Poullier 1990; OECD 1995; Evans 1996; Jönsson and Musgrove 1997; Chinitz, Preker and Wasem 1998; Kanavos and McKee 1998). There are both demand-side and supply-side reasons for why health care expenditures are accounting for an ever growing share of GDP. On the demand side, these reasons include population ageing (with more expensive health needs) and a growing demand for health services in affluent societies in general ('health' as a 'superior good'). On the supply side, reasons include the labour-intensive character of health services which are not easily amenable to productivity gains, and medical and technological progress which leads to cost-intensive treatment of ever more diseases. However, while these factors are general trends affecting more or less all advanced health care systems alike, it is an important policy question whether some health care systems are more able to control health expenditure development than others.

In *figure 1* we see an increase of total health care expenditures in all 23 OECD countries which are included in the analysis from 5.3 per cent of GDP in 1970 to 9.1 per cent of GDP in 2002. That is, the share of health care expenditures in GDP has risen by more than 70 per cent of its initial level during that period, thereby crowding out other expenditure items.

**Figure 1 Total health care expenditure as % of GDP**

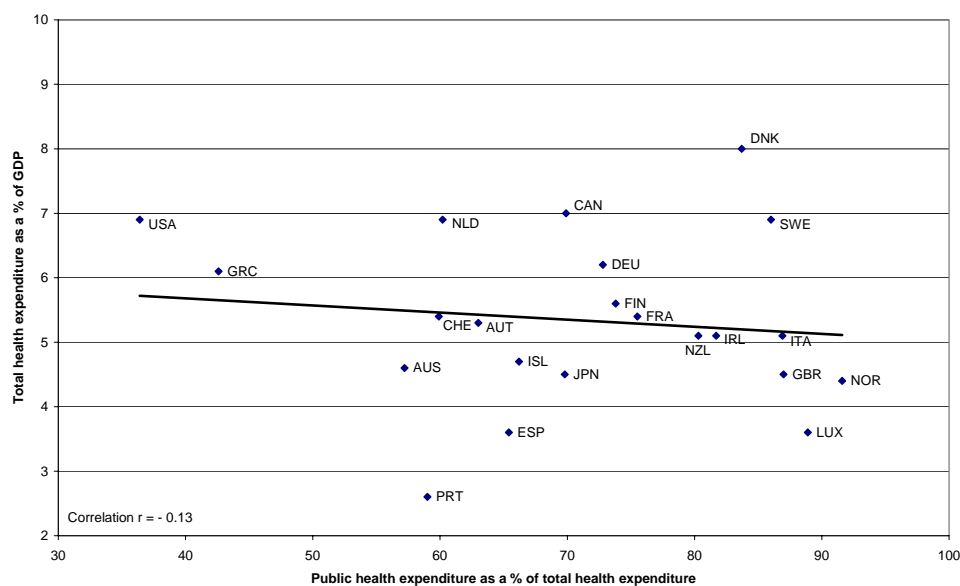
Note: Germany: data until 1990 are for West Germany; data from 1992 onwards are for United Germany.

Source: OECD 2004

This analysis shows that the British NHS has been the most successful in controlling health care costs. The German SHI scheme also managed to stabilize total health expenditure (in per cent of GDP) in the period following the oil price shocks of the 1970s. Following German Unification, however, total health expenditure reached its highest level so far. Compared to the mainly publicly financed types of health care systems, the market-based US health care system experienced a virtual explosion of health care costs – quite in contrast to the claim often made that market mechanisms would contribute to more competition among service providers and thereby exert more control on costs. Until 2002, total health financing increased up to more than 14 per cent of GDP and thereby doubled its initial level in 1970. As a result of the much more pronounced expenditure increase in the US, a growing divergence between the three health care systems with regard to total expenditure development becomes apparent.

According to Alber (1988, 1989), in periods of welfare state expansion health care financing is increased in all types of health care systems. In periods of cost containment, however, NHS systems with higher interventionist power of the state are in general more effective in controlling the increase of health care financing than either SHI systems or market-based systems.

**Figure 2 Total health care expenditure (as a % of GDP) and public share of total health care financing in 1970**

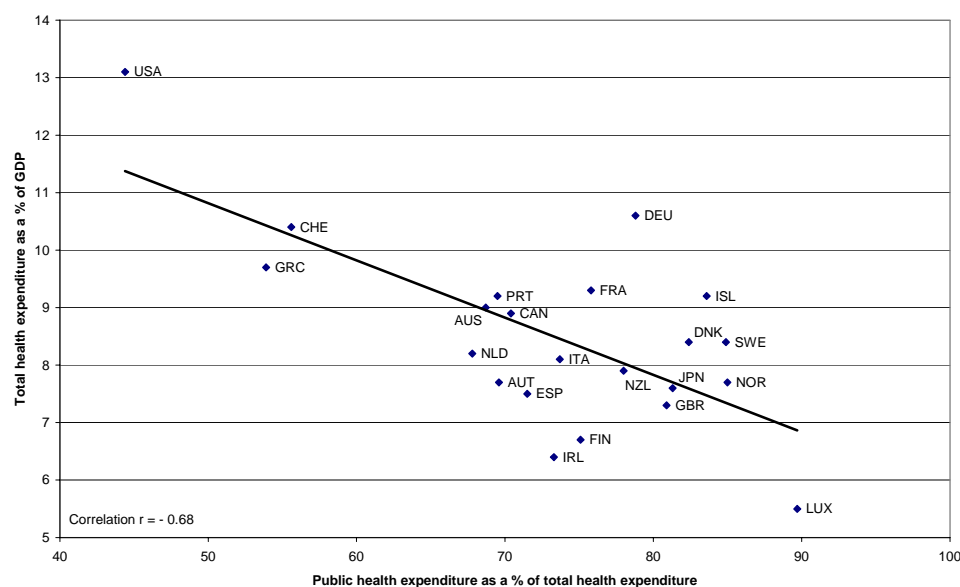


Notes: Belgium: data missing; Denmark: data for 1969 (THE in % of GDP) and 1971 (PHE in % of THE); Netherlands: data for 1972; Switzerland: data from OECD 2002

Abbreviations are as follows: AUS: Australia, AUT: Austria; BEL: Belgium; CAN: Canada; DNK: Denmark; FIN: Finland; FRA: France; DEU: Germany; GRC: Greece; ISL: Iceland; IRL: Ireland; ITA: Italy; JPN: Japan; LUX: Luxembourg; NDL: Netherlands; NZL: New Zealand; NOR: Norway; PRT: Portugal; ESP: Spain; SWE: Sweden; CHE: Switzerland; GBR: United Kingdom; USA: United States.

Source: OECD 2002; OECD 2004

**Figure 3 Total health care expenditure (as a % of GDP) and public share of total health care financing in 2000**

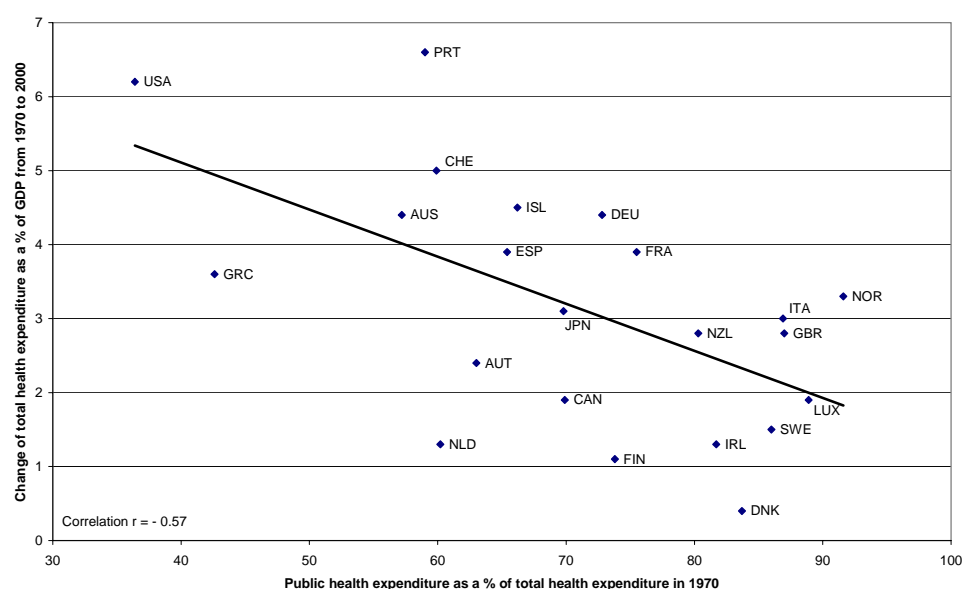


Notes: Belgium: data missing; Netherlands: data for 1997 (PHE in % of THE)

Source: OECD 2004

The hypothesis that publicly financed systems have a higher potential for cost containment is supported when we correlate total health expenditure (in per cent of GDP) with the share of public health financing<sup>2</sup> (see *figures 2 and 3*). While in 1970 there is almost no correlation, in 2000 we find a strong negative correlation of  $r = -0.68$  (even when excluding the US case, the correlation is at  $r = -0.49$ ). These findings are further corroborated when we correlate the share of public health financing in 1970 with the percentage point change in total health expenditure 1970 – 2000, i.e. when we predict the increase in total health expenditure on the basis of the share of public financing at the beginning of the period (see as well Tuohy, Flood and Stabile 2004).

**Figure 4 Public health care financing as a % of total health care financing in 1970 and change of total health expenditure as a % of GDP from 1970 to 2000**



Source: OECD 2004, own calculation

Taken together, *figures 2 – 4* provide evidence that the more a health care system is financed out of private sources, the higher is the *level* of total health care expenditure (in per cent of GDP) and also the *increase* in total health care spending. This indicates that public agencies – by regulation and/or as purchasers of health care services – can control health care costs more effectively than market forces. However, while state regulation may be able to slow down the increase of health care expenditures, examples for a reduction of an already achieved level of health care costs are very rare (Wendt and Thompson 2004).

The comparison of regulatory measures in the health care systems of the UK, Germany, and the US has shown that the respective solutions were sometimes beyond the system-specific path of reforms (Moran 1999; Freeman 2000; Giaimo 2002; Rothgang et al. 2005). How did these changes influence

<sup>2</sup> 'Public health financing' here comprises financing by general tax revenues as well as by social security contributions.

the development of health care financing? With respect to the three selected countries, our findings indicate that at least some of the cost containment regulations might have been effective.

In the UK, for the whole period under consideration, total health care expenditure as a share of GDP remained below the OECD average, a fact that can be considered to be highly related to the centralized planning and control system of the British NHS. With the introduction of internal markets into the British NHS, total health expenditure increased at a *higher* rate than in the previous years. The fact that health expenditures in Britain are still below average, however, points to the possibility that in combination with the hierarchical cost control system, the new market-like mechanisms might produce at the same time low cost health provision *and* a higher responsiveness of service providers to the needs of their patients.

In the German SHI system, total health care costs are well above the OECD average. In spite of the large number of cost control measures by the German government since the late 1970s, total health care expenditure (as a share of GDP) today is the second highest in the OECD world. The system of negotiations between sickness funds and service providers seems not to be able to establish effective cost control mechanisms, a deficit that became obvious in the years following German unification when health care costs increased from 8.5 per cent of GDP in 1990 to 10.9 per cent of GDP in 1996 (OECD 2004). In the 1990s, the federal government intervened directly in the corporatist self-regulating structure by introducing a (partly) flat-rate payment system for family doctors, fixed budgets for drug prescriptions etc. (Health Care Structure Act 1993). Furthermore, the ability of sickness funds to determine contribution rates autonomously was restricted by the Health Care Structure Act (1993), the Health Care Reorganisation Act (1997) and the GKV Modernisation Act (2003). In the late 1990s, total health care financing remained more or less at the same level, indicating that direct state intervention has been (partly) effective. Other examples point in a similar direction. In the Austrian SHI system, for instance, contribution rates are set by state agencies (not by sickness funds as it is the case in Germany!), leading to a level of total health care expenditure below the OECD average (OECD 2004).

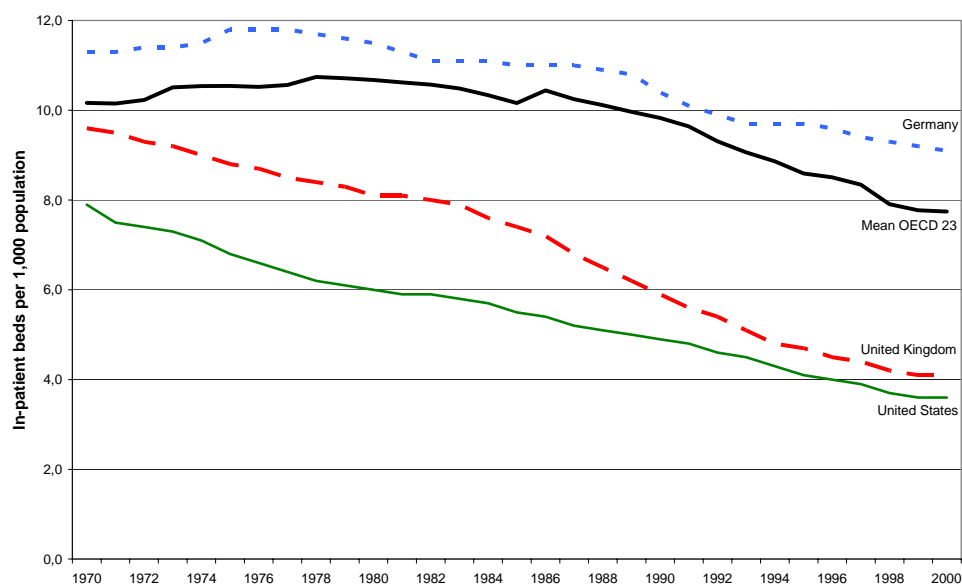
The high level of total health care expenditure in the US (more than 14 per cent of GDP, about 5 percentage points above OECD average) provides strong arguments that a high share of private financing – in combination with a low level of direct state intervention – opens the door for disproportionate cost increases. In line with this proposition, we find the third highest share of private financing in Switzerland where total health care expenditure also ranks third in the OECD world. In the US system, the process of cost increase has only levelled off during the 1990s. In this period, managed care settings, such as Health Maintenance Organisations, have become more and more important, and these units may contain certain hierarchical elements as for instance a higher degree of control towards providers (with respect to remuneration systems). However, this seems to have been only a temporary effect, for since 2000 total health expenditure are again surging. One possible reason for this development is that since 2000 coverage by HMOs decreased while the market share of managed care plans with less restrictive cost control mechanisms (such as Preferred Provider Organizations, PPOs) increased.

## 5 Health service provision

An obvious factor contributing to the increase of health expenditure seems to be the expansion of employment in the health sector. This is especially so when we assume that productivity increases are comparatively low in the service sector (Baumol 1993; Culyer 1990; McPherson 1990; Hsiao 1995; Freeman 2000). Then an expansion of services provided is likely to be paralleled by an increase in the number of service providers. Employment in the health sector includes, of course, not only the medical profession, but all kinds of paramedical personnel, such as nurses, physiotherapists or chiropractors. Given the differences in qualification and, hence, in earnings for the various categories of personnel, total health employment is, of course, only a crude, but nonetheless useful indicator of the manpower input to the health system. In view of the different types of organisation of health care systems, one can hypothesize that such differences in organisation and in service priorities (e.g. out-patient vs. in-patient care, physical vs. mental health, etc.) will also show up in the level and in the structure of health employment (McPherson 1990; Freeman 2000; Figueras et al. 2004).

At a first glance, the development of employment in the health care sector of OECD countries seems to be quite similar to the development of health care spending (OECD 2004). On average, the numbers of total health employment have almost doubled during the period 1970 to 2000 (OECD 2004; Wendt, Grimmeisen and Rothgang 2005). Focussing on the number of medical doctors per 1,000 population we find a similar development (OECD 2004). Another input factor for service provision in OECD health care systems is the density of in-patient beds per 1,000 inhabitants (see figure 5).

**Figure 5 Total in-patient beds per 1,000 population**



Note: data on total in-patient beds are not available in OECD 2004

Source: OECD 2002



On average, OECD countries reduced in-patient beds since the 1980s. Increasing pressure for cost containment as well as new medical (technological) appliances result in shorter hospital stays and, therefore, fewer in-patient beds were needed. This trend of reduction of in-patient beds is particularly pronounced in the market-based US system as well as in the hierarchical British NHS where the number of hospital beds has been cut in half during the period under observation, while the German SHI system shows a more stable development.

Again, some of the changes in the regulation dimension in the UK, Germany and the US are instructive for a first explanation of the tendencies in the development of health employment and of the supply with in-patient beds. In the UK, the number and location of general practitioners is highly controlled by central government. The major part of the remaining medical doctors work in state-owned hospitals, explaining the low number of medical doctors in the UK which is only about 58 per cent of OECD average (OECD 2004). In the self-regulated German system, on the other hand, only indirect control of the number and location of general practitioners and specialists was possible for many years. In the US, too, general practitioners and specialists used to have free access to the 'health care market'. Within Managed Care plans, however, the access for medical doctors to the health care market has partly been restricted.

The comparison of hospital beds indicates that a system of hospital financing on the basis of Diagnosis Related Groups (DRG) is not a precondition for a successful reduction of in-patient beds. The private US system provided the lowest number of hospital beds already before the introduction of a DRG system in the 1980s. In the British system, hospitals received for many years a fixed budget. From the early 1990s onwards, most hospitals received the status of partly independent hospital trusts and had to earn their revenues on the basis of contracts won with health care purchasers (Health Authorities and GP Fundholders). Today, the British level of in-patient beds is close to the US curve, but for different reasons. While in the British case the low number of hospital beds can be related to the high degree of state control, the US case is less unequivocal. From 1980 onwards, access to the hospital market was highly restricted by state regulation (National Planning Act, 1974), and state agencies were also involved in the introduction of prospective payment systems on a DRG basis. The latter development was targeted at implementing transparency as well as competition between hospitals. The low number of hospital beds in the US can, therefore, be explained as the combined effect of state regulation and competition.

The number of in-patient beds in Germany is well above the OECD mean. The German dual system of hospital financing – with the sickness insurance funds covering the operating costs of hospitals and the Länder responsible for the investment in new facilities – seems to be less successful in reducing hospital beds than either a hierarchical model or a model of regulated competition. Developments in the US system (and further systems with hospital financing on DRG basis), however, give reason to assume that in Germany as well the DRG system which is currently being introduced will contribute to a reduction of the above OECD average level of hospital beds.

While in most countries cost containment of health *expenditure* is the main focus of reforms, the production side of health *services* is often neglected in the health policy debate – probably due to the difficulties of measuring the level and/or quality of health services. Focussing exclusively on health expenditures, however, misses the point of what health policy is all about. Neither maximizing nor minimizing health expenditures is a reasonable policy goal in itself. High levels of health expenditure only make sense under the assumption that these monetary inputs are efficiently converted into real inputs (such as medical facilities and personnel) and finally into real outputs. Likewise, containing or reducing health expenditure would not make much sense if it were tied to cuts in real resources and/or in the quality of services. It only makes sense under the opposite assumption that it is *not* accompanied by a proportionate reduction in the quantity and/or quality of services. The real challenge of health policy is, therefore, to make effective use of (monetary and real) resources in order to provide medical and social services meeting the needs and demands of citizens.

In order to investigate the relationship between health care expenditure and health service provision, we constructed an index of health care provision (Kohl and Wendt 2004: 323ff.)<sup>3</sup>. We selected two indicators from in-patient health care (total hospital employment and hospital beds), two indicators from out-patient health care (total out-patient health employment and general practitioners), one indicator from dental health care (dentists) and one indicator from pharmaceutical health care (pharmacists). We aggregated these indicators into an index of health care provision in the following way: First, the raw values for the various indicators, expressed per 1,000 of population, were standardized and recalculated as percentages of the OECD 23 average (= 100). Our index of health care provision was then calculated as the average value for all six health service indicators (where all indicators were weighted equally, thus approximating the relative importance of the various health care sectors).<sup>4</sup>

Comparing the index of health care provision with the level of health care expenditure (in per cent of GDP), we find only a weak correlation ( $r = 0.18$ ), with a wide dispersion (see *figure 6*). Some countries as, for instance, Norway, Finland or Iceland are able to provide an above average package of health care services with below average health care spending while other countries, as the US or Canada, with above average health care spending are only able to offer a package of health care services at or below the OECD average. Inasmuch as our index of health care provision is an adequate measure of 'real inputs' to the health care system, the former group of countries can be said to have more effectively transformed their monetary inputs into 'real inputs' and thus to have achieved a superior policy path, compared to the latter group of countries. Notably the US with by far the highest level of health care expenditure barely reaches an average level with regard to our index of health care provision. Sweden or Austria, on the other hand, only spend about the OECD average for health care

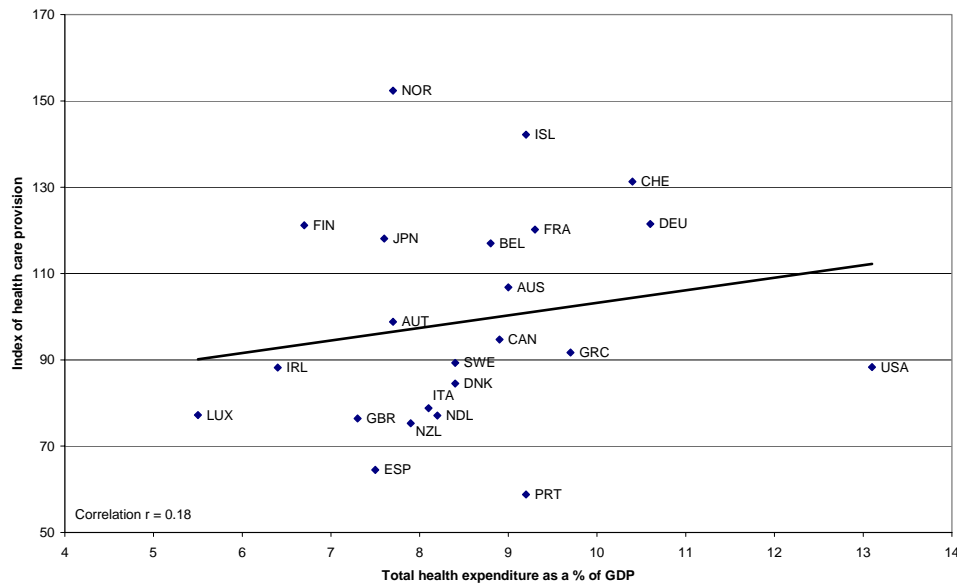
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<sup>3</sup> For earlier attempts to develop indices for measuring the quality of health care services, see Alber 1988 and Kangas 1994.

<sup>4</sup> For the raw values of the various indicators for the EU countries, see Kohl and Wendt 2004: 324, Table 7. The same procedure was followed here for the OECD countries.

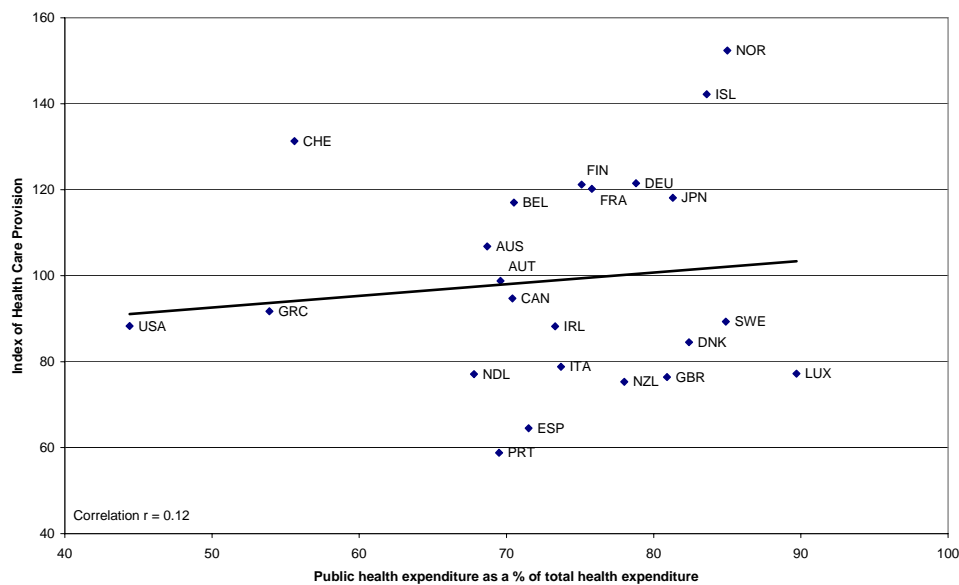
(i.e. 5 per cent of GDP less than the US), but are able to achieve a similar ranking with regard to health care provision.

**Figure 6 Total health care expenditure (as a % of GDP) and Index of health care provision, 2000**



Source: OECD 2002; OECD 2004

**Figure 7 Public share of total health financing and Index of health care provision, 2000**



Source: OECD 2002; OECD 2004

Our analysis of the financing dimension has shown that the level of total health care spending is negatively correlated with the share of public financing: the higher the share of public financing, the lower the level of total health expenditure. In the service dimension, however, no such relationship can be detected. The index of health care provision is not negatively, but weakly positively correlated ( $r = 0.12$ ) with the public share of health care financing, again with a wide dispersion (see *figure 7*). We find, for instance, countries with a high public share of the health care budget (like Luxembourg, the UK or New Zealand) that provide a below average package of health care services, and we find countries with a much lower share of public financing (like Switzerland or Belgium) that provide a health care package well above the OECD 23 mean.

This seemingly inconsistent pattern may be explained in the following way: Total health expenditure is probably more important in determining the level of provision of health services than is the public share of health care financing. Since countries with a high public share of financing are better able to control overall health care spending (negative correlation), one would expect that lower expenditure levels in these countries might lead to a poorer provision of services. This, however, is not the case. Despite lower expenditure levels, a high share of public financing enables them to provide health services which are, on average, even slightly better than in countries with a low share of public financing.

## 6 Discussion

As our empirical analysis has demonstrated, the mode of regulation matters above all with regard to health expenditure development. There can be no doubt that the market-based US system shows the highest level and the most dramatic increases of total health expenditures. The self-regulated German SHI scheme shows major problems in stabilizing health care costs. The example of the Austrian health care system, however, demonstrates that a SHI system with a higher level of state regulation can also implement effective cost control mechanisms. Finally, the British NHS system proved to be most successful in keeping relative health expenditures (in per cent of GDP) in check. There is a fairly strong negative correlation between the public share of health care financing and total health expenditure in 2000 which can be taken as evidence that the stronger interventionist and regulatory powers of the state are more effective in controlling health care costs than competitive market mechanisms.

While in general there is a positive correlation between total health expenditures and total employment in the health care sector, the type of regulation also matters with regard to manpower resources. Total health care employment grew disproportionately in the US since the mid-1980s, but the growth of the number of medical doctors was below OECD average.

In order to measure the input of real resources to health care systems more accurately, we constructed an 'index of health care provision'. The correlation between relative health expenditure levels (in per cent of GDP) and the index of health care provision in 2000, however, turned out to be

very low. This seemingly negative finding can be interpreted as evidence that high expenditures for health care do not necessarily translate into a better provision of services, but are mediated by organisational factors. The different modes of regulation in health care systems can help to explain why some countries succeed to provide superior services with only average or below average health expenditures.

A closer analysis of changes in public regulation of health care systems in three countries representing three types of regulation (UK, Germany and the US) leads to the conclusion that such distinctions become increasingly blurred when certain ideas and policy instruments are adopted from alternative health care systems. For instance, while internal markets and thus competitive mechanisms have been implemented in the British NHS, in the US health care system market forces have been reduced by strengthening hierarchical control within Managed Care settings. In the German SHI system, non-governmental social insurance agencies have been strengthened by state regulation. At the same time, competitive mechanisms were introduced in Germany by offering all members of sickness insurance funds the freedom of choice between different funds. Since each of the three countries represents one specific type of regulation, our analysis suggests that health care systems are facing a process of convergence with respect to regulation (see also Giaimo 2002; Wendt, Grimmeisen and Rothgang 2005). It remains to be seen and further investigated whether such a hybridisation of regulatory modes will in the future also lead to a convergence in the outcome and performance of different health care systems.

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