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# Mapping European healthcare systems: a comparative analysis of financing, service provision and access to healthcare

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**Summary** Healthcare systems have been institutionalized to provide healthcare for those in need. Therefore, comparisons should focus in particular on differences in healthcare provision and on how access to healthcare services is regulated. This article presents a typology of healthcare systems which simultaneously takes into account data on expenditures, financing, provision and access to healthcare in 15 European countries. On this basis, three types of healthcare system have been constructed using statistical cluster analysis: a *health service provision-oriented type* that is characterized by a high number of service providers and free access for patients to medical doctors; a *universal coverage – controlled access type* where healthcare provision has the status of a social citizenship right and equal access to healthcare is of higher importance than free access and freedom of choice; and a *low budget – restricted access type* where financial resources for healthcare are limited and patients' access to healthcare is restricted by high private out-of-pocket payments and the regulation that patients have to sign up on a general practitioner's list for a longer period of time.

**Key words** access to healthcare, cluster analysis, healthcare systems, health policy, typology

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## Introduction

Healthcare systems provide security against major life risks: 'Not often, but sometimes, it is a matter of life and death. More usually it represents a powerful means of alleviating the anxiety, discomfort, and incapacity that come from sickness and ill health' (Freeman and Moran, 2000: 35). When studying how protection during illness has been institutionalized in different countries, healthcare systems are often distinguished according to their main source of funding. While cross-country comparisons of welfare states have made considerable progress from the early 1990s onwards (Esping-Andersen, 1990; Arts and Gelissen, 2001; Scruggs and Allan, 2006), in healthcare system research 'Social Health Insurance' (SHI) types are still mainly contrasted with 'National Health Service' (NHS) schemes, and the latter has partly been

differentiated into early and late developed NHS countries. Alternatively the names of the founding fathers, Bismarck and Beveridge, are employed when comparing these types (Kokko et al., 1998; Marmor and Okma, 1998; Hassenteufel and Palier, 2007).

This article argues that comparisons that rely on broad organizational and financial principles are not sufficient for gaining a better understanding of healthcare systems (see also Marmor et al., 2005). Since healthcare systems serve to provide care for those in need, comparisons first and foremost have to concentrate on healthcare provision as well as on how access to health service providers is regulated. Taking into account information on expenditures, financing, healthcare provision and access to health services, this article presents a typology of healthcare systems which builds on but goes beyond previous comparative analyses.

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Based on existing typologies, as outlined in the following section, a set of indicators which represent major characteristics of healthcare systems is introduced in the third part. By using these indicators, 15 European healthcare systems were classified with statistical cluster techniques.<sup>1</sup> The construction of types helps to better explain how healthcare systems differ from each other. Beyond that, it contributes insights into the interrelation of the main dimensions of healthcare systems. More specifically it shows how access to healthcare is related to levels of expenditure, the public-private mix of healthcare funding, and the density of service providers. In the Conclusion the healthcare system types are discussed and compared with earlier typologies. Furthermore, examples are provided for demonstrating that these types are not only useful for the understanding of healthcare systems as such but also provide the basis of further studies which may, for instance, focus on their effects on satisfaction, utilization, and health outcomes respectively.

## Typologies of healthcare systems

The welfare regime debate provides valuable insights in conceptual terms but cannot be directly applied for the comparative analysis of healthcare systems due to its missing focus on social and healthcare services (Alber, 1995; Bambra, 2005; Wendt et al., 2009). In order to close this analytical gap, Bambra (2005) has introduced a 'health decommodification index'. Her concept, however, does not directly cover access to healthcare providers and can therefore not be taken as a starting point for the typology to be developed in this article.

This also holds true for comparative studies on healthcare systems that focus on modes of governance in order to better understand institutional differences across countries. Tuohy (2003), for instance, differentiates between 'agency', 'contract' and 'networks' as modes of governance in the healthcare arena, while Giaimo and Manow (1999) draw a distinction between 'state-led', 'corporatist-governed' and 'market-driven' healthcare systems. These and other concepts (see Marmor and Okma, 1998; Rothgang et al., 2005), however, do not directly link the 'modes of governance' to quantitative data on levels and structures of healthcare financing and service provision or to institutional data on access to healthcare.

Other typologies have a stronger focus on provision. Field (1973) distinguished healthcare systems

according to the ownership of healthcare services and doctors' autonomy. An OECD study categorized healthcare systems according to the dimensions 'coverage', 'funding' and 'ownership' (OECD, 1987) and Frenk and Donabedian (1987) suggested a typology of state intervention in medical care that is based on the form of state control over the production of medical care and the basis for eligibility of the population.

A conceptual framework that systematically combines the dimensions of funding, service provision and governance has been introduced by Moran (1999; 2000). His concept of the 'healthcare state' consists of the three governing arenas: 'consumption', 'provision' and 'production'. By referring to Moran's typology, Wendt et al. (2009) suggest combining the dimensions of 'financing', 'service provision' and 'regulation' with the level of involvement by the state, non-governmental actors and the market. The result is a taxonomy of 27 healthcare systems, of which three can be identified as 'ideal types'. This typology serves to identify differences across countries and changes over time regarding the role of the state in healthcare in relation to the role of societal-based and private actors.

Each of the concepts discussed above (see the more detailed discussion of health system typologies in Bureau and Blank, 2006; Wendt et al., 2009) covers healthcare provision. However, they do not capture the number of available providers or regulation of access to healthcare but instead focus on organizational principles on the supply side: ownership of health services (Field, 1973; Frenk and Donabedian, 1987; OECD, 1987; Moran, 1999; 2000; Wendt et al., 2009) and doctors' autonomy (Field, 1973; Moran, 1999; 2000). As far as access is concerned, it refers to health system coverage (Frenk and Donabedian, 1987; OECD, 1987) but not to patients' access to providers. Even if the term 'consumption' is used, the focus is not on patients' access to caregivers but on more general eligibility criteria for coverage. In Moran's concept of the healthcare state, institutions governing healthcare consumption control patients' eligibility for access to the healthcare system as well as the mechanisms which decide on the allocation of financial resources (Moran, 1999; 2000; Bureau and Blank, 2006). The conceptual framework of Wendt et al. (2009) captures regulations of patients' access to providers. However, it is not the strength of regulation that is of interest here but *who* is regulating.

A strong focus on provision of healthcare, however, is essential to a typology of healthcare systems that may support comparative analyses of the functioning of healthcare systems and their effects on patients' satisfaction, healthcare utilization and health outcomes. This does not mean that expenditure and financing indicators should be ignored. The provision of health services requires funding that today in some European healthcare systems exceeds one-tenth of the GDP. Furthermore, the mode of financing is not only an indicator of the role of the state in healthcare. Private out-of-pocket payments also have an influence on patients' access to service providers and may discriminate against lower-income groups. In the following, a set of indicators is discussed that captures major health system characteristics. The selection of indicators follows literature which considers 'financing', 'health service provision' and 'regulation' as the main dimensions of healthcare systems (Moran, 1999; 2000; Rothgang et al., 2005; Powell, 2007). On this basis, 15 European healthcare systems<sup>2</sup> are classified by using cluster analysis. Our goal is to construct groups of health systems which combine in a typical way expenditure, financing, service provision and access regulation indicators.

## Indicators for classifying healthcare systems

### *Healthcare expenditure*

Although the control of healthcare expenditure is considered to be a major problem in all types of healthcare systems, some have turned out to be more successful in stabilizing healthcare costs than others (Freeman and Moran, 2000; Rothgang et al., 2005). Total health expenditure (THE) covers the sum of expenditure for activities in the area of preventive, outpatient and inpatient healthcare, caring for persons with chronic illness etc. as well as administering the healthcare system (OECD, 2007). THE can either be calculated as a percentage of GDP, indicating the level of resources a society is willing to spend on the provision of healthcare, or it can be calculated in monetary units per head of the population, indicating the amount of money a society invests on average in the health of its members. In this article, THE is measured in US dollars per head of the population by using purchasing power parities (PPP/general deflator) since the amount of money

actually spent on healthcare, which is related to the country's economic position, is certainly more important for the functioning of the healthcare system than the relative level of health expenditure. As argued by Wendt and Kohl (2009), however, there is only a weak correlation between the financial resources invested in a nation's health and the level of health employment, possibly due to differences in prices and health providers' income chances. Therefore, not only monetary input but also health employment indicators (see below) are to be taken into account when constructing healthcare system types.

### *Healthcare financing*

In some comparative studies, the mode of financing is taken as the main or even sole indicator for classifying healthcare systems. Doubtless, it is very important to patients whether they are entitled to healthcare on the basis of earmarked social insurance contributions, private payments or citizenship (which in general means tax financing) (Mossialos and Dixon, 2002). While information on the mode of entitlement will be covered under the dimension 'institutional characteristics', in the 'financing dimension' the public share of total health funding (in percent) and the share of private out-of-pocket payments (in percent of total health financing) will be included. The share of public funding can be taken as an indicator for the interventional power of the state (Alber, 1988). The hypothesis that the capacity to stabilize healthcare costs is greater the higher the share of public funding is supported by the fact that today there is a strong negative correlation between THE in percent of GDP and the share of public funding (Wendt and Kohl, 2009). Regarding access to healthcare providers, the share of public funding indicates to what extent it is considered a public responsibility to guarantee entry for those in need of medical treatment. For the individual patient, a second indicator of the financing dimension is highly relevant (especially concerning his or her access to healthcare providers): the level of private out-of-pocket payments (measured in percent of THE). Various studies (Rice and Morrison, 1994; Thomson and Mossialos, 2004; Van Doorslaer and Koolman, 2004; Van Doorslaer et al., 2006) have shown how private cost sharing reduces health service utilization and increases inequality.

The higher the share of private out-of-pocket funding, the greater the privatization of risk in the case of sickness (Hacker, 2004) and therefore, especially for lower-income groups, the barriers to entering the health system.

### *Healthcare provision*

Compared to the high attention paid to expenditure and financing, the production side of health services is rather neglected in the international health policy debate. This holds despite the fact that healthcare is particularly labour-intensive and about 70 percent of the total healthcare budgets in Western Europe is directly related to employment (Dubois et al., 2006b). In recent publications of the European Observatory on Health Systems and Policies Series, health employment in Europe has been given greater attention (Dubois et al., 2006a; 2006b; Rechel et al., 2006). These publications represent what Marmor et al. (2005) label as 'stapled' national case-studies which allow for a detailed description of healthcare providers and therefore provide the basis for learning about health delivery processes in European countries.

For cross-national studies and also for the construction of health system types, however, only a limited number of indicators are to be selected that represent the level and structure of health employment in the included countries. The neglect of health provision in comparative studies is probably due to the difficulties of measuring the level of health services on the basis of a few pre-selected indicators. Alber (1988), for example, used the density of medical doctors and hospital beds as indicators for the 'quality of healthcare' in OECD countries. Compared with these input indicators, the 'quality of health service index' developed by Kangas (1994) is more complex and takes into account the earnings replacement ratio of sickness benefits, the coverage rates of healthcare systems, the number of waiting days, and the length of the contribution period required for the access to benefits. However, while this index covers essential 'social rights' elements of health systems, it does not directly measure the availability of health services.

For a comparison of the *level* of healthcare provision, further or, more precisely, different indicators are to be included (McPherson, 1990; Freeman, 2000; Figueras et al., 2004). For patients, the availability of healthcare providers is crucial and therefore health

employment data should be directly included in health system comparisons. In the current article, four health employment indicators have been selected on the basis of available OECD data. With these data, two 'healthcare provider indices' have been constructed: one 'inpatient care index' which includes specialists and hospital nurses and one 'outpatient care index' which includes general practitioners and pharmacists (see also Wendt and Kohl, 2009). The indices provide information on whether healthcare systems rely to a higher extent on primary healthcare (general practitioners, pharmacists) or on specialist healthcare (specialists, hospital nurses).

### *Institutional characteristics*

Access of patients to healthcare is not only influenced by private copayments or available service providers but also by institutional regulations. A precondition for receiving health services is that (potential) care receivers are covered by the health system. However, since European systems include, with few exceptions, the total population, it is not really meaningful to use the coverage rate for classifying health systems (see, however, Bambra [2005], who takes the coverage rate into account when calculating a health decommodification index).

As a first institutional indicator with an effect on patients' access to the healthcare system, the mode of entitlement is considered. Possible bases of entitlement are citizenship, social insurance contributions, private insurance contributions or proven need (Mossialos and Dixon, 2002). Compared to proven need or entitlement on the basis of citizenship, private and social insurance might stimulate a higher take-up rate of health services in return for contribution payments. While the US healthcare system can be taken as an example of private insurance being the main basis of entitlement, in Europe it is either citizenship or social insurance. Even the most inclusive healthcare systems cover parts of the population on the basis of proven need or exempt them from private out-of-pocket payments. Such details cannot be included in this comparative analysis where the focus will be on the *main* mode of entitlement.

As a second indicator, the remuneration of doctors is included. Doctors can be reimbursed on the basis of fee-for-service, per case, per capita (the number of patients on his or her list), or by a salary. The control over doctors' income is highest when paying a salary

and lowest under a fee-for-service scheme (Culyer, 1990; Groenewegen et al., 2002). The reimbursement method also affects how doctors alter their workload and ‘it seems fairly clear that fee-for-service methods result in both more active treatment and higher incomes of doctors’ (Culyer, 1990: 38). The remuneration method indicates the degree of doctors’ autonomy from state control (Moran, 1999) and presumably also influences the level of health services provided. Whereas a fee-for-service payment may set an incentive for the doctor to see his or her patients as often as possible, a reimbursement per capita or a fixed salary might set an incentive for reducing the workload (Rice and Smith, 2002).

As a third institutional indicator, the regulation of patients’ access to healthcare providers is included (see also Reibling, forthcoming). This indicator captures whether patients have a free choice of doctors or whether they have to sign onto the list of a certain general practitioner (GP) for a longer period of time (‘gatekeeping system’ or ‘family doctor principle’) (Saltman, 1994; Rico et al., 2003). This indicates the degree to which patients’ access to GPs is regulated. Furthermore, access to specialists can be restricted. Patients can have free choice and direct access to specialists. Alternatively a referral by a GP can be required. In a third type of system, people may skip the referral system to specialist treatment by accepting additional copayment (Reibling and Wendt, 2008). For constructing health system types, these indicators are combined to an ‘access regulation index’ which ranges from free choice of doctors (no regulation) on the one side to strict ‘gatekeeping’ on the other, with patients having to sign on a GP’s list and needing a referral to specialists. Table 1 summarizes the indicators used for the analyses.

## Data and analysis

### Data

In this article, types of healthcare systems were constructed by using quantitative data (see Table 2) on the level of total health expenditure, the share of public funding, the level of private out-of-pocket payment and the level of health employment. For the measurement of health service provision, two healthcare provider indices were calculated. By using factor analysis (see annotation in Table 2), two indicators for specialist healthcare, one indicator for primary

**Table 1** Indicators for the comparative analysis of healthcare systems

Dimension	Health expenditure	Public-private mix of health financing	Privatization of risk	Health service provision	Entitlement to healthcare	Remuneration of doctors	Patients’ access to service providers
Indicator (see data in Table 2)	THE per head of the population in US\$ (PPP)	Public funding in % of THE	Private out-of-pocket funding in % of THE	Indices of healthcare providers	Entitlement on the basis of citizenship, social insurance contributions, private insurance contributions, or direct out-of-pocket payments	Remuneration of GPs on the basis of ‘fee-for-service’, ‘per capita’, ‘cost per case’ or a ‘salary’	Access Regulation Index
Description	Average level of monetary inputs invested in a person’s health	Indicator of the degree of public responsibility to guarantee access to healthcare	Share of funding that is directly covered by the individual; barrier to entry especially for low-income groups	Indicators for the level of healthcare providers. The indices are constructed by using data on specialists, nurses, general practitioners, and pharmacists	The indicator describes the main mode of entitlement. In European healthcare systems patients are, in general, covered either on the basis of citizenship or social insurance contributions	The method of remuneration indicates whether doctors have an incentive to provide high-volume healthcare	It is covered whether patients have free access to GPs and whether access to specialists requires a referral, additional copayment or is free

Table 2 Institutional characteristics of healthcare systems, 2001

	Health expenditure and private payment				Healthcare provider indices <sup>d</sup>			Institutional indicators			
	THE <sup>a</sup> per capita, US\$	PHE <sup>b</sup> in % of THE	private OOP <sup>c</sup> in % of THE	inpatient care index	outpatient care index	Entitlement to healthcare <sup>e</sup>	Remuneration of GPs <sup>f</sup>	GP registration	Access regulation		Access regulation index <sup>g</sup>
									specialists	skip&pay	
1. Austria	2,898	75.7	17.0	109.9	120.2	0	0	-	skip&pay	1	
2. Belgium	2,452	76.6	22.2	84.6	193.0	0	0	-	skip&pay	1	
3. Denmark	2,561	82.7	15.9	105.2	53.7	1	1	+	referral	3	
4. Finland	1,861	75.9	19.7	79.9	136.4	1	2	+	referral	3	
5. France	2,649	78.3	7.5	90.2	163.7	0	0	-	free	0	
6. Germany	2,754	79.3	11.5	120.8	102.6	0	0	-	free	0	
7. Great Britain	2,034	83.0	11.0	91.4	73.3	1	1	+	referral	3	
8. Greece	2,178	47.4	42.4	111.6	68.4	1	2	-	free	0	
9. Ireland	2,151	73.6	12.5	107.0	80.1	1	1	+	skip&pay	2	
10. Italy	2,188	74.6	22.1	101.0	122.6	1	1	+	referral	3	
11. Luxembourg	3,270	87.9	6.5	120.2	85.5	0	0	-	free	0	
12. Netherlands	2,525	62.8	8.7	109.2	42.0	0	1	+	referral	3	
13. Portugal	1,685	71.5	23.2	68.6	74.3	1	2	+	referral	3	
14. Spain	1,617	71.2	23.9	91.2	110.4	1	2	+	referral	3	
15. Sweden	2,409	84.9	15.1	109.1	73.8	1	2	+	skip&pay	2	

## Notes:

<sup>a</sup> THE: total health expenditure.<sup>b</sup> PHE: public health expenditure.<sup>c</sup> OOP: out-of-pocket payments.<sup>d</sup> In a first step all available OECD data on healthcare personnel have been included in the analysis (specialists, nurses, general practitioners, dentists, pharmacists). The result of an unrotated principal component factor analysis was that two factors accounted for 64% of the variance of the included variables. However, the uniqueness of dentists turned out to be comparatively high. Therefore, a second model was calculated without dentists. In this model, two factors accounted for 75% of the variance. The first factor captures inpatient healthcare with a negative correlation between specialists and nurses. The second factor accounts for outpatient healthcare with a positive correlation between general practitioners and pharmacists. Based on the factor analysis we decided to construct one inpatient care index and one outpatient care index.<sup>e</sup> Coding for entitlement: Social Insurance = 0; Citizenship = 1.<sup>f</sup> Coding for remuneration: fee-for-service = 0; capitation = 1; salary = 2.<sup>g</sup> Coding for index construction: - = 0; + = 1; free = 0; skip&pay = 1; referral = 2.

Sources: OECD (2007); Reibling and Wendt (2008).

healthcare, and one indicator for pharmaceutical healthcare have been selected. These indicators were aggregated into healthcare provider indices in the following way: first, the raw values for the included indicators, expressed per 1,000 of population, were standardized and recalculated as percentages of the EU15 average. The respective index was then calculated as the average value of two health provider indicators. All indicators were weighted equally, thus giving inpatient healthcare (specialists and nurses) and outpatient healthcare (GPs and pharmacists) – which can both be considered as unique and indispensable parts of the healthcare system – the same importance. Furthermore, institutional indicators have been selected that cover: (a) the mode of patients' entitlement to healthcare; (b) the method for reimbursing doctors; and (c) patients' access to health service providers (see Table 2). The latter two have an influence on the doctor–patient relationship and the treatment of patients (see Kuhlmann, 2006; Stevenson, 2006).

### Analysis

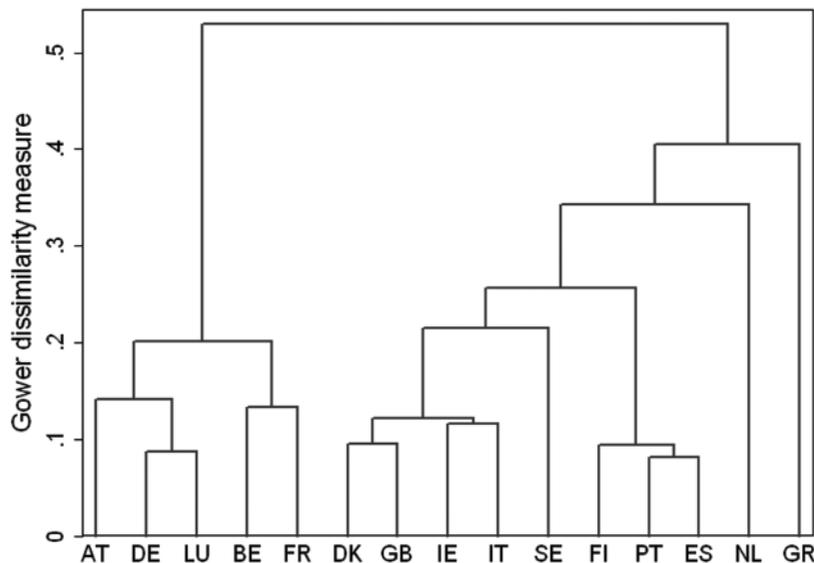
On the basis of data and information included in Table 2, cluster analysis was used to identify certain types of healthcare systems and to group countries in different clusters (for comparing welfare states by using cluster analysis see Obinger and Wagschal, 1998; Kautto, 2002; Powell and Barrientos, 2004; Jensen, 2008). Cluster analysis aims to group cases by simultaneously taking a number of selected characteristics into account. Usually the analysis groups cases (here, countries) such that it maximizes homogeneity within clusters and maximizes heterogeneity between clusters. Ideally countries within clusters should be more similar to each other than to any country of another cluster across all their characteristics. In the present analysis, agglomerative hierarchical clustering methods were used (see Everitt et al., 2001). They start out with each country forming a cluster of its own, and then gradually join countries to form clusters of similar countries until finally all cases come together within one group. Once a country has been allocated to a cluster, it remains within this initial cluster. The result presented in Figure 1 is based on average linkage cluster analysis with the Gower dissimilarity coefficient since a mix of binary and continuous data was included. In order to check the stability of cluster solutions, several other procedures were used

(single and complete linkage, ward method and waverage linkage; for methodological details see Gower, 1986; Everitt et al., 2001). All procedures (except complete linkage, where Sweden was considered as a deviant case) created three identical clusters, and the development of the level of homogeneity (as expressed in the distance coefficient or similarity coefficient respectively) within country groupings suggested that three clusters best represent the structure of the data. With the transition to a two-cluster solution there was a severe increase in heterogeneity, indicating the combination of unlike entities.<sup>3</sup>

As shown in Figure 1, Greece and the Netherlands cannot be grouped in any of the three clusters. The Netherlands (before 2006) seems to be unique due to the high share of private funding, a low level of outpatient healthcare, entitlement on the basis of social insurance contributions and comparatively strict access regulation. Greece is characterized by the highest out-of-pocket payments but, in contrast to other Southern countries, has little legal regulation of access to healthcare providers. However, as Davaki and Mossialos (2005) argue, the private health sector is of great importance, and services obtained in this sector are related with informal payments and bribes which restrict access to healthcare services for certain population groups.

The remaining countries can be classified as follows (see Table 3):

- *Cluster 1* consists of Austria, Belgium, France, Germany and Luxembourg (which are all social insurance countries<sup>4</sup>). This type can be described by a high level of total health expenditure and also a high share of public funding. The share of private out-of-pocket funding is moderate. The high level of health expenditure is translated into a moderate level of inpatient and a high level of outpatient healthcare. Countries of this cluster are also characterized by a high level of autonomy of self-employed doctors and high freedom of choice for patients.
- *Cluster 2* covers Denmark, Great Britain, Sweden (which are all early developed NHS countries), Italy (late developed NHS) and Ireland (no fully institutionalized NHS in 2001). This type is characterized by a medium level of total health expenditure. The share of public health funding is high, and private out-of-pocket funding is moderate. Compared to *Cluster 1* the level of inpatient



**Figure 1** Hierarchical cluster analysis: dendrogram using average linkage

*Note:* AT: Austria; DE: Germany; LU: Luxembourg; BE: Belgium; FR: France; DK: Denmark; GB: Great Britain; IE: Ireland; IT: Italy; SE: Sweden; FI: Finland; PT: Portugal; ES: Spain; NL: Netherlands; GR: Greece.

healthcare providers is similar but the outpatient provider level is particularly low. The access to doctors is highly regulated, and doctors face strict regulation regarding their income chances.

- *Cluster 3* includes Portugal, Spain (which are late developed NHS countries) and Finland (with a NHS introduced in the 1960s). This type is characterized by a particularly low level of total health expenditure (per capita) which is (except for Finland) related to the weaker economic position of these countries. Private out-of-pocket payments are on a high level and institutional indicators show a high control of patients' access to medical doctors. The inpatient index is low and the outpatient index is at a moderate level. Since GPs receive in general a fixed salary, income chances are even more highly restricted than in *Cluster 2*.

These types of healthcare system corroborate earlier comparative studies in this field but also specify this debate in four respects. First, it is misleading to believe that all countries *have to be grouped* under a certain type. Second, there are two cases which are grouped in different clusters than

would be expected on the basis of other typologies (see discussion below); Italy joins the group of established NHS countries while Finland, due to its low level of expenditure, high private out-of-pocket funding, salary payment and strict access regulation, is much closer to Southern European countries than to its Scandinavian neighbours. Third, the results provide a more detailed description of 'healthcare system types' than earlier typologies. They show, for instance, that in contrast to *Cluster 3*, the established NHS countries of *Cluster 2* are regulating access to healthcare in a way which mainly affects the level of healthcare provided by GPs and pharmacists but not inpatient healthcare from specialists and nurses. Fourth, the concept does not imply 'frozen types of healthcare system'. Changes over time or the inclusion of further countries will not only lead to a regrouping of countries but will also change the characteristics of a certain type.

## Conclusion and discussion

When mapping European healthcare systems by using various quantitative and institutional indicators, the identified clusters partly mirror prior differentiation

Table 3 Description of clusters

	THE in US\$ per capita	Public funding in % of THE	Private out-of- pocket payment in % of THE	Index inpatient care	Index outpatient care	Entitlement to healthcare	Remuneration of GPs	Access regulation index
<b>Cluster 1</b> AT, BE, DE, FR, LU	High level of THE (at average US\$ 2,805 per head)	High share of public funding (80% of THE)	Medium share of out-of-pocket payment (13% of THE)	Medium inpatient index (105)	High outpatient index (133)	Contributions	Fee-for-service	Low regulation
<b>Cluster 2</b> DK, GB, IE, IT, SE	Medium level of THE (US\$ 2,269)	High share of public funding (80% of THE)	Medium out-of- pocket payment (15% of THE)	Medium inpatient index (103)	Low outpatient index (81)	Citizenship	Capitation (except SE: salary)	Medium to strong regulation
<b>Cluster 3</b> ES, FI, PT	Low level of THE (US\$ 1,721)	Medium public funding (73% of THE)	High out-of- pocket payment (22% of THE)	Low inpatient index (80)	Medium outpatient index (107)	Citizenship	Salary	Strong regulation

of healthcare systems into NHS-type countries (with the subgroups of early and late developed NHS systems) on the one side and SHI-type countries on the other. In general, the analysis therefore supports earlier findings and established models of contrasting healthcare systems.

However, earlier typologies (Table 4; see also Wendt et al., 2009) have been based on either financing indicators (tax financing versus social insurance financing) or organizational tasks (state hierarchy versus self-regulation by corporate actors). By using the dimensions 'coverage', 'funding' and 'ownership', the OECD (1987) study, for instance, distinguished a 'national health service model', a 'social insurance model' and a 'private insurance model'. The OECD typology therefore does not offer a concept for separating NHS types with different levels of health resources, service providers and access regulations, respectively. Furthermore, the OECD concept would label the Netherlands as a 'social insurance model' while the analysis provided in this article demonstrates how difficult it is to classify a system with social insurance characteristics on the funding side and with comparatively strict regulations in provision and access to healthcare.

The typology suggested by Wendt et al. (2009) focuses on the changing role of the state along the dimensions 'financing', 'service provision' and 'regulation'. This concept is designed to detect shifts from healthcare offered by public to private providers (for-profit or non-profit) and respective changes in financing and regulation. Yet differences across countries regarding the *levels* of funding, provision and access to medical care cannot be analysed on the basis of this analytical framework.

The typology that comes closest to the solution offered in this article has been developed by Moran (1999; 2000). His 'four families of healthcare states', which are based on qualitative judgement, are: 'entrenched command and control state', the 'supply state', the 'corporatist state' and the 'insecure command and control state'. The 'entrenched command and control state' is compatible with Cluster 2 and it can be argued that the high level of state control of doctors' autonomy has been used to stabilize healthcare costs, restricting the level of outpatient employment, controlling doctors' income chances and regulating patients' access to providers. These are major characteristics of the countries included in Cluster 2. 'Insecure command and

Table 4 Typologies of healthcare systems

	<i>Dimensions</i>	<i>Types of healthcare systems</i>	<i>Classification of countries</i>
OECD (1987)	<ul style="list-style-type: none"> <li>• Coverage</li> <li>• funding</li> <li>• ownership</li> </ul>	<ol style="list-style-type: none"> <li>1. National health service</li> <li>2. Social insurance</li> <li>3. Private insurance</li> </ol>	<ol style="list-style-type: none"> <li>1. Great Britain</li> <li>2. Germany</li> <li>3. United States</li> </ol>
Moran (1999); classification of countries: see also Bureau and Blank (2006)	<ul style="list-style-type: none"> <li>• Consumption</li> <li>• provision</li> <li>• production</li> </ul>	<ol style="list-style-type: none"> <li>1. Entrenched command-and-control state</li> <li>2. Supply state</li> <li>3. Corporatist state</li> <li>4. Insecure command-and-control state</li> </ol>	<ol style="list-style-type: none"> <li>1. Great Britain, Sweden</li> <li>2. United States</li> <li>3. Germany</li> <li>4. Greece, Italy, Portugal</li> </ol>
Wendt et al. (2009)	Role of the state, societal and market actors in: <ul style="list-style-type: none"> <li>• financing</li> <li>• service provision</li> <li>• regulation</li> </ul>	Taxonomy of 27 health systems with three ideal types: <ol style="list-style-type: none"> <li>1. State healthcare system</li> <li>2. Societal healthcare system</li> <li>3. Private healthcare system</li> </ol>	<ol style="list-style-type: none"> <li>1. Great Britain, Scandinavian countries</li> <li>2. No ideal-type; Germany represents a societal-based mixed type</li> <li>3. No ideal-type: United States represents a private-based mixed type</li> </ol>
Typology in 'Mapping European Healthcare Systems'	<ul style="list-style-type: none"> <li>• Health expenditure</li> <li>• Public-private mix of financing</li> <li>• Privatization of risk</li> <li>• Healthcare provision</li> <li>• Entitlement to care</li> <li>• Payment of doctors</li> <li>• Patients' access to providers</li> </ul>	<ol style="list-style-type: none"> <li>1. Health service provision-oriented type</li> <li>2. Universal coverage – controlled access type</li> <li>3. Low budget – restricted access type</li> </ol>	<ol style="list-style-type: none"> <li>1. Austria, Belgium, France, Germany, Luxembourg</li> <li>2. Denmark, Great Britain, Sweden, Italy, Ireland</li> <li>3. Portugal, Spain, Finland</li> </ol>

control states', by contrast, have never achieved administrative capacities that are typical of the Scandinavian countries and Great Britain. As a result, barriers to enter the healthcare system are much greater, especially for lower-income groups, which in part mirror characteristics of Cluster 3 countries. The 'corporatist state' is dominated by public law bodies, particularly ambulatory care by doctors' associations (Moran, 2000). This is in line with characteristics of Cluster 1 countries, which show high levels of health expenditure, high service provider levels and privileged income chances for doctors. Interestingly, the concept proposed by Moran also seems to face difficulties in classifying the Netherlands (Bureau and Blank, 2006). In contrast to Moran (1999; 2000), however, we argue that Cluster 1 countries are not primarily characterized by a dominant position of doctors but by comparatively smooth access of patients to service providers. This may indicate that social insurance agencies are of higher importance within the corporate governance

structure than was proposed by Moran, and that these agencies have used their position for improving patients' access to healthcare.

Beyond clarifying and, in the case of Moran, complementing earlier concepts, the typology developed in this study enables a detailed description of the three types which can be labelled as follows:

- *Health service provision-oriented type.* This type is mainly characterized by its high level and unquestioned importance of service provision especially in the outpatient sector. While today the mode of entitlement (social insurance contributions) is hardly a means for excluding members of the population (with some exceptions), there are various indicators that this type provides comparatively smooth access for patients to service providers. The number of health service providers is high and patients are confronted with only modest out-of-pocket copayments. Furthermore, patients have free access to and

free choice of medical doctors. Since self-employed doctors are mainly paid on a fee-for-service basis, they have an incentive for 'more active treatment' to improve their income chances. However, there are differences to the 'supplier-dominated health economy', as Moran (2000) has labelled the US case, since the autonomy of patients and equity of access seem to be of higher importance than doctors' autonomy.

- *Universal coverage – controlled access type.* This type of healthcare system is mainly characterized by its universal coverage. Patients' access to healthcare providers, however, is strictly regulated by the state. This is indicated not only by the low level of outpatient health service providers, but also by the restricted access to GPs and specialists. The high share of public funding implies strong state responsibility for the provision of healthcare. In general, patients have to sign up on a GP's list for a longer period of time. The remuneration method of doctors (capitation) also does not set incentives to increase the level of healthcare services. However, equity of access is supported since the total population is covered and private out-of-pocket payments are particularly low. In contrast to Moran (2000), Italy joins the group of established NHS countries which can be related to the much higher level of outpatient healthcare there than in other Southern European countries. Due to its heterogeneous structure, it is in general difficult to classify the Irish system as a NHS (Nolan, 2008). Based on the indicators included in this article, however, Ireland has considerable similarities to Great Britain and the Scandinavian countries.
- *Low budget – restricted access type.* This type of healthcare system is characterized by a low level of total health expenditure (per capita). Patients' access to healthcare is restricted by high private out-of-pocket payments and by the regulation that patients have to choose their first-contact doctor for a longer period of time. Furthermore, the inpatient provider level is particularly low. Direct private payments represent a burden for patients (particularly for lower-income group) and can negatively affect equity of access to healthcare. Since GPs are mainly remunerated on a salary basis, the degree of doctors' autonomy from state control can be considered to be even lower than under the 'universal coverage – controlled access' type.

This classification of health systems depends to some extent on the selection of cases so that adding further nations such as the United States, Switzerland or Central and Eastern European countries could reveal different and presumably more than three system types. When analysing different points in time it can also be hypothesized that different types of healthcare systems are identifiable and that countries might change clusters over time. The concept introduced in this article, therefore, does not presume 'frozen types of healthcare systems' but takes into account that different types can be constructed depending on time and space.

As the results of the cluster analysis are preliminary, the robustness of the healthcare system types will be tested by further analysis. While the classification of countries is certainly helpful, it is not an end in itself. Nevertheless, as welfare regime types help us to better understand the relationship between social exclusion and welfare state types, the construction of this healthcare system typology contributes to the analysis of the consequences of disparities in healthcare provision and access. The primary goal of healthcare systems is providing treatment for those in need. Therefore, the consequences for health provision and access to healthcare should be taken into account when analysing 'modes of governance' (Moran 1999; 2000) or the 'changing role of the state' (Rothgang et al., 2005).

In recent years, a few comparative studies have become available that focus on the effect of different institutional structures on health outcomes (Conley and Springer, 2001; Eikemo et al., 2008; Beckfield and Krieger, 2009). However, these studies concentrate either on the effects of welfare regimes or even the wider political institutional structure, and in general argue that the variation in health is only to a minor extent related to welfare state characteristics (Eikemo et al., 2008). Since welfare state typologies hardly include health system characteristics, typologies of healthcare systems promise to draw a closer link between institutional structures and health outcomes. And while Van Doorslaer et al. (2006) find only weak effects of institutional structures on inequalities in health service use, a more detailed analysis of access regulations should facilitate an explanation of inequalities in healthcare utilization. Furthermore, it can be argued that patterns of satisfaction with healthcare systems should be less related to general welfare state arrangements

(Gelissen, 2002) and more with specific healthcare institutions. It remains to be seen whether such studies benefit from a concept where the number and characteristics of healthcare system types are not given but depend on time and the sample of countries analysed.

When learning from other nations' healthcare systems it is essential to take their main characteristics into account and not only isolated reform proposals. If easy access to healthcare is the primary goal, in the outpatient sector a high level of service providers becomes especially necessary, which requires incentives such as privileged income chances through fee-for-service. Comparatively high costs are the consequence. If the idea of equal access is more prevalent, patients' visits by general practitioners and specialists are more regulated and the number of outpatient care providers is much lower. However, in both cases direct payments by patients are comparatively low so that a privatization of risk in the case of sickness currently characterizes only a few European countries. The typology presented in this study suggests that cross-national policy learning in the healthcare arena should especially focus on factors which improve patients' access to necessary healthcare services.

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#### Notes

- 1 See Jensen (2008) for a similar approach when analysing financial transfers and welfare services. Jensen also includes 'healthcare' in his comparative study but only by using public health expenditure.
- 2 The OECD Health Data set provides quantitative data for further countries. However, in addition to OECD data, institutional data have been taken from the DFG research project 'Attitudes Towards Welfare State Institutions' (MZES/University of Mannheim) which

collects such indicators for the 'old' EU member states for 2001. The study has therefore been restricted to 15 European countries.

- 3 After the hierarchical clustering procedures, the robustness of this solution was checked with k-means clustering (Powell and Barrientos, 2004; Jensen, 2008). With this method, the number of clusters is set by the researcher, and cases are thus selected and recombined to form the optimal solution regarding homogeneity within clusters in the a priori set number of clusters. Cases can change clusters during the process of optimizing within-cluster homogeneity. Thus, the method provides a useful check for the results of hierarchical procedures. Again, the three-cluster solution as reached by these algorithms shows the highest degree of homogeneity and proves stable using k-means clustering.
- 4 By referring to social insurance as well to early and late developed NHS systems, similarities to conventional ways of contrasting healthcare systems are indicated. Great Britain and the Scandinavian countries represent 'early NHS systems' while Southern European countries have introduced NHS systems only since the late 1970s.

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