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Executive Report of the Research Project

"PPP-Hospitals: Qualitative and Quantitative Risk Sharing and how to Manage Interface Problems in the Restructuring of Hospitals "

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1. Aim of research task

In light of the current developments in the health sector, especially since the introduction of the German Diagnostic Related Groups (G-DRG), hospitals face increasing competition in terms of prices, quality and patients. The result of this development is a great demand for (rationalization-) investment, as many hospitals in their current structure rarely achieve sufficient patient income to cover patient cost and thus operate uneconomically. A critical aspect to become economic operationally is the restructuring of buildings to suit new treatment methods and optimize operational processes. To a large extent this is achieved by reducing the distance between individual medical treatment centres as well as a functional spatial arrangement to suit the diagnostic and therapeutic requirements in the treatment of patients. As a consequence distances and waiting times for patients are reduced and the number of medical equipment can be optimized. Portering is more effective as time taken to move patients is reduced. In effect more value adding processes are achieved in the hospital and so it becomes more economical.

As the public sector hospital sponsors are forced in nearly all cases to invest heavily since the introduction of the case-based lump sum compensation, so the involvement of private partners across the life-cycle to safeguard and improve upon the medical infrastructure becomes a viable option. An important tool for the optimal implementation of building schemes are Public Private Partnerships. As a result of the lack of German experience in the project sector of hospitals there is a particular demand for research, especially in the area of hospital restructuring and extension schemes. Even if one does not opt for a true functional specification when tendering a hospital project, it is essential to optimize apparent interfaces between the hospital and the PPP-partner and those created within the hospital and incorporate them into the project and building scheme.

The aim of the research project is primarily to capture and optimally allocate the risks between the hospital and the private partner as well as the economic management of interface problems when adopting PPP’s.

The risks that occur in the design, construction, financing, maintenance and operation of a hospital project have to be identified and quantified. This is particularly important for the preliminary business case study comparing the traditional with the PPP realization according to § 7 BHO and respective state regulations. The known risk values from traditional public sector procurement or private sector building development have to be adjusted for the partnership approach in the realization of a hospital. The focus rests on the risk allocation between both parties. The result must be a specific and well balanced allocation of risks between the hospital and the PPP-partner.

The focus on the interfaces is to ensure that the building scheme enables a working functional concept, sometimes integrating existing buildings, and thus creates the basis for future orientated and competitive approaches. Besides questions concerning the building, there are also those concerning medical equipment, which

the operational units are fitted out with and have to be operated in a PPP project. This can include the maintenance and repair as well as questions as to the replacement of equipment during the term of the PPP.

2. Research activities

The method of this research relates to the insights gained on the basis of the New Institutional Economics Theory, especially the Transaction Cost Theory and the Theory of Relational Contracts. The institutional framework of a nation has an effect on the allocation of risks and on the structure of interfaces between the public sector and the private sector partner.

Within the framework of the research task various nations are investigated. Great Britain was chosen as the “mother country” of PPP and France because its institutional framework is similar to Germany’s in many ways and exhibits a significant number of projects. Each investigation into Great Britain, France and Germany is based on the following foundation:

a) Literature search and analysis of technical and commercial documents,

b) expert interviews, and

c) conducting own empirical research into past realized and currently developing projects.

The starting point of each nation’s analysis is a look at the legal framework in respect of each health and hospital system as well as the legal basis for PPP. Upon describing real best-practice examples (Great Britain and France) as well as currently developing German projects the areas of scope, finance, risks as well as interfaces for each nation will be presented. The real allocation of risk is to a large extent dependent upon the legal framework and the payment mechanism as part of financing. The management of interface problems is equally influenced by the legal framework. Also the degree to which services are to be transferred plays an important role. In respect of Great Britain and France there are five best-practice examples to be presented, which include all relevant interface combinations. The nation specific analysis of Great Britain and France are rounded off with a look into the transferability of the experiences gained in each nation upon Germany. Following the nations’ analysis there are detailed descriptions as to life-cycle costs, risks and risk evaluation, as PPP projects can only be commenced in Germany upon a preliminary business case study. As a deal flow of health sector projects is currently not present in Germany, life-cycle costs and risk evaluation can only be decided upon in general terms. In the evaluation of risks one relies on risk categories such as schools in order to obtain an approximation. Added to the information on life-cycle costs there is a fully worked out example of an emergency hospital.

3. Summary of results

Great Britain as the mother country of PPP has the most developed PPP market. The *legal framework* has matured over many years. The British health system is based upon four national health systems (England, Scotland, Wales and Northern Ireland). These are financed primarily out of taxation income and are subordinated to the British Department of Health. In case of illness patients are guided by their local doctor, who either transfers them to a specialist or a hospital.

The National Health Service is responsible for the development and the operation of hospitals. For the purpose of simplifying the administration it is divided into regional health boards. The hospitals are sponsored by specific trusts.

In case of the approximately 70 *PPP-projects in operation* they are often new build or extensions. The new build is typically erected next to the existing building, which is demolished after the transfer has been completed. In some cases the location changes altogether and the land is put to alternative use. The best-practice example Queen Alexandra Hospital has shown that with careful structuring of the project even complex services can be brought to the market and can be financed as a PPP in project finance terms.

The *scope of work and services* of hospital PPP's typically includes design, finance, construction and operation. The operational services are divided into hard and soft facility management, whereby the former encompasses building related services and is always included in the contract. The trust as procuring authority can decide independently which additional services are to be transferred. The only limiting rule that applies determines that not more than 15 % of its turnover can be expended on PPP measures.

Finance as a rule occurs in terms of project finance, as this is seen by the sponsors to provide an optimum of risk transfer and thus the best value for money. The project company (SPV) receives in payment a unitary charge, which is determined by the payment mechanism and takes into account the availability and quality of the services that are due under contract.

The qualitative *analysis of risks* itemizes those risks that as a rule are not transferred by the public sector or are shared with the private partner. The results of the quantitative analysis are presented by way of examples of different projects.

The PPP process is largely standardized. Extensive preparation is aimed at identifying *interfaces* in British PPP-hospital projects and to determine their structure. In effect, however, differences remain from project to project, as the procuring authorities (trusts) are largely independent in determining the scope of work and services.

The British PPP-process in the health sector is partially *transferable* to Germany. The regulations in respect of procurement are in keeping with the standards that the European Union sets. Legal and technical standards are not transferable to Germany. Nevertheless, the type and extent of work and services tendered and subsequently awarded, can principally be introduced in Germany. One can assume that a risk allocation structure that is applied in a project finance environment can equally be applied in Germany to finance a project. Also it is assured that the public sector body awarding the contract in such a transaction is safe from insolvency. This concerns overriding risk categories, which apply across project specific interface and risk allocations and are of great importance in terms of bankability from the point of view of financing banks in a project finance scenario. Since these are standard procedures in Great Britain and are in summary marketable one can clearly use the example of Great Britain as an orientation.

The *legal framework* dominating in **France** is in many respects very similar to Germany's. The French health system, just as Germany's, is based on the model of a statutory social security system. The health insurance is primarily supported by the social security contributions of employers and employees and the general social tax. From 2008 onwards hospitals have for the first time been financed wholly on the basis of case-based lump sums. The financing of private sector hospitals occurs on the same basis, although temporarily with different tariff levels. There exists in France next to the partnership contract (Contrat de Partenariat) the more widely used hospital leasehold contract model (Bail Emphytéotique Hospitalier) which is exclusively used in the hospital sector.

The wide range of *operational projects* in France (of which 40 are hospital-leasehold and 6 are partnership contracts) is evidence that PPP is not only suitable for new build but also for the restructuring of patient tracts, operating theatres, power plants, laundries and logistic centres at existing locations. By way of four examples it was shown that the transfer of maintenance and operational services to the private sector does not differ significantly.

When determining *the scope of work and services*, all those which require the direct contact with patients usually remain within the domain of the hospital. As a rule the private sector becomes responsible for cleaning services (general access), parking, transport, telecommunication as well as various commercial services. The responsibility for energy management is structured differently from contract to contract. In respect of maintenance and repair the private sector becomes responsible for the upkeep of the building and grounds and mechanical and heating services.

The typical *financing* of a hospital-PPP is based on 80 % non-recourse forfeiture by the public sector, 10-15 % project finance and 5-10 % equity. As a consequence of the large share of non-recourse forfeiture the risk transfer onto the private sector is limited.

With the exception of the ground risk, subsequent changes and technology all *risks* are explicitly allocated to the contract party which is in the best position to manage it. The agreements in respect of technology risks differ from project to project and represent on account of their complex nature a major aspect of the risk allocation.

The private sector partner merely takes on the responsibility concerning the *interfaces* with the building. Interfaces, which are a direct result of the activities of the hospital, are not part of his scope.

In order to determine the *transferability to Germany* it is of benefit that the application of PPP-contract models in the hospital sector in both nations is in most respects similar.

The debt finance in France is secured on behalf of the sponsor on account of the responsibility of the health authorities (Établissement Public de la Santé, EPS) and the investment budgets “hospital 2007” (“Hôpital 2007”) and “hospital 2012” (“Hôpital 2012”). At this point no direct transfer of experiences to Germany is possible.

Cost accounting of hospitals in France occurs since the year 2008 to 100 % on the basis of case-based lump sums, which has given French hospitals a similar rise in economic pressure. Quantity and quality of PPP-projects already carried out in France can be used as evidence that PPP is a method forward to solve the existing backlog of investments and face the newly created competitive challenge in the hospital sector. Both in the time taken to reach contractual close as well as keeping within the construction schedule obvious benefits in favour of PPP are evident.

The health system in **Germany** is based in analogy to France on the model of a statutory social security system. The *legal framework* for the subsidy of investments in the hospital sector has a limiting influence on the application of PPP-measures. The states of Hessen and North Rhine-Westphalia have amended their regulatory system in the area of hospital finance with a view to the potential of PPP.

There exists neither a standard contract in civil law as is the case in Great Britain or in France, nor a generally accepted risk matrix. In every project individually drafted contracts or specimen texts are agreed.

Operational projects are limited to investments in large scale medical equipment, namely the West German Proton Therapy Centre and the Particle Therapy Centre Kiel. A very limited number of building related projects are currently in the developing or procuring phase.

The *scope of work and services* in the projects usually includes the turn-key design and construction (including the fitting out with medical facilities, medical equipment and furniture) as well as the facility management and the maintenance of the medical facilities. Additional services in a PPP can possibly be included, but this is at present not done.

Financing follows the model of project finance. An essential financing prerequisite is however, that the public sector sponsor guarantees the ongoing existence of the hospital to the financing financial institutions.

The *risk allocation and evaluation* in the hospital sector is usually undertaken in analogy to the otherwise regularly performed risk assessment in PPP building projects. Only in the event that the services to be awarded are close to the core operation of the hospital do operational risks gain in significance. It has to be pointed out however, that medical treatment services should always remain with the sponsor.

The *interfaces* should be structured explicitly and follow transparent contractual rules. Hereby it is useful to refer to the experiences gained over many years with the outsourcing of hospital services. A general rule to successfully structure interfaces is the explicit allocation of responsibilities as well as a partnership approach by the parties prior and during the contractual phase.

A uniform definition of the term **life-cycle costs** of buildings does not exist in Germany. Possible definitions are included within the standards DIN EN 1325-1 (1966) and the GEFMA-standard 100-1 (2004). From those one can summarise that life-cycle costs refer to the acquisition costs, the operating costs, the costs arising out of foreseen and unforeseen maintenance and repair as well as the costs for decommissioning and reconditioning, recovery and disposal.

The planning of *life-cycle costs* is undertaken on both sides, the sponsor and project company. The cost of investment for the construction is estimated on the basis of known average costs and is adjusted to allow for the requirements of each specific project such as location, standard of fitting out and current price levels. These are made up of costs for foundations, structure, roof, external cladding, internal fitting out, building services and external works. The *maintenance and repair costs of hospitals* include among other things the upkeep of the grounds, the maintenance and repair of the building as well as the maintenance and repair of technical equipment. *Operational costs* of the building are comprised of costs of heating, electricity, water and sewage, waste disposal, cleaning, security, etc. The level of operating costs is dependent on the size of the hospital and its particular technical standard. In addition very high standards of fire protection and hygiene are applied. The costs for the maintenance and operation of a hospital can therefore increase significantly during the duration of the contract and constitute up to a third of the cost of investment. Thus, a long term maintenance and repair strategy should be developed at the design stage. It is also recommended to adopt as high quality and durable building components as possible.

With regards to the individual **risk evaluation** of life-cycle costs of hospitals there again no experience exist in Germany. To describe *the term risk* the probability of an event occurring and the cost of the event need to be determined. As a third dimension the variation of risk in relation to the passing of time needs to be considered. The evaluation of risk is a part of *risk analysis*, which is concerned with

the quantitative appraisal of the probability of an event occurring and the extent of its effect.

The most significant risks are exceeding design and construction costs, design and construction schedule, operational costs, costs of repair (including the risk of vandalism), insufficient quality of services, lower availability and regulatory risks (e.g. fire protection standards).

To allow for the resulting increase in the business case study based on the risk evaluation similar values from equally complex building categories are applied. These empirical values are necessary for the completion of the preliminary business case study as PPP projects can only commence in Germany if a quantitative economic benefit can be demonstrated. Positive experiences abroad have provided evidence that PPP can be very much a way forward to restructure a hospital.