

Gestaltung von Anreiz- und Vergütungsmechanismen als
Instrumente des Risikomanagements in PPP-Verträgen

*Incentive and payment mechanisms as part of risk management
in PPP contracts*

Katrin Fischer, Hans Wilhelm Alfen 5

Investitionen in Public-Private-Partnership-Projekte im öffentlichen
Hochbau unter besonderer Berücksichtigung der Risikoverteilung -
Eine theoretische und empirische Untersuchung der Anforderung
privater Investoren

*Investments in Public-Private-Partnerships taking into account risk
allocation - a theoretical and empirical investigation of private
investors' requirement*

Philip Boll 29

Bestimmung des Instandhaltungsbudgets öffentlicher Hochbauten

The determination of maintenance budgets for public buildings

Carolin Bahr, Kunibert Lennerts 47

>> GELEITWORT EDITORIAL	2
>> DIE HERAUSGEBER THE EDITORS	4
>> AUFSÄTZE PAPERS	5
Gestaltung von Anreiz- und Vergütungsmechanismen als Instrumente des Risikomanagements in PPP-Verträgen <i>Incentive and payment mechanisms as part of risk management in PPP contracts</i> Katrin Fischer, Hans Wilhelm Alfen	5
Investitionen in Public-Private-Partnership-Projekte im öffentlichen Hochbau unter besonderer Berücksichtigung der Risikoverteilung – Eine theoretische und empirische Untersuchung der Anforderung privater Investoren <i>Investments in Public-Private-Partnerships taking into account risk allocation – a theoretical and empirical investigation of private investors' requirements</i> Philip Boll	29
Bestimmung des Instandhaltungsbudgets öffentlicher Hochbauten <i>The determination of maintenance budgets for public buildings</i> Carolin Bahr, Kunibert Lennerts	47
>> BUCHREZENSIONEN BOOK REVIEWS	65
>> ABGESCHLOSSENE DISSERTATIONEN COMPLETED PHD THESISES	69
>> GIF GESELLSCHAFT FÜR IMMOBILIENWIRTSCHAFTLICHE FORSCHUNG SOCIETY OF PROPERTY RESEARCHERS, GERMANY	71
>> GIF VERÖFFENTLICHUNGEN GIF PUBLICATIONS	75
>> VERÖFFENTLICHUNGSGRUNDSÄTZE UND ZITIERREGELN EDITORIAL POLICY AND SUBMISSION GUIDELINES	77
>> IMPRESSUM, ABONNEMENTS IMPRINT, SUBSRPTIONS	78

>> GELEITWORT EDITORIAL

Editorial

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Prof. Dr. K.-W. Schulte
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Did you notice the change on the cover of this edition? The Zeitschrift für Immobilienökonomie has a new English subtitle. Instead of “German Journal of Property Research” it is now “Journal of Interdisciplinary Property Research”.

By making this change, the editorial committee want to make clear that the fundamental features and aliud character of ZIÖ are based on the interdisciplinary understanding of real estate research. Although most of the contributions will of course still be in German, the importance of the English „Summary“ will increase.

The global economic and financial crisis has also affected researchers. Many empirical studies have been overtaken by events. As a result, many of the manuscripts submitted have fallen victim to updating requirements.

The current edition of ZIÖ is focused on one theme, which, in these times of strained budgets in the public sector has gained renewed importance: Public Private Partnerships.

Katrin Fischer has investigated the design of incentives and reward mechanisms as instruments of risk management in PPP contracts. Philip Boll looks into investments in PPP projects in public sector building construction, paying particular attention to the allocation of risk. The third paper is also from the field of public real estate management: “Maintenance Budgets of Public Buildings” is the title of the paper by gif research prize winner Carolin Bahr.

I warmly recommend you to read all the papers in this edition and hope that these will once again create positive interest in the new „Discussion“ column, as did the contributions in the previous edition.

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>> AUFSÄTZE PAPERS **KATRIN FISCHER, HANS WILHELM ALFEN**

Gestaltung von Anreiz- und Vergütungsmechanismen als Instrumente des Risikomanagements in PPP-Verträgen

Incentive and payment mechanisms as part of risk management in PPP contracts

DR.-ING. KATRIN FISCHER

Senior-Projektleiterin bei Alfen Consult GmbH, Weimar
E-Mail: Katrin.Fischer@alfen-consult.de

PROF. DR. HANS WILHELM ALFEN

Professur für Betriebswirtschaftslehre im Bauwesen,
Bauhaus-Universität Weimar
E-Mail: Wilhelm.Alfen@bauing.uni-weimar.de

Zusammenfassung

Der vorliegende Artikel befasst sich mit Anreiz-, Kontroll- und Steuerungsmechanismen bei PPP-Projekten und gibt konkrete Empfehlungen für die Gestaltung von Outputspezifikationen und Vergütungsmechanismen in PPP-Verträgen.

Dabei wird die grundsätzliche Wirkungsweise des in Ansätzen in Literatur und Praxis bereits vorhandenen Instrumentariums zur Entwicklung, Leistungsüberwachung und strategischen Steuerung von PPP-Projekten unter Verwendung der Neuen Institutionenökonomie wissenschaftlich untersucht.

Auf Basis der theoretischen Erkenntnisse sowie untersuchter Fallstudien im Verwaltungs-, Schul- und Krankenhausbereich im In- und Ausland werden Handlungsempfehlungen für die Praxis abgeleitet.

Schlüsselwörter: PPP, Privatisierung, Vertrag, Outputspezifikationen, Vergütung

Abstract

“Privatisation” stands for a multiplicity of concepts and activities in the public sector. Privatisation is understood as the partial or complete transfer of administrative units to private enterprises having private legal form and management structures. Privatisation includes the term “Private Sector Participation” (PSP), which merely describes the outsourcing of transferable tasks of a public body to more efficient private enterprises. Transferable tasks are considered to be those that are not sovereign or of core interest to the public. One possibility for PSP is Public Private Partnership (PPP). PPP/PFI can be defined as long-term, contractually-regulated co-operation between the public and private sectors for the efficient fulfilment of public tasks, whereby the essential resources (e.g. expertise, operational funds, capital, personnel) of the partners are combined and existing project risks are appropriately distributed, according to the risk management competence of the project partners.

PPP is analysed from a perspective of institutional economics. The nature of the PPPs in real estate transactions, including asset (also location) specificity, uncertainty/complexity and the behavioural characteristics of parties to the transaction, i.e. bounded rationality and opportunism, warrant the consideration of the new institutional economics. The theoretical concepts help to explain that the characteristics of the PPPs that result from organising real estate PPPs are distinctly different from both the market and the firm as the PPP is organised in a separate economic unit, with a transaction-specific governance structure necessitated by contractual arrangements, in a hybrid form of organization. The governance mechanism in the PPP arrangement can minimise subsequent difficulties in structuring real estate PPPs. The formation of contractual arrangements for trading property rights includes the need for interpretation and may lack some provisions, owing to the limited capacity of the economic agent’s cognitive power (i.e. bounded rationality). It also reflects inadequacy in catering for all contingent events. When such a contractual arrangement is formed to procure a specific-real estate asset using particular institutions, third party intervention to address the issues arising from this inadequacy, or contracts cannot be of great help. Hence, a special regulatory regime or transaction-specific governance structure is needed in order to trade property rights through contractual arrangements in PPPs.

In PPPs, the governance mechanism should be able to be adjusted to control and minimise the risk of post-contractual opportunism and the cost of dealing with different agents. Indeed, other than managing asset specificity, the transaction governance should facilitate the distribution of risk through contractual arrangements. In PPPs, the risk of agency problems arises in risk distribution through the contractual arrangements, mainly due to opportunism.

The asymmetry of information relating to agency issues is still important in PPPs. In PPPs the cost of transaction of bilateral dependency between the external lenders and the project company (i.e. agency costs of debt) can be minimized if the governance mechanism can give credible evidence of its ability to control post-contractual opportunism. If the governance mechanism can expand the information constraints of the parties to the transaction and the environment, while being able to accommodate credit support for lending, the cost of transaction in terms of external financing can be reduced. With respect to the risk associated with stakeholders’ rights in PPPs, the transaction-specific governance structure should be able to support effective contractual arrangements to address the uncertainty and complexity that contributes to the unpredictability of information.

Therefore, specific institutions are created to protect the property rights of different stakeholders through contractual arrangements in real estate PPPs. It is against this background that different PPPs (for example BOT and BOO type arrangements) in real estate development originate when the attributes that govern the transaction are addressed by institutions created in particular institutional environments.

The effectiveness of the governance mechanism in PPPs arrangements depends on the strength and weakness of the institutional environment: for example credibility, stability and enforceability of institutions to strengthen the transaction governance. If there are weak institutional arrangements, or in the

>> AUFSÄTZE PAPERS KATRIN FISCHER, HANS WILHELM ALFEN

absence of proper institutions, incentives will be necessary in order to achieve appropriate governance structures to protect the property rights of the different stakeholders and thereby to make PPP projects feasible by enhancing the close coordination necessitated by bilateral dependency. On the other hand, under this governance mechanism, the essence of real estate PPPs, (i.e. protecting the property rights of different stakeholders), can only be achieved if those institutions are properly in place. Operation of an effective incentive mechanism is also quite important here. If institutional arrangements are weak, the motivation is less for effective risk distribution than for additional comfort for a particular party to bear the risk in the transaction governance. In addition, this incentive can reduce the cost of dealing with different agents (such as controlling the agency cost of debt) and address the risk of agency issues within the transaction specific governance structure. In the unstable institutional environment, in order to address traditional agency and information issues, additional measures such as guarantees are required in the event that the enforceability of contracts is not certain. This condition could be identified as a risk of agency problems associated with the risk of counterparty contractual performance, particularly arising with respect to the secondary contracts in PPPs.

The allocation of risk between public and private sector plays a crucial role in the performance and incentives structure of the project. Every project agreement will differ in allocating the risks associated with each partner. A special purpose vehicle is specially created to manage the associated risks within the project. Usually, public authorities that are unfamiliar with PPP type of projects are also unaware of the risks associated with the delivery of real estate services. The risk allocation is inherent in the specified service obligations, the payment structure and contractual provisions.

A key component of incentive and payment mechanisms within PPP contracts is output specifications. Output specifications are related to two elements, the built infrastructure and infrastructural services. Output specifications concerning the built infrastructure mainly define:

- *requirements linked to environmental, legal and property aspects,*
- *requirements of the construction process and project management, and*
- *design, technical and material requirements of the building elements.*

Output specifications referring to the outputs of the infrastructural services primarily deal with the following aspects:

- *quality standards,*
- *quantities and volumes,*
- *schedules,*
- *qualification of staff,*
- *involvement of users.*

All construction and operational risks related to meeting these standards can be governed by payment mechanisms. Non-achievement of the set standards and outputs will lead to financial consequences of risk at contract. A quality and performance measurement system as part of the contract management is a condition precedent to using payment mechanisms. Therefore, it is proposed in this paper that the output standard should be directly linked to the appropriate performance indicator and a suitable measurement method. An analysis of cases in the administration, education and health sector provides insights into the current application of incentive and controlling mechanisms in PPP projects. From that analysis payment mechanisms can be assigned to five different categories:

- *Availability payments: These payments depend on the availability of rooms, areas or services.*
- *Performance payments: Payments are based on the service standards achieved.*
- *Volume payments: Payments are dependent on consumption (electricity, water etc.).*
- *Demand/User payments: Payments depend on user demand.*

>> AUFSÄTZE PAPERS **KATRIN FISCHER, HANS WILHELM ALFEN**

- *Improvement payments: Payments are made if the agreed objectives are achieved under a continuous improvement process (CPI).*

In order to achieve optimum risk allocation in the project it is of great importance to structure these systems of payments and deductions carefully, in order to set the right incentives. Availability and performance payments are core to public real estate projects. For that reason, this paper focuses on these payment mechanisms and proposes ways of developing a manageable and simple incentive and payment mechanism.

>> AUFSÄTZE PAPERS PHILIP BOLL

Investitionen in Public-Private-Partnership-Projekte im öffentlichen Hochbau unter besonderer Berücksichtigung der Risikoverteilung – Eine theoretische und empirische Untersuchung der Anforderungen privater Investoren

Investments in Public-Private-Partnerships taking into account risk allocation – a theoretical and empirical investigation of private investors' requirements

DR. PHILIP BOLL

E-Mail: p.boll@gmx.de

Zusammenfassung

Die Investitionsmöglichkeiten der öffentlichen Hand in Deutschland sind trotz vermehrter Steuereinnahmen weiterhin stark eingeschränkt. Aufgrund der schwierigen Haushaltslage ist auch in Zukunft nicht damit zu rechnen, dass der bestehende Investitionsstau bei öffentlichen Infrastrukturvorhaben alleine durch Haushaltsmittel abgebaut werden kann. Durch die Zusammenarbeit mit privaten Unternehmen im Rahmen von Public-Private-Partnership-Projekte bietet sich der öffentlichen Hand die Möglichkeit, erhebliche Einsparungen zu erzielen und die notwendigen Maßnahmen zeitnah zu realisieren. Nachdem diese Beschaffungsalternative in anderen Ländern bereits erfolgreich angewandt wird, fördert nun auch die deutsche Bundesregierung gezielt die Realisierung von PPP-Projekten. Bei einem schnell wachsenden PPP-Projektfinanzierungsmarkt ist mit einem erheblichen Kapitalbedarf zu rechnen, der mit Hilfe von Investoren gedeckt werden muss. Zugleich hat das Interesse der institutionellen Investoren an PPP- und Infrastrukturprojekten in den letzten Jahren erheblich zugenommen, da sich langfristig attraktive Risiken bei einem überschaubaren Risikoprofil erwirtschaften lassen.

In dem nachfolgenden Beitrag wird dargestellt, wie sich Eigenkapital-Investoren während des Lebenszyklus eines PPP-Projektes beteiligen können. Im Rahmen von strukturierten Experteninterviews und konzeptionellen Analysen wurde ermittelt, welche Anforderungen die Investoren bei der Anlage in PPP-Projekte und insbesondere hinsichtlich der Verteilung der Risiken haben. Aus den gewonnenen Erkenntnissen wurde eine Differenzierung nach Primär- und Sekundärmarkt vorgenommen und ein lebenszyklusübergreifendes Beteiligungsmodell entwickelt.

Damit bietet der vorliegende Beitrag der Wissenschaft einen detaillierten Einblick in die Zusammenhänge zwischen Finanzierung und Risiken bei PPP-Projekten, wobei in besonderem Maße die Veränderungen im Lebenszyklus berücksichtigt werden. Für die Praxis ergeben sich aus den Ergebnissen vielfältige Ansatzpunkte für Investoren, die sich mit Eigenkapital an PPP-Projekten beteiligen möchten.

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Abstract

In Germany, investment opportunities for public authorities are strictly limited by the huge budget deficit. In order to be able to satisfy the need for infrastructure investments in the future and to guarantee efficient procurement for the public sector, public private partnerships (PPP) are becoming increasingly popular. With a PPP, private sector involvement provides knowledge and capital for public services like transport and public buildings. In the fast-growing PPP market in Germany, investors will play an important role in providing not only debt capital but also private equity.

Investors are also very interested in PPP and infrastructure projects because of their longterm, stable cash flows. The study of "Investments in Public-Private-Partnerships" investigates how equity investors can participate throughout the life cycle of a PPP project. To explore and define investors' requirements, 38 personal interviews were conducted with experts from Germany and the UK. The special focus of this empirical study was on the allocation of risks in a PPP project.

From the results of the interviews, a life-cycle model for participation in PPP projects that allows for a differentiation between primary and secondary market investors was derived. The results of the study also give a profound insight into the relationship between the financing and risk structures of a PPP project and the way they change over the life cycle of a project. For potential equity investors, the study outlines different approaches to participating in a PPP project.

>> AUFSÄTZE PAPERS CAROLIN BAHR, KUNIBERT LENNERTS

Bestimmung des Instandhaltungsbudgets öffentlicher Hochbauten

The determination of maintenance budgets for public buildings

DR.-ING. CAROLIN BAHR

Postdoc, Institut für Technologie und Management im Baubetrieb, Professur für Facility Management, Karlsruher Institut für Technologie (KIT) / Universität Karlsruhe (TH)
E-Mail: carolin.bahr@uni-karlsruhe.de

PROF. DR.-ING. KUNIBERT LENNERTS

Leiter der Professur für Facility Management, Institut für Technologie und Management im Baubetrieb, Karlsruher Institut für Technologie (KIT) / Universität Karlsruhe (TH)
E-Mail: kunibert.lennerts@uni-karlsruhe.de

Zusammenfassung

Zur Instandhaltung des Gebäudebestandes spielt die Bereitstellung finanzieller Mittel zum richtigen Zeitpunkt eine wesentliche Rolle. Die Bestimmung des Instandhaltungsbudgets erfolgt bisher nicht systematisch, so dass in der Praxis sehr unterschiedliche Ansätze zur Budgetierung von Instandhaltungsmaßnahmen angewandt werden.

Dieser Artikel stellt die verschiedenen Budgetierungsansätze vor und validiert diese mit Hilfe empirischer Instandhaltungsdaten von 17 realen Immobilien. Der Vergleich der bisherigen Verfahren mit den Realdaten zeigt, dass die Berücksichtigung von Einflussfaktoren bei der Budgetierung eine wichtige Rolle spielt. Vor diesem Hintergrund wird mit Hilfe der erhobenen Realdaten der Einfluss verschiedener Parameter auf die Höhe der Instandhaltungskosten untersucht und quantifiziert. Die Auswertungen zeigen, dass die Kosten für regelmäßige bzw. außerordentliche Instandhaltungsmaßnahmen von jeweils unterschiedlichen Parametern beeinflusst werden. Dieser Sachverhalt wird von keinem der bisherigen Ansätze berücksichtigt, so dass ein neues Berechnungsverfahren entwickelt wird. Das so genannte PABI-Verfahren (praxisorientierte, adaptive Budgetierung von Instandhaltungsmaßnahmen) differenziert erstmals zwischen regelmäßigen und außerordentlichen Instandhaltungsmaßnahmen.

Schlüsselwörter: Instandhaltung, Bestandsgebäude, Instandhaltungskosten, Instandhaltungsbudget, Budgetierung, Einflussfaktoren

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Abstract

It is important to allocate financial resources appropriately so that maintenance work can be undertaken before serious damage occurs. Nevertheless, building owners lack reliable methods for planning maintenance budgets. In practice, maintenance staff have major problems each year as they try to calculate a budget for the following year. In the absence of knowledge of actual maintenance requirements and other cost-relevant factors, budgeting is mostly based on figures from previous years. This approach is imprecise.

This paper presents and discusses several existing calculation methods for maintenance budgets. Each method is evaluated, using comprehensive building and maintenance data from 17 buildings. Using each method, maintenance budgets are determined and then compared to the actual maintenance costs of the buildings. The analysis shows that the existing calculation methods fail to determine the real maintenance costs of the buildings. Also, various institutions estimate and apply the necessary financial means in very different ways. The conclusion: these methods are unsuitable. They produce maintenance estimates that differ very significantly from actual maintenance costs.

The comparison of the calculated budgets and actual data shows that the proper consideration of influencing factors plays an important role. The identification of the cost-determinant factors and their influence on maintenance expenditure is analysed and quantified, with the help of maintenance data from the buildings. It becomes clear that the parameters and their effect on maintenance costs depend on the type of maintenance works. To reflect different cost-determinant factors, annual maintenance costs, e.g. preventive maintenance; service inspection; and corrective maintenance in accordance with DIN 31051; as well as individual works, e.g. improvements, need to be analysed separately. This research develops an analytical calculation method, in two parts, that takes the different influencing parameters into account. This leads to a completely new calculation method, which differs considerably from known methods. The results of the investigation provide the required support for the proper planning and budgeting of maintenance work.

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Herausgeber

Prof. Dr. Karl-Werner Schulte HonRICS CRE
Universität Regensburg
Institut für Immobilienwirtschaft
93040 Regensburg
E-mail: karl-werner.schulte@irebs.de

Schriftleitung

Prof. Dr. Kristin Wellner
Hochschule Mittweida
University of Applied Sciences
Technikumplatz 17, 09648 Mittweida
Tel.: 03727 581 532, Fax 03727 581 376
E-mail: wellner@htwm.de

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E-mail: info@gif-ev.de

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Wilhelmstr. 12 · D - 65185 Wiesbaden

Tel.: +49 (0) 611 23 68 10 70

E-Mail: info@gif-ev.de

Fax: +49 (0) 611 23 68 10 75

Internet: www.gif-ev.de