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A comparison of Project Finance and the Forfeiting Model as financing forms for PPP projects in Germany

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Abstract

This paper compares Project Finance with the Forfeiting Model as the two basic forms that are used to finance Public Private Partnership projects in Germany. It describes the basic characteristics of both models in order to estimate their respective advantages and disadvantages from the public principal's perspective. The economic feasibility study is presented as an instrument to choose the most efficient PPP financing form. It is used to compare idealised models of PPP financing variants. The comparison reveals the composition of the total costs and emphasises the close connection between financing costs and transferred risks. The research findings show that the economic feasibility study enables public decision makers to evaluate the total costs of a PPP project depending on the chosen financing form.

Keywords: Public Private Partnership (PPP); Financing; Project Finance; Forfeiting Model; Economic feasibility study; Financing costs; Non-transferred risks

1. Introduction

A dynamic Public Private Partnership (PPP) market is developing in Germany. In the time period from 2002 until the first quarter of the year 2007, a total of 51 PPP life cycle real estate projects with an investment volume of about 1.55 billion Euros have been implemented. More than 140 projects are scheduled at present. Nevertheless, there is no single definition of the concept of PPP. In practice as well as in literature this term is used in different ways.

One common definition of PPP was provided in the study "PPP in Public Real Estate" by the German Ministry of Transport, Construction and Housing, commissioned in 2003 [1]. This study marks the beginning of a broad acceptance of the PPP initiative in Germany, therefore this paper is based on this definition. According to this, PPP is defined as a long-term contractual arrangement between the public and the private sector to realise public infrastructure and services more cost effectively and efficiently than under conventional procurement.

A PPP project is characterised by an optimised risk allocation and a holistic life cycle approach. This includes one-stop planning, construction, financing, operating, maintenance and liquidation by a private contractor. Thus, financing is one of the services that a private contractor delivers to the public sector within a PPP project [2].

In Germany, two forms of financing a PPP project are used – Project Finance and the Forfeiting Model. The Forfeiting Model refers to a construction in which the private contractor sells claims for payments to the bank, while the public principal declares a waiver of objection. In contrast, Project Finance is characterised by cash flow related financing of a particular project.

Presently, the question of the appropriate financing form for a PPP project is discussed controversially in

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Germany [2–5]. This debate is continuing because definitive findings on the most favourable financing form do not exist. In the German PPP market different views are held regarding the impact on the project's value for money. The decision for one or the other financing form often only depends on financing costs without consideration of the specific risk allocation. This paper intends to give arguments for a more transparent discussion in this respect.

2. Methodology

The paper starts with a positive analysis of financing as one life cycle element of a PPP project. Therein, the characteristics of financing forms as well as the role of risks and their coverage by securities are highlighted. The investigation is based on an international literature review and a market survey of German PPP projects. The market survey was conducted in cooperation with the Federation of the German Construction Industry [6]. In various interviews with PPP experts and participants project attributes were collected, including the chosen financing form.

In the paper's second part, Project Finance, the conventional Forfeiting Model and a Forfeiting variant that includes additional securities are compared qualitatively by using an idealised model of their life cycle costs based on the economic feasibility study. Therewith, the financing form's impact on the project's value for money is investigated. The analysis reveals the respective allocation of risks and financing costs as results of the chosen financing form. Findings discussed at the occasion of two workshops, organised for the German Federal PPP Task Force, are included in the investigation [7].

Finally, the authors show advantages and disadvantages of both financing forms and give some recommendations in order to assist public principals in estimating the appropriate PPP financing form for future PPP projects in Germany.

3. PPP and financing

The involvement of private financing is an important element of the PPP project's life cycle approach. It enables optimisation of a project's total costs. Thereby, all costs, such as real estate based costs of investment, operation and maintenance, costs of risks, and financing costs, have to be taken into account. In this context, the financing costs represent an essential part of the total costs. Hence, an isolated analysis of these costs is inappropriate, mainly due to their correlation with those connected to the transfer of risks.

Generally, in a PPP project, certain project risks have to be transferred to the private contractor to achieve value for money. It is crucial for an optimal risk allocation that a risk is borne by the party that is best able to manage and control it [8,9]. Transferring the financing to the private contractor reveals project risks and enables their more effective management. Moreover, the private contractor then strives for a lasting risk management [1,2].

Another argument for private financing is the private sector's permanent access to capital markets. Therefore, it can potentially provide public infrastructure at times when public capital would not be available. For that reason, provision of public facilities within PPP procurement is more flexible than under traditional procurement procedures.

However, PPP does not imply "construction without money", because investment costs are only "bought now and paid later": the public principal pays a unitary charge (unitary payment used synonymously) over the whole life cycle that refinances the private contractor's investments in public infrastructure [3].

The characteristics of Public Private Partnerships described above show that PPP is not only a financing model, but an alternative, more profitable procurement method that involves a private contractor as well as private capital and know-how in realising public infrastructure and services to reach value for money. It has been shown that financial aspects play a crucial role in the overall structuring of such a project [2].

4. Financing models for PPP projects in Germany

There are two basic forms of financing used for PPP projects in Germany. These are:

- Project Finance and the
- Non-recourse forfeiting of instalments (Forfeiting Model).

Derived from these two models, a multiplicity of variations of legal arrangements are possible that are adapted to the specific requirements of the individual project.

The Forfeiting Model is a special arrangement [2,4]. Thereby, the private contractor sells claims for payments that result from the construction contract with the public sector to the bank. The public principal declares a waiver of objection regarding the claims sold. Project Finance comprises the financing of a particular project mainly based on the project's cash flow. The next figure gives an overview of German life cycle PPP projects and their financing forms. In addition to this, the figure shows the project's scope of services, investment volume, value for money, term of contract and date of financial close. The data collection includes the period from financial close of the first PPP project in 2002 until spring 2007. It becomes apparent that most of the projects (22 out of 51) are realised in the education sector (see Fig. 1).

During the first years of PPP in Germany, the Forfeiting Model was the preferred financing form. It is chosen for most of the implemented German projects since 2002. Overall, 37 out of 51 projects with an investment volume of about 780 million Euro are financed by the Forfeiting Model. In contrast to international practice, where Project Finance is the predominant financing model, this financing form is used in a few German PPP projects only [8].

Signed PPP public real estate projects 2002 - 1st quarter of 2007								
Number	Project title	Scope of services	Financing form	Investment volume in million Euro	Project volume in million Euro	Value for money	Term of contract	Date of financial close
Education				**542**				
1	Centre of education in Frankfurt on the Main	Plan , Build, Finance, Operate	Project Finance	42	94	25%	20 years	July 2003
2	Schools in Monheim	Plan , Rebuild, Finance, Operate	Forfeiting Model	24	75	15%	25 years	January 2004
3	Special school ans sports hall in Frechen	Plan , Build, Finance, Operate	Forfeiting Model	15	48	10%	25 years	February 2004
4	Schools in the county Offenbach (west)	Plan , Rebuild, Finance, Operate	Forfeiting Model	100	370	19%	15 years	March 04
7	Special school in Gütersloh	Plan , Build, Finance, Operate	Forfeiting Model	10	45	5%	30 years	June 2004
5	Schools in Witten	Plan , Build, Finance, Operate	Forfeiting Model	13	32	9%	25 years	August 2004
6	Schools in the county Offenbach (east)	Plan , Rebuild, Finance, Operate	Forfeiting Model	100	410	18%	15 years	November 2004
8	Schools in Bedburg	Plan , Build, Finance, Operate	Forfeiting Model	11	56	10%	25 years	March 05
9	Schools in Cologne (I)	Plan , Rebuild, Finance, Operate	Project Finance	34	125	10%	25 years	April 2005
10	Vocational schools in Leverkusen	Plan , Build, Finance, Operate	Forfeiting Model	26	70	15%	29 years	June 2005
11	Schools in Achim	Plan , Rebuild, Finance, Operate	Forfeiting Model	8	unknown	18%	25 years	August 2005
12	Nursery in Münster-Roxel	Plan , Build, Finance, Maintain	Forfeiting Model	3	unknown	unknown	20 years	December 2005
13	School in Barleben	Plan , Build, Finance, Operate	Forfeiting Model	7	unknown	21%	20 years	February 2006
14	Grammar school in Schwarzenbek	Plan , Build, Finance, Operate	Project Finance	20	unknown	10%	25 years	May 2006
15	Grammar school in Twistringen	Plan , Build, Finance, Operate	Forfeiting Model	6	unknown	26%	25 years	July 2006
16	Schools in Cologne (II)	Plan , Rebuild, Operate	no long-term financing	5	unknown	unknown	25 years	August 2006
17	International school in Neuss	Plan , Build, Finance, Operate	Forfeiting Model	19	unknown	unknown	25 years	November 2006
18	Vocational schools in Buchholz i.d.N	Plan , Build, Finance, Operate	Forfeiting Model	4	unknown	8%	20 years	November 2006
19	Schools in Halle	Plan , Rebuild, Finance, Operate	Forfeiting Model	45	unknown	19%	25 years	December 2006
20	Nursery in Halle	Plan , Rebuild, Finance, Operate	Forfeiting Model	8	24	12%	25 years	December 2006
21	Schools in Wetzlar	Plan , Build, Finance, Operate	Project Finance	27	unknown	10%	25 years	January 2007
22	Schools in Düren	Plan , Rebuild, Finance, Operate	Forfeiting Model	16	unknown	unknown	25 years	March 2007
Administration				**203**				
23	District office in Unna	Plan , Rebuild, Finance, Operate	Project Finance	20	90	6%	25 years	September 2004
24	Town hall in Gladbeck	Plan , Rebuild, Finance, Operate	Forfeiting Model	16	44	14%	25 years	September 2004
25	District office in Friedrichshafen	Plan , Build, Finance, Operate	Forfeiting Model	12	34	20%	20 years	August 2005
26	Administration building in Chemnitz	Plan , Build, Finance, Operate	Forfeiting Model	28	65	14%	20 years	September 2006
27	Administration building in Kassel	Plan , Build, Finance, Operate	Project Finance	30	unknown	12%	30 Jahre	November 2006
28	Administration building in Berlin	Plan, Build, Finance, Operate	Forfeiting Model	12	14	unknown	15 years	January 2007
29	Town hall in Freudenberg	Plan , Build, Finance, Maintain	Forfeiting Model	5	unknown	unknown	25 years	February 2007
30	Administration building in Wiesbaden	Plan , Build, Finance, Operate	Project Finance	80	unknown	unknown	30 Jahre	March 2007
Health care				**136**				
31	Proton therapy centre for cancer medication in Essen	Plan , Build, Finance, Operate	Project Finance	136	300	unknown	15 years	June 2006
Prison				**193**				
32	Prison in Munich Stadelheim	Plan , Build, Finance, Maintain	Forfeiting Model	27	50	unknown	20 years	May 2006
33	Prison in Offenburg	Plan , Build, Finance, Maintain	Forfeiting Model	66	unknown	15%	20 years	October 2006
34	Prison in Burg	Plan , Build, Finance, Maintain	Project Finance	100	512	12%	25 years	December 2006
Sports, leasure & cultural buildings				**175**				
35	Thermal spa in Wiesbaden	Plan , Build, Finance, Operate	Forfeiting Model	22	unknown	12%	23 years	January 2002
36	Sports hall in Münster	Plan , Build, Finance, Operate	Forfeiting Model	7	15	15%	30 years	June 2004
37	Swimming bath in Lüdinghausen	Plan , Rebuild, Finance, Operate	Forfeiting Model	10	unknown	20%	30 years	June 2004
38	Sports hall in the county Lippe	Plan , Build, Finance, Operate	Forfeiting Model	14	17	19%	20 years	June 2004
39	Swimming bath in Leimen	Plan , Rebuild, Finance, Operate	Forfeiting Model	11	unknown	20%	30 years	April 2005
40	Thermal spa in Fürth	Plan , Build, Finance, Operate	Forfeiting Model	33	64	unknown	30 years	June 2005
41	Swimming bath in Hannover	Plan , Rebuild, Finance, Operate	Forfeiting Model	11	26	25%	30 years	September 2005
42	Swimming bath in Senden	Plan , Build, Finance, Operate	Forfeiting Model	10	unknown	unknown	25 years	November 2005
43	Swimming bath in Cottbus	Plan , Build, Finance, Operate	Forfeiting Model	16	unknown	12%	25 years	December 2005
44	Multifunction sports hall in Bestensee	Plan , Build, Finance, Operate	Forfeiting Model	4	unknown	6%	25 years	August 2006
45	Thermal spa in Sylt	Plan , Build, Finance, Operate	Forfeiting Model	15	unknown	unknown	20 years	September 2006
46	Sports and event center in Schwerin	Plan , Rebuild, Finance, Operate	Forfeiting Model	23	unknown	unknown	25 years	March 2007
Parking & other				**300**				
47	Parking Garage in Leipzig	Plan , Build, Finance, Operate	Project Finance	7	15	12%	30 years	April 2004
48	Parking garage in Wiesbaden	Plan , Build, Finance, Operate	Project Finance	20	unknown	unknown	50 years	January 2005
49	Parking and logistic centre - Hospital in Dortmund	Plan , Build, Finance, Operate	Forfeiting Model	21	unknown	unknown	20 years	May 2005
50	Helicopter flight training simulators, ministry of defence	Plan , Build, Finance, Operate	Project Finance	245	489	unknown	17,5 years	November 2005
51	Parking garage in Düsseldorf	Plan , Build, Finance, Operate	Project Finance	7	30	unknown	30 years	April 2006
Amount of all sectors				**1,549**				

Fig. 1. Overview of German PPP Projects (2002 – 1st quarter of 2007).

Regarding the analysed data Project Finance is applied to 13 out of 51 PPP projects with an investment volume of about 770 million Euro. The figure below shows this distribution for German PPP projects (see Fig. 2).

4.1. The basic characteristics of Project Finance

According to Nevitt and Fabozzi [10] Project Finance is defined as "a financing of a particular economic unit in which a lender is satisfied to look initially to cash flow and earnings of that economic unit as the source of funds from which a loan will be repaid and to the assets of the economic unit as collateral for the loan". In contrast to corporate finance, the lender does not consider the overall financial strength or balance sheet of the sponsor as a prerequisite to lending for a project, but primarily rely on the revenue stream generated by the project itself [11]. To realise a PPP project within a self-contained single project company, the so-called Special Purpose Vehicle (SPV) that functions as the borrower, has to be set up. This is the private contractor of a PPP project. Project Finance is characterised by the following basic criteria [11–13].

4.1.1. Cash flow related lending

In Project Finance the lender relies on the project's ability to cover interest and debt repayment, operating costs, and to yield return on equity. That is why they conduct an extensive Due Diligence in advance of financing the

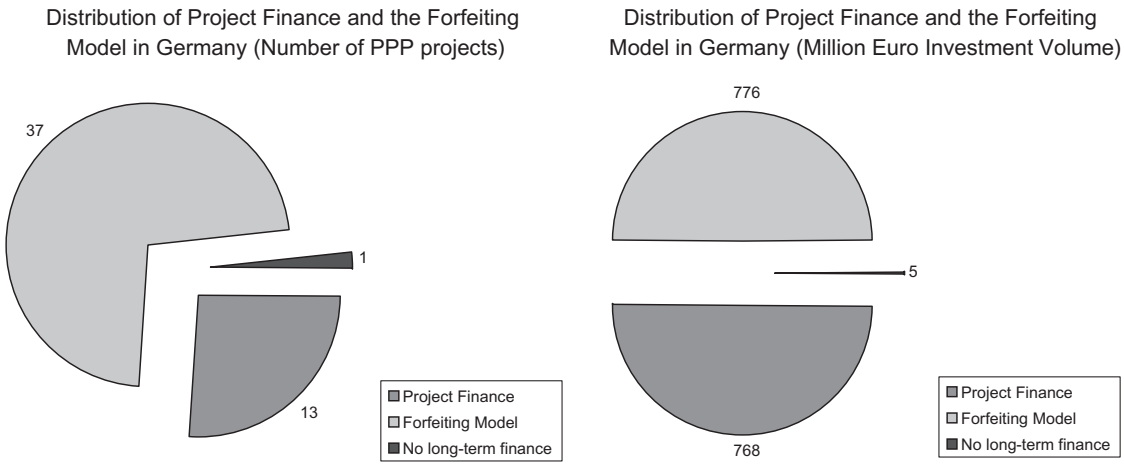


Fig. 2. Distribution of Project Finance and the Forfeiting Model in German PPP projects.

project. Thereby, the evaluation of the project is based on the expected future cash flows that influence the financing decision and the interest terms set by the lender. Nevertheless, the sponsor who is a shareholder of the Special Purpose Vehicle should bring the technical and commercial competence to fulfil the contractual obligations.

4.1.2. The risk sharing principle

One of the main features of Project Finance is the spread of risks between all parties involved. The lender primarily bears the risk and consequences when the private contractor is unable to fulfil the contract. In the following, this is understood as the risk of insolvency. Due to this, the lender has an own interest to control and influence the fulfilment of the PPP contract. In case of an insufficient or non-performance of the private contractor, Step-in-Rights arranged with the public principal allow the lender to replace the contractor by another. As a basic principle, risks should be allocated so that the individual ability to manage the respective risk is met. This is also one important rationale of Public Private Partnerships.

4.1.3. Off balance sheet financing

In the past, the possibility inherent to Project Finance of not including debts in the sponsor's balance sheet was considered as an argument in favour of this instrument from the private contractor's point of view. It was argued that due to the direct project crediting – with the SPV as the borrower – the balance of the parent company will not be charged. However, the external accounting regulations of most countries prohibit keeping debts off the balance sheet when the investor is a majority shareholder in the project and when the sponsor has to consolidate shares exceeding a 50% limit [14].

4.1.4. Non or limited recourse financing

The liability of the SPV against the lender is limited to the capital and assets in kind brought in by the project company's sponsors. That is why the lender stays without having recourse to the project's sponsors and their assets (non-recourse financing).

However, the provision of guaranties, which are limited in time, e.g., a guarantee for the completion of the building or securities that are adapted to the risk profile of the specific project, is commonly seen in practice. Under certain conditions, the lender has recourse to these securities (limited recourse financing).

4.1.5. The different types of capital

The involvement of different forms and sources of capital depends on a variety of project-specific criteria, such as the investment volume and the allocation of risks as well as the individual risk-return-structure of the investor. As regards Project Finance, the lender requires coverage with equity according to the risks associated with the project. In the case of a more risky project, the borrower has to provide a higher equity ratio than in a project with a lower risk. However, in practice, a 10–15% equity stake by the sponsor is accepted as adequate [8]. In total, debt represents the main source of capital in Project Finance. In the case of a larger project, the gap between equity and debt can be filled with mezzanine-capital [4].

4.1.6. The structure of Project Finance

Fig. 3 below shows the basic structure of Project Finance, its contractual relationships, and the corresponding payment streams.

4.2. The basic characteristics of the Forfeiting Model

Forfeiting implies the sale of claims for payment. The term has been established in export financing, but is currently used for a special form of financing a PPP project, the so-called Forfeiting Model. Within the scope of the Forfeiting Model, the private contractor of a PPP project sells his claims for payment that result from the PPP contract with the public principal to a bank. The combination of this transaction with a declaration of a waiver of objec-

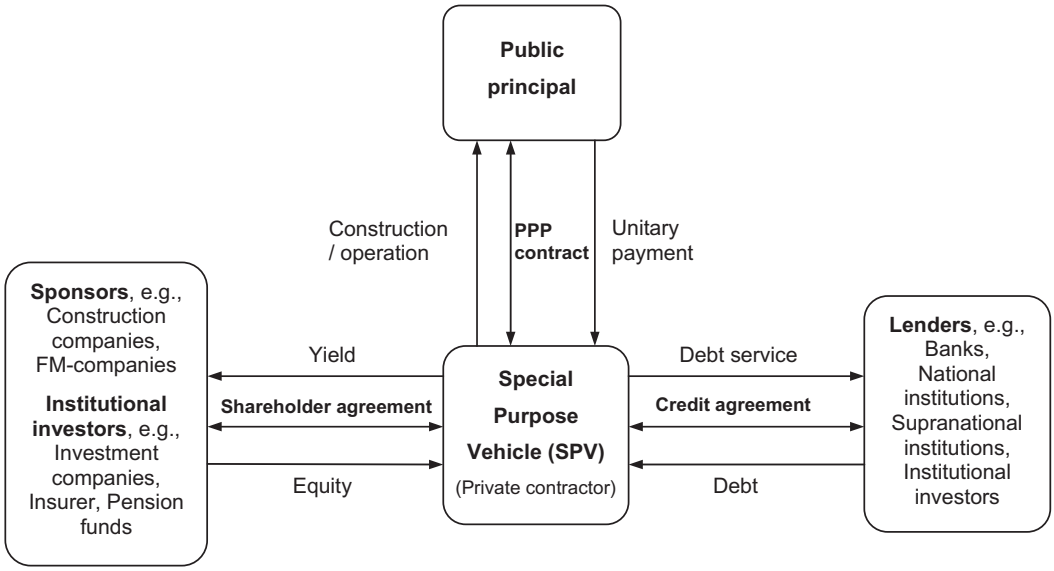


Fig. 3. The structure of Project Finance [2].

tion by the public principal to the bank allows to obtain favourable financing conditions similar to those in the case of a local authority loan.

The Forfeiting Model is characterised by the following features [4]:

4.2.1. The sale of claims for payment resulting from construction works

In practice, the Forfeiting Model is based on a partial sale of claims for payment by the private contractor to the bank. This implies that only that part of the claims for payment that results from the construction contract between private contractor and public principal is sold to the bank. After the project's successful completion and the final acceptance, the bank becomes the creditor against the public principal. The latter has to pay the debt service to the bank that equals the part of the unitary payment related to the construction works. The other part of the unitary payment resulting from the operation contract between the private contractor and the public principal is excluded from this procedure. It has to be paid directly by the public principal to the private contractor, as is shown in Fig. 4.

4.2.2. The waiver of objection

After the public principal has accepted the completed construction works, he declares a waiver of objection regarding the debt service to the bank. Due to this fact, the public principal cannot invoke any objection regarding the debt service towards the bank. Therefore, he has to pay that part of the unitary payment that results from the construction works to the bank even in case of the private contractor's deficient performance.

4.2.3. Local authority loan financing conditions

The advantageous financing conditions of the Forfeiting Model are due to the waiver of objection. Therefore, the bank only assesses the private contractor's creditworthiness for the short-term financing of the project. Whereas, the creditworthiness of the public principal serves as the basis for the long-term financing of the project. For the latter, the bank is not concerned with the private contractor's creditworthiness. Because of the still valid AAA rating of most public authorities, the bank is not obliged to support the credit with equity [15]. Hence, the bank can grant the same credit conditions as in the case of local authority loans.

4.2.4. The different types of capital

Given the current PPP practice in Germany, Forfeiting Model is based on debt financing to a substantial extent. The main reason for this is that banks have no or only few requirements regarding the provision of equity by the private contractor, while relying on the public sector's creditworthiness. In some cases, surrogates of equity in the form of subordinate shareholder loans of maximal 10% of the total investment volume are provided [2].

4.2.5. The structure of the Forfeiting Model

Fig. 4 shows the basic structure of the Forfeiting Model, its contractual relations and the resulting payment streams.

4.3. Risks and their coverage by securities in different financing forms

In structuring a PPP project the assessment of risks plays an important role to achieve value for money [16]. Based on this, a well-adapted concept of securities is significant for the success of a PPP project [17]. It depends on the chosen financing model and serves to cover risks according to the interests of the public principal. Different kinds of securities that are used in the financing forms are mentioned in the following.

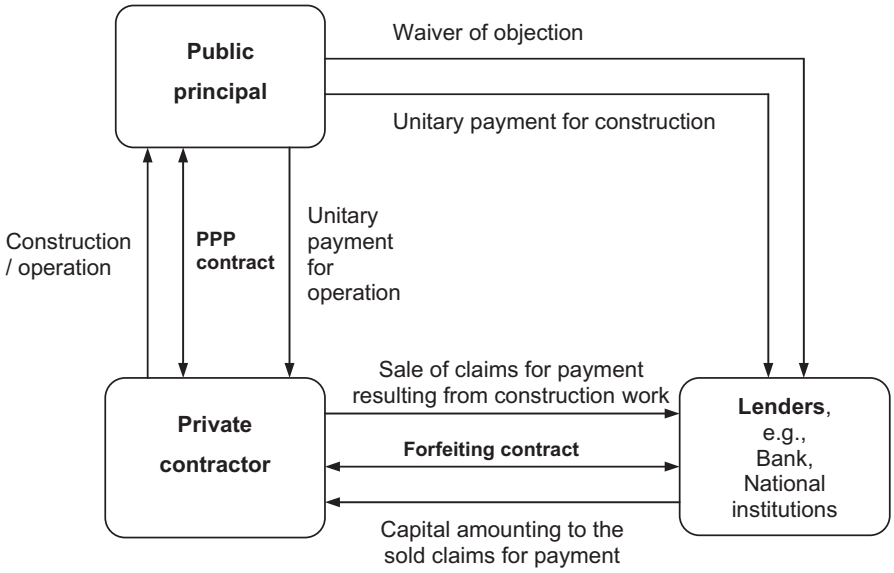


Fig. 4. The structure of a Forfeiting Model [2].

A PPP project is characterised by a variety of risks. This paper concentrates on the performance risks. We discuss two different kinds of potential PPP risks: bad-performance and non-performance. Bad-performance implies the failure of the private contractor to comply with agreed services and low operating productivity. In contrast, non-performance means the private contractor's insolvency [18].

In the case of bad-performance by a private contractor, the public principal can react by referring to sanctions agreed upon in the PPP contract. A possible debasement of the project's services can be compensated by reducing the unitary payment for the private contractor. Bonus-malus-arrangements can be applied as an additional security instrument.

Project Finance grants to the public principal the unrestrained possibility to reduce the unitary payment. In the Forfeiting Model, such a reduction is only possible for that part of the unitary payment for that a waiver of objection has not been declared. Therefore, only the part of the unitary payment that results from the operation contract can be retained by the public partner. Due to this, during the operation period, the public principal bears all risks resulting from the construction work beyond the implied warranty. In case of deficiencies stemming from shortcomings in the construction work, the private contractor cannot be held liable to the full extent, but only within the implied or expressed warranty.

The situation is different in the case of non-performance. If the private contractor terminates the contract or goes bankrupt, the public principal is insufficiently protected by the possibility to reduce unitary payments or bonus-malus-agreements, because these sanctions require a solvent private contractor.

The following costs can arise from a private contractor's insolvency:

- Costs for a new tendering,
- costs resulting from a deficient condition of the building at the date of the private contractor's withdrawal,
- possible higher unitary payment from construction, maintenance, and operation by the new private contractor [5].

The question of who bears these costs depends on the project's phase in which the private contractor becomes insolvent, the chosen financing form, and the securities that have been agreed upon in the PPP contract.

During the construction period, there is no difference in the effects of non-performance between Project Finance and the Forfeiting Model. In both cases, the construction costs will be pre-financed by the private contractor via short term financing. This means that the bank bears the private contractor's insolvency risk in the construction period.

In case of non-performance in the operation period in combination with Project Finance, the lender also bears the risk of the private contractor becoming unable to pay at this stage of the project. Due to the agreed Step-in-Rights of the lender, the latter then takes care that a new contractor will provide the agreed services and fulfil the PPP contract. The public principal does not have to cover the additional costs. If Step-in-Rights have not been agreed with the bank, the public principal can – in case of non-performance of the private contractor – compensate the loss resulting from the additional costs mentioned above by the value of the building. Then, the public principal has to pay only the remaining difference to the insolvency administrator. Therefore, the additional costs are covered. Hence, Project Finance provides an all-embracing security instrument for public authorities.

	Project Finance	Forfeiting Model
Bad-performance	• Unrestrained reduction of the unitary payment, • Bonus-malus-arrangements for the whole sum of the unitary payment	• Reduction only for that part of the unitary payment resulting from the operation, • Bonus-malus-arrangements for the operation part of the unitary payment
Non-performance in the construction period	• The private partner has to pre-finance the construction costs - the insolvency risk bears the lender	
Non-performance in the operation period	• The lender bears the insolvency risk and the related costs • He replaces the contractor (Step-in-Rights)	• The public principal bears the insolvency risk and additional costs

Fig. 5. A comparison of possibilities to react in the case of bad- and non-performance.

In contrast, in the Forfeiting Model the public principal bears the insolvency risk of the private contractor and has to pay the ensuing costs. The public principal cannot assert a claim regarding these costs against the insolvency administrator.

This is the reason why the public principal has a substantial interest in protecting itself against the insolvency risk of the private contractor and thus against the non-fulfilment of the contract. Hence, in the Forfeiting Model, the public principal demands additional securities from the private contractor in the operation period. These can comprise: equity of the SPV, guaranties provided by the parent company or a bank as well as guaranties for maintenance of capital and operation (see Fig. 5).

5. Set financing in the economic feasibility study

The economic feasibility study is used – although in slightly different ways – as a common instrument in the international PPP practise [19,20]. It analyses value for money by comparing a project realised as a PPP with an equal project procured conventionally. In this context, it also supports the choice of the most efficient form of PPP financing [21].

Two different stages can be distinguished: the preliminary and the final economic feasibility study. The preliminary feasibility study compares the forecasted life cycle costs of the conventional realisation, which are summarised in the public sector comparator (PSC), with estimated life cycle costs of the PPP alternative. After having determined the preferred bidder, this PPP bid will be compared to the PSC in the final economic feasibility study [22]. Thereby, the expected value for money is calculated. Because of the precept of efficiency and economy in the § 7 of Federal Budgetary Regulations [23], the PPP contract can be signed only if the PPP bid is more efficient than the PSC. Otherwise, a conventional tendering has to be arranged.

The total PPP costs are calculated by adjusting the PSC and by introducing benchmarks from comparable projects. Thereby, the specific effects of the chosen financing form as well as all other PPP life cycle costs are taken into account [5].

5.1. Financial costs as part of the PPP life cycle costs

Fig. 6 shows which direct costs have to be considered in the PPP option. In this context, the unitary payment represents the largest portion of the total PPP costs [22]. The private contractor receives the unitary payment for providing long-term services in the PPP project. Furthermore, beside the real estate based costs of investment, operation, and maintenance, the unitary payment normally also includes the financing costs for the project. In addition, the unitary charge includes payments arising from the transfer of risks. These costs are subsumed under the term "transferred risks" in Fig. 6.

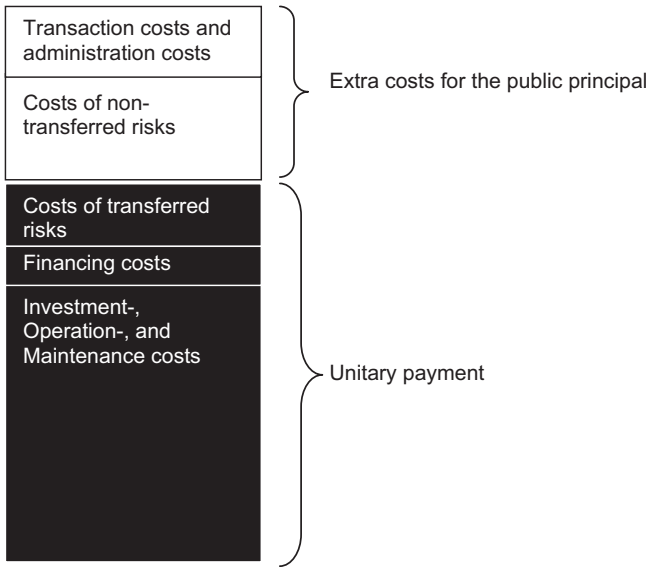


Fig. 6. Composition of the PPP life cycle costs.

In addition to the unitary payment, extra costs for the contracting authority connected to a project's realisation as a PPP have to be taken into account. These additional costs for the contracting authority arise from retaining risks. They are assigned to the category "costs of non-transferred risks" in Fig. 6. Furthermore, transaction and administration costs accrue to the public authority from structuring a PPP project.

5.2. The connection between financing costs and risk allocation

Primarily, the total amount of the debts' financing costs is determined by the interest reference rate (for example, EURIBOR) and the risk-related financing costs of the respective financing form. The height of the interest reference rate does not depend on the chosen financing form – it is the same for the Forfeiting Model and Project Finance. The risk-related financing costs are composed of transaction costs and the bank's interest margin [4].

In the case of Project Finance, the bank is involved as a risk partner and therefore takes substantial risks. Especially, this includes the insolvency risk of the private Special Purpose Vehicle – the private contractor. To estimate the risk-related financing costs, the bank conducts a Due Diligence check of the project's technical and economical viability. Furthermore, controlling measures are installed during the contract period. Due to this complex project realisation, there are – in comparison to the Forfeiting Model – higher transaction costs before and during the implementation of the project. Moreover, because of the substantial risk transfer, the interest margin of the bank is higher in Project Finance. Hence, in this context, the bank's risk-related financing costs are higher. This results in higher financing costs than in the Forfeiting Model.

When resorting to Forfeiting Model, the financing costs are lower than under Project Finance. Because of the lower extent of risk transfer to the private contractor and the declaration of a waiver of objection by the public principal, Due Diligence or controlling measures are not made by the bank. In this way, the transaction costs remain on a relatively lower level. Furthermore, the Forfeiting Model is based on the creditworthiness of the highly rated public principal. This is the reason why the financing bank is normally not forced to refinance with equity according to § 10 Banking Act [15]. That is one reason why, compared to Project Finance, lower bank interest margins can be offered. All things considered, the financing banks can provide financing conditions at a reduced rate under the Forfeiting Model (see Fig. 7).

This analysis shows that there is a close relation between the financing costs and the transferred risks. The financing costs are part and determinant of the unitary payment. Hence, the total costs of each PPP alternative have to be taken into account when comparing the various financing models. This aspect is elaborated in the next section.

5.3. Impact of financing forms on life cycle costs

One possibility to show the influence of financing forms on a project's value for money is to devise several variations of PPP alternatives during the preliminary feasibility study. In the next step, the impact of the two financing models Project Finance and Forfeiting are compared. In addition to the basic Forfeiting Model, a variant that includes additional securities is analysed.

A comparison of three variants of a PPP alternative, each adjusted to the respective financing form, shows the division of the individual costs over the total life cycle costs. Because the efficiency of each financing form has to be analysed for every single project, our argumentation is based on idealised financing models. Therein, the amount of the life cycle costs is claimed to be the same for all three variants. For the purpose of clarification of the models' basic structure, the existence of a perfect capital market is assumed. The comparison is shown in Fig. 8.

When these financing models are applied to a real project, different financing and risk costs as well as different real estate based costs of investment, operation and maintenance can accrue. Therefore, a different level of total costs can be expected for each of these models. Differences in the value for money as a result of the chosen financing form can be identified by applying the scheme in Fig. 8 to a real project.

Case 1 in Fig. 8 shows a Forfeiting Model without additional securities. Therein, only a few risks are transferred to the private contractor. The "costs of non-transferred risks" presents a larger portion of the total costs than in the other

	Project Finance	Forfeiting Model
Interest reference rate (e.g. EURIBOR)	• The interest rate is base for each financing form and its height is equal for all	
Risk-related financing costs	• Substantial risk transfer • Includes insolvency risk of the SPV • Due Diligence costs because of the project's complexity	• Lower extent of risk transfer • Does not include insolvency risk of the SPV • No Due Diligence made

Fig. 7. Composition of financing costs.

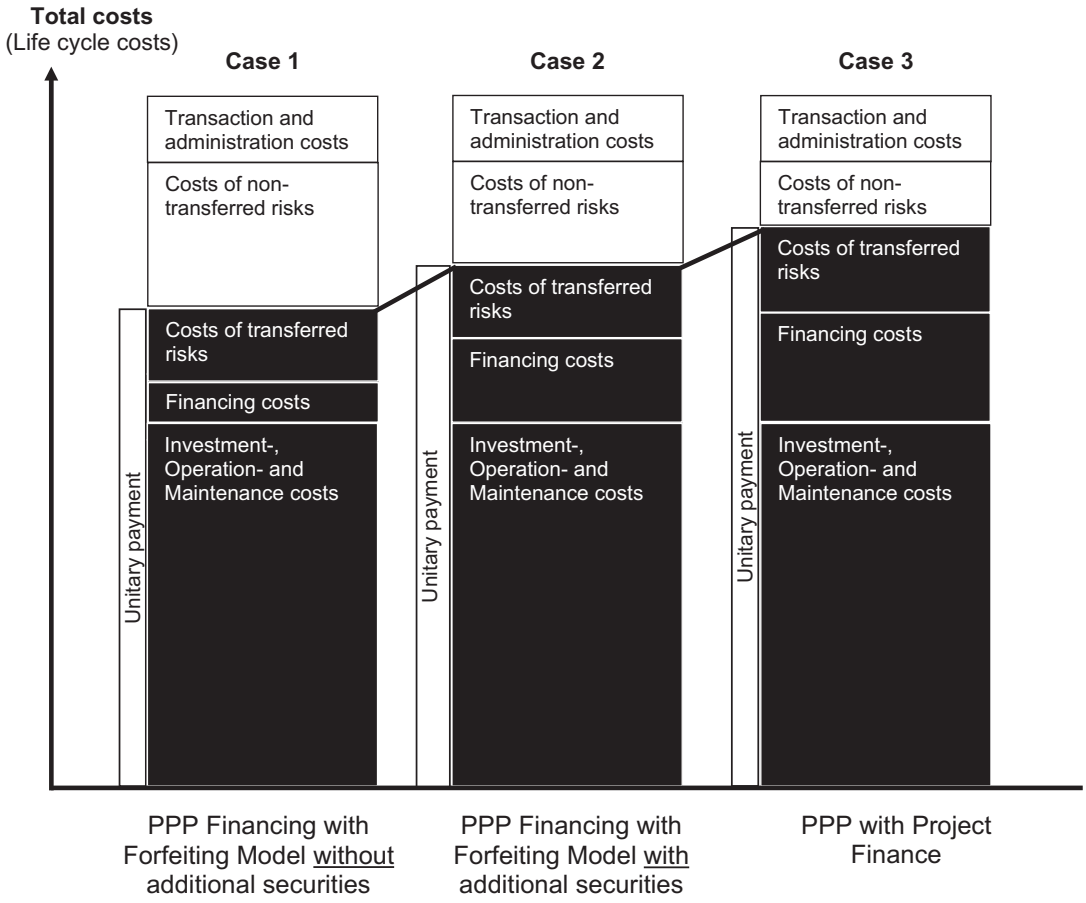


Fig. 8. A comparison of the total costs of different financing variants of a PPP alternative.

two cases. Corresponding to this, the costs amount of "transferred risks" is comparatively low. Therefore, as has been argued above, the Forfeiting Model without additional securities creates lower financing costs.

In case 2, the Forfeiting Model includes additional securities from the private contractor, such as guarantees. Hence, fewer project risks have to be taken by the public principal. Consequently the "costs of non-transferred risks" are smaller than in case 1. The granted extra securities cause additional risk-related financing costs that the private contractor includes in the calculation of the unitary payment. The reallocation of the individual costs within the PPP alternative can be seen in Fig. 8. The costs for risks assigned to the cost category "non-transferred risks" in case 1, now (in case 2) belong to the category "financing costs". Case 2 depicts only one example for a securities concept. The level of coverage and the level of risk transfer depend on the risk affinity of the contracting authority.

According to case 3, Project Finance is featured by an extensive transfer of risks. The costs of the "non-transferred risks", which are borne by the contracting authority, are lower than in cases 1 and 2. Amongst others, the reason for that is the inclusion of equity from the private contractors. On account of this equity investment, the private contractor has a strong incentive for project improvements. Additionally, Project Finance is characterised by an enhanced risk transfer to the bank as compared to the Forfeiting Model with additional securities. Therefore, higher risk-related financing costs incur in Project Finance. Moreover, a higher unitary payment than in the Forfeiting Models can be expected.

Given these insights, value for money cannot be analysed by independently estimating the financing costs and the unitary payment. Additional costs, especially the costs for non-transferred risks that are paid by the contracting authority, have to be taken into account.

It cannot be stated in general, whether the anticipated lower risk-related costs due to an optimal risk allocation in Project Finance are sufficient to (over) compensate the higher financing costs compared to the Forfeiting Model. Which financing form finally yields the lowest total costs depends on the detailed concept of a certain project. Furthermore, the project's goals and the decision maker's willingness to transfer risks determine which financing form is the most efficient one and may attain a better value for money.

6. Findings

The main differences between the basic forms of PPP financing have been identified in the following areas:

- allocation of risks,
- financing costs depending on differences in transaction costs of the bank and risk-related financing costs,
- monitoring of the PPP project.

As was shown, due to the differences with respect to the allocation of risks and the arrangement of securities, a variety of contractual arrangements between the basic financing forms of a PPP project are possible.

Advantages and disadvantages of Project Finance and Forfeiting Model can be summarised as follows (see Fig. 9):

6.1. Potential consequences regarding the choice of the financing forms

Making the decision for one or the other form of financing a PPP project depends on project-specific factors. The most important criteria to choose the adequate financing model are efficiency-related.

Moreover, a project's investment volume is a crucial criterion. On account of higher transaction costs in form of Due Diligence costs, Project Finance is more suitable for projects with a relative high investment volume or in case of pooling several projects. In contrast, Forfeiting Model is more appropriate for PPP projects with a smaller investment volume.

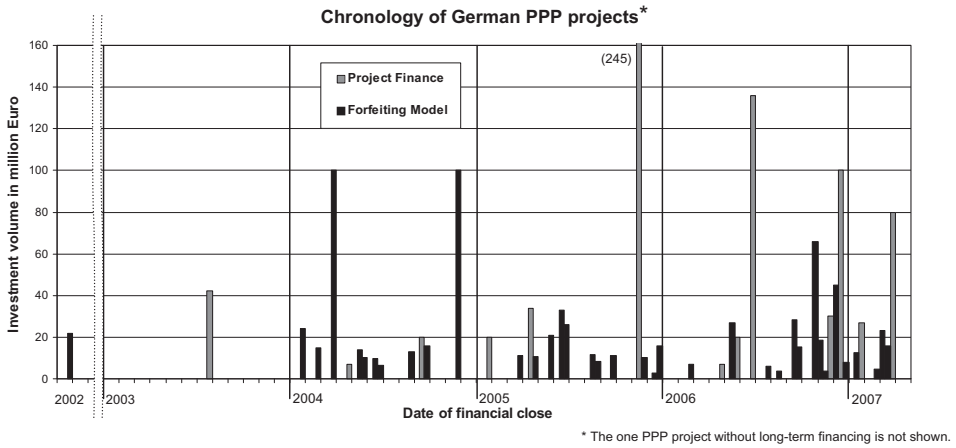
Another aspect relates to the intended allocation of tasks and risks by the public authority. In a complex project connected with a high risk, Due Diligence costs can be compensated. Because of an encompassing risk transfer to the private contractor, the latter faces strong incentives to apply specific know-how. As a consequence, a higher level of a project's overall efficiency can be reached. Hence, Project Finance is more appropriate for risky and complex projects. However, as regards standard projects with manageable risks, the Forfeiting Model is normally more suitable.

If it is assumed that the complexity of a project is correlated with investment volume, it can be deduced that the higher the project's investment volume the more Project Finance is the appropriate option.

This assumption can be validated by the investigation of the first PPP projects in Germany. As is shown in Fig. 10, two projects with an investment volume above 100 million Euro Project Finance are applied only. On the other hand, with 25 out of 27 projects, the predominant portion of smaller projects with an investment volume less than 20 million Euro were financed by using the Forfeiting Model. Another finding in favour of this assumption is based on the project's average investment volume. Whereas, for Project Finance projects, the average investment volume is about 59 million Euro, projects that apply the Forfeiting Model have an average volume of 21 million Euro.

Project Finance	Forfeiting Model
Advantages	
• Adequate allocation of risks according to the risk management competence of the partners • Insolvency risk taken by the lender (Step-In-Rights) • Early evaluation of the projects' viability by the lender (due diligence) • Monitoring and controlling of the project by lenders during the whole contract period • Setting of additional incentives in case of bad performance of the private partner (relating to the construction works) • Equity as additional security and incentive for efficiency	• Lower unitary payment because of lower financing costs • Faster procurement process —no time-consuming Due Diligence processes
Disadvantages	
• Higher unitary payment because of higher financing costs • Longer procurement process due to time-consuming Due Diligence procedure by lenders	• Intransparency of costs for not transferred risks • Insolvency risk taken by the public principal • No additional evaluation and controlling of the project neither in the forefront of the project nor in the course of the contract period • Less incentives in case of bad performance of the private partner (relating to the construction works) • No additional incentives because of low involvement of equity

Fig. 9. Advantages and disadvantages of Project Finance and the Forfeiting Model from the public principal's point of view.



Year	2002	2003	2004	2005	2006	1st q. 2007	Total
Number of PPP project per year	**1**	**1**	**12**	**14**	**17**	**6**	**51**
Project Finance	0	1	2	3	5	2	13
Forfeiting Model	1	0	10	11	11	4	37
No long-term financing	0	0	0	0	1	0	1
Investment volume in million Euro	**22**	**42**	**335**	**461**	**526**	**163**	**1,549**
Project Finance	0	42	27	299	293	107	768
Forfeiting Model	22	0	308	162	228	56	776
No long-term financing	0	0	0	0	5	0	5

Fig. 10. Chronology of German PPP projects.

Furthermore, the legal framework and the general conditions of a project play an important role in the decision making process. For example, the level of debt financing that a local authority can bear, public law guidelines for the public budgets as well as other restrictions for the public principal have to be taken into consideration. Moreover, it can be assumed that the level of standardisation coming along with the increasing PPP experience and knowledge of the project participants [24] influence the choice of the financing model. After one project in 2003, the Forfeiting Model was used consistently for 10 to 12 PPP projects in the years 2004 to 2006. While Project Finance was less used in early PPP projects, its share grew constantly over the past years. Starting from one project in 2003, in the year 2006 five projects were realised by applying Project Finance. Already two out of six projects have applied Project Finance in the first quarter of 2007. In combination with a rising level of PPP expertise, it can be expected that Project Finance will become more important for future projects in Germany.

7. Conclusions and forecast

Given the interdependencies of the evaluation criteria for PPP financing models presented in this paper, the public principal should analyse in detail the particular project at hand. An important goal is to identify which of the two main financing forms Project Finance or the Forfeiting Model is more likely to yield efficient results.

Economic feasibility studies can provide an instrument to facilitate such a profound analysis and can assist the public principal's decision making process. As has been argued, the economic feasibility study is an appropriate means to illustrate the main differences between the basic PPP financing forms. It reveals their respective risk allocation and financing costs. Thereby, it serves public authorities to estimate more accurately the total costs of a PPP project and its value for money.

The overview of German PPP projects has shown that the Forfeiting Model is still the most common form of financing PPP projects in Germany, particularly for projects with small investment volume. However, with a growing number of projects with high investment volumes, a tendency can be assumed to a more frequently use of Project Finance in Germany.

Generally, it can be recommended that public principals should pay special attention to the fact that a PPP project's costs for securities should not exceed the costs of potential risks. An adequate security concept is one important success factor for a PPP project to reach value for money.

Further investigations into this subject by means of case studies are required. Therein, an analysis of risks and financing costs based on data from real projects seems to be helpful. This empirical evidence can support and verify the more theoretical approach and findings of this paper.

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