

Financing of Pay-on-Production-Models

Christian Decker and Stephan Paesler

**Berichte aus dem Weltwirtschaftlichen Colloquium
der Universität Bremen**

Nr. 92

Hrsg. von
Andreas Knorr, Alfons Lemper, Axel Sell, Karl Wohlmuth

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*Fixed Income – Asset Backed Structuring,
DZ BANK AG, Frankfurt am Main*

Andreas Knorr, Alfons Lemper, Axel Sell, Karl Wohlmuth
(Hrsg.):

Berichte aus dem Weltwirtschaftlichen Colloquium
der Universität Bremen, Nr. 92, November 2004,
ISSN 0948-3829

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1 Introduction

The management paradigm of a more or less strict orientation of decision-making on the maximisation of the shareholder value has been extensively discussed in wider areas of the management practice as well as in the theoretical literature. Accompanied by an increasing competition, this has led to the identification and concentration on operational core competencies. As a result the economy is showing a tendency towards outsourcing of selected areas of goods and services production, which are not any longer qualified as core tasks of the individual economic activity. Consequently those companies are gaining new opportunities, which are taking over outsourced parts of the goods and services production and hence expanding their business volume as well as increasing potentially their real net output ratio. Recently an increasing trend towards the outsourcing of production and logistics services in the context of (industrial) operating schemes could be observed. The so-called **Pay-on-Production-models** (PoP-models) are forming a special version, whereby single industrial manufacturing and transport systems are financed, erected and operated at the production site of the off-taker by a construction company (contractor) and are repaid solely via an output related fee by the off-taker.

This paper aims at introducing the pay-on-production model and differentiating it from related concepts. For this purpose the relevant parties and their stylised interests have to be identified as well as selected risk areas to be discussed. Subsequently the financing concept of a cash flow based (project) financing of pay-on-production models will be introduced and complemented by a characterisation of selected terms of financing which will generally be required by banks.

2 The Pay-on-Production-Model

2.1 Starting Point

Against the background of an increasing competition in the industrial production of consumer and capital goods, as well as in the area of complex logistics services, the availability of effective and efficient production and transport systems forms a basic requirement for the success of market participants. Thereto required modern equipment and system technology regularly distinguishes itself by technical complexity and innovation and requires the availability of a corresponding technological know-how. The self-contained company or group internal realisation of corresponding investments implicates the allocation of appropriate financial and human resources. Industrial and logistics companies have to decide, whether one or more of the steps: planning, development, financing, construction as well as operation and maintenance will be internally generated or externally contracted.

With a decision towards an external procurement the following ideal types of procurement models can be distinguished:

- **Pay-for-Equipment**

An engineering and construction company, who will not be responsible after technical acceptance of the facilities, will deliver machinery and equipment. Selected services (e.g. periodical maintenance, order-related refitting, irregular repairs, delivery of spare parts) will only be offered on the basis of separate contractual arrangements. The construction contract usually arranges for an erection, which will

have to be finished on schedule (,Date Certain'), provides ready to use equipment and machinery (,Turn Key') and/or will be based on a fixed price arrangement (,Lump Sum'). With the potential exception that contracted services have to be provided, the construction company is exempted from any further obligations after technical acceptance.

- **Pay-on-Availability**

The Pay-for-Equipment-Model can be expanded to a Pay-on-Availability-Model¹, if the operation as well as the maintenance, will be assigned to the construction company within the scope of a corresponding contractual arrangement. Such a contract will bind the construction company to operate the industrial manufacturing and/or transport systems based on plant utilisation with its own personnel on site. Compensation is only based on available production and/or transport capacity and thus not linked to the actual workload of machinery and equipment (,Availability Fee', ,Capacity Fee'). However, fees only have to be paid insofar as the operator delivers the contractually owed performance, i.e. the predefined availability ratio. The general market risk still remains with the off-taker of the manufactured goods or transport services.

- **Pay-on-Production**

In the context of a Pay-on-Production-model (PoP-model) the construction company also takes responsibility for the financing of the industrial manufacturing and/or transport systems beside the essential parts of planning, engineering, construction, operation and maintenance. Generally ownership of machinery and equipment will remain with the construction company or a solely for this purpose established special purpose company and will not form part of the property of the contractual partner. The off-taker compensates the operation of the industrial manufacturing and/or transport systems by way of a workload respectively output related payment. Therefore the construction company participates in the market risk of the off-taker. Project realisation by way of a PoP-model usually implies for the construction company more or less the acceptance of a sponsor function, e.g. an involvement via the issuance of a contractually binding (recoverable) guarantee and/or by means of an equity participation.

2.2 Business Model

A prerequisite of a PoP-model is the identification of separable tasks of the production process, which can be erected and operated separately. Regularly, a newly established single purpose company, respectively a project company, will be the owner and operator of the machinery and equipment to be constructed.² This legal entity will sign a contract with the construction company regarding the engineering, procurement and construction of the facility.³ The remuneration of the contract price will be provided via shareholders funds to be paid in by the construction company by way of

1 In the literature one will also notice the term ,Performance Contracting'. See Freiling (2002), p. 210.

2 Besides of the described basic structure there might be in other cases a necessity to establish more than one company (e.g. an asset owning company and an operating company) because of tax, legal or financial objectives.

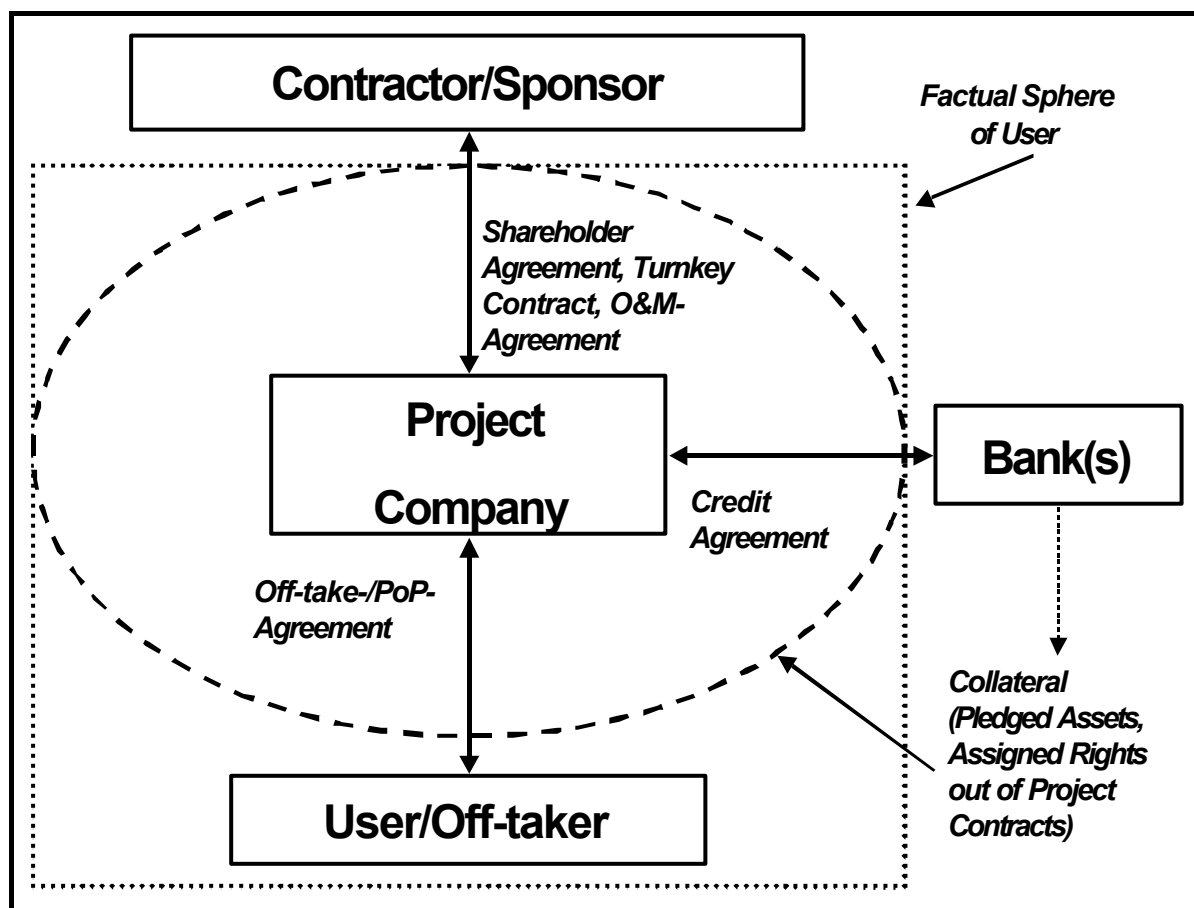
3 One might also imagine that a production or transportation system has already been successfully erected and put into operation, whereas pre-financing of the contract is provided by the engineering and construction company. In this case the completed equipment can be transferred to a project company by way of a purchase agreement.

contributed equity capital or subordinated loans as well as external financing arranged by banks or leasing companies.⁴ The execution of the functional tasks operation and maintenance can be conducted by own personnel of the project company, or within the framework of an operation and maintenance agreement between the project company and the construction company by staff of the latter. In addition, the project company will sign an off-take agreement with the consumer respectively the off-taker of the production and/or transport services on the basis of a pay-on-production-obligation.

Basically the compensation will be linked to the produced output (‘Pay-on-Production’), whereby in accordance with the contractual arrangements (e.g. a progressive price escalation clause) as well as optional price components (e.g. capacity fee) market risk will be transferred more or less to the project company.

The following illustration shows the essential elements of the basic structure of a PoP-model:

Chart 1: Basic Structure of a PoP-model



Source: Own representation

Although the assets are legally ring-fenced within a special purpose company, the project will factually form part of the corporate sphere of the user, i.e. the off-taker (see dotted rectangle in Graphic 1). From a physical-geographical perspective the facilities will be regularly located in direct proximity of the production plant respectively on the premises of the user.⁵ In consequence of the off take agreement or rather the

4 Equity may also be injected via mobilization of private equity investors or private equity funds.

5 One might imagine an assembly or a paint-spray line, which is operated within the framework of a PoP-model and located directly at the premises of a car manufacturer.

included PoP-arrangement the project company is additionally closely interconnected with the marketing policy and/or sales success of the user. Alternative off-takers of supplied production and transport services will not be available – at least not on short term –, because an ulterior use of the transport and production facilities will regularly require an adjustment to the technical requirements of the new user by way of a cost intensive degradation, alteration and reconstruction. Furthermore the customized and therefore highly specialized assets will have a limited secondary market because of their narrow range of application.

The PoP-model shows great similarities with the concept of contracting respectively of classical operating schemes (BOT-, BOOT-, BOO-models etc.), whereas basic differences can be isolated by analysing selected characteristics:

- **Contracting**

In the context of contracting single assets, which stand under the legal ownership of an engineering and construction company and/or an operator, will be erected or rather delivered to the premises of the user respectively off-taker and operated on location. Usually an independent separation by establishing a project company is not envisioned. Legal, tax and economic reasons will stand against an extension of the concept to more complex transport and production systems, which are realized by taking up project-related external financing. Therefore, application will regularly be limited to (small) energy management systems (heating, cooling, lighting and ventilation, power stand-by units, elevators etc. ⁶).⁷

- **“Classical” Operating Schemes (BOT-/BOO-models)**

“Classical” operating schemes, which are normally employed for the realisation of self-contained, large-volume projects in the application areas **energy production** (power plants, electricity networks), **traffic infrastructure** (roads, tunnels, bridges, airports and seaports), **municipal/public infrastructure** (schools, prisons, office buildings, water supply, waste disposal etc.) as well as in exceptional cases **telecommunication** (mobile and fixed-line networks), are distinguished from PoP-Models in the majority of the cases, that contractual compensation arrangements will allow the repayment of debt as well as a satisfactory return on equity, independent of the actual utilisation of the project capacities. Through this quantitative off-take, risk is to the greatest possible extent eliminated, respectively substituted by the creditworthiness of the off-taker.⁸ Furthermore “classical” operating schemes are regularly detached functional units, which are not integrated as modules in the production and logistic processes of established companies.⁹

6 See Reisz, T.: Contracting sorgt für effizienten Energieverbrauch, in: Handelsblatt, February 5th, 2003, No. 25, p. B1.

7 Partially the term ‘Contracting’ is used as collective or generic term for miscellaneous varieties of operating schemes. See Freiling, J.: Das Contracting als innovatives Instrument des Marketing industrieller Services und seine Implikationen bezüglich der Interaktionsgestaltung zwischen Anbieter- und Nachfragerseite, in: M. Bruhn, B. Stauss (ed.), Dienstleistungsmanagement Jahrbuch 2001: Interaktionen im Dienstleistungsbereich, Wiesbaden 2001, p. 461 f. See also VIK (Hrsg.): Contracting: Das VIK-Contracting Modell zur Finanzierung von Energieanlagen in der Industrie, Essen 1991, p. 14.

8 We would like to point out that there is a seamless transition between the outlined concepts. Therefore, in an individual case a selective distinction might not always be possible.

9 E.g. within the framework of a classical operating scheme a complete airport might be realized by a concessionaire. A PoP-Model will only be suitable for the realization of a sub-process of the airport (e.g. a baggage sorter and conveyor).

2.3 Essential Parties and Idealised Concerns

2.3.1 Sponsor (Contractor/Operator/Equity Investor)

In the majority, those companies which have build-up a track record as general contractors in the field of erecting complex plant and system technology will act as sponsors. Also, besides their interest in the physical realisation of the project, potential sponsors will need to demonstrate their willingness and ability to conclude a long-term contractual obligation regarding the provisioning of operating and maintenance tasks, as well as the injection of equity, i.e. to act as ‚equity investor‘. From the perspective of banks, these contractors will regularly be qualified as members of the segment of larger medium-sized businesses.

From the perspective of contractors, the following advantages can among other things, be cited as arguments for an extension of the business activities into PoP-models:

- Enlargement of distribution instruments for the purpose of marketing plant and systems technologies
- Reinforcement of acquisition impact via the addition of emotional aspects to the business connection („We are prepared to share a common destiny!“)
- Expansion of real net output ratio and opening up of additional means of income via deliverance of operation and maintenance services
- Increased customer loyalty via a contractually fixed, long-term involvement in the core processes of production and logistics

The outlined advantages will require the acceptance, respectively consideration of the following disadvantages:

- Dependence on the market success of the end product by way of assumption of economic risks from the off-taker
- Requirement to provide and maintain an equity stake in the newly formed holding and/or operating company as well as taking over further contractual obligations for additional contributions over a longer period of time
- Build-up and hold-up of sufficient specialised knowledge in the functional areas planning, valuation, financing and management as well as controlling of projects

2.3.2 User/Off-taker

Manufacturers of complex capital and high-grade consumer goods – among other things in the automobile, white goods, electrical, pulp, paper, printing and beverage - industries – can be named as examples for potential users, respectively off-takers in a PoP-model.¹⁰ In the field of complex transport services letters and package sorting machines, baggage sorters and conveyors at airports, conveying systems and transport devices at networked/synchronised production locations as well as computer-controlled transport systems for container terminals or fully automated inventory control and handling systems for large high rack storage areas (among other things pharmaceuticals, foods, spare parts, books) can be mentioned as potential fields of application. From the perspective of a bank, these contractors will regularly be qualified

10 For example Ford Germany (Ford-Werke AG) has used a PoP-Model in order to finance a fully automated assembly line as well as related conveying systems and transport devices for the production of the Ford Fiesta at its production site in Cologne since Fall 2001. See Dudenhöffer (2002), p. 3, Dudenhöffer (2002a), p. 6, Wildemann (2002), p. 62.

as members of the segments of corporate clients or at least as larger medium-sized businesses.

From the perspective of an off-taker, the realisation of production and transport systems via a PoP-model will have the following advantages:

- Protection of equity resources, respectively reduction of capital locked-up in investment projects
- Focussing on core business areas and core competencies
- Possibility to unload, respectively reducing the balance sheet depending on the concrete design of the business model as well as the applicable accounting rules (,Off-Balance-Sheet-Finance‘)
- Reduction of fixed production costs by way of increasing variable production costs
- Partial transfer of business risks, particularly market risk, respectively off-take risk, to the equity investors and lending parties of the PoP-model

The outlined advantages will have to be balanced against the following disadvantages:

- Single sourcing leads to dependence on the performance of contractor, respectively operator¹¹
- Abandonment, respectively loss of know-how regarding central and therefore critical parts of the production and logistics chain
- Acceptance of higher production costs as a result of an additional risk premium, as well as potentially higher financing costs of the sponsors implicitly contained in the compensation scheme

2.3.3 Banks

In the preliminary stages of developing and structuring a project and financing concept (,Financial Advising‘) banks can take on a consulting function. But their main function will usually be the arranging of a bankable project financing by way of underwriting the required loan amount, setting up of a bank consortia by means of inviting other banks to participate in the syndicated project loan in order to share the default risk associated with the financed PoP-model, as well as holding a share (participation) in the project loan. While putting together a smaller or larger group of banks (,club deal‘ respectively ,general syndication‘) usually one bank will be responsible for the co-ordination of draw downs and debt service related payments (interest, fees and amortisation) as well as in the provisioning of an effective communication between borrower and the lenders (,agent bank‘). All participating banks should have sufficient know-how in the area of structured finance, respectively specialised lending as well as the ability to underwrite and hold appropriate lending stakes. Because of the involved financing ticket sizes, primarily major banks will be considered as lenders.

While extending their economic activities to the financing of PoP-models, banks may realise one or more of the following advantages:

- Transaction specific structuring of project risks and hence altering probability of default via the implementation of an appropriate design of the individual contrac-

11 See Werner (2002), p. 941.

tual agreements, respectively an individual modification of selected obligations of sponsors and off-takers

- Protection against third party creditors via isolation of production and transport systems within a special purpose company (SPC), as well as the creation of sufficient loan securities by taking interest in the project assets as collateral
- Opportunity and requirement to perform a transaction related, i.e. holistic, credit analysis, because of the ability to isolate and deconstruct the envisaged production and sales operations
- Increased transparency and therefore improved control of utilisation of the loan proceeds, because monies are exclusive allocated, respectively paid out in order to finance project purposes

The outlined advantages of the financing of PoP-models will have to be balanced against the following disadvantages:

- The costs associated with the structuring as well as credit analysis and credit monitoring, longer repayment periods and the factual acceptance of business and market risks implies under a rational decision behaviour the bank-sided charging, respectively the customer-sided acceptance of adequate, i.e. higher credit conditions (up-front and commitment fees, interest margins)
- The assessment of complex sector and market specific issues as well as the evaluation of the technological feasibility will require the assignment of (neutral) experts to the banks in order to prepare appropriate forecasts and expert opinions, respectively in order to produce the required decision information while transferring directly or indirectly the associated costs to the borrower
- Increased requirements regarding the bank-sided know-how and the creditworthiness of the involved parties will (at first) put a natural restriction to the use of PoP-models

2.4 Selected Risk Areas

2.4.1 Completion

During the construction phase PoP-models will be subject to the typical completion risks of investment projects, which can be further distinguished in the following ideal types:¹²

- **Cost Overrun Risk**

Complex projects in the field of plant and systems technology always implicate the risk of budgeted investment costs being exceeded. Causative for this can inter alia be too optimistic plan estimates and/or a lack of experience on the side of the planning party. Because of inherent complexities, particularly major projects frequently show a tendency towards unexpected technological or other problems, which in ideal cases are covered by sufficiently calculated contingencies.

- **Completion Risk**

Investment projects are subject to the risk of not being completed on schedule. The time schedule being exceeded is usually closely connected, respectively cau-

¹² See also Backhaus/Köhl (2001), column 1720.

sally linked to the cost overrun risk, so that the aforementioned reasons will regularly also result in a failure of a timely completion and vice versa.

- **Risk of Technical Non-Performance**

Generally there is always a risk that the agreed technical parameters, i.e. the projected capacities might not be achieved in qualitative and/or quantitative respects. In extreme cases this can result in situations, where the erected plant cannot render products or services at all or produces only defective outcomes.

The aforementioned outlined risks will be of importance to the project company, because they directly effect the contractual obligation to the off-taker/user which have been agreed upon under the PoP-contract. Since completion risks cannot be controlled by the project company, a transfer of the risk to a creditworthy and/or otherwise guaranteed general contractor will take place in ideal cases. In the majority of the cases, this party will also be the sponsor of the project company and should have long-standing experience in the project management and erection of corresponding production and transport systems. This expertise should be evidenced by comparable reference projects. Consecutively, completion risks can be remarkably reduced by the application of a proven technology, respectively modified and/or advance standard technology.

2.4.2 Operation/Maintenance

After the successful completion and commissioning of the plant, i.e. after passing of a start-up phase as well as pre-defined acceptance tests, the manufacturing and/or transport system will enter the operation phase. During this period the success of the project will inter alia be determined by an effective execution of the necessary operation and maintenance tasks. Moreover the financing costs of the general contractor/operator, respectively the project company which was set up in order to realise the PoP-model, will regularly be higher than the costs which would arise from a direct financing by the off-taker based on its own creditworthiness (‘balance sheet related lending’). Insofar, it is not only imperative to exclude and/or minimise operation and maintenance risks but rather to realise efficiency gains by way of an optimisation of operation and maintenance tasks, which will enable the project to pay a higher debt service as well as an adequate return on equity.¹³ Against this background it might be reasonable to transfer the operational functions accordingly by way of an operation and maintenance agreement to the general contractor, i.e. mostly the sponsor and equity provider (see Chart 1). The contractually agreed availability of the project, which has to be determined under consideration of required down times, should be sufficiently congruent to the guaranteed parameters of the off-take agreement/PoP-contract. Moreover the general contractor must be adequately experienced in terms of servicing and operating production and/or transport system similar to the ones to be applied. Generally alternative operators should be available and contractual arrangements should provision for a potential substitution of the initial party (e.g. by including termination clauses in the operation and maintenance agreement). In addition, the application of a proven technology should be able to reduce operation and maintenance risks substantially.

2.4.3 Market

We have already pointed out that the output of end-products produced by the user/off-taker will simultaneously affect the amount that can be sold by

¹³ See Klapper (2002), p. 50.

the project company under the PoP-contract, so that the market risk of the user/off-taker will be transferred in parts to the project company. Despite the possibility to partially mitigate this risk transfer by way of an appropriate definition of the contractual price formula, quantitative off-take risk will remain with the project company, respectively with the sponsors/equity investors as well as with the lenders in the basic structure of a PoP-model. Alternatively this risk can be re-transferred to the user/off-taker by way of arranging for a minimum off-take obligation, which will result in a full or partial coverage of the scheduled debt service payments. In this case the off-taker will be obliged to compensation payments if not off-taking the contracted goods and/or services, so that in extreme cases the Pay-on-Production-scheme might be turned into a Use-or-Pay-scheme.¹⁴ Independently of the concrete contractual structure of the PoP-contract the market potential of the final products will have to be evaluated by way of a market due diligence, respectively a market forecast prepared by an independent expert/consultant. Debt servicing should be possible at substantially lower off-take amounts than forecasted, respectively under the presumption of historical low price scenarios. Generally investment projects should not be realised or financed on the base of PoP-models, if off-takers/users are selling their final products or services to markets, which are exposed to short term trends or fashions, frequent innovations and/or are high volatility. Exceptions might exist, where frequent product re-launches belong to the immanent character of the branch/sector (e.g. seasonal models in the automobile industry, change of collections in the clothing industry) as well as corresponding changeovers, respectively conversion of the employed production or transport systems are ex ante incorporated in the manufacturing concepts and are therefore technically and economically feasible.

Against the background of asymmetric information distribution (especially regarding the inherent market risks) questions might still exist as to whether the realisation of a project by way of a PoP-model is reasonable. Furthermore, suspicious facts can in isolated cases lead to the conclusion that the off-taker wants to shift substantial parts of its business risk to the project company. From the standpoint of the operator and the banks, the involvement of the off-taker as additional equity sponsor of the project company may result in a risk reduction. For this reason, sponsors equity not only increases credit enhancement available to the lenders, but forms a positive signal of the off-taker regarding its own confidence in the market success of its final products, and by this also the preliminary products and services of the project company ("signalling").¹⁵

14 The difference to the aforementioned Pay-on-Availability-model is basically that in the case of a Use-or-Pay-model the production and transport systems are owned by the project company.

15 Regarding the aspects of "Signalling" in the context of project financings see Finnerty (1996) p. 20 f. First insights point out that particularly the protection of their own financial resources (and with it the appearance of their balance sheets) will dominate the decisions of off-takers towards the outsourcing by way of operating schemes. See Klapper (2002), p. 50.

3 Project Finance

3.1 Conceptual Design of the Financial Structure

From a banks perspective, the external financing of a PoP-model will regularly have to be structured by way of a (classical) project financing.¹⁶ This complex “financial concept”¹⁷ is distinguished by the following three immanent features:

- A financing of a particular economic unit (the “project“) ...
- ... in which a lender is satisfied to look initially to the cash flows and earnings of that particular 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.¹⁸

In a (classical) project financing, lenders will abstain to the greatest possible extent from a recourse to the diversified repayment sources of an existing company (e.g. the sponsors or the off-takers) by restricting their claims to the cash flows of the project. In return an extensive or total separation of the borrower (project company) against the claims of third parties for the benefit of the lenders will become possible by way of incorporating covenants and other lending conditions in the loan agreement. In a situation where a specific project is not creditworthy by itself an additional credit enhancement can be provided by way of implementing a limited recourse to the sponsors (i.e. an obligation to make additional contributions. In particular cases abstract payment guarantees in form of contractual penalties of third parties (general contractor, operator, off-taker etc.) included in the construction, off-take as well operation and maintenance agreements will form essential parts of a bankable project and financing concept.

3.2 Selected Financing Requirements (‘Bankability‘)

3.2.1 Counterparty Risk

The realisation of a PoP-model depends on the successful structuring of a complex network of long-term contracts (sponsors agreement, construction agreement, operation and maintenance agreement, PoP-contract, loan agreement), which will ideally lead to a risk sharing acceptable to all involved parties, especially to the banks. The functionality of such a project and financing concept is primarily determined by the recoverability of the individual contractual obligations, as well as the corresponding fi-

16 Alternatively the project company can be fully financed by a 100% equity injection in the form of share capital and/or subordinated sponsors loans.

17 See Büschgen (1991), p. 189.

18 Nevitt/Fabozzi (2000), p. 1. Other characteristics partially cited in the literature like for example the ‘off-balance sheet financing from a sponsors perspective’ or ‘risk sharing between the project parties’ naturally cannot form constitutive elements of a classical project finance. In fact these are potential other attributes of this financing conception. Particularly the demanding of a risk sharing proves to be not operational, because it is too vague in order to be useful as a specification. An apportioning of risks will per se be existent at every classical project financing. A judgement if the risks are distributed symmetric or asymmetric, fair or unfair respectively appropriate or inappropriate can only be formed by taking into account the (subjective) normative perceptions of a single decision maker. Against the background of manifold arrangements of circumstances and divergent accounting rules the attribute off-balance sheet financing proves to be an inappropriate feature of classical project financings. Fahrholz points out correctly, that classical project financings can be structured as non-consolidated debt transactions. See Fahrholz (1998), p. 10 a. 258.

nancial obligations. In this respect a minimum grade of creditworthiness for the involved contractual parties will be a prerequisite for a positive credit granting decision. If the creditworthiness of a party is not acceptable to the lenders, a standby letter of credit or a guarantee provided by a creditworthy third party can be an alternative way of enhancing the corresponding contractual obligation. Existing doubts in view of the equity to be injected by the sponsors might be relieved by either contributing the capital prior to first drawdown or inserting it together with the individual debt drawdowns on a pro rata base complemented by a guarantee of a first class rated financial institution.

3.2.2 Tenor and Pricing

Naturally not all aspects of a project financing of a PoP-model can be addressed in the essay on hand. Furthermore, considerable differences regarding minimum financing standards and/or requirements might be expected against the background of individual credit risk strategies if looking at different institutional policies.¹⁹ Therefore the following remarks are constricted to selected issues:

- **Tenor**

Maturity will regularly be in the medium and long-term ranges. However, it should not exceed the expected useful life of the assets to be financed. On one hand, a bank will aim for a sufficiently determined maturity based on the anticipated debt servicing capacity of the PoP-model. On the other hand, a further increase of the tenor will inevitably extend the forecast horizon, which in turn is complicating a judgement about the market position of the off-taker in future periods.

- **Margin**

The interest margin which has to be paid together with a variable reference rate (e.g. EURIBOR) and which needs to be negotiated with the borrower will have to cover all of the following cost positions:

- Processing Costs per Unit

The costs of the structuring and of the credit granting decision process will basically be remunerated via separate upfront fees (arranging fee). In contrast, the costs of the permanent credit monitoring process have to be covered by (a fraction of) the interest margin. One has to take into account that credit monitoring is not only limited to the analysis of annual financial statements and thereon a preparation of credit review applications, but also includes the analysis of monthly and quarterly project reports, as well as particularly technical reports and other contractually requested information materials like updated market forecasts. Project financings based on the concept of PoP-models are implicating processing costs per unit, which will usually be higher than the ones resulting from „traditional“ lending business with corporate clients.

- Refinancing / Liquidity Costs

Whereas the (variable) reference rate to be paid for the sourcing of liquidity will be shifted to the borrower, a bank has to pay a surcharge for its own credit risk at the capital market („funding spread“) by itself, respectively out of the received interest

¹⁹ In this context it has to be pointed out that under German banking regulation credit institutions will have to specify a general credit risk strategy before taking up lending business in new products or in new markets as well as prepare a written concept regarding the planned activities; see. BAFin (2002), No. 9 ff. u. 18 f.

margin. An increased tenor tends to raise the risk of a deterioration of the banks creditworthiness. Insofar as that the funding spread will have to be individually calculated based on the most recent rating of the financial institution, as well as on the absolute tenor of the requested credit transaction and will be incorporated in the pricing at the point of the credit granting decision.

- (Standard-) Risk Costs

The professional conduction of credit business implicates inevitably the occurrence of events of default in the loan portfolio. Expected losses can be determined via statistically-objectified or simulation-based rating models. Based on the ideas of insurance theory banks will have to cover the expected losses in the form of (standard) risk costs allocated to the entirety of the loan portfolio, in order to earn a sufficient „actuarial reserve fund“ for the compensation of future losses. Significant determining factors for risk cost to be charged in concrete cases are the ‚probability of default‘, the ‚recovery rate‘ and the ‚exposure at default‘, which will have to be forecasted by the applied rating models.

- (Regulatory or Economic) Costs of Capital

Any unexpectedly arising losses in the loan portfolio, i.e. deficits that are not covered by (standard) risk costs, will lead to additional provisions and/or depreciations and will reduce the equity, respectively will have to be covered by equity. It is of no importance if a bank covers (unexpected) credit risks either by the regulatory required mandatory minimum amount of equity or by an equity position calculated from an economical perspective, the required capital means are not free of (opportunity) costs and will have to be priced at a level corresponding to the minimum return on equity claimed by the shareholders.

A positive contribution margin and a return above the hurdle rate of the deployed regulatory capital (‚Return-on-Solvency‘) respectively the economic capital (‚Risk-adjusted-Return-on-[Economic-]Capital‘) will not be achieved until all of the aforementioned cost positions are covered.

• **Fees**

Besides an obligatory commitment fee on behalf of un-drawn line of credits, the borrower has to pay a one-time up-front fee. In case of syndicated loans an additional arranging and underwriting fee might be due in case that these services are not covered sufficiently by the up-front fee.

3.2.3 Collateral Security

The project related realization of manufacturing and transport systems at the same time implies the emergence of sunk costs, which can not be compensated by payments under the PoP-contract or liquidation proceeds in case of a premature abandonment of the project during the construction or early operation phase. Equity to be injected in the form of share capital or subordinated shareholder’s loans has to cover at least ‚soft‘ as well as ideally a reasonable fraction of ‚hard‘ investment costs. By implementing a satisfactory debt-to-equity-ratio not only will the probability of default be reduced, but also the absolute amount of capital to be borrowed, which will lead in case of a default to higher recovery rates. In praxis a prerequisite for this causation will be that a realization of collateral security or a restructuring of the loan agreement is legally possible and enforceable. Against this background the creation of collateral security for the favor of the lending banks becomes more important, whereas enforcement/realization of pledges and assignments will not be envisaged due to the spe-

cialized character of the financed capital goods. In fact collateral security provides more of a shielding effect against third party lenders. This prevents the project operation being endangered by enforcement of claims from other lenders. Consecutively, the creation of collateral security provides an alternative control of the borrower (e.g. by way of pledging the project accounts to the lending consortia and monitoring the movement of monies).

The implementation of a project company as owner of the manufacturing and transport system to be financed will basically enable an advanced isolation of pledged or assigned assets, as it would be possible to do in an already existing company with historically grown banking relations (see dotted ellipse in Graphic 1). The following list enumerates and exemplifies potential collateral security, which might be available to the lenders:

- Prime mortgage/charge over land and liens with regard to machinery and equipment respectively a registered pledge of a heritable building right and as the case may be a step in right into a limited personal easement
- pledge of shares of project company
- assignment of all rights and claims arising out of project related contracts
- assignment of all rights and claims arising out of insurance policies
- pledge of all material capital and current assets of the borrower (i.e. the project company)
- pledge of all accounts related to the project

It must be pointed out that particularly under German law the problem of an illicit over-collateralization might arise.²⁰ In case of doubt the lenders will have to find a balance between an economically driven need of collateral security and a legally demanded self-restriction. Therefore, it might not only be recommendable in unfamiliar jurisdictions to obtain a legal opinion in order to clarify and assess the legal circumstances but also for projects on “native soil”.

4 Conclusion

The conclusion of PoP-contracts enables engineering and construction companies to increase their business volume, as well as potentially increasing their real net output ratio. The sustained pursuit of such an expanded business strategy however, implies the availability of funding sources for each project. As an alternative to a complete funding of a PoP-model via sponsors equity – which might be problematic due to financial restrictions – we introduced the basic concept of cash-flow-related lending by way of a (classical) project financing. Furthermore, operating schemes might be extended by tax or legally motivated structural elements (e.g. leasing structures) and/or split up in operating and holding companies. However, it remains the basic challenge of developing and implementing a project and financing concept which is acceptable to the lenders, while it is solely based on the cash flow of the manufacturing and transport system to be erected and operated as repayment source. Particularly the arrangement of a contractual framework which is tailored to the individual case, includes a differentiated compensation scheme and especially constitutes a customized risk sharing acceptable to all of the involved parties, should be of greatest im-

20 For more details see Westermann (1996), pp. 579.

portance. In addition, a lasting pursuit of a PoP-model strategy will require a solution to the equity problem, e.g. the availability of funds to be injected as equity into the project company. This need stems from the fact that on the one hand usually a complete financing through borrowing will not be possible, and on the other hand financial resources of sponsoring companies are likely to be restricted. Possible solutions could be the fundraising of monies in the form of private equity provided by institutional, private investors and/or specialized funds. With the utmost probability the evolution in practice will come up with more structured financing solutions for the realization of PoP-models and related operating schemes in the future.²¹

21 See Schäffer (2003), S. R3.

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