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EFFECTS OF DBFM CONTRACTS ON PROJECT EXECUTION - EXPERIENCES FROM THE FIELD -

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1 Introduction

Purpose
Purpose of this paper is to address the facts & myths around Design Build Finance and Maintain (DBFM) contracts for public infrastructure projects in The Netherlands in order to support the national discussion on applying this contract form more often. The emphasis will be on the execution aspects of this type of projects.

Source
The main source of information for this paper is the A59 highway project executed by the Poort van den Bosch consortium: a 9-kilometre state highway between Rosmalen and Geffen. It was The Netherlands' first public private partnership (PPP) DBFM contract for road infrastructure. The Poort van Den Bosch consortium is a partnership between Fluor, Royal BAM Group and Boskalis. The design, build, finance and maintain contract will last for 18-years, 3-years for design and construction and a 15-years maintenance period.

In March 2006, this project received the European Construction Industry (ECI) ACTIVE Project of the Year Award. The ECI jury selected the PPP-A59 project because of :
- its safety record
- a reduction of 14% on the project costs compared with traditional tendering
- excellent community relations and traffic management
- integrated risk management
- completion ahead of schedule

2 Financial issues

Rough price comparison
This paper is primarily focussed on the execution aspects of DBFM projects. However, since many people have a predetermined view on this type of project from a financial perspective, we will first briefly address the economic feasibility.

In the last few years there has been a lot of debate around the question whether or not a DBFM set up will provide better value for money. Especially people experienced in traditional contracts are often cynical about the costs related to external financing.

The obvious thing to do is to compare the total costs of road projects as published in the newspaper, divided by the number of relevant kilometers. However, this comparison is hampered by the difficulty

to compare the related costs for comparable scope of different projects. Costs for project management organizations and potential maintenance for traditional projects are hard to determine. It is possible though, to exclude the maintenance costs for a DBFM project for comparison purposes. When we executed the A59 project between Oss and Den Bosch, we made a rough comparison with the A50 project between Oss and Eindhoven and found project costs to be in the same range (this was before the A50 project was finished).

Financing costs
It is clear that private financing of a project can provide the solution when public funds are not (yet) available. But why should the State execute a project by means of private finance when the State has no budget problem? People assume the State does not have to pay interest on tax money, so the general perception is that financing by the State is much cheaper.

A lot of misunderstanding exists around the financing costs of DBFM contracts (where the project is (pre)financed by the private party to a considerable extent) in comparison to traditional projects.

The first premise is that interest does not have to be paid on State-money when the State realizes a project and therefore the State has its money 'for free'. Since the State borrows a lot of her money this is incorrect. Government money being without cost can be an assumption from a viewpoint of a local (state) project organization, but from a macro-economic perspective this argument can not persist.

A simple illustration to the above is the fact that the interest on State-obligations in The Netherlands was 4,2 % on average over the past 15 years. The interest the A59 consortium has to pay on their loans is also around 4%. In addition, the State receives the savings when at any moment the actual (daily) interest rate is below the contractually agreed rate.

The second premise is that missed income on available State capital does not play a role. On a macro economic scale this is also not correct because the State could use or invest the money elsewhere and create income. The State-household functions in a similar way to a private household. For comparison: when somebody builds his own house, he does have to pay interest for the money that he uses during construction in addition during that time he does not have the benefit of the house yet.
Details of financing options for the A59 project were investigated by independent specialists (see report Deloitte, evaluation A59, 5 December 2003). It was concluded that the interest rate for the private party was only slightly higher then for the State. In the A59 set-up, this difference was strongly reduced by keeping the interest fluctuation risk with the State. By doing this, the Finance risk for the private party was strongly reduced, which resulted in cheaper loans.

PPC (Public Private Comparator) and PSC (Public Sector Comparator)
In order to determine objectively whether a DBFM set-up for a project is cheaper then a traditional set-up, and to compare different private proposals, the PPC and PSC were developed. The first is intended to compare a publicly financed project to a privately financed project. The second is intended to compare various offers for a project that requires private financing. These tools have been studied and discussed in length in relation to the A59. See for more information the website of the knowledge centre PPP of the Dutch Ministry of Finance (http://pps.minfin.nl). Reference material was obtained by recalculating various earlier projects executed in The Netherlands as if they were executed in a DBFM set-up.

Results for the A59 project showed a cost saving from 7 to 14 % in favor of DBFM execution against traditional contracts. 'Traditional' in this context means separate contracts for Design (D), Construction (B), and Maintenance (M), with Financing by the State. Differences in costs are mainly the result of optimization of risk budgets. In a flexible contract set-up every risks is allocated to the party which can control it best, which typically reduces the required contingencies.

The PPC and PSC give a clear financial result, but do not give unequivocal advice about using a PPP contract. There are a lot of other factors that have to be considered during the determination of the contract type. It is up to the judgment of the (State) project team to make this decision.

Doing this, one should realize the accuracy of project estimates. In early stages this is +/- 10 % at best. During the determination of the risk profile this is acknowledged in several ways (for example during the Monte Carlo calculation of the total contingency budget a probability interval can be chosen from 50 to 95 %). Estimating projects is not an exact science.

Intermediate conclusion
From the above, the conclusion is justified; it is well possible the costs for a specific project under a DBFM contract can be the same or less in comparison to a traditional contract configuration.

To compare different contract types by other criteria then pre-award estimates, the focus in the following chapter will be on the question: "How can we maximize the chance for a project to be successful?"

'Success' in this context is defined as:

On time, within budget, with the required quality, without accidents, and in harmony with its surroundings.

3 Common threats to infrastructure projects

When we want to know how to be successful, it is very important to know why so many attempts fail. In The Netherlands the Committee Duyvestein did an investigation on this topic. Also in the studies performed by Deloitte on A59 this is a repeating theme.

Three major reasons are:
1. For strategic or political reasons, it happens that projects are (knowingly) estimated too tight.
2. During the project major changes are implemented, typically effecting cost and schedule.
3. The State does not estimate contingencies for risks in the project budget, but accepts them in the end as budget overruns in the form of 'bad luck' or 'unforeseen circumstances'.

The challenge is to choose the type of contract(s) that best mitigates the above 3 failure mechanisms. This is the guiding principle in the comparison below between traditional contracts and a DBFM set up.

4 Plusses and minuses of DBFM contracts

In order to list the differences between DBFM and traditional contracts in a logical way, the sections below show first the differences between Design/Build contracts and separate contracts for only Design and only Construction. Subsequently the advantages and disadvantages of Private Financing in relation to project execution are listed, and finally the consequences of Maintenance included in the main contract are given.

The most important arguments are indicated with an arrow. Apart from this no priority is indicated. Priorities are determined from the viewpoint of 'The Dutch tax-payer'. It is very well possible the priorities could be different for a specific local (or regional) Client project team.

Arguments in favor of Design Build

- ➢ Client is not responsible for the interface between design and construction. Complications in these interfaces typically have a negative impact on cost, schedule and quality.
- ➢ Parallel planning of a large part of the design period with the construction period is possible and controllable within the same party. This saves time. (Construction can start although design is not yet finished, provided the critical deliverables are available)
- ➢ No time-loss for transition from design to construction (no different parties, no different contracts).
- ➢ Input of construction knowledge into the design improves constructability. Apart from positive cost and schedule impacts, this approach also has a safety advantage.
- ➢ More focus on installation costs during the design phase. The contractor has more freedom in design to realize optimizations.
- The incentive for the designers to make a 'Gold plated' design is minimized: they have to build it as well!
- Strong push to be open about any technical issues in the design, and prevent 'hidden costs' resulting from left out or ambiguous details.
- Hard deadlines can be derived from the construction planning (possibly also via the necessary periods for permit procedures).

Arguments against Design Build

- ➢ For very complex projects with large unpredictable risks, a private party might calculate too much contingency (if they can calculate it at all). For example: what contingencies are required for a new metro tunnel under the old wooden pile foundations of Amsterdam?
- ➢ Design/Build contracts require a functional specification of the scope (otherwise the advantage of design freedom disappears, and the risk for small technical changes goes back to the client). Most Government agencies are not (yet) used to make functional specifications.
- ➢ The time frame for preliminary design and tracé determination is typically very long and uncertain. It is difficult to fit this in a Lump Sum contract. (When starting a D&C contract with basic and detailed design after the trace act is final this problem is solved but design freedom is reduced).
- With Lump Sum Design/Build, the tendency exists to save on Architectural details (see also remark related to 'gold plated' under the advantages of DB).

- Utilization of Governmental design expertise is difficult when the responsibility for design lies with the private partner.
- In a Design/Build contract the Client has less influence on the design (when this is his wish). When the client wants this influence later on, he takes back the responsibility for the design.

Advantages of Private Financing

- Through the payment of interest on the private loans the well known principle 'Time = Money' is now introduced into infrastructure work. This focus "permeates" to all the partners, also the Client. The resistance to except extension of time becomes very strong. For some specific (side) effects of this time pressure, see also the 'secondary aspects' mentioned below.
- Risk identification: private companies (certainly lenders!) are much more focused on risk. Typically a detailed risk study is done before contract signature. This greatly reduces surprises and expensive changes later on.
- Realistic budgets: private companies are less prone to strategic / political budgeting. This prevents budgets to be knowingly set too low because of strategic or political reasons. (Note: at an individual level this can be experienced as a disadvantage)
- It makes it possible to start projects earlier when it is not necessary to wait for the availability of client budgets because the project becomes relative independent from main client budget planning.
- Less change and disturbance: time and financing complications that accompany contractual changes, have a discouraging effect on the acceptance of changes. (you don't do a change when it is too much hassle)
- Additional checks & balances: apart from the Client checks, investors will also do their checks. This reduces the risk of the Client, and protects the Contractor against arbitrariness.
- More clarity: it promotes transparency and taking of responsibility in general.
- Less bureaucracy: additional permit requirements by Authorities are strongly discouraged (see also under 'changes' above). It is very well possible to implement the principle: 'The one, who has extra wishes, pays.'
- More clarity and reliability of the long term budgets in the State finances.
- Potential choices for toll systems can be incorporated very well.
- The associated long term periodical payment obligation for the State is not a part of the National dept according the European administrative regulations.

Disadvantage of Private Financing

- Higher financing costs: private parties typically have somewhat higher financing costs then the Government (especially in the public opinion).
- It is advisable to keep a (small) part of the project finance structure with the State. This will always keep the Client in the position of 'control over money'. This is good for Client-contractor relationships. In addition to this, it strongly reduces the financing costs of the private party when he does not have to get a loan for the top-end of the total investment (compare: mortgage rate for 80% or 100% of a house is un-proportionally different).
- State budget problems: a short term budget problem for the state develops when some costs have to be made for a project that was not yet scheduled for several years. And for a DBFM project, total costs including contingencies and maintenance are budgeted from the beginning, compared

to traditional projects that experience these costs later. The State might well have to combine different budgets for realization and maintenance of new infrastructure.
- Expensive bidding process: the bidding process is relative expensive. Because competition has to be guaranteed, this process has to be followed with several competitors. In future these costs will probably reduce with increasing standardization.
- When many changes in construction scope are foreseen, a 'fixed price contract' is usually not the best solution. This applies also for DBFM contracts. The (slow) pace of changes during maintenance is usually not too difficult.

Secondary aspects of Private Financed Projects

Private financing creates a 'pressure' which can be used very well in different parts of a project.
The business-like approach, which is a result of financial pressure and the logical management stile chosen by the Contractor, can be very effective in the subjects traditionally handled between different government departments. To enable this, it is a prerequisite these subjects are to a certain extend included in the scope of the Contractor.

In the A59 project specific agreements are made for:
- Permit coordination
- Traffic management
- Communication
- Relocation of underground cables and piping

An additional advantage then develops because the Client has the possibility to control and stimulate these subjects contractually. A good example of this is the financial deductions for temporary traffic lane closures. Unnecessary road blockages are prevented and only placed when the traffic is quiet. This results in better service to users of the road and other stakeholders.

Advantages Maintenance in main contract

- 'Total Life Cycle Cost' approach is strongly promoted.
- His long term responsibility "Automatically" prevents the Contractor from going too fast and neglect quality in his pursuit to save time.

Disadvantages Maintenance in main contract

- There is still little experience with (functional) specifications for maintenance in contracts.
- The State is (at this moment) better equipped for the maintenance task. Relative small parts contracted to a private party are more expensive.
- Additional private focal points for maintenance require good arrangements with the State maintenance departments.

5 Summary

The financial aspects and especially the interest costs of a DBFM contract are often used by critics as argument against a DBFM contract. When these points are objectively looked at in some more detail, the financial costs are just a part of the equation between the various types of contracts. Through the direct relationship between time and money as a result from project finance and interest on loans, a strong emphasis develops on timely completion of a project. Inclusion of a substantial maintenance scope then safeguards a good quality standard.

A DBFM contract does not only have advantages. A reasonable large scope is necessary to justify the additional contractual costs in the bidding phase of a project. Also a different budgeting and contract management approach can create challenges for government organisations and contractors. In respect to changes a DBFM contract behaves similar to any lump sum contract with the difference that there is even more emphasis on time effects. This pressure prevents changes and stimulates the project to continue during differences of opinion between Client and Contractor.

The new division of risks between Client and Contractor suits the general high abstraction level of the contract and creates new opportunities for improvement of the overall project management processes. It invites the Contractor to take responsibility for the project. With approval requirements and incentives/penalties the Client still has strong steering mechanisms to ensure the Contractor indeed meets the expectations.

6 Conclusion

As the A59 is just in her 2nd year of maintenance there isn’t yet a final conclusion. However it is clear a DBFM contract configuration can be an important positive factor in setting the best preconditions in the general quest for a successful project.