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AN ANALYSIS OF THE RISKS INHERENT IN THE BUILD-OWNCOPERATE - TRANSFER METHOD OF INFRASTRUCTURE, PROCUREMENT

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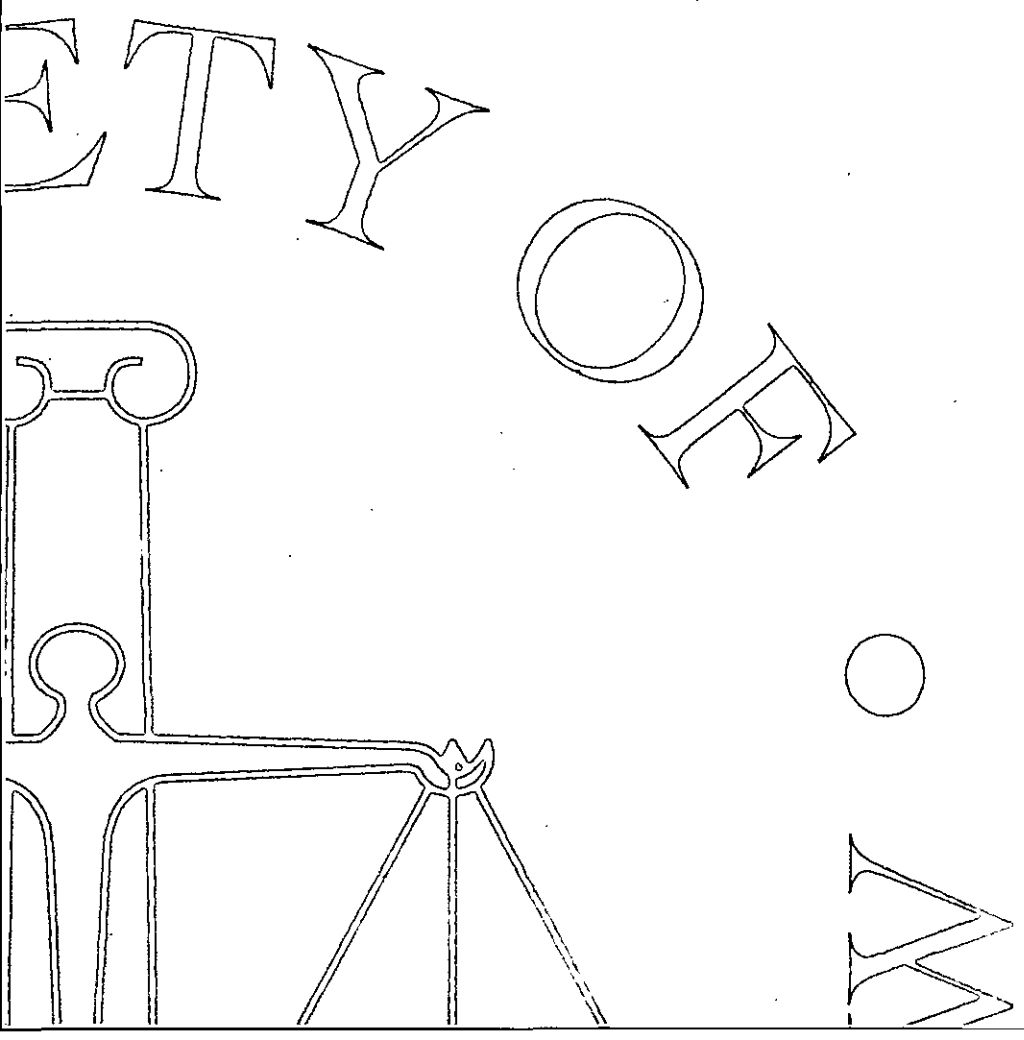

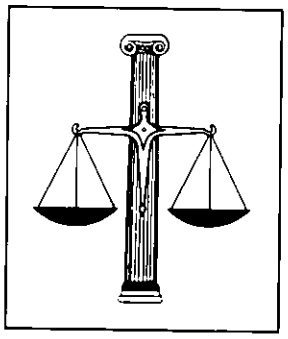

Society of Construction Law

AN ANALYSIS OF THE RISKS INHERENT IN THE BUILD - OWN/OPERATE - TRANSFER METHOD OF INFRASTRUCTURE PROCUREMENT

by

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WINNER OF
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AN ANALYSIS OF THE RISKS INHERENT IN THE BUILD - OWN / OPERATE - TRANSFER ("BOT") METHOD OF INFRASTRUCTURE PROCUREMENT

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SYNOPSIS

This paper analyses the risks inherent in the Build-Own/Operate-Transfer ("BOT") approach to infrastructure procurement. A useful definition of BOT for the purposes of this paper is as follows:

> "A BOT project is based on the granting of a concession by a principal to a promoter who is responsible for the construction, financing, and operation and maintenance of a facility over the period of the concession before finally transferring at no cost to the principal, a fully operational facility. During the concession period, the promoter owns and operates the facility and collects revenues in order to be able to repay the financing and investment costs, maintain and operate the facility and make a margin of profit."

The author outlines the history and evolution of the BOT strategy and demonstrates that such an approach is increasingly being adopted in many countries. The risks inherent in BOT project financing are investigated and suggestions made as to their management.

The approach of lenders was believed a useful tool to link the risk management element to the way in which projects are assessed for financial structuring.

I - EVOLUTION OF THE BOT CONCEPT

Introduction

There has been a growing trend in recent years both in the United Kingdom and overseas towards reduced public spending on infrastructure projects. This has been demonstrated by governments or their agencies placing major projects into the private sector, rather than the traditional domain of the public sector, by using the BOT contracting strategy. According to such a strategy, financing for the project is generally provided by the private sector promoter who will not only build, but also own and operate the project over a certain period of time and transfer it at the end of that period. Often referred to as a concession contract, this form of project procurement does not require direct funds from the public budget.

History

As far back as the eighteenth century one can trace the provision and financing of infrastructure to individuals. The mid-1800s saw a number of large specialist undertakings being established under a concession or franchise arrangement in different parts of the world.

The need for water distribution arguably initiated the concept(1) with the first concession being granted in 1782 to the Perrier brothers in Paris. During the nineteenth century ambitious projects such as the Suez Canal and Trans Siberian Railway were constructed, financed and owned and operated by private companies under concession arrangements.

However, due to increasing political risks, nineteenth century entrepreneurship disappeared after the First World War, especially in Third World countries as colonial powers lost control and new governments implemented nationalised infrastructure projects.

The post World War I period in Europe also showed increased involvement by the state in the reconstruction of war damaged infrastructure and new nationalised industries. After the Second World War, most infrastructure projects in industrialised countries were built under the supervision of the host government and were funded from their respective budgetary resources or sovereign borrowings. In France the private sector continued to play a significant role in the development of infrastructure with many of the French distribution companies privately owned.

This traditional approach of governmental involvement in identifying needs, setting policy and procuring infrastructure was by and large followed by less developed countries with the public finance being supported by bond instruments or direct sovereign loans by such organisations as the World Bank, Asian Development Bank and the International Monetary Fund.

The convergence of a number of factors by the early 1980s led to the search for an alternative way to develop and finance infrastructure projects around the world:

i) with continued population and economic growth the need for additional infrastructure - roads, power plants, water treatment plants - continued to grow;

ii) the debt crisis meant many countries had less borrowing capacity and fewer budgetary resources to finance needed projects; and

iii) major international contracting firms which, in the mid-1970s, had been kept very busy, particularly in the oil-rich Middle East, were by the early 1980s facing a significant downturn in business and looking for creative ways to promote additional projects.

In the United Kingdom, private investment in infrastructure was effectively discouraged by the Ryrie Rules(2), under which private funding for infrastructure projects had to be offset by an equivalent amount in public funding. A National Economic Development Office (NEDO) report devised certain criteria under which private finance could be introduced :

> "...such [private sector] projects should yield benefits in terms of improved efficiency and profit from additional investment commensurate with the cost of raising risk capital from financial markets..."

Yet the relaxation and subsequent abolition in May 1989 of the Ryrie Rules established the UK government's position. It sought the private sector's ideas, its responsiveness to incentive and risk and indeed looked to the benefits it believed tended to go with private finance such as improved efficiency, lower costs and the reduction of the risks falling on to the taxpayer. An example of this perhaps can be seen in Part 1 of the New Roads and Street Works Act 1991(3) which came into effect on 1 November 1991 and which enables private promoters to enter into concession agreements with the Secretary of State to finance, build and operate new roads and to charge tolls.

UK government agencies have since been involved in projects which have been built and operated by a private company, but financed largely from public sources. An example of such a project is the Manchester Light Transit Railway project which required invited bidders to tender for a concession to build and operate and maintain the system with ninety-five percent of the costs provided by the public sector. The remaining five percent being provided by the promoter to be recouped during the operation and maintenance period from revenues generated. In the Channel Fixed Link project, however, finance was effected by a private consortium of lenders and investors without any financial backing from the governments of France and the UK.

Slagter(4) suggests that the reasons for deregulation and privatisation in Holland in the early 1980s were that :

> "...the financing of government expenditure had become a major problem, politicians recognised that a strong government role did not offer a solution and the dominance of the public sector had a negative effect on private sector initiatives and the public had become increasingly critical of the government's excessive bureaucracy and mismanagement".

Omar(5) identifies the main objectives of the Malaysian government's policy regarding its privatisation programme as relieving the financial and administrative burden of the government, reducing the size of the public sector, raising efficiency and productivity and accelerating growth.

An emerging consensus developed. It supports tapping the energy and initiative of the private sector and the discipline imposed by its profit motive to enhance the efficiency and productivity of that which had previously been considered public sector services.

The search for a new way to promote and finance infrastructure projects led to the revitalisation of a technique that is, as noted above, not all that new. The Turkish Prime Minister, Turgat Ozal, is often credited with conceiving the "new" model of project development; hence it is often referred to as the Ozal Formula (6).

II - BOT STRUCTURE

What is BOT?

The acronym "BOT" stands for "build, own and transfer" or "build, operate and transfer" which terms are often used interchangeably. Yet the "owning" is an essential element since the main attraction to the host government is that the promoter's equity stake guarantees its commitment to a project's success.

Other variants include "BOOT" (build, own, operate and transfer) and "BOO" (build, own, operate). In BOO projects the promoter finances, designs, constructs and operates the facility over a given period but which does not revert to the principal as do facilities using the BOOT strategy: the principal remains the ultimate client or purchaser of the project.

Further extensions of the concept are "BRT" or "BLT" (build, rent (or lease) and transfer) or simply "BT" (build and transfer immediately, but possibly subject to installment payments of the purchase price).

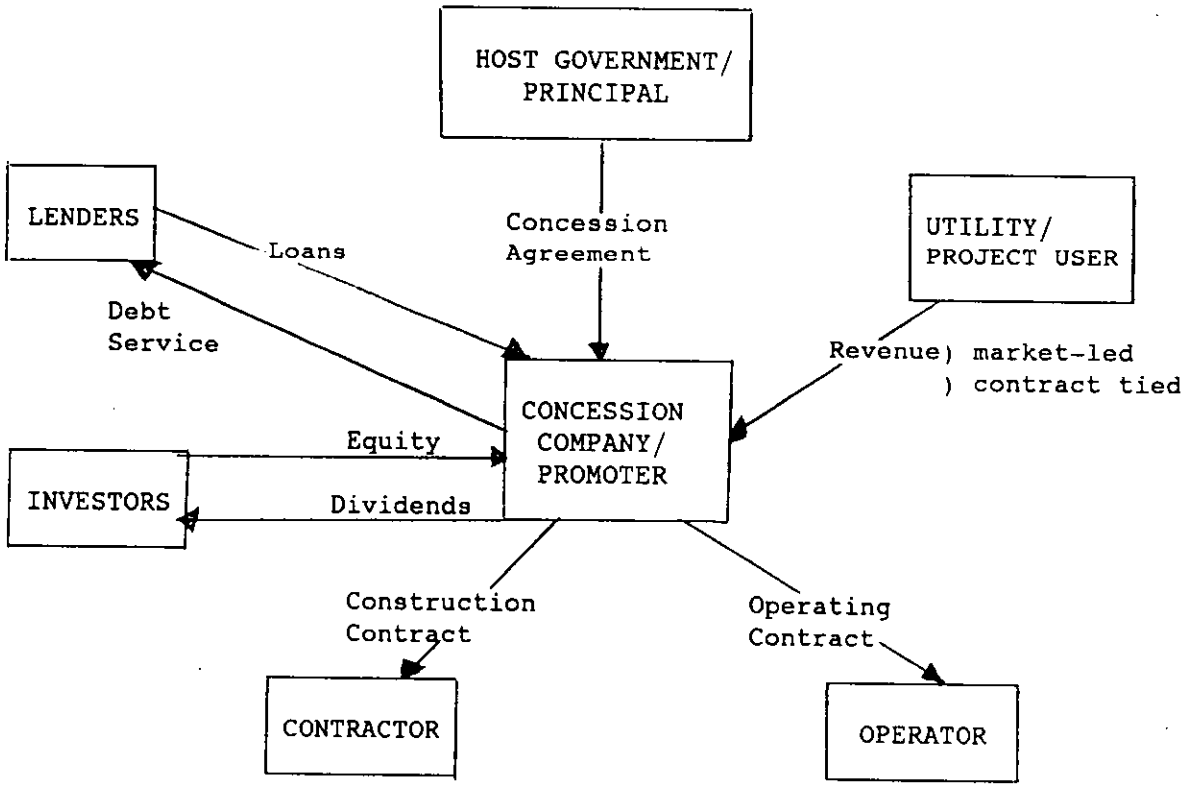
Another approach "BTO" (build, transfer and operate) has become increasingly popular in the Far East (7), particularly preferred by the power and telecommunications authorities. It is a simpler transaction or concept than BOT and BOOT that can be implemented in a shorter time without the need for the formation of a project company and with the project assets being owned by the public sector.

Generic Project Structure

A BOT project often requires a promoter to enter into a number of contracts with a variety of parties. It is however possible for any particular project to have all, some or none of these contracts. For example, in the Dartford Bridge Crossing project the construction and

operation was carried out by a constructor-led promoter providing its own equity and only utilised a contract with lenders. Conversely, in a power generating facility, such as the Shajio 'B' Power Station in China the promoter entered into contracts with constructors, operators, lenders, investors, suppliers of raw materials and offtake purchasers.

The structure of a BOT project is very complex and the process of its development immensely complicated, time consuming and expensive. Although no two BOT projects will be identical, there is a generic structure which can be summarised as shown in Figure A.



The development and integration of the contractual documents and tailoring their terms and conditions to meet the objectives of the host government, while satisfying the needs of the sponsors and lenders, is a sophisticated challenge with many pitfalls. Most infrastructure projects are first identified by the host government which will invite bids to have a particular project delivered, such as a power plant or a toll road, on a BOT basis. It is also possible, however, that a particular project opportunity will first be identified by a private enterpreneur who will propose it to the host government on a "speculative" basis.

Key Participants

There are numerous organisations which may be involved in a typical BOT project, such as the host government; offtake purchasers; lenders (multilateral agencies, export credit agencies, commercial banks); insurers; technical, financial and legal advisers; regulatory and supervisory bodies.

The main participants normally involved in a BOT project are:

i) Principal: this is usually the host government or a government agency whose role can include equity taker, provider of grants, loan guarantor, fiscal relief giver such as tax, provider of existing facilities and of raw materials;

ii) Promoter (sponsor/concessionaire): this player is often drawn from a number of construction companies, suppliers and lenders and whom will initially set up a project or concession company. Its prime functions are to procure feasibility studies, to negotiate favourable concession arrangements, to raise equity and loans, to construct and operate (or procure the same) the facility;

iii) Constructor: who is normally responsible for the design and feasibility studies, construction and implementation of the facility;

iv) Operator: such a participant may be drawn from those organisations interested in operating the facility after commissioning; from existing organisations, such as in the Dartford Bridge Crossing project; or newly formed operating organisations specifically formed, usually by the promoter, such as in the Channel Fixed Link project; and

v) Lender: this participant may be drawn from organisations such as multilateral agencies, export credit agencies, commercial banks and whose responsibilities may include financial resourcing, appraisal of the project's economic stability, arranging loans and capital.

Principal Agreements

The following agreements form a typical basic contractual framework for a BOT infrastructure project:

Concession Agreement (Implementation/Project Agreement): this is the primary contract and is between the principal and promoter which forms the contractual basis from which the other contracts are developed. It entitles the promoter to build and operate the facility and imposes conditions as to design, construction, operation of the project and establishes the concession or operation period.

Shareholders' Agreement: the subscription of the share capital and the contractual arrangements between the shareholders in the project or concession company are contained in the Shareholders' Agreement.

Credit Agreement: the contract between the promoter and the lender can only be determined when the lender has sufficient information to assess the viability of a project. The debt financing and loan security structure will be included in the Credit Agreement.

Equity Financing Contract: often equity participants will include the promoter, constructor, operator, major vendors, the host country and passive investors looking for sound investment opportunities.

Construction Contract: although fixed price turnkey contracts are often considered to be the most suitable agreements between the promoter and the constructor there are a number of other strategies available. In the Channel Fixed Link, the contracts for the English and French terminals and fixed equipment in the tunnels are lump sum, a target contract for the tunnelling works and a provisional sum in respect of the locomotives and rolling stock.

Operating/Maintenance Contract: the promoter may require the operator to operate the facility and in which case he would be primarily concerned with revenue collection, but not competent to carry out maintenance works. Alternatively, the promoter could collect the revenue and the operator would take responsibility for maintenance standards. Equally the operator may operate and maintain the facility and return it to the principal in full working order at the end of the concession period. Any of these options may also include a training element.

Supply Contract: raw materials or fuel may need to be supplied to the promoter and such a contract may be a term of the concession being granted.

Offtake/Sales/Purchase Contract: this contract may be in the form of a direct arrangement with the users of the facility, such as tolls, or an indirect arrangement in the form of tariffs with a principal or one of its agencies. The latter should provide the promoter with an assurance of a minimum purchase and arrange a pricing structure.

Insurance Contract: in most BOT projects the insurance cover during the construction and operation phases is a requirement of the Concession Agreement.

The above framework is quite clearly not exhaustive. Escrow agreements, service agreements, supplementary loan arrangements can also be part of the legal framework governing a BOT infrastructure project. Its structure will vary to reflect both the political and physical environment of the particular project.

III - RISKS: IDENTIFICATION, ANALYSIS AND RESPONSE

Risk Management

The development and execution of any major project can often be a difficult and uncertain process. The location of a project will determine the host country's political, legal and commercial requirements which will be a major factor in project sanction. In the case of a domestic project, the promoter will often be aware of the country requirements. In international projects promoters may need to carry out in-country surveys to determine risks associated with meeting the requirements of the concession and determine how revenues may be repatriated to service loans; all of which will effectively be determined by the constraints of the host government.

Risk and uncertainty are often used inter-changeably. Lifson and Shaifer(8) combine the two terms by defining risk as:

"...the uncertainty associated with estimates of outcomes".

A risk event implies that there is a range of outcomes of each event, both more or less favourable than the expected outcome and each outcome has a probability of occurrence.

Risk and uncertainty are inherent in all construction projects. In BOT projects the length of concession, the type of facility and its location, the number of organisations involved and the uncertainty of meeting the required revenues greatly increase the risks over those considered in a traditional contract.(9) Slight increases in capital costs, operational costs and finance charges coupled with a slight decrease in demand can turn an investment into a loss making venture.

Hayes et al(10) consider a systematic approach to risk management based on the three elements of:

- identification, analysis and response.

The author suggests that risks associated with BOT projects need to be identified, appraised and allocated through a risk management structure which addresses all those risks over the life cycle of a project. This is emphasised in a report by the National Economic Development Council(11) which suggests that promoters are exposed to risks throughout the life of the project and which may be summarised as:

* failure at several stages of the project;

* failure in the later stages of the project when considerable amounts of money have been expended in development costs; and

* failure of the project to generate returns or the opportunity to recover costs.

The assessment of risk and reward is clearly fundamental to any venture. An infrastucture project demands a rigorous, structured and disciplined risk analysis(12); by their nature they carry a high level of risk as typically they involve:

* the combination of high capital and low normal operating costs which means the financing costs constitute a very high proportion of available cashflow;

* the long construction lead times combined with the main financial commitment taking place up front (in marked contrast with labour intensive industries); and

* long lived assets with little value in alternative use.

Risk Identification

The identification of risks associated with any contract is a necessary step before analysis and allocation especially in the early stages of project appraisal.

By identifying risks at the appraisal stage of a project a realistic estimate of the duration and final costs and revenues of a project may be determined. The author however suggests that since no two BOT projects are identical, sources of project risks should be identified for each project by considering all the risk elements affecting the concession. Indeed, the author et al(13) would propose a structured concession agreement in which not only the issues as between the principal and promoter are addressed, but also those issues associated with construction, operation and maintenance, finance and revenue packages.

Risks associated with BOT projects can be considered on two levels: project risks which are to some extent controllable and relate to construction, operation, finance and revenue generation; and a second package of risks outside the project ("global risks") which are generally not controllable by the parties, such as are associated with political, legal, commercial and environmental factors. Risk characteristics of infrastructure projects differ on a project by project basis and thus it is difficult to generalise. However, broad categories of the risks can be distinguished although the degree of importance attached to these risks differs depending on the country of operation and the project characteristics.

i) Construction Risk: Whether the project can be built on time, to specification and within budget is usually referred to as the Completion Risk and is considered as a major technical risk by

authors such as Beharrell(14) and Geneid(15). The degree of this risk can vary between different types of infrastructure project: for example, it could be of considerable importance in relation to the design of a challenging bridge if there are doubtful ground conditions, although perhaps not so high in construction of a conventional motorway.

Linked to the completion risk, other major construction risks are the type of technology adopted and the terms of the construction contract. A new, untried transportation system - for example an unproven city centre monorail system - poses a high risk and is less likely to secure debt funding on a project finance non recourse basis.

Perry and Hayes(16) identify physical risks which should fall in this category including force majeure, such as earthquake, flood, fire, landslip, pestilence and disease. Other construction risks include those associated with labour, plant, equipment and materials, technology and management.

As increased project costs and time overruns are the main risks during the pre-commissioning period, it is essential that the contracting risks be clearly defined. The contract should be clear and preferably be on a fixed price turnkey basis with penalties for time overruns and performance failure. Force majeure and strike relief should be minimal. Risks in ground conditions should be identified and priced and preferably the obligation should be accepted by the contractor.

Strong performance bonds, preferably "on demand" and adequate retentions should be insisted upon. Further the project management structure developed for the project should avoid variations and limit opportunities for design changes and extensions to the time for completion.

Associated infrastructure risks are particularly important if connecting or approach roads have to be constructed by a specified date by the public sector. This problem may be exacerbated in the case of a cross border project in having to deal with two governments or their departments. Risks associated with infrastructure can be reduced by fixing a programme for hand over, for example, of access roads, with compensation by a government in the event of delay on their part.

ii) Operational Risk: As well as the risks associated with the physical operation of a facility, such as plant falling into disrepair due to neglect or negligence, damage to equipment or part of the project asset, other operational risks are considered to include default or insolvency, operation economics, training of operatives, complexity of operation and operational interruptions.

Other major risks which can be categorised as operational are those associated with the feedstock contract regarding the raw materials to be used and the offtake contract, particularly prominent in international power projects where the fuel is imported and purchased in international markets.

Latent defects in the project are of particular importance in certain types of design particularly of a novel nature and which only become apparent during operation. Some projects have to undergo extensive repairs within the design life because of unforeseen circumstances.

Latent defects in the project can be minimised by increased attention to monitoring of the design. Detailed design coupled with adequate financial contingencies made available at the outset of the project to cover potential latent defect problems can provide additional comfort to the project.

iii) Financial Risk: This category arguably covers the broadest range of risks associated with BOT infrastructure projects. Financial risks include those associated with the mechanics of raising and the delivery of finance and the availability of working capital. They can also include foreign exchange risks and debt service risk which may arise during the operation phase when the facility is running to specification, but does not generate sufficient revenue to cover operating costs and debt service.

Montague(17) considers financial risks to be those risks associated with the take or pay terms and the effect of escalation clauses over the length of the concession period.

Financial risks inevitably relate to the cost of servicing a loan, default by the lender, loan period, cash flow milestones, the type of and changes in the interest rate and currency mis-matches. Such risks increase the cost of finance. They can be tackled by complex financial instruments such as index linked bonds and long-dated swaps. For example, the second Severn crossing in the UK includes a twenty-one year index linked debt with tolls being indexed similarly.

iv) Revenue Risk: The risks associated with revenue generation are often considered on the basis of meeting demands. The accuracy of demand and growth data, the ability to meet increased demand, tariff/toll variation formulae are all classic revenue risks. Market-led revenues are far more uncertain than those based on pre-determined sales contracts, thus promoter organisations will often seek contract-led revenue streams. For example, in a toll road facility a promoter may approach haulage contractors to enter into take or pay arrangements for the use of the facility to reduce the risks associated with revenue generation.

The revenue risk may be reasonably easy to ascertain in some projects but extremely difficult in others. In the case of an estuarial crossing a captive market can provide reasonably accurate traffic predictions. However, where there is no captive traffic flow as in the case of a new toll road the issues relating to potential traffic flows at various levels of toll become extremely complex. Revenue risk could be reduced by obtaining more detailed forecasts, the use of sophisticated computer models and government agencies providing more information to bidders at the bidding stage.

Infrastructure projects theoretically have stable revenue characteristics but differ considerably from industrial projects and in some aspects are more uncertain. Unless the project is a local monopoly and a new infrastructure is in addition to an existing facility, such as a second estuarial crossing, there can be a considerable revenue risk. This arises largely because in many cases revenue potential and price elasticity in free market conditions have not been estimated. Where a project may be competing with another project, i.e., a tolled motorway competing with an untolled road, extremely complex forecasting analysis is required including an assessment of the value users may be prepared to place on the savings in travel time.

In mitigating risk under this heading, potential for risk sharing between the public and private sector is available if economic benefits other than return on the investment are taken into account. The shared traffic risk between the principal and the user is possible by allowing increased tolls and increasing the concession period if the traffic falls below an agreed estimate for traffic flow. Another option is for a government to provide a revenue support guarantee if traffic forecasts fall below an

agreed level. Other possibilities include the provision of subordinated debt arrangements by a government and maximising guaranteed revenue by way of user agreements, such as the arrangements with the British and French Railways on the Channel Fixed Link project.

v) Political Risk: Political risks can be associated with both local political powers, such as changes in policies or parties and/or those risks generated by political entities beyond national jurisdiction. Omar(18) suggests political risks are related to a government's attitude towards allowing profits on infrastructure projects, repatriation of profits and changes in regulations. In the Sydney Harbour Tunnel Project(19), for example, the setting of tolls and future tolls are effectively set by the government. Other risks which fall into this category include expropriation, nationalisation, changes in taxation, rationing of production and forced sale of the asset or its offtake.

A great deal of time, effort and expense is required to develop a BOT project. Before proceeding, parties assess the enthusiasm of the host government and in particular whether there are any political difficulties preventing a project from going ahead. Fiscal and policy changes can constitute real threats to a project and such risks can be adequately covered by the government or public sector offering protection for a completed project. A domestic regulatory change would not be considered a major issue if the concession agreement made provision for compensation in the event of such change. Another alternative is to offer a promoter protection by reducing future competition, such as Eurotunnel's option to build a second fixed link across the channel.

vi) Legal Risk: Legal risks can be sub-divided into those that can be associated with the host country and those that can be more particularly linked to the concession agreement. Falling into the former category are the nature of the existing legal framework; changes in laws and regulations during the concession period; and conflicting economic community (if applicable), national and regional laws. Where projects are to be constructed across national boundaries, different laws and conflicts between legal systems can add to pre-construction delay risks. Into the latter sub-division can be placed the risks associated with the type of concession agreement; changes in the obligations under the legal framework; and resolution of disputes. Such risks can also extend to the ability of the promoter legally to enforce the provisions of the concession agreement and requirements of statutory undertakers.

Since the complex organisational structure often associated with BOT projects involves numerous legal agreements between the organisations involved and which must operate within the legal framework of the host country the legislation affecting the BOT struicture can be a great risk. In overseas projects the legal system of the host country may require the use of local companies and nominated suppliers to ensure compatability with existing or proposed facilities operated by the principal(20).

In BOT projects it is the responsibility of both the principal and the promoter, irrespective of a bid being speculative or invited, to ensure that the provisions of the concession agreement are determined to alleviate any legal uncertainties prior to award.

vii) Commercial Risks: Risks affecting the market and revenue streams and hence the commercial viability of a project can, broadly speaking, be classed as commercial risks; examples of which can include changes in demand for the facility, escalation of costs of raw materials, consumer resistance to tolls, convertibility of revenue currencies, and devaluation.

Each project has its own inherent risks. Demand risks are normally uncontrollable on a road project and thus promoters should be allowed to extend the operation period if demand is less than that which is predicted. Further, a take or pay contract or other through-put arrangements could be used to reduce the risk of offtake demand being reduced by the user. In order to minimise foreign exchange risks, one can arrange the finance of a project in the same mixture and proportion of currencies as those anticipated from the revenue streams.

viii) Environmental Risks: Environmental issues are assuming an increasing importance on a global basis. Such issues are a major aspect in the planning and design of major energy, water or transport infrastructure projects. For example, promoters considering any project in the UK which requires approval by an Act of Parliament are required to provide an environmental statement for consideration by select committees.(21)

Emissions do not recognise boundaries and perceived environmental risks in one country may have far reaching effects in another country. For example, effluent discharge into a river which crosses a number of borders may create pressure from the downstream country to stop production or generation and/or require major technical upgrading of the facility under the concession agreement.

As well as the risk of existing environmental constraints, the risk of an environmental catastrophe on a new facility may lead to new environmental legislation, which in turn may increase the cost of operation.

Whilst assessment of existing environmental requirements may be determined at the project appraisal stage, the risks associated with the introduction of new environmental requirements may not be capable of identification; notwithstanding which, the impact of such requirements may affect the commercial viability of the project at any stage of the concession period.

Risk Analysis

Following the initial identification of risks, Hull(22) considers the analysis of risks can be broken down into two distinct phases:

i) Qualitative Risk Analysis: this phase seeks to obtain a clear understanding of what risks are involved, which areas they affect and what can be done to reduce those risks both at the appraisal stage and in the future.

ii) Quantitative Risk Analysis: this phase assesses the impact of the risks identified during the qualitative phase and provides information to target effort at reducing those risks which could potentially cause the maximum disruption to the project.

Hull(23) suggests there is nothing new about risk analysis and that most risks can be diluted by distributing them over many contracts and passing them on to the client. However, the author would suggest that in BOT projects the risks borne by the promoter and those risks allocated to other parties will influence the success of the project since the revenue generated over the concession period may suffer if risks are not properly and adequately analysed and allocated.

Response to Risks

Having identified and analysed the risks associated with a BOT project, those risks should be apportioned to each of the parties involved. Many authors, such as Augenblick and Custer(24), suggest that risks in financing BOT projects should be assumed by the party within whose control the risk most lies; each party usually insists on some reward commensurate with the risks assumed.

The response to a risk should take into account the level of impact, the resources available to determine and implement the response and the costs involved in alternative responses. In this connection risks can be averted by avoiding the activity with which the risk is associated. For example, the risk of steel corrosion of pipework may be avoided by use of a proprietary treatment. The impact of a risk may be reduced by lowering the probability of occurrence or by diminishing the extent of the loss. The effects of risks may be transferred from one party to another; for example, to the principal in the concession agreement or by insurance. Where the cost of risk transfer exceeds the expected cost of the risk by more than the premium required to cover the risk, then risk retention is considered a valid response.

Omar(25) considers risks should be shared between the promoter and the principal through the concession agreement and that construction and operational risks should be covered by performance guarantees, completion guarantees, warranties and operating guarantees.

Arguably, the involvement of offtakers, vendors and contractors in a promoter consortium allows the allocation of risk to those parties best able to manage it. For example, guarantees in offtake contracts can be used to transfer risk due to changes in market conditions from the project users; take or pay contracts guarantee the project a future stream of revenues. Lump sum or turnkey contracts can be used to transfer cost overrun and other construction risks to the contractor.

The author would reiterate that the allocation or risks in a BOT project may be determined by a structured concession agreement. It could provide the basis for the allocation of risk to the organisations responsible for finance, construction, operation and maintenance and, where applicable, to those responsible for supply and offtake.

Most governments wish to maximise rather than optimise the transfer of risk from the public to the private sector. Such a policy can deter bidders from privately financed infrastructure schemes with the private sector being concerned about the cost, risk and delay associated with the scheme. To achieve a successful BOT scheme a government will have to ensure that there is no imbalance between the risk and return. If the cost of tendering for a private finance contract is too high bids will be discouraged. Governments need to consider what efficiency gains might result from the transfer of each type of risk to the private sector and how it would affect the risk/reward ratio for the promoter of privately financed infrastructure projects. Although the strongest incentive for efficiency gains will be provided by a one hundred percent transfer of risks to the private sector, this is highly unlikely to provide a sufficiently attractive risk/reward ratio to encourage private sector involvement given the inherently high risk of such projects.

As a general rule the government should be prepared to retain some or all of the risks where :

- it does not threaten the incentive for efficiency gains by the private sector;

- the risk is largely outside the control of the private sector and there is thus little to be gained from transfer to the private sector. Broadly speaking, construction and performance risk are controllable whereas demand and financial risk are at least to some extent uncontrollable;

- the risk can only be transferred at a cost to the private sector which is far higher than retaining the risk in the public sector.

However the inter-dependence between the risks complicates this general rule. In particular, financial risk is largely outside the control of the private sector but the assumption of this risk by the private sector will have a favourable incentive effect on project cost elements which are largely subject to controllable risk, such as construction and performance. The impact upon the project as a whole must therefore be carefully considered.

A number of measures could be introduced which would reduce the risk to the private sector while not reducing the incentives through efficiency gains:

* Governments need to recognise that large projects attract high risks and therefore rewards must be sufficiently high to attract equity investors;

* Specific tender documents and clear government requirements would in turn reduce the costs of bidding and simplify the procedure for the evaluation of bids by the public sector;

* Financing risks could be reduced by providing a range of BOT projects so that investors and promoters can spread the risk across a portfolio of investments;

* A government can share the financing risk in the project by subordinating debt, bearing part of the capital cost or taking an equity stake in the project;

* Demand risk can be shared between the government and the private sector through a variable concession period. If demand is less than expected, the contract period can be extended to allow the private sector further time to recoup its investment. As this may

weaken the incentive for the private sector to influence demand through improved service quality (performance risk) it should be restricted to projects where demand risk lies largely outside the control of the private sector; and

* A major risk to some projects is competition from existing projects. For example, a major risk to privately financed toll roads is untolled roads. In this event it may be appropriate to consider tolling competing roads.

IV - PERSPECTIVES ON RISK

Lenders' Approach

Risks related to BOT projects are to a significant extent risks on the performance of the host government and the country as a whole, so that country risk assessment becomes a crucial element for determining availability of resources within a bank's country exposure limit. The higher the country risk and existing external debt the less open will banks be to new lending and for taking more project risk within a BOT project credit structure.

Commercial banks are in a strong negotiating position and only after lenders' security requirements are satisfied can the host government and project sponsors enter into serious negotiations to determine the sharing of residual risks and rewards.

Lenders are used to assessing technical and market risk and taking an active role in the project decision making process. One can start with the premise that BOT projects have certain risk-return characteristics(26):

* the construction period is longer in BOT projects than in conventional industrial projects;

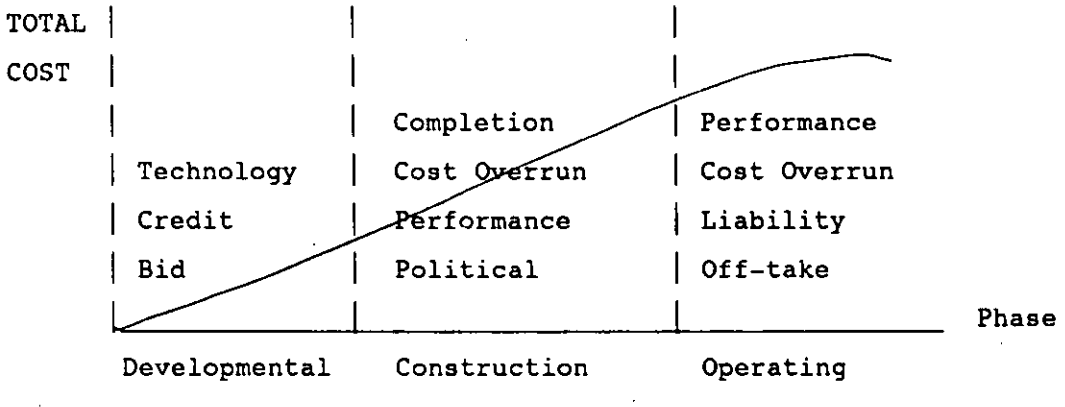
* the usable life of an asset can frequently be measured in terms of tens of years - possibly even a hundred, as in a tunnel;

* operation and maintenance costs are generally low per unit of throughput;

* BOT projects are usually undertaken as a simple, stand-alone venture so investors are exposed to all the project-specific risks that would normally be diversified within a portfolio; and

* the lengthy construction period means that capitalised interest usually forms a substantial part of the overall cost to be financed.

With an increasing number of projects seeking project finance, lenders can afford to be careless with neither their initial analysis undertaken nor the types of risk they assume. Projects are exposed to different risks as different phases of their implementation and construction commence.(27)



Infrastructure projects are seen to have some distinct advantages:

- the assets have a very long life and appreciate rather than depreciate;

- the technical risk is usually low, providing management is effective; and

- in many infrastructure projects market demand can be predicted with some degree of accuracy.

A clear indication of a strong commitment to this developing sector is the long periods for which banks are prepared either to lend directly to a project or to provide guarantees to other lenders, such as the European Investment Bank. Infrastructure projects tend to be expensive and have long payback periods; the project finance market recognise this and hence maturities of fifteen years or longer are not unusual.(28)

Lenders tend to ask four basic questions:

i) can the project be built to time, to specification and within budget?

ii) is the project management adequate and experienced?

iii) is there market demand such as to give confidence in future revenue expectations? and

iv) is there sufficient political will to help the project succeed?

Sensitivity to Risks

One feature to which lenders are particularly sensitive is the construction contract itself. Cost overruns and completion delays are the main causes of projects in trouble. Lenders need to be sure that reasonable and achievable incentives for the contractor to perform are contained in the construction agreement together with meaningful penalties if not. Performance bonds and other such forms of surety need to be set at levels which give confidence to lenders.

One of the main distinguishing features of infrastructure project finance is the lack of track record and experienced resources in the promoter/project owning company. Lenders will like to see clear provisions in the loan agreement allowing them to monitor and, if necessary, control events.

There are certain obvious risks that can be identified among projects; the banks have several key factors at which to look in order to identify whether a project is sensitive to them:

i) Revenue Risk: One of the initial analyses undertaken by a bank is to look at how sensitive a project is to a downturn in revenues. If the projections are ten percent wrong what will it do to the financial viability of the project? There are obviously some infrastructure projects which are more susceptible to this risk where no one can guarantee the consumers' demand for it. If, therefore, there is no question of getting the projections one hundred percent correct, the key question becomes how 'nearly' right can the projections be? Lenders will try to minimise this risk by commissioning reputable firms with vast experience and good track records to act as consultants, and be involved in an industry that has a tried and tested technique so that a comparison can be made with other projects in the same industry that have previously been undertaken.

In the case of toll roads there is no captive traffic flow. Although traffic forecasting is far from an exact science, banks may be prepared to form a view on future usage of a transport facility and accept the traffic risk based on that view.(29)

ii) Interest Rate Risk: Some projects are particularly sensitive to interest rates. The risk lies in the project capitalisation being based on a forecast interest rate which is not borne out in actuality. The banks, to make sure that their loans get repaid according to the agreed time schedule, usually find ways to circumvent the uncertainty by requiring borrowers to swap floating interest rates to fixed or by putting a cap on the interest rate. However, if future cash requirements are higher than expected, the banks have to assume some responsibility for providing additional financing.

iii) Inflation Risk: Ideally, one should have low inflation during the construction period and more rapid inflation thereafter as the facility begins to generate revenue. The effect of a rise or decline in inflation can be particularly severe for a project if

combined with changes in the interest rate. Both lenders and equity investors will normally insist on some mechanism to protect themselves against inflation risk. This protection may be provided by price escalation clauses in the off-take agreement (in the case of power projects) or by provisions in the concession agreement allowing the promoter/project company to increase tolls (in the case of a toll road project).

iv) Currency Risk: A typical BOT infrastracture project, which sells its output into the local economy, will receive its earnings in local currency; the risk arises when different currencies are involved. Both lenders and equity investors will want firm assurances that they will be able to recoup their original investment, together with interest or dividends, in foreign currency at a reasonable exchange rate. Lenders and equity investors need to be assured by the host government that they will be authorised to convert local currency earnings into foreign currency, that there will be enough foreign currency available in the host country's banking system to make the conversion and that the rate will not be unduly unfavourable. Lenders will also try to minimise this risk through hedging contracts.

v) Syndication Risk: This is of increasing importance to banks. Commercial banking practice dictates that it is no longer possible to obtain all the required senior debt from a relatively small group of banks each taking a smaller share. Wickham(30) suggests this has come about as a result of managing balance sheets, maintaining capital ratios and not taking on large amounts of low-yeilding assets.

vi) Subsidiary Risk: The types of risk referred to in this category are usually not directly related to a particular project ("global risks"), although arguably certain political risks such as the

failure of a government body to fulfil the terms could be classed as subsidiary. Woodward and Chan(31) quote an example in this category of the cost of money. The Bank of England requires that banks place a certain amount of money with it on which only a minimal or even zero interest rate is paid. The amount is not fixed and can be varied in the light of Central Bank policy. Therefore the banks have to build this risk into the documentation so that they will be covered in the event of any changes which could otherwise reduce their return.

Distribution of Risks

The traditional instrument of risk spreading is a guarantee of the indebtedness of the project company. Guarantees enable promoters to shift risk among other interested parties.

Lenders will often require an owner/sponsor guarantee from a host government, parent companies or foreign and domestic shareholders/investors in the project company where the project company has inadequate capital or operating track record to support the indebtedness on the basis of its own financing standing.

The most usual form of guarantee is the direct unconditional undertaking which in the case of default transfer responsibility for all payment obligations to the lender from the guaranteed party to the guarantors. Such guarantees are likely to be required from the promoter or project sponsors to cover cost and time overruns and contingencies such as government action, civil unrest, war.

Lenders often demand protection against factors beyond the control of the project's participants and which could affect the project's ability to generate earnings to service the debt. Such protection is often used to assure a minimum stream of project revenues; the most common forms

of which are arrangements where users, sponsors or third parties agree to make periodic payments in return for a given portion of output, service or use. The obligations to make payments is generally speaking unconditional regardless of whether the product or service is delivered ("take or pay contracts"). Similarly, through-put agreements stipulate that pipeline users put a minimum amount of a product through the pipeline at periodic intervals and pay for the use of the pipeline irrespective of whether the stipulated amount of through-put is achieved.

Other techniques for distributing risks take the form of forward purchase agreements whereby the lender makes available a loan to purchase minerals or other resources not yet delivered or produced. When the project commences operation, the lenders have the right to take quantities of the projects equivalent to the scheduled debt service on the loan.

The mechanisms of hedging, swaps and insurance are often used by participants in a project to adjust further the risk that has been allocated to them with a view to finding a more appropriate match with their preferred risk-reward profile. Each such technique has a cost associated with it which must be factored into the risk-reward profile.

Project insurance can remove or alleviate some of the risks which are of concern to the participants of a project. During the feasibility stage it is essential to identify the risks that can be adequately covered by insurance, those that are not adequately covered or can only be covered by payment of high premiums and those that are not covered and for which insurance is not available. As a very general guide insurance cover is available for the following risks:

- a specific event of force majeure causing physical damage, such as a fire or flood;

- defective design, workmanship or materials giving rise to a quantifiable loss; and

- loss resulting from a defined credit or political risk.

V - CONCLUSION

The BOT arrangement typically encompasses infrastructure services based on various types of financial and contractual linkages. These linkages bring together public/private sector partnerships through financial arrangements that are normally leveraged highly.

The BOT project procurement strategy has now been used on a number of large and prestigious projects both in the UK and overseas, but which can equally be adopted for smaller scale projects from which revenues, either directly or indirectly, generated during the operation phase can be used to repay the financial investment and operating costs and provide the promoter with an acceptable margin of profit. A number of infrastructure facilities have been constructed which would not otherwise have been realised under traditional contract strategies and sovereign borrowing.

It promotes private investment in schemes which have traditionally been regarded as public services and thus helping in the reduction of public debt.

The risks inherent in BOT infrastructure projects are greater than those associated with traditional forms of contract since the revenues generated by the operational facility must be sufficient to pay for the construction, operation and maintenance, and finance. The uncertainty of demand (and hence revenues), cost of finance, length of concession periods, effects of commercial, political, legal and environmental factors are but a small number of the risks to be considered by promoter organisations. Lenders' attitudes towards risk and the way in which they "redistribute" risks they assume demonstrates how intrinsically linked is the management of risk in and the financing of a BOT project.

Lenders wish to be in a no-risk situation, but equally are aware that there are some types of risk - such as market risk - they may have to assume.

Participants in a project must fully appreciate the nature and extent of the risks they assume. Participants, promoters and lenders alike must remember that an unfair or disproportionate allocation of risk to participants who cannot withstand the impact of its occurrence can be damaging not only to that participant but also to the project as a whole. Measures can be taken in mitigation, but rarely will a risk be fully extinguished. The author maintains this can most effectively be done within the concession agreement.

Successful BOT project development has as two of its most crucial ingredients the political will of the host government to "champion" the project and so far as is possible to offer political stability throughout the concession period, and the host government's understanding of promoters' and lenders' risk-reward sharing expectations. Support in a variety of forms, such as the legal and administrative environment, convertibility of revenue earned, logistical measures, needs to be forthcoming from the host government to minimise the risk exposure of both promoters and lenders. An imbalance of the risk-reward ratio will only serve to discourage both private investment and more particularly the entrepreneurship and initiative of private sector promoters.

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