Risk and risk management in project-related finance

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Metadata Record: https://dspace.lboro.ac.uk/2134/26166

Version: Published

Publisher: International Procurement Research Group, University of Glamorgan

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Risk And Risk Management In Project Related Finance


Abstract

This paper introduces the concept of Project Related Finance and discusses the main issues that lending banks should take into account when providing a finance package. The paper is based upon research that investigated the use of Project Related Finance for funding construction projects in The United Arab Emirates (UAE). The main areas of risk have been identified and the use of guarantees to shift specific risks to interested parties has been discussed. Based upon interviews with lending banks in the UAE, seven factors that have the most significant influence on the banks decision on whether or not to provide finance have been identified and used to provide an overall assessment. Three Case Studies were used to demonstrate the assessment process. Important aspects of Risk Management have been discussed along with a five-step decision making process for lending banks. A check list was developed and circulated as part of questionnaire to banks and contractors. The responses have been presented to illustrate the degree of acceptability of certain types of risk normally associated with construction projects.

The paper concludes that banks consider many of the risks less acceptable than the contractors do. Banks were also more concerned than the contractors with respect to deficiency in working capital and adequacy of reserves. Both banks and contractors were especially concerned about uncertainty of project completion and contractual matters.

Keywords: Banks, finance, risk, risk management.

Introduction

Project Finance has become an important constituent in the portfolios of many national and international banks. According to Wood (1980: 313) "Project loans involve a degree of equity risk in the sense that they rely on the project for their pay-out and not on the general credit of the borrower". Since Project Finance requires the repayment of the loan from the project's income, it involves little or no dependence on the balance sheet of the borrower. Both lenders and investors therefore need to look very closely at the economics of the project itself and its associated contractual agreements for security rather than the general credit of the promoters.

Project Related Finance for construction, although equally important, is less well known. It is a method of financing the contractor to construct a project by means of agreed facilities linked purely to the project's own planned cash flow. This form of borrowing is becoming increasingly popular in the construction industry both internationally and, more evidently, in the developing countries of the Middle East. Project Related Finance is looked upon as an innovative feature of banking where an equity risk is taken without equity participation (Shawa 1995). Lenders resort to various methods to protect their interests from the risks to which the borrower, project and host country exposes them. Many of these methods are centred around the credit-worthiness and technical capability of the construction contractor, combined with effective progress reporting on the performance of the construction project itself.
Samuels et al (1980: 507) stated that Project Finance should be: "limited to those cases where it is possible to identify a particular project and to be able to identify an income stream that results from the project". Repayments in Project Related Finance are dependent upon the contractor's ability to perform. Hence, the lending bank becomes more involved in the mechanics of construction and is compelled to employ the appropriate technology and resources which enables it to effectively evaluate the prospective borrower. More importantly, it enables the lending bank to monitor the progress of the construction project. The borrower, on the other hand, will want the lending bank's full commitment to provide the necessary facilities at the least cost.

Risk

There is a general consensus that there is a direct relationship between risk and reward: that more risk should yield a higher return. According to Marks et al (1985: 56):

"Risk is inherent in all commercial transactions. The amount of risk accepted usually bears some relation to the profit expected. A decrease in the certainty of the conclusion will be generally balanced by an increase in the reward expected".

Investment decisions that are made under the conditions of risk involve assessing the probability of outcomes relating to each alternative based upon past experiences. These assessments can be made either on a rational or intuitive basis. A good example of a tendering decision made under the conditions of risk is the assessment made of a project's duration. Previous experience on similar projects will give a good indication of how long the project will take and the probability associated with major delays. Investment decisions can only be made under the conditions of risk if similar investments or tenders have been made in the past and on enough occasions to establish a general trend. The decision can then be based on this trend which has been established from historical data.

Overlap between Risk and Uncertainty

There will always be some overlap between decisions that are classified in terms of risk and uncertainty. In order to define uncertainty it is best to first look at certainty. Certainty exists only when it is possible to accurately predict what will happen during the decision period. This, of course, is an ideal situation which does not happen very often, especially in construction finance. In reality, it is impossible to be 100 per cent certain about the security of an investment. The condition of certainty refers to investments where nothing short of a major international disaster can influence the result. The investment into government bonds bringing a fixed rate of return is a good example of an investment decision made under the conditions of certainty. There is little doubt regarding both the security of the investment and the returns that will be generated. The conditions of certainty are made at a price and the price is usually that only modest returns are possible under conditions of certainty.

Where incomplete historical data exists, investment and tendering decisions have to be made under the conditions of uncertainty. These decisions still involve the assessment of probability of future events and will often involve the prediction of future trends and markets. For example, a company may have developed a new product which it intends to launch into the market. The company will not be able to draw on historical data relating to the product and the launch involves a high degree of uncertainty. Decisions involving uncertainty are often influenced by government policy and legislation. For example, an international contractor may decide to concentrate upon the construction of small factory units in a country.
where such investment attracts significant government subsidies. If there was a change in government or government policy, the demand for this product would drop considerably and the outcome of the investment would be influenced.

Attempts are often made to separate decisions that exhibit risk characteristics and uncertainty characteristics. The separation could be made between decisions having a statistical basis and those that do not; or between events which are repeatable and those that are not. There are, however, many situations where there are both risk and uncertainty characteristics are present. There are many construction projects that are unique and are unlikely to be repeated (such as bridges, dams, power stations etc.). However, there will be statistical data relating to weather, ground conditions, labour productivity that will be used in the decision making process. Most construction projects will therefore involve a degree of both risk and uncertainty. Owing to the nature of the problem, it is important to bear in mind the difference between risk and uncertainty, but this should be done to aid the decision making process and not classify different problems into separate boxes.

Risk in Project Related Finance

When dealing with company finance, most risk (both company and project) is carried by the ordinary shareholders in the company. To safeguard the lender’s right of recourse, they traditionally require construction companies to provide:

- a general fixed floating charge over the company’s assets; and/or
- parental guarantees.

The lending banks exposure in Project Related Finance is, however, related to the borrower’s performance on a particular project. It is essential that lenders evaluate the borrower’s capability to perform in Project Related Finance situations. However, some form of recourse is necessary and a blanket lien on receivables and equipment is generally required.

Key Project Related Risks

The decision-making process of any lending bank that finances contractors should include a reliable method of risk analysis suited to that particular line of business. In Project Related Finance, the lending bank needs to be able to identify the various risks associated with a particular project and refer to them during in the loan analysis stage. A check list should be developed containing the following key project related risks.

- **Estimate risk:** whereby the contractor puts enough margin for overheads and profits;
- **Completion risk:** whereby the project can be completed and handed over by a certain period. This is usually the period of highest risk because of possible cost overruns, delays, labour difficulties, and technical problems, etc.;
- **Resource risk:** whereby the resources of the borrower are sufficient and of good quality;
- **Operations risk:** whereby raw materials and a competent labour force are available for the project;
- **Market risk:** the current state of the construction industry;
- **Currency risk:** - especially where the currency of payment differs from the loan currency;

- **Political risk:** - whereby there is no risk of civil disorder and outright expropriations without compensation.

Once the construction phase of a project has commenced financial expenditure and commitments increase rapidly, consequently, as most of the above risks manifest themselves during the construction phase, this is the greatest period of risk exposure for all parties involved with the project. Construction projects should, therefore, be closely monitored during the construction phase and supported by performance bonds or guarantees.

**The Use of Bonds to Offset Risk**

There are several types of guarantees and bonds that can be used to guarantee completion and performance as specified in the construction contract, these include: Performance Bonds; Tender Bonds; Advanced Payment Bonds; Retention Bonds; and Maintenance Bonds. In international transactions, surety bonds are an unconditional obligation to pay on demand a sum of money when the beneficiary considers that the contractor has failed to perform. In most cases, international surety bonds are issued by banks in the form of an unconditional letter of credit payable on demand without proof of non-performance. The US domestic surety bond market has several key differences to the international market, the main ones being that the obligation is to perform the contract and they can only be called upon by proof of default.

A bond remains in effect until such a time as the contractor has completed his/her obligation. A bond could be in effect for a considerable time after the completion date, since defects may not become evident straight away. However, most bonds will state an expiry date which corresponds to the end of the maintenance period and the issue of a maintenance certificate. Bonds of this sort often involve either banks or insurance companies as the surety. When a bank acts as a surety, it is often in the form of an extension of credit to a long-established customer. The implications of this are that the risks will probably have not been so well investigated as with an insurance company offering the same type of bond, because the insurance company will have undertaken a more thorough analysis of the contractor’s financial stability. The main reason for selecting a bank as a surety in preference to an insurance company is usually that bonds from banks will often be speedily dealt with, however, the contractor’s ability to borrow further sums of money could be reduced. It usually takes longer to process an application for a bond with an insurance company.

**Performance Bonds**

Generally, a performance bond is an agreement between three parties: the client, the contractor and the person who issues the bond, known as the surety. The role of the surety is to "bond" itself to the contractor, and in doing so offers a guarantee to the client that the contractor will complete its obligation to finish the contract. If for some reason the contractor cannot complete the contract, then the surety steps in and pays the employer a sum of money equal to the loss incurred by the client. The size of the bond is usually in the region of ten percent of the contract price, however, it is up to the employer to decide if the size of the bond is sufficient.
Performance bonds should never be confused with insurance, they are completely separate for a variety of reasons. Insurance is normally an agreement between two parties (the insured and the insurer) whereas bonds involve three parties (the contractor, the client and the surety). The crucial point being that a bond offers no security to the contractor. With insurance, taking some act of negligence as an example, so long as adequate cover has been obtained, the insurance policy will pay for most of the contractor’s legal costs and penalties. With a performance bond, the surety is not releasing the contractor from any responsibilities, the surety is merely there to assure the client that the work will be done. If for some reason the surety has to pay out to the client, the surety is entitled to claim the money back from the contractor through the courts or by some other method.

Tender Bond

The purpose of a bid or tender bond is to ensure that the tender put in by the contractor is a serious bid. If the bid is accepted and the contractor fails to go through with it, the bond will cover any expenses incurred whilst the employer tries to find a new contractor.

Advanced Payment Bond

Advance payment bonds may be required to enable the contractor to purchase goods and equipment before construction has started. The bond protects the client against advances being lost through the contractor’s default.

Retention Bonds

Most construction projects will require money to be retained in order to provide a fund to rectify any mistakes made by the contractor. Retention bonds may be issued in lieu of these retention monies.

Maintenance Bonds

Maintenance bonds can be used to provide the funds to correct defaults in the construction that are discovered after the construction has been completed. It is common for performance and retention bonds to be converted into maintenance bonds once construction has finished.

The Use of Guarantees to Offset Risk

Guarantees are especially useful in Project Related Finance since such undertakings permit the shifting of specific risks to interested parties. Guarantees may be divided in five groups:

- **Supplier’s guarantees.** A supplier may be motivated to provide a guarantee for some processing facilities to be constructed and operated in order to procure the market for its product.

- **Seller’s guarantees.** A seller may have plant that is surplus to requirements with little prospect of selling it except to an under-capitalised company which the seller feels has good prospects. A guarantee by the seller may be necessary to enable the purchaser to obtain finance.

- **User’s guarantees.** The user of a product on a potential project may be motivated to financially aid it or guarantee the debt required to finance it in order to get it built.
• **Contractor's guarantees.** Contractors must provide bank guarantees where there are elements of risk. At the bidding stage, bid bonds must be enclosed with tenders. Performance guarantees must be given after award. Advance payments and retention release at completion are made only against bank guarantees.

• **Government guarantees.** Government agencies with a stake in the project, but which do not want to own or control the company may guarantee the loan.

**Sensitivity Analysis**

Sensitivity analysis can be used to test the effect of a change in the value of a single risky variable on the total value of the project. It provides answers to many 'what if' questions, such as 'what happens to the cost if the interest rate is increased by one per cent?' or 'what happens if the contract duration is decreased by one month?' According to Flanagan and Norman (1993: 143):

"Sensitivity analysis enables us to test which components of the project have the greatest impact upon the results, thus narrowing down the main variables to be considered. The technique is widely used because of its simplicity and ability to focus on particular estimates. It does not however actually evaluate risk, the decision maker must still assess the probability of an event occurring".

One approach is to develop and evaluate downside scenarios according to the complexity of the project. For example, when a high percentage of the material content for the project has to be imported from a single overseas supplier, it is important to determine:

• the effect on profit of a proportional increase/decrease in the rate of exchange of that country, by a forecast percentage, while holding all other costs constant;

• the effect on profit if the freight charges are increased by a forecast amount holding all other costs constant.

On its own, sensitivity analysis does not determine the probability of a risk occurring, but relies upon the historical data that indicates the degree of risk. When historical data are combined with a sensitivity analysis, the potential impact of risk on the overall project can be assessed so that management can:

• allow for it in the selling price; or
• transfer it by making their bid conditional; or
• insure against it.

**Evaluation of Risk**

The evaluation of risk involves many variables and a systematic approach must be developed to ensure that decisions taken by the lending banks are based upon reliable information. All the identified risks need to be reasonably evaluated. The significance of each risk depends upon the extent to which the resulting losses affect the project, as indicated from the sensitivity analysis. Forecasting the effects requires consideration of three characteristics:
how often the losses will happen;
how severe they will be when they happen;
the ability to foresee their happening.

In addition to the key project related risks, lending banks also need to take into account other factors such as:

- the management structure of the borrowing company and the board of directors;
- how the project is to be planned, monitored and controlled;
- the company's audited balance sheet and profit and loss account;
- whether the borrower maintained an acceptable debt-equity ratio;
- limiting unsecured exposure;
- some form of recourse to assets;
- whether all inventories are comprehensively insured at all times;
- the project's primary source of income;
- the project's secondary source of income;
- the project's condition of contract;
- the introduction of covenants.

Many risk related elements are very difficult to express in quantifiable terms. However, a suitable method of risk rating must be devised by the lending bank. An extensive literature search based on risk management identified seven factors that have the most significant influence on the evaluation of company related risk. These factors were presented in tabular form to selected credit managers in banks for their opinions in order to develop the rating scales presented in Tables 1 and 2. An excellent financial performance, for example, sustained over a long period of time with cash flow covering the debt servicing and a strong equity base warrants 25 marks on the financial condition scale (No.1). Unavailable financial statements with unsatisfactory cash flow is awarded a zero. Each of the seven factors are rated, an overall score out of 100 determined and classification of overall risk is obtained.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Financial condition (balance sheet &amp; cash flow)</td>
<td>0 - 25</td>
</tr>
<tr>
<td>2. Security/collateral</td>
<td>0 - 20</td>
</tr>
<tr>
<td>3. Management</td>
<td>0 - 20</td>
</tr>
<tr>
<td>4. Market position of company</td>
<td>0 - 10</td>
</tr>
<tr>
<td>5. Condition of construction industry</td>
<td>0 - 10</td>
</tr>
<tr>
<td>6. Conduct of account</td>
<td>0 - 10</td>
</tr>
<tr>
<td>7. Company &amp; owner reputation</td>
<td>0 - 5</td>
</tr>
</tbody>
</table>

Table 1. Ratings for evaluating a contracting firm
<table>
<thead>
<tr>
<th>Numerical Risk Rating =</th>
<th>Classification of overall risk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total score for all seven factors</strong></td>
<td><strong>Superior</strong></td>
</tr>
<tr>
<td>81 - 100</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>71 - 80</td>
<td>Acceptable</td>
</tr>
<tr>
<td>61 - 70</td>
<td>Watch</td>
</tr>
<tr>
<td>51 - 60</td>
<td>EMA*</td>
</tr>
<tr>
<td>45 - 50</td>
<td>Substandard</td>
</tr>
<tr>
<td>35 - 44</td>
<td>Classified</td>
</tr>
<tr>
<td>25 - 34</td>
<td>accounts</td>
</tr>
<tr>
<td>15 - 24</td>
<td>Doubtful</td>
</tr>
<tr>
<td>*Especially Mentioned Assets</td>
<td>Loss</td>
</tr>
</tbody>
</table>

Table 2. Classification of overall risk

**Superior**
- Good credit
- Good asset quality and liquidity
- Very good debt capacity and operating cash flow
- Very good management
- Audited financial statements are available
- Good access to capital market

**Satisfactory**
- Acceptable business credit
- Satisfactory asset quality and liquidity
- Acceptable debt capacity and operating cash flow
- Credit likely to require some collateral
- Some management weakness
- Financial statements are expected
- Company is mid-tier competitor in local market

**Acceptable**
- Weaker but acceptable business credit
- A well secured credit
- Borderline asset quality
- May have somewhat strained liquidity
- Limited debt capacity
- Management weakness
- Financial statements may be available but may be weak
- Company is lower-tier competitor in local market
- Cash flow and profits are somewhat unreliable

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Watch

- Loans of lower quality than acceptable
- Given classification by credit officer when emerging problems are detected
- Credit requires special attention

EMA (Especially Mentioned Assets)

- 1st phase of classification
- Loan of higher quality than substandard but containing potential danger
- Especially Mentioned Assets (advances) to be separated by Risk Management Division for special attention
- Credit managers are required to monitor Especially Mentioned Assets that lie in this category

Substandard

- Loan inadequately protected by currently sound net worth, paying capacity of the borrower, or pledged collateral
- Loan having unsatisfactory characteristics causing unacceptable level of risk which could jeopardise the repayment

Doubtful

- Down-graded substandard loan with weaknesses inherent to the substandard classification and in which collection or liquidation in full is questionable
- Debt servicing is erratic with several past overdue payments and the borrower seems unable to generate enough cash flow from normal business operations to resume payment
- Loan is managed by Debt Servicing Division

Loss

- Rating assigned to loans considered partly or wholly noncollectable
- The bank expects significant write-offs
- Collateral or guarantees are the main source for collection and legal procedure to be initiated
- Debt Servicing Division is to manage the recovery effort

Case Studies

A detailed study into the mechanisms behind Project Related Finance has been performed by the authors (Shawa 1995). As part of that study, data were gathered by means of random sampling through the sending out of questionnaires to contracting companies and banks operating in the UAE. Interviews were also conducted with selected participants who practise Project Related Finance. Three detailed case studies were then used to test these hypotheses further. The detailed findings relating to the questionnaires (Price 1997) and case studies (Shawa 1995) have been reported elsewhere. As part of that study, the three case studies were evaluated using the rating model shown in Tables 1 and 2, and an assessment of the risks associated with each case study has been presented in Table 3.
Case Study A: 120 one-storey houses

Case Study A was located in the Liwa area, an agricultural community situated south of the Emirate of Abu Dhabi. It was built on three different sites, Nafeer, Jabanah, and Wazeel (Site C) with forty typical one-storey houses constructed on each site. All of the houses are of typical reinforced concrete and blockwork design with reconstructed stone facing for the main villas and white fair face blockwork for the boundary walls. The scope of works included soil improvement with approved imported fill compacted in layers, reinforced concrete for the substructure and the superstructure, and hollow block partition walls with cement-sand plaster. Finishes included mosaic and ceramic tiles and stone facing. Boundary walls were built with fair face blocks. Internal footpaths were built using precast concrete kerbstones and interlock tiles. The plumbing and electro-mechanical works, and the joinery and aluminium works were sub-contracted. External works included a sewerage treatment plant, external drainage with associated civil works and a banking slab for slope protection on Site C. The contract was a Lump Sum Contract with a breakdown of prices given by the contractor. The contract start date was 27 October 1990.

The contract duration was 24 months but this was subsequently extended by three months and completion date was reset for 24 January 1993. The Contractor experienced difficulties at the start of the project due to the remoteness of the sites and adverse weather conditions. However, the Contractor's claims for extension of time with costs were due to variation orders. The contracting company applied to a lending bank for Project Related Finance facilities to execute the project. The bank, having previously assessed the ownership structure, technical capability and overall financial position of the construction company, studied the tender documents, the projected cash flow and execution programme of the project.

Case Study B: integrated traffic system

Case Study B was located in Sector 125 of Dubai Municipality, and involved the provision of an integrated traffic system between the commercial district along the northern bank of the Dubai Creek and Tariq Ibn Ziyad Road which crosses the creek at the Al Maktoum Bridge. The project comprised:

- the widening and reconstruction of the existing Beniyas Road to a dual two-lane highway over 600 metres from Etisalat junction through to a new roundabout to be constructed adjacent to the Kuwaiti Consulate;

- the improvement of Omar Ibn Al Khattab Road;

- the construction of the extension of Beniyas Road as a dual three-lane highway from the new roundabout at the Kuwaiti Consulate for a distance of 2000 metres to connect to the proposed new road network to be constructed (by others) in Dubai Municipality Contract R 384;

- a dual three lane link road of 600 metres between Junction 9 on Beniyas Road and Flame Roundabout;

- the construction of a grade separated interchange at the intersection of Beniyas Road and Tariq Ibn Ziyad Road including an underpass below Tariq Ibn Ziyad Road (Underpass 1) and 1700 metres of associated slip roads;
• the construction of a two-lane single carriageway underpass from Al Maktoum Road to Tariq Ibn Ziyad Road (Underpass 2);

• the provision for new utilities and diversion and/or protection of existing utilities;

• the provision of hard landscaping to the general area of the site with base irrigation services to allow the subsequent provision (by others) of the soft landscaping and planting.

The contract period including mobilisation was 609 days with completion date set for 14 March 1994. Mobilisation for the project commenced on the contract start date of 13 July 1992 with the contractor fencing off the designated area for the site establishment and erecting the site offices. There was an initial delay of six weeks caused by the slow response of Dubai Telecommunication (Etisalat) in relocating ground cables. The re-routing of services and temporary traffic diversions were two major items in the contract.

Case Study C: water transmission pipeline

Case Study C was the supply, installation and maintenance for 12 months of a 1200 mm diameter potable water transmission pipeline in Jebel Ali to 2nd Zabeel Road. The contract start date was 11 May 1992 and the duration was 365 days. The scope of the works included associated valves, specials and appurtenant chambers as follows:

• 26 km of 1200mm diameter pipeline along the main Abu Dhabi-Dubai Road from Jebel Ali to the Trade Centre Roundabout;

• 1.9 km and 1.7 km of 600mm diameter pipeline to the Jumeira Beach Road.

The contract included ground surveys, the construction of air and butterfly valve chambers, road crossings, the installation of a bulk flow meter, hydraulic testing, flushing and disinfecting and final flushing. The road crossings were carried out by thrust boring in order not to disrupt the flow of traffic. The pipeline was intended to boost the existing supply line to cater for the increasing demand due to the commercial and industrial boom taking place in Dubai. The contracting company successfully applied to a bank for finance facilities for its execution. The lending bank requested a copy of the tender documents, the project's execution programme and cash flow together with the company's audited financial report.
Table 3  Risk associated with case studies

By referring to the Translation to the risk ratings (Table 3) Case Study A, with a rating of 61 was Acceptable; Case Study B, with a rating of 72, was Satisfactory; and Case Study C, with a rating of 68, was Acceptable.

Risks in Financing the Execution of Construction Projects

Construction contracting is a high-risk business due to the numerous factors that influence it but remain beyond contractors' control. Bankers, who give credit to construction contractors, find the latter's businesses difficult to evaluate for credit purposes. They find construction contractors to be largely high risk-takers. Still (1991) outlined two ways of recovering the loan: the first should be tied to a positive cash flow; and the second should be tied to sound asset values. Whatever the loan, the key concept in determining asset value is that an asset's value is a function of its earning power. A good credit analyst disregards the concept of accounting values. To be able to evaluate the risks involved, the lending banks must first understand the contractors and the elements affecting their success or failure. Schleifer (1989, p. 4-15) identified the following ten elements of risk of failure.

- Increase in project size.
- Unfamiliarity with new geographic area.
- Moving into new types of construction.
- Replacing key personnel.
- Lack of managerial maturity.
- Poor use of accounting systems.
- Failure to evaluate project profitability.
- Lack of equipment cost control.
The first five elements relate to the company's business strategies or practical considerations. Schleifer did not suggest that contractors should fear growth or the need to expand into unfamiliar locations or new types of construction, but that events or poor decisions in these areas preceded the failure of a large number of contractors. To reduce the risks associated with these elements, the key issue is the quality and suitability of the project staff, and the lending bank may wish to insist upon and approve new key appointments.

The second five elements relate to fiscal or accounting considerations and in most cases represent unacceptable situations which can be easily rectified if the deficiency is spotted early enough. The emphasis is, therefore, on the management and accounting processes adopted by the contractor which could be benchmarked against other organisation and deficiencies identified.

There is an inherent danger in these elements, and proper planning combined with a complete understanding of the risks involved are necessary when encountering them. The importance of these elements of risk warranted a more detailed investigation into risk management literature. This led to the following elaboration.

**Increase in Project Size**

It is essential for both lenders and borrowers to determine the size and capacity of the contracting firm. A common risk is that contractors tend to increase the volume of their work to maximise revenue. The sudden increase in the size of a contractor's projects is the most common cause of failure. Contractors tend to take on larger projects during the profitable years, but problems often develop even before the first of the larger projects is completed. Construction contractors need to take on larger projects in order to grow, but growth should be gradual. The size of the project in relation to the company, and the size of its average projects, has a definite and direct relationship to profitability. When a construction company is working profitably in executing certain average-size projects, it does not follow that it will make more profit by taking on much larger projects.

**Unfamiliarity with New Geographic Areas**

Changing the area of operations from where a contractor normally works is almost as common an element preceding failure as the change in project size. While there are many good business reasons for a contractor to expand into new geographic areas, such as growth, lack of work in its primary area and more opportunities in the new areas, the risks involved must be recognised.

**Moving into New Types of Construction**

Contractors will change or add to the type of construction they usually do for a variety of reasons. Changing from one type of civil engineering work to another, or from building housing estates to high rise buildings, can be very costly. The learning period, during which an organisation adjusts to executing a new type of work, is costly. For example, a contractor may have to complete several projects under a new type of contract at the break-even point or at a loss before profitable projects are undertaken. This could cost a lot more than expected, and some companies become insolvent in the process. Most contractors are more specialised than they like to admit. This becomes more apparent when bidding for several
different types of project, but most of the projects awarded seem to be one type. This can be explained by the fact that because they are specialised in constructing that type of work, they can price it better and have a winning edge over their competitors.

Replacing Key Personnel

There are three primary functional areas of a construction business that must be adequately managed:

- estimating;
- administration and accounting;
- construction operations.

Every successful construction company must have a top-level manager responsible for each one of the above areas. The loss of a profit-making top manager puts a construction company at risk. This risk should not be combined with others until a suitable replacement is found.

Lack of Management Maturity

Lack of management maturity is a primary risk that should be carefully analysed, particularly for contractors. It is the most widespread element of contractor failure. It can also contribute to some of the other failure elements identified by Schleifer. At the project level, successful completion on time and within budget requires skilful and mature project managers. On the organisational level, changes are necessary in the growth periods and knowing when and how to make such changes needs management skills and maturity.

Poor Use of Accounting Systems

Construction companies are often faced with large amounts of other people’s money passing through their accounts. They require effective systems and procedures to capture all the information and process it quickly and efficiently. Contractors are often at risk to deficient cash flows, particularly during the early stages of construction where on site costs may be high but payment spread over the life of the project. Those with weak invoicing and debt collection procedures are at a greater risk. Unlike other industries, the terms of payment for construction work are often not in full. Inefficient invoicing for work done is unacceptable and top management should take responsibility for this critical side of the business.

Failure to Evaluate Project Profitability

Most construction companies are working with a four to six per cent profit margin but turnover large amounts of money in comparison. In practice, very few projects are tendered for, awarded and completed conveniently within a given financial year to allow for the expedient verification of the base data. On-going construction projects cannot be measured accurately. All parties involved in the process of determining the percentage completion of projects benefit from a higher evaluation. There is a natural tendency to err on the higher side, and to over-state the profitability of the work in progress.

Lack of Equipment Control

Each project must bear equipment costs whether company-owned or hired. This can best be done by applying a hire rate for each and every piece of equipment on site. To do otherwise
could create a situation whereby projects report profits, but the company reports a loss at the end of the year. Accounting for idle equipment affects job profitability because costs are incurred whether a machine is used or not.

**Poor Billing Procedure**

In the construction industry, regular monthly progress payments have enabled many businesses to commence with low capital bases. Low capitalised contractors with inefficient valuation and collection procedures are at a much greater risk than others. The terms of payments in construction contracting compel contractors to work to tight budgets. Late approval and collection of a large progress payment could put a contractor's whole cash flow in jeopardy.

**Transition to or Problems with Computerised Accounting**

Accurate and timely records of numerous transactions and variation orders must be kept for each contract. The need to convert to computerised accounting becomes more apparent as the company grows. The process of converting from a manual to a computerised system to cope with the increased load, or the transition from one computer system to another can present many problems.

The above points emphasise the need for the lending bank to carefully examine the contractor's organisation before extending finance arrangements. The keeping and understanding of records on the causes of contractor failure enables the banker to discuss the possible unforeseen risks that the prospective borrower might take.

**Risk Management**

Bankers agree that they are in the risk business, and they aim to limit the degree of risk rather than the number of risks. Risk and return are entwined and form the basis of lending.

"Banks operating in the international field have to act prudently both in assuming risks - which no one can avoid doing - and in making adequate provisions." Guth (1981: 29).

Risk management literature stresses the identification of risk as the most important step towards managing it. Proper risk identification is necessary and must be on-going if a risk is to be discovered before it develops into a loss. According to Bond (1991: 21-28) risk management literature gives a five-step decision process comprising:

- risk identification;
- risk assessment;
- evaluation of risk alternatives;
- selection of an alternative or risk control measure;
- on-going monitoring of the risk management programme.

Financial risk management is part of a banker's daily activities. Portfolio diversification, loan analysis, loan grading, risk pricing of loans, lending limits on organisations and countries, contingency planning, monitoring and early warning systems are all used by lending banks as risk control measures. Risks in Project Related Finance are more easily identifiable than in other forms of finance as they are often associated with only one project.
Insurance

In planning the best risk-handling programme, insurance cover is the cornerstone to adequate financial protection. Insurance does not eliminate all the risks involved in construction contracting, but it transfers most of the financial threat to a professional risk bearer. Insurance represents contractual security against anticipated potential damage or liability whereby the insurer undertakes to indemnify the insured for a stipulated premium against particular perils described in the policy.

There are a number of different policies that cover various forms of losses, some are mandatory and others are optional depending upon the contracting company's ability to take the risks involved and its pricing strategy. Some principal contractor insurance policies are: Comprehensive General Liability Insurance; Workmen’s Compensation and Employers’ Liability; Builder’s Risk Insurance; Contractor's Plant Coverage and Property Insurance. Lending banks often ask borrowers to assign certain insurance policies to them especially those relating to mortgaged plant.

Willingness to Assume Risks

Banks' policies towards risk are partly influenced by the personalities of the banks' management and partly by the characteristics of the banks' deposit liabilities. Thus, a bank with fluctuating deposit liabilities in a static community will tend to be a conservative lender, while a bank whose deposits are growing with little interruption may follow more liberal credit policies. Weston and Brigham (1993) have explained that some banks have "creative banking policies" while others tend to be more conservative. A large bank with a broad diversification across different industries or over geographic regions is able to combine and average risks and therefore reap the benefits thereof. Thus, credit risks that might be unacceptable to a small or specialised bank can be pooled by a larger bank to reduce the overall risk of a group of marginal accounts.

Acceptability of Risk

When each of the above main areas was examined closely it led to other risks being identified. The literature review and preliminary interviews identified fifteen main elements of risk that have to be dealt with in construction projects generally. These elements were a combination of project, company and industry related factors. In order to determine the degree of acceptability attached to each source of risk, they were presented in a questionnaire to both contractors and bankers in order to assess their reaction. The responses have been presented in Tables 4 and 5. The intensity has been calculated by multiplying responses by the acceptability scale and dividing by total number of responses (30 for contractors and 20 for banks).

When combined, Tables 4 and 5 show that the banks considered many of the risks less acceptable than the contractors. Both were most concerned about uncertainty relating to project completion and contractural matters. Banks were more concerned than the contractors with respect to deficiency in working capital and adequacy of reserves. Most disappointing was the low score attached by both the banks (score 2.4) and contractors (score 1.5) to variation orders and the consequent increase in contract duration and price. Given that project completion scores were (4.8) for banks and (4.2) for contractors and cost overrun scores were (3.8) for banks and (3.3) for contractors; the only conclusion to be drawn is that the client will have to bear the risks attached to variation orders.
Table 3 predominantly dealt with the lending bank's view of a company and its ability to perform at a project level. Table 5 predominantly deals with the lending bank's view on the acceptability of certain risks. Although the two tables are not measuring the same factors there is a large degree of consistency between the results. For example, financial condition were given high rankings in Table 3, whereas deficiency in working capital and adequacy of reserves were used as root causes in Table 5 and again ranked highly. Also, a good high ranking of management in Table 3 should provide the lending bank with the confidence that the project will be completed on time and best practice will be adopted relating to contractual issues.

Acceptability Scale for Tables 4 and 5

<table>
<thead>
<tr>
<th>Source of risk</th>
<th>Acceptability scale</th>
<th>Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Deficiency in working capital</td>
<td>5</td>
<td>10</td>
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<tr>
<td>Adequacy of reserves</td>
<td>8</td>
<td>7</td>
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<tr>
<td>Delay in commencement</td>
<td>7</td>
<td>8</td>
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<tr>
<td>Rise in costs</td>
<td>7</td>
<td>12</td>
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<tr>
<td>Contractual matters</td>
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<td>0</td>
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<tr>
<td>Variation in interest rate</td>
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<td>12</td>
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<tr>
<td>Project completion</td>
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<td>1</td>
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<tr>
<td>Rate of inflation</td>
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<td>10</td>
</tr>
<tr>
<td>Increase in debt to equity ratio</td>
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<td>6</td>
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<tr>
<td>Cost overrun</td>
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<td>3</td>
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<tr>
<td>Lengthening of repayment period</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>Variation in orders and consequent increase in contract duration and price</td>
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<td>2</td>
</tr>
<tr>
<td>Currency exchange variations</td>
<td>10</td>
<td>10</td>
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<tr>
<td>Political change</td>
<td>14</td>
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<tr>
<td>Force majeure events</td>
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<td>5</td>
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Table 4 Acceptability of individual sources of risk by contractors
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<thead>
<tr>
<th>Source of risk</th>
<th>Acceptability scale</th>
<th>Intensity</th>
</tr>
</thead>
<tbody>
<tr>
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<td>2</td>
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<td>Rise in costs</td>
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<td>Project completion</td>
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<td>Rate of inflation</td>
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<td>Force majeure events</td>
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<td>6</td>
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</table>

Table 5  Acceptability of individual sources of risk by banks

Conclusions

Construction contracting is a business which operates in a risk-taking environment with many constantly changing variables that can have adverse and/or beneficial effects on the project. Project Related Finance has been identified as a banking mechanism that contractors use to raise finance for the construction phase of project using the project's cash flows as a key source of security for the lending bank. This approach requires the lending banks to appraise and manage risks that are confined to the execution of one particular project, as opposed to traditional company risk assessment.

Based upon interviews with lending banks in the UAE, following seven factors relating to the contractor that were considered to have the most significant influence on the bank's decision on, whether or not to provide finance, were identified. These factors were used to provide an overall assessment using Three Case Studies to demonstrate the assessment process.

- financial condition (balance sheet and cash flow);
- security/collateral;
- management;
- market position of company;
- condition of construction industry;
- conduct of account; and
- company and owner reputation.
This paper has also shown that the identification, evaluation and treatment of risk associated with a project are essential for both the contracting organisation and its lenders. A check list was developed and circulated as part of questionnaire to banks and contractors. The responses have been presented to illustrate the degree of acceptability of certain types of risk normally associated with construction projects. Tables 4 and 5 show that the lending banks considered many of the risks less acceptable than the contractors, for example, lending banks were also more concerned than the contractors with respect to deficiency in working capital and adequacy of reserves. However, a high degree of concerned was expressed by both lending banks and contractors regarding the uncertainty of project completion and contractual matters. Both the lending banks and contractor gave a relatively low score to the risk attached to variation orders, probably because the client is seen as another risk offsetting mechanism and will have to pay for such variations.
REFERENCES:


