Financial risks in construction projects

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Risks in construction projects can be defined as the probability of an event that impairs the viability of the project. This probability, perhaps, is higher than in other industries. In the construction sector, as elsewhere, various risks that affect business can be identified. This paper aims to identify, classify and analyze the most significant risks inherent in large engineering or construction projects, with particular attention to the group of economic risks and developing finally a conclusion in this regard. The results showed that construction projects are exposed to many risk sources, internal and external, being one of the most important, the financial risks such as inflation, fluctuation of the currency, lack of solvency, etc. Construction is a complex area involving many factors that can affect the final outcome, and being a teamwork process whose common goal is the completion of the project, the risks are essentially due to the uncertainty affecting the various participants in it.

Key words: Risk allocation, financial risks, construction projects, infrastructures.

INTRODUCTION

Risks in construction projects can be defined as the probability of an event that impairs the viability of the project. This probability is perhaps, higher than in other industries (Flanagan and Norman, 1993; Kim and Bajaj, 2000; Tah and Car, 2000), due to its inherent characteristics (Bing et al., 1999; Bunni, 1997; Hayes et al., 1986; Kangari and Riggs, 1989).

Not all risks should be associated with negative results, because although most of the time this happens, risks can also mean opportunities. From the moment that the objectives of the construction project are set, time, cost and quality represent the most important risk factors to consider. The main problem is that these risks are not always dealt with properly by the construction industry (Mills, 2001; Thomson and Perry, 1992).

Risk management is a process of identifying, analysing and responding to risks throughout the lifecycle of a project to control, reduce or eliminate those risks (Edwards and Bowen, 1998; El-Sayegh, 2008; Zhao and Li, 2010). The total elimination is, in the construction sector, almost impossible, and the objective should be to transfer them from one party to another through contract clauses (Andi, 2006; Mak and Picken, 2000). Thus, to reduce risks, it is very important first to identify them (Godfrey, 1996; Hayes et al., 1986; Williams, 1995). Once this has been done, it is possible to adopt actions to address it (Kayis and Ahmed, 2007) and to allocate it to various parties in order to keep it under control and to prevent possible negative consequences (Bunni, 1997).

Risk management might also be useful in order to maximize profits (Baker et al., 1999). However, the benefits of risk management have not always been understood by this sector (Flanagan and Norman, 1993; Raftery, 1994; Ward et al., 1991).

In the construction sector, as elsewhere, various risks that affect business can be identified. However, in this particular area there seems to be greater risks as a result of the involvement of multiple factors such as different contracting parties, multiple suppliers, designers, etc., all linked to the socio-cultural, political and economic differences of the place where the project will be undertaken.
To appropriately address the risks, we must first identify internal risks in the construction sector and in a second stage and after analyzing them, focus on external risks, especially in economic and financial sector. Proper risk identification and allocation will reduce the negative impacts, increasing efficiency and effectiveness in management (Abrahamson, 1984; Barnes, 1983; McCallum, 2000; Rahman and Kumaraswamy, 2002; Thompson and Perry, 1992). There have been many classifications of risks. Wiguna and Scott (2006) established four categories: external and site condition risks, economic and financial risks, technical and contractual risks, and managerial risks. In this study, risks will be classified as external, internal and financial. This paper aims to identify, classify and analyze the most significant risks inherent in large engineering or construction projects, with particular attention to the group of economic risks and developing finally a conclusion in this regard.

INTERNAL RISKS

Internal risks in large construction projects are usually related to the control of the management team. According to Aleshin (2001), they have their origin within the project, while the external risks are originated from the macro-level. They can be divided into the following groups: obligations of the owner, designers, contractors, subcontractors and suppliers. In turn, these can be subdivided into several subgroups and thus form the overall risk structure (El-Sayegh, 2008). To reduce the risk on the owner's obligations, they must be clearly defined as running for their performance and a resource statement. In case these obligations are not met, penalties for noncompliance should be included in the contracts (Hassanein and Afify, 2007).

The group of owner's obligations includes the following subgroups: payments to contractors, project schedules too tight, inappropriate intervention, design changes, lack of scope of project definition, sudden bankruptcy and breach of contract.

For construction contractors, payments received from the owners represent the fundamental source of income. So, if those owners delay payments, this means more financial difficulties and therefore a risk of default in the terms of the project. In some countries, the rate of late payments by the owners has reached even 77% (Kartam and Kartam, 2001).

The contractors, in turn, also understand that the risk of late payment, together with the resolution of contractual issues, is the largest that can tackle an engineering or construction project of large dimensions. They suggest the need for fairer contracts for them, incorporating better payment terms and also improved methods of dispute resolution, including mediation and arbitration. This shows their concern and the urgent need to improve risk management strategies (Hassim et al., 2009). Sometimes the project planning is too tight, and owners impose difficult to achieve construction schedules (Dey, 2002). Other times, the owners impose changes in project design, thus affecting its definition. If these changes are excessive, they bring negative consequences for the achievement of the objectives of the project. The fact that the owners act on the basis of time and money often leads to poor work planning, producing precisely an excessive duration and an increase in costs higher than originally budgeted (Balolia and Priceb, 2003; Kaming et al., 1997; Raftery, 1994). Morris and Hough (1987), reviewing the different types of projects funded by the World Bank between 1974 and 1998, found that 63% of a total of 1,778 projects had experienced significant cost overruns. The next group includes the risks of project designers. The greatest risks that may occur in this section are the design flaws and changes to be carried out after the start of the construction phase. The design may be incomplete, insufficient or incorrect and, therefore, the project may not be buildable. In addition, there may be an additional risk as the delay in the issuance of building plans (Kartam and Kartam, 2001).

The risks associated with contractors refer to different aspects closely related to them such as construction accidents, quality and productivity of labor, other risks associated with technical problems that lead to the construction contingency and lack of qualified personnel that shows the incompetence of contractors. In short, many of these aspects are related. For example, normally, when an accident happens, it affects all the equipment, reduces productivity and employee morale, and hinders the achievement of the target. The quality is also affected.

In connection with the subcontractors, it is necessary to mention that, through outsourcing, the construction company can make profits, but that this practice, at the same time, can be risky. Poor performance can be obtained, which would delay the whole project, or cause a breach of contract as a result of disputes between subcontractors and contractor that prevent the project is carried out. As for suppliers, the most representative risks arising are those related to the quality of materials and delays in the supply of material. According to contractors, suppliers are in the third position in the risk impact analysis (Dey, 2002; Hassim, Jaafar and Sazalli, 2009).

In addition to this series of risks, Hassanein and Afify (2007) add three subgroups: the acquisition of permissions, the provision of capital goods and obtaining credits.

EXTERNAL RISKS

The external risks are not directly related to the construction process, however, they have a high weight in relation to the achievement of the project. They can be classified into the following groups: political, socio-cultural, economic, natural and other (El-Sayegh, 2008). Within the political risks are: threats of war, strikes of
workers, changes in legislation, corruption and bribery, delays in approvals. These risks relate to the “country risk”. Country risk also includes cases where the host country can not pay the debt because of their own economic problems. Political risks affect all aspects of a project, from site selection to completion of construction, through operations and marketing (Wang and Chou, 2003). They are difficult to assess. When possible, they are borne by the owners, and if it is not possible, lenders also sometimes take risks (Maniar, 2010; Nevitt and Fabozzi, 2000). Some authors have been more concrete regarding political risk in construction projects of international scope, focusing on factors such as costs - workforce, materials and overhead costs- and income – related to taxes, foreign currency and exchange rates-(Ashley and Bonner, 1987; Baloia and Priceb, 2003).

Socio-cultural risks may include criminal acts or conflicts due to cultural differences, while natural hazards are well known (unexpected weather conditions, natural disasters, etc.). Apart from the economic risks discussed below, there are other external risks such as delays in resolving contractual issues, delays in resolving disputes, lack of equity in the bidding, presence of bid rigging, difficulties in insurance contracts, presence of interest groups, resource availability, statutory regulations, etc., that might have a significant effect on the outcome of a construction process.

ECONOMIC RISKS

Concerning economic risks, El-Sayegh (2008) notes that inflation and sudden price changes represent the most important economic risks in countries such as, for example, the UAE. The same view is put forward for countries such as Kuwait (Kartam and Kartam, 2001), China (Fang et al., 2004) or Indonesia (Andi, 2006).

Just in reference to inflation, Maniar (2010) and Nevitt and Fabozzi (2000) argue that the use of correct forecasts of inflation is essential to meet the future cost updated correctly, and that is the lender who has more experience to perform these reliable predictions, even better than the promoters of the project. The builders, meanwhile, also see in inflation an important risk (Kartam and Kartam, 2001).

Another economic risks to consider when planning a large construction project is the fluctuation of the currency, especially in the case of international projects. Recently in many countries the construction of privately financed infrastructures has been based on foreign capital, thus running the risk of devaluation of local currency. International lenders rarely take that risk, preferring to have their payments in foreign currency. In the past, public companies or governments have accepted the currency risk, but now, with the growing demand for private financing, the risk of depreciation of the currency often lies in the promoter of the project and, ultimately, on consumers, because the lender is not willing to assume it (El-Sayegh, 2008; Nevitt and Fabozzi, 2000).

Changes in interest rates are also a significant risk for such projects. Loans with variable interest rates can be used for long-term construction and financing, as well as short-term needs. Forecasts of future interest rates used to calculate the costs of the project depend on a number of assumptions that can be fulfilled or not later. At present, it is advisable to adjust the projects based on variable interest rates given the uncertain economic environment, but predictions will never be perfect (Nevitt and Fabozzi, 2000).

Hassanein and Afify (2007) mention other various financial risks such as lack of clarity in the allocation of responsibilities for payment of some taxes, lack of provisions for partial payment thus reducing the risk of default, the improper withholding of guarantees on the advance payment, etc. Finally, some authors consider that the lack of financial solvency from any of the parties (owners and contractors) is one of the greatest risks to consider. Normally, contractors minimize their profit margins to maximize their chances of winning projects, which is a major risk during the construction period (Hassim et al., 2009). Financial effects of these risks are quite clear: lower productivity, poor performance and increase in the cost of the project (Mills, 2001).

Conclusion

Having identified and classified most of the risks inherent to the construction and infrastructures sector it can be said that is a complex field involving many factors that can affect the final outcome. It could also be said that being a teamwork process whose common goal is the completion of the project, the risks are essentially due to the uncertainty affecting the various participants in it. It is also important to notice that the parties in the contract should adopt a continuous learning approach towards risk identification. Past projects and past events are an opportunity from which to gain experience that might lead to success in the future, as real-life scenarios already seen might help to take measures in order to avoid triggering risk events.

Another measure to reduce risks is that of their transfer. Contractors are sometimes reluctant to forward claims for losses in order not to harm the good relation with the employer, which makes insurance companies’ role more important.

In the classification made, the risks are divided into categories, the most frequently mentioned by different authors, which require special attention. One could consider that the most important risks are: payments to contractors, breach of contract, poor designs and financial risks. Among them, payments to contractors are surely the number one, as if they are delayed or suspended, it may cause the project gridlock. For its part,
the financial risks almost always result in lose of money.

It has to be kept in mind that many of the authors mentioned in this paper analyze the financial risks of infrastructures of countries in the Middle East and Asia. The risks in this sector depend heavily on countries or regions in which the projects are to be built, and it is totally different to implement those projects in areas of political stability such as Europe that performing them in conflict-ridden places. Therefore, when establishing which are the most important risks in a certain project it should be taken into account in the first place where they intend to build. From there, the risk analysis must be performed.

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REFERENCES