

Risks of Project Financing

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Project financing is a model of financing the projects based on the analysis of the feasibility of the project itself, since only the projects whose generated money inflow from the project is high enough to allow for the repay of invested funds are considered eligible. Consequently, the contracting followed by the project financing has to meet mutual interests of various parties, and therefore the expected economic return from each participant is in proportion with the risk they bear in the project execution process. Hence a successful project financing analysis is said to be based on the examination of all the risks that the project carries during its life cycle. This paper but points out these risks.

1. Introduction

Project financing is a specific type of financing, that is, a financing technique especially suitable in the execution of infrastructure and industrial projects. It is a complex procedure by which the lender (investor) expects the loaned funds to be paid back exclusively from the returns the infrastructure project generates, where a large share of borrowed money, as well as inadequate financial results threaten to endanger the sustainability of the infrastructure project. Hence an adequate risk allocation is considered to be a key part of a quality project finance.

In the area of finance, risk is defined as a possibility that the return on investments differs from that expected. In the project finance, the risk includes the impacts of a large number of factors that may affect the project execution success. It is for this reason that risk identification, the assessment of risks and risk allocation among the project participants, as well as risk extenuation are the key activities in the project finance.

2. Risks in project financing

A successful project finance analysis is based upon the assessment of all the risks the project bears during its economic life cycle. Risk is the basic factor in project finance since it is deemed responsible for unexpected changes related to paying the project expenses, debt servicing and payment of dividends to the shareholders (owners). The money flow can also be affected by certain types of risks, hence, if these risks are not adequately anticipated and if an adequate protection from risks is not provided, the losses are possible. More precisely, if there is not enough cash, it is not possible to pay to the creditors, and the project becomes technically problematic too. Therefore the financial plan of the project should be designed in such a manner that it selects those among the available fi-

ancial options that minimize the risk, adjusting the financial expenses to the conditions of offer and demand on the global capital market. [5]

It is for this reason that the largest amount of time spent in designing the project is devoted to the assessment of project risks that may emerge during the project's life cycle. More precisely, the focus is upon defining the solutions that may be used to limit or eliminate any risk. Risk assessment is conducted prior to undertaking the project finance process.

The modern approach to decision making is characterised by making decisions on the basis of quantitative results that include the cost-benefit analysis or computing the criteria of net present value. Such an attitude means the implementation of the assumption on perfect certainty in the future, which is rather naive as the analysts are rarely willing to cope with anything that comes after the distribution of probabilities related to the uncertainty of events in the future. By far more sophisticated is the approach of the analysts who are ready to acknowledge the problems related to determining the probability of certain events, but do not know how to incorporate them into their analysis. All the above mentioned stress the fact that risk can be explained in a concrete way, however uncertainty cannot. [7]

The project financing risk identification and assessment refer to evaluation of various ownership-related rights that result from complex legal and financial structures of the project participants, such as sponsors, construction creditors, permanent creditors, contractors, constructors, owners of technology, suppliers and exporters. Each participant has a different task in the project execution, hence their engagement carries a different level of risk each; i.e., each participant may view the prospects and the characteristics of the proj-

ect differently and assess the risk subjectively. [14] Project finance makes it possible to allocate risk and returns in a considerably more efficient way compared to the direct (corporate) method of financing. [1] The project finance arrangements may be designed in such a way that they allocate the risk among the partici-

pants in the project execution in such a manner that each of them is satisfied (i.e., at lowest expenses). So the construction companies cope with the project execution related risk, the raw material suppliers cope exclusively with the risk related to supplies, the customers count with the price-related risk, etc. [4]

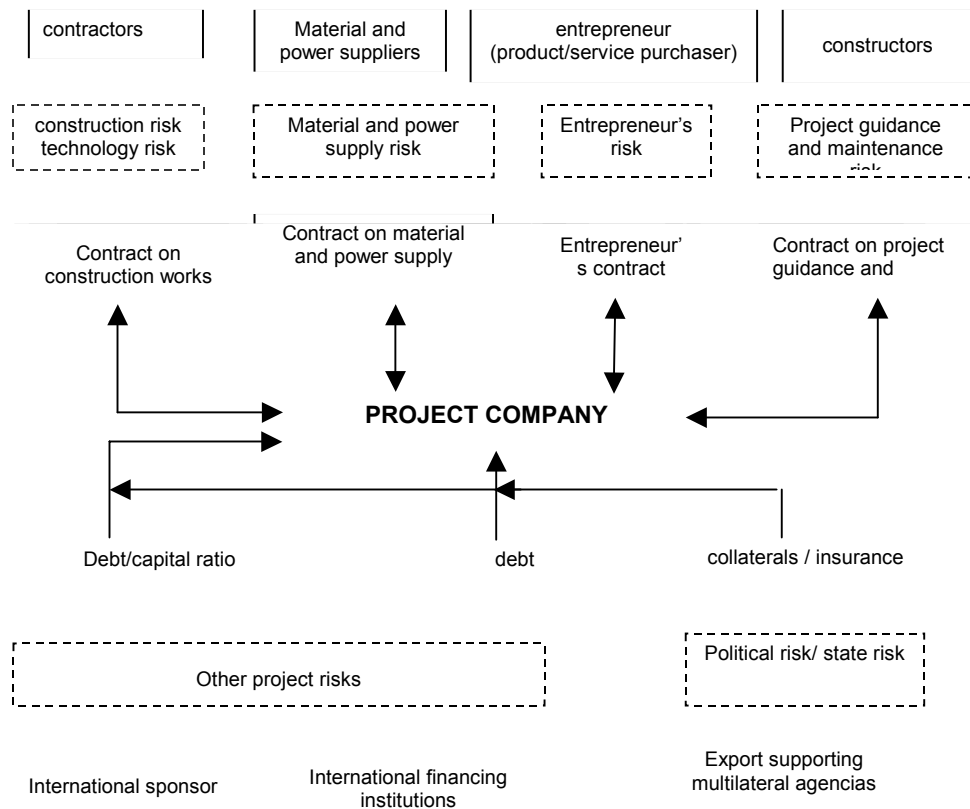


Figure 1. – A usual risk allocation structure in project finance [13]

A common mistake in risk allocation is leaving too big a scope of risk with the project company, which, due to being highly indebted, is not in a position to bear a high level of risk. On the other hand, transferring the entire risk from the project company to the other participants in the project is not feasible, since these participants may decide to take over a larger part of risk, but simultaneously expect a higher rate of capital returns, which the financial construction of the project could barely allow.

3. Project finance risk classification

There is a number of risk classifications in project finance. One alternative is offered by the Standard & Poor classification which assesses the project finance risk in six steps: assessment of financial and operational contracts, analysis of technology factors, analysis of the project market position, rating the risk the partners bring to the project, the analysis of the legal structure of

the project and the assessment of the financial risks that may impact the project execution. [17]

The Moody's analysis includes economic, construction, operational, technological, legal, political and regulatory risks. [16] According to Tinsley, risks in project finance are classified as: operational risk (technological, cost-related risk and management-related risk), risk of participants, the project completion risk, the risk related to material and energy supplies, market risk, infrastructure risk, environmental risk, political risk, the force majeure risk, currency risk, engineering risk, union-related risk, interest payment risk and legal risk. [12] Grimsey and Lewis list nine types of risk all infrastructure projects are faced with: technical risk, construction risk, operational risk, income-earning risk, financial risk, the force majeure risk, political risk, environmental risk

and failure in project execution that can be a result of previously mentioned risks. [10] Perhaps the most clearly put classification is the one that classes risks into three groups, i.e., commercial, financial and political risks [15], hence it is according to this classification that the specific features of project finance risks will be explained, which is simultaneously the subject of this paper.

3.1. Commercial risks

Commercial risks refer to the project itself, i.e., to the impact of internal factors upon the project execution. The project is exposed to risk both in the construction and in the operational (effectuation) phases. The initial frame in the commercial risk analysis is the analysis of the project appropriateness, that is, the opportunity that the product or service be effectively realized on the market. Another important issue is whether the project can be completed in a defined space of time and within the projected budget and which are the factors this can be affected by. This part of the analysis is related to the project construction period. The most important issue in the operational phase is whether the revenues will be sufficient to ensure a continuous repayment of loaned assets and the expected returns rate on the capital invested.

The commercial risk assessment also includes the analysis of the impact of the force majeure factors upon the project, as well as the issues dealing with environmental protection. Hence the commercial risk assessment incorporates the following aspects: the project appropriateness analysis, the project completion risk, the environmental protection risk, the operational risk, the income risk, the material and power supply risk, the force majeure risk and the project contracts adjustment risk. [15]

a) Risk appropriateness

The first step in the analysis of any project is the assessment of its commercial potential, that is, the appropriateness of the project execution. Hence this aspect of risk will be of considerable interest to creditors, since it will answer the questions such as: [6]

- Is there a market for the project product or service?
- What is the competition on the market like and are any changes anticipated in the future?
- Is the projected price of the product/service adequate in comparison with the competition?
- Can any structural changes on the market be foreseen and which would be the effects of such changes?

- Are the prospective buyers of these products/services financially eligible enough to purchase them?
- Do other players on the market encounter any specific troubles?
- Are the prices offered by the constructor and the material and power supplier realistic enough?
- Are there any factors that might hinder the normal operation of the project in the effectuation period?

b) Project completion risk

The project completion risk refers to the construction phase and is basically related to the monetary and technical aspects of the project. The monetary element of the project completion analyses the options as to whether the risk is a) higher in comparison with that projected by the inflation rate, the assets available, the unpredicted delays related to the project execution, or b) lower than the anticipated price related to products or services the project is to provide, that is, lower for the projected returns rate. [6]

A successful project execution in the construction phase means that the project should be completed in the planned space of time, according to the specifications stipulated and within the planned budget. The project completion risk analysis includes the analysis of the internal factors that may impact the project execution in the construction phase.

Important components in this risk group refer to: project acquisition risk, the required leases provision risk, the contractor selection risk, the risk of exceeding projected costs, revenues during the construction period, postponing the project construction completion, inadequate project performance and the third party risk. The other important element connected to the project completion risk deals with the technical process incorporated in the project itself. [6]

c) Environmental protection risk

The environmental protection risk refers to the effects the project may cause by the postponement of the development of its design or by its unavoidable redesign due to the failure to incorporate new standards and regulations. [6]

In designing the project it is necessary that all the regulations related to the environmental protection be observed. This risk is by far lower in inventive companies, however, some aspects here depend on the field the project belongs to. What is certain is that the impact of the project execution and exploitation upon the environment could not be higher than the standard construction of a building or a warehouse. [2] As the regu-



lations in this field are frequently subject to changes, there is a risk that may cause additional costs. A large number of factors in the public sector, as well as international organizations such as the World Bank and the European Investment Bank follow their own standards in the field of environmental protection which the project contractors are obliged to observe even in case such standards do not exist in the legislation system of the country the project is executed in. To special risks belong the activities of aggressive environmental groups that may endanger the project.

d) Operational risk

Operational risks refer to the factors that may impact the project execution in the operational phase (in the period the project is put into effect). The operational risk is one related to the market value of the project results, that is, the risk related to the capacities of the product (service), the project result, to repay the debt (the invested value) of the project. Such a type of risk may occur as a result of neglecting the project activity, of a poor assessment of the project recovery after a critical phase, a poor assessment of engineering capacities, of low productivity resulting from engaging foreign labour force or due to unrealistic prices and the change in the exchange rates. [5] The basic parameters in the operational phase are operational revenues and operational costs. In order that the project should operate as anticipated, it is necessary that the operational revenues be high enough to ensure a continuous repayment of debts and an adequate revenue rate on invested capital, as well as that the operational costs be in accordance with the forecasts. The key operational risks are: technology risk, general operation of the project, operational costs exceeding risk, project availability risk and the risk related to project maintenance.

e) Technology risk

The technology risk refers to the technologies defined in the project documentation, but that do not work according to their specification or become prematurely inapplicable. [6] Generally, the technology risk can be defined as a field resulting from the implementation of the technology used in the development of a new product (service) the project provides. [5] More precisely, the technology risk is connected to the performance of the technology the project uses, two risks being immanent to it: the new technology risk and the risk of the technology obsolescence. The new technology risk refers to the fact that the technology is not tested thoroughly enough, so even in case it proves to be good in the tests, the risk remains as to how it will behave in a long term. The implementation of new and insufficiently tested technology is not usual in

project financing. The new technology risk can be mitigated in several ways: by the contractor's guarantee and by the sponsor's guarantee that cover a long-term performance. The risk of technology obsolescence means that the technology implemented may become obsolete which results in a product not being competitive on the market. This problem is characteristic of the projects in the information technology sector.

f) General operation of the project

This risk refers to the case when the project performances are inadequate due to poor operational management. By the contract on guidance and maintenance, the project operation is assigned to an experienced contractor responsible for the project management. The contract usually stipulates penalties the contractor is obliged to pay in case of delay of the planned activities, but also defines the option of the breach of the contract in case the performance falls below the minimum allowed values. The option of the breach of contract is used considerably more in the contracts on guidance and maintenance compared to other project contracts. The investors prefer the contractors in charge of project guidance to be simultaneously the project investors, since in that case their commitment to the project is stronger.

g) Risk of exceeding operational costs

Two largest groups of costs in any project are the supplier costs and the debt servicing costs and they should be fixed. The investors attempt to limit any variable operational costs controlled by the project company in a way similar to what they do with construction costs, however, they cannot force the project company to stop fulfilling the contract obligations. The standard approach in the project company cost control (maintenance, personnel, premises, expenses following the construction period) is to determine the budget for such types of costs within the final financial construction.

h) Periods when the project is not in operation

There are periods when the project is not in operation (regular maintenance or unexpected disruptions in operation) and then it does not earn income and in some cases even has to pay penalties. The risk refers to the cases when the project is not in operation in a period longer than anticipated and hence is not in a position to earn the planned revenues.

i) Maintenance

The maintenance risk is managed by the contractor, according to the contract on project guidance and maintenance. Normally, the longer the project is in operation, the oftener it requires maintenance, al-

though the need for maintenance also depends on the extent to which its capacity is exploited. The maintenance costs should not be a problem as the project returns should cover them. The major risks as regards maintenance result from the fact that: maintenance may last longer than initially planned, the costs may be higher than expected, the money flow may be slowed down compared to the maintenance costs, and, finally, the extent to which the equipment is used is higher than expected.

j) Income risk

The income risk refers to the danger that the project will fail to generate the income high enough to cover the expenses, to service debts, and to achieve the planned rates of returns on invested assets. If the end result of a project is a product, two types of risk occur, the risk of scope – refers to the quantity of products sold, and the price risk – refers to the sales price of the product. These risks are covered by the entrepreneurial contract (a contract between the project sponsor and the customer interested in the project product or service), the contract for differences, the hedging contracts or by the contracts by which the project company takes the risk of the sales of the product on the market. If the end result of the project is based on the concession for services, the risk is related to the number of the service users.

k) Supplies risk

In order that the project execution be successful it is necessary that a continuous supplies of power, material and other inputs be effected at reasonable prices, since that can be the crucial moment in the manufacturing of products or service provision planned in the project execution. [8] It is also necessary that a long-term contract on supplies is signed, except in cases when the power supplies and the material are the commodity sold on open market. The contract on supplies is meant to reduce the risk in supplies, although some risk still exists related primarily to inputs, quality and the delivery time and the credit risk the supplier takes.

A special case are the projects that use natural resources, water or wind as power supplies. Here the risk is that the level and intensity of the water or wind may vary significantly, therefore it is necessary that a thorough analysis of scope, strength and the quality of water as well as the scope, direction and frequency of the wind be made. If, however, the mineral resources are the main input to the project or the project is based on their extraction, there is a risk that they will not be used to a satisfactory degree, therefore it is necessary that a classification is made having in mind the possibilities of renewal and the quantity estimated.

l) Force majeure risk

The force majeure risk refers to the factors from the domain of force majeure, such as strikes, floods, fires or catastrophic technical errors that can reduce the capacities or temporarily or permanently stop the project. The project is also exposed to risk of force majeure during the effectuation period. Lenders sometimes insist that they be protected against this form of force majeure. [6]

When drawing project contracts, the force majeure risk can prove to be a sensitive issue. Part of the risk can be covered by insurance, not the complete risk though, therefore this form of risk has to be somehow shared between the parties in the project financing. The insurance covers only the loss incurred by the physical damage to the project (costs of repair or replacement) or the economic loss (delay in construction or missed income) that are the consequences of a physical damage to the project. Losses in case of strike are not covered by the standard insurance; here a specific type of insurance is required, with a significantly higher insurance premium. Thus, for example, the events that count as the risk of the political force majeure are not covered by a standard insurance, except in case of physical damage (for example, in case of war or terrorism).

The party that suffers the consequences of force majeure is exempted from paying penalties and is granted a period of time to solve the problem and prepare the project to continue work; however, this does not exempt it from observing the obligations stipulated in the project contracts. If through the force majeure risk the project is permanently damaged and put out of function, the project contracts are breached. The term “permanently” refers to a period of one year and longer.

m) Risk of project contract discrepancies

A special type of risk may be a result of the discrepancies of project contracts. Each project contract is autonomous, however, it affects other contracts; hence the entire structure of project contract has to be viewed as an entity. Some problems caused by contract discrepancies are the following: different dates of project completion in the construction documents, different dates of commencement of materials and power supplies in contracts on supplies and contracts on takeover, different procedures of cost evaluation in contracts related to takeover and contracts on construction, differences in pricing the power supplies in contracts on supplies and contracts of the product/service buyer that are result of the project execution, differences in the times of revenues and pay-

ment of money related to the costs of supplies and repayment of borrowed funds, differences in understanding the force majeure risk. [9]

3.2. Financial risks

The project is exposed to financial risks both in the course of construction and later, during the effectuation period. The financial risks include the action of various economic factors impacting the project execution, those that may result into the deviation of the money flow from the real money flow conditions, characteristic of the respective phase in the project execution. [8] Their impact is indirect, as they affect the economic environment in which the project works. The financial risks include: inflation risk, interest rate risk and the exchange rate risk.

The impact of the inflation risk is related to the projects in which the dynamics of costs increases at such a speed that it is impossible to follow with the incomes the project earns. The inflation risk most frequently results from the contracts between the project company and the contractor (company), where such contracts are subject to the change mechanism, due to the changes in the price index. [9]

The impact of inflation upon the project, that is, upon the incomes and expenses of the project, depends on the period in which the inflation is present. Inflation may be a risk; however, it may also bring some benefits to the project. It is important that in calculating the budget of the programme the expected inflation rate be taken into consideration. During the construction period the inflation causes the costs to rise, which results in overrunning the planned budget. A larger part of construction costs should not be inflation-sensitive. The costs of construction contract, financial expenses and the expenses on the consulting services should be fixed. In the effectuation period the inflation may cause the increase in the operational costs, the level of indebtedment ratio, while the returns on invested capital rate may fall. If the incomes are defined on the basis of the tariff agreed upon, the inflation risk is reduced. The impact of inflation may be predicted by calculating the inflation sensitivity indices of individual incomes and expenses. If the inflation sensitivity indices of incomes and expenses are equal, the project company is in a rather favourable position.

Exposure to the interest rate risk depends on the structure of the project financing. If the project is financed by the bonds or loans at fixed interest rate, the project company is not faced with the interest rate risk. In practice, it is rather difficult to obtain a long-term loan at a

fixed interest rate, since such loans are not profitable to the banks, whose deposit structure is predominantly a short-term one. The basic interest rate in project finance loans is generally set in a defined time interval (most frequently a six-month period) in accordance to the interest rate on the market. The basic reference for setting the interest rate on the international market is the London Bank interest rate (LIBOR). [9]

The interest is not paid until the beginning of the project effectuation. During the project construction period the interest is capitalized, that is, added to the debt principal. During the project construction period the interest becomes an integral part of the project capital budget, and, if the interest is not fixed, it may be higher than expected and lead to exceeding the determined costs of construction. In the effectuation period, the rise in the interest rate results in the decrease in the returns rate and the creditor ratio. When "closing" the financial transaction, attention should be paid to the estimates of the interest rate trends. The sponsors prefer arrangements with floating interest rates, which the investors avoid because they would rather not be exposed to unnecessary financial risk. To mitigate the interest rate risk in cases where a floating interest rate is used, hedge arrangements are preferable: interest rate swaps, interest rate cap and collar, but other instruments too.

The exchange rate risk refers to the impact of changes of currency rate upon the project costs and incomes. The project is exposed to the exchange rate risk both in the construction and in the operational phases. The basic relations in this risk are related to the ratio of the currency used to finance the project, the currency in which the costs are paid and the project income currency. In the project construction period, in case the project is funded in one currency, and the expenses are paid in another, the risk the project company as the main contractor is exposed to is that the value of the currency in which the costs are paid may rise. For example, the construction costs amount to \$100, and are funded with €100, where the exchange rate is 1:1; if the value of the euro falls so that its ratio to the dollar amounts to 1.2:1, the value of financing will be sufficient to pay not more than \$83.3 of the construction costs, and the result is the overdraw of the planned costs (deficit) of \$16.7.

In the operational phase, if the project is financed in one currency and the income is earned in another, the change in the currency rate impacts the project money flow and consequently the project's capability of debt repayment. In that case, it would be ideal if financing were effected in the local currency, i.e., in

the currency of project income, which is most often impossible in the developing countries whose financial market is not developed enough to support project financing. The risk of currency rate change could be covered by forward contracts; however, this type of protection against risk is rarely used in practice. In the project construction period the costs should be either converted into the currency in which the project is financed, or the currency in which the project is financed should be converted into the one in which the costs are paid, which is an easier way and may even be of help in the operational period too. If the contractor agrees to be paid in the currency used to finance the project, the largest part of the problems will be solved. The second important costs are financing costs which will automatically be in the currency in which the project is financed. In the operational period, the incomes should be in the same currency as the costs and the debt to be repaid to the investors. The income currency dictates the financing currency and vice versa.

3.3. Political risks

A very important role in project financing is played by the government and the public sector. The political risk refers to a possibility that the Government or the political authorities of the country in which the respective infrastructure project is executed choose to affect the development of the project itself, actually the long-term sustainability of the project. [6] The projects financed through the project financing concept are long-term investments of paramount importance for the development and functioning of the local economy, hence the political will and continuous support in their execution is necessary. The political support should come from both the top levels of governance and from lower (local) levels. [3] The project will be endangered if it happens to be in the centre of political events in a country, i.e., become the issue of disagreement between the government and opposition. Here we have a strong probability that in case of the change of government the contract on the project be cancelled as disadvantageous for the country and the population, as intransparent or as corruptive. [11]

It is therefore necessary that the project be politically appropriate, that is, that it should earn benefits for the entire social community, not only to investors; that it should enhance employment, improve infrastructure, and that the product and service prices should be adjusted to the local market. If these conditions are not fulfilled, the political risk may increase significantly. Political risks may be classed into three main categories:

a) investment risks, b) risks of legislation system change, and c) quasi-political risks.

Investments risks are characteristic of developing countries, known for political and financial instability. Managing such risks requires the aid from the government of the country in which the project is executed. The risk of legislation system change is characteristic both of the projects executed in the developed countries and those executed in the developing ones. This risk means the changes within the existing legal system and the establishment of a new legal system and their impact upon the project. The quasi-political risks, however, refer to the issues such as disputes about the contracts that may have a market or a political background, which shows that the difference between commercial and political risks is not always clear.

Conclusion

In the last fifteen years the governments worldwide have adopted project financing as a driving force in the execution of various services related to improving the field of infrastructure. Following the experiences of the pioneer in this field, the UK government, and its experiences in financing socially and economically important projects from private funds in the early 1930s, the project finance concept for infrastructure projects financing has been adjusted and adopted on all the levels of implementation in the countries all over the world.

Project financing brings numerous advantages over a direct, or corporative project financing. The benefits, however, can be identified only upon a careful analysis and a skilfull financial engineering. The project execution organization, its legal structure and the financial plan should reflect the nature of the project, since the elements such as risk, expected profitability, creditworthiness of the participants, demands and sums of collaterals related to insuring the loaned financial assets from financial institutions, the opportunity to qualify for tax savings, the project sponsor's financial position, the expectations of the host country's government, the expectations of the local autonomy, as well as any other elements, may affect the project execution.

Project finance is generally said to be a form of financing that includes even the social community, hence a thorough analysis must include the assessment of the risk expected to be accepted by all the participants in the project execution, in order that the project should be completed timely and in a defined way, since it is only in such circumstances that the execution of a project may be certain and safe.

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