

DEVELOPING A AND MONITORING OF THE RISK RESPONSE STRATEGIES IN PROJECT FINANCE

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Abstract:

Project finance represents the most common way to finance large investments, especially but not limited infrastructure and energy. The last couple of years shows that the banks did not used the proper tools project valuation, especially form the risk perspective.

The most common way of analysis was limited to cash flow and collateral assessment. Considering that a typical project takes a couple of years to be developed and the loans are repaid from the cash flow for many years, we believe that the project assessment from should step in a new stage by analyzing the risks that arise not only from project itself, but from developer organization as well and by using proper tools for stress testing.

We propose an risk analysis methodology from a global perspective in project finance starting with the analysis of the three pillars that supports any project, bringing in the light the all the elements necessary for a proper assessment of the risk and introducing the tridimensional view of the project risk profile. We will conclude presenting the key triggers for successful project finance.

JEL classification: G17, G24, G32

Key words: critical; stress test, project management, organizational culture; financial risks, project finance modeling, risk assessment

1. INTRODUCTION

Lately, due to contraction of financial markets, has been increasingly raised moral hazard issue. Although it is considered that the financial system is an integrated system, however there are some who believe that in many ways it evolve uncontrolled, moral hazard risk being obvious in this context, proven by the recent turmoil on international financial markets. Government intervention has become in some cases the only way that financial institutions have been saved, all the measures finally being achieved on the expense of taxpayers.

Moral hazard behavior was defined as a person who is protected by the manifestation of risk, behavior would be different than when directly exposed to risk. Paul Krugman has defined moral hazard as "... any situation where a person makes decisions on how much risk to be assumed, while another person is to bear the cost of risk if it occurs "(Krugman, Paul (2009). *The Return of Depression Economics and the Crisis of 2008*. WW Norton Company Limited).

The banking system has not been spared the accusation of moral hazard, critics noting their relaxed risk policies and appetite for more risky products, from consumer loans, exacerbating the use of credit cards, mortgage loans with high debt leverage and large financing and project finance. In fact, banks were among the main criticized as increasing housing bubble encouraged increasing their profits as much as possible, knowing that expensive projects attract higher value of mortgage financing.

The most vehement criticism came against financial institutions came along with the government aid for the crisis, which resulted later in the tax burden increases or reductions in income for the population.

Against this background concerns appeared to strengthen risk policies. Basel Committee has already proposed a new agreement, Basel III, which include increasing the level of capitalization require banks to improve banking system's ability to absorb shocks in the market and to withstand any stress in the financial sector and economy in general.

That's why we stopped to the analysis of the development of the strategies to response to risks in project financing. We will examine how they develop and how risk is controlled response, making a comparison between how risk has been addressed before the crisis and how that must be explored and addressed to avoid past mistakes.

2. OBJECTIVES

As a first step we will focus on the concepts of organizational maturity and quality of risk management, considered essential in assessing a project and in the decision either to finance a project or not. From this perspective we will review the analysis phases of a project and we will explore ways in which a financier can protect against risks that may arise in a project.

The most important factor in developing risk response strategies derived mainly from a proper risk analysis, without which any plan will fall apart. There is a unanimous opinion that project finance cannot be addressed in a standardized manner, but can be developed a set of principles that circumscribe both methods of analysis and the main strategies that can be addressed based on identified risks.

3. METHODOLOGY – RISK PROFILE ANALYSIS

From the perspective of the lender, the risk in project financing can be defined in a very simple manner as any event that may affect the financial results of the project. Given that any financier invests in a project to obtain a profit, its failure would obviously be the worst case scenario for an investor.

Given this perspective, financiers seek risk management solutions by which to preserve the profit potential they considered when they invested in a project.

The methodology for analyzing projects based on three components:

- Character, the result of investor analysis, organizational maturity and quality of risk management;
- Cash, is net cash flow

- Collateral, the proposed guarantee and securities structure

Although the three components are essential in the decision to fund a project or not, after experience the banking system had with occasional investors is necessary to go to a higher level of analysis, meaning the organizational culture of the investor, which will ultimately defines the best investors. The analysis of the organizational culture of the organization that develops projects analysis is essential for the assessing of the investor's risk profile and to decide the financing of the project. There were frequent cases where projects that could be a real success did not achieve expected results or, worse, failed due to lack of experience of investors or their inability to react in moments of the project and to absorb market shocks.

Analysis of organizational maturity

Maturity is given by the organization's culture, processes and applications used, and the last but not the least by the accrued experience. Experience built up can come both from people with experience working for that organization, and the lessons learned during its existence from previous projects.

In 2002, IACCM (The International Association for Contract & Commercial Management) Business Risk Management Working Group has defined four levels of the organizational of risk management from the perspective of the organizational maturity, namely Novice, Competent, Professional and Expert. The investigation involves four areas of the organization: Culture, Process, Experience, Applications.

In each of the categories, the investigation is based on a pack of questions, evaluator recording the responses to each question and the final score classify the organization in one of four categories: novice, competent, professional and expert.

From the lender perspective, this analysis is even more important to be done to better understand how the borrower will react against risk. Although until now this kind of analysis was not performed properly, this will become essential in any further project analysis in the future.

Also in this context must be performed the assessment of the borrower risk policy, risk perception and risk tolerance. Along with this process will be analyzed the risk perception and risk tolerance of the staff involved in the project.

Lawrence and Lorch emphasized that an organization's effectiveness is judged by the adequacy with which they are satisfying the participants' needs through planned interactions with the environment (Pugh and Hickson, "Managementul organizatiilor", pag.49). Thus it is important that the analysis outcome will show how the people involved acted before, and their expectations in the near future. In this way you can more easily anticipate if a person or groups of persons that may adversely affect the project.

Given that the criteria for analysis are more or less subjective, most of the bankers agree that the level of competence can be defined as the sum of several features, as follows:

Level of competence = Professional expertise + Experience + Known Behavior

If training and professional experience can be certified and documented, the most difficult to assess is the Behavior. For this the analyst must carry out an investigation to find the individual that information on the sponsor of various backgrounds, not just business.

Known behavior may be a major factor to be able to anticipate future actions and the project.

For a better picture of stakeholder groups is extremely useful to use symbolic representation of the project proposed by Thomas H. Pyle, "Angel Project" in which we can represent all participants in the project representative.

In this allegorical representation of the constituent elements of the project, as follows: halo angel would be the government and other the public authorities, the project sponsor is the head, body project company, contractor and operator are its wings, suppliers and customers are arms, financier (bank) is the feet.

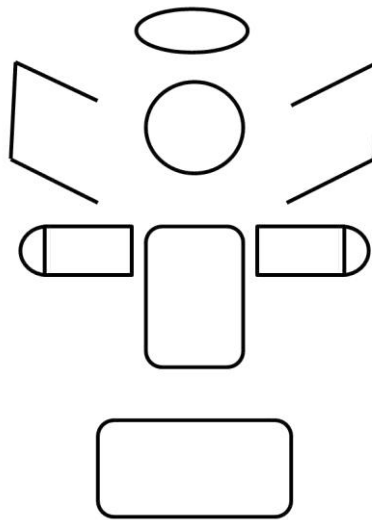


Fig. 1 Project's Angel

The model presented above represents only a preliminary and brief analysis of the project and of the sponsor's organizational maturity. Such model should be flexible enough in order to be adapted to each project apart, applying the following principles:

- Analysis of project participants: behavior in the past, likely reactions, ideas for future actions;
- Analysis of the developer in terms of organization culture, processes, experience and applications to determine the level of maturity of the organization.

What is important is that from this brief analysis can highlight areas of risk already revealed in the project, on which will be developed risk strategies. These strategies are either from a financing structure perspective, such as conditions precedent or supervisor role, and legal, through specific clauses included in contracts for funding.

Stress test of Cash Flow

The financier main task is to check the forecasted cash flow proposed by the developer. In order to this various methods were designs, among which we can nominate (CODECS, Project Management, vol.2, p. 10): breakdown cost method, product breakdown structure, comparison with other similar projects, expert opinion.

Regardless of method chosen, one or more combined basic principles to build a cash flow forecast to remain the same:

- The income section includes only revenues that are considered certain;
- In section costs include all likely expenses;
- Reconciliation between income and expenditure is required, meaning they must meet the same forecast period.

Considering the above principles for further analysis are used forecasted cash flow, balance sheet and profit and loss account. These financial statements have been designed only for the operational period, since during development the only financial statements are based on the development invoices which are based on work schedule, quantities and values.

Taking into account the life cycle of project funding the cash flow is divided in two major components:

- The first component is on cash flow during construction which contains only components of cost, cash inflows are exclusively based on the invested capital, equity or loans;
- The second component is related to the operational period, when the project is completed and begins to generate operating income. For the respective period the expenses section changes, as it contains the operating expenses of the project and the financial costs of the capital.

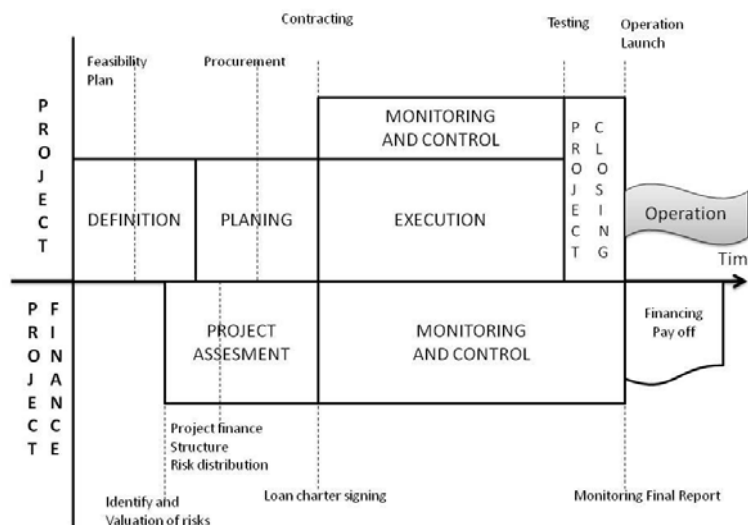


Fig. 2. Project Finance life cycle

Extremely interesting is that there are many risks that may affect the project and its results still show that during development, so they must be identified and evaluated in order to develop the risk response strategies since that time. As mentioned, the project development brings a formidable set of risks. Although the number of risks is higher, the lenders focused primarily on risk categories that can affect cash flows of the project. The number of these categories was determined between 12 and 20, depending on the nature and complexity of the project (Richard Tinsley, Advanced Project Finance - Structuring risk, pag.72). Risk analyst role in

financing the projects is to identify risks that may affect the project and to properly assess both the likelihood and impact of those risks in the project. Although the number of risk categories is differentiated from one project to another, lenders agreed that 16 of these would be reflected in any financial model for risk management (Richard Tinsley, Advanced Project Finance - Structuring risk, pag.68). These categories are: Supply Risk / Traffic / Reserves, Market, Exchange Rates, Operational: Technical, Operational: Cost, Operating: Management, Environment, Infrastructure, Force Majeure, Finish, Design, Politics, Sponsor; Finance / Interest; Syndication , Legal.

Once all risks are identified and assessed they are allocated to the related cash flow section as influenced by the respective risk. Cash flow in stress conditions is determined by using the following principles:

- Each component of cash flow is weighted by an aggregate ratio as resulted from the risk matrix determined by probability and impact for each risk component
- Ignore any risks with positive impact
- For negative risk, aggregate risk ratio applies downward for income and for expense components by increasing.

The new result obtained should represent the most pessimistic version of net cash flow, and if this flow is still positive then the project is definitely one that can be financed without problems. The stress test is done first to see how realistic the project is and especially to determine the level of commitment that must be applied in case of financing by the project sponsor.

Collateral stress test

Collateral stress test is perhaps one of the least logical and rational. Practically is based on the market value of the collateral as valued by authorized assessors.

The value of the asset accepted as collateral is based on the market value and the liquidation value in case of foreclosure.

4. RISK PROFILE ANALYSIS

Was mentioned in the beginning that there are three components of analysis: character, cash and collateral. For each component there are methods for detailed analysis and assessment and , most important, the outcome can be measured.

Based the above data we can build a grid from 0 (weakest) to 1 (strongest) for each component. By calculating rates for each component resulting values between 0 and 1, we can get a view of the risk profile of the project.

Typically for collaterals, the market value is weighted by a prudential discount rate. The discount rate for project risk profile assessment is based on the collateral coverage rate. Providing that this rate is above 1, for the project risk profile will be used the maximum value on the grid, respectively 1. In the analyzed project the Collateral rate was 0,35.

The Cash Flow rate is obtained by the division between stress free cash flow and the forecasted free cash flow. In the analyzed project the Cash rate was 0,95.

The Character rate results based on the detailed analysis made by the analyst as presented in the beginning. Character rate is the result of the division between the score obtained after the analysis and maximum that can be obtained. In the analyzed project the Character rate was 0,9.

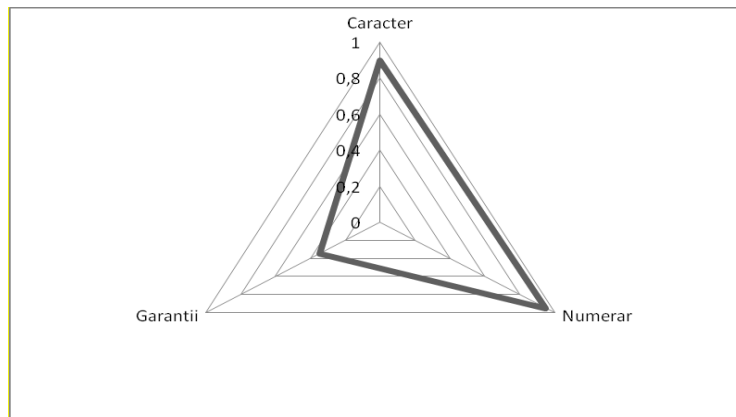


Fig. 3. Project Risk Profile

Although the market was not considered a major risk in the project, the construction of the project risk profile can be seen immediately that the collateral is the sore of the project. Basically if something goes wrong and the project will not generate expected cash flows, the lender will not be able to secure a second way out of the project by collateral foreclosure.

Even if the analysis was performed in a time when real estate was booming, this model, the project risk profile shows sufficient signals to be considered and to classify the market risk as a major risk in the project development equation.

If the lender initially would use this model of project analyze then the financing approach would be significantly more prudent, but for sure in the initial financing structure we would find some supplementary strategies to response to risks that we have now.

5. Risk Management in Project Finance

As mentioned, a very important part in project analysis is the analysis of the organization. One of the critical components of the organization to be analyzed is the risk management system, because if an is weak organization from this perspective, then the bank must interfere more strongly in the project through a more aggressive financing structure. To the extent that the organization uses a risk management system must be assessed the quality of the respective system.

It is well known that there are standard project management systems, which contain components of risk management. RISKMAN methodology proposes structuring risk in four components of a total of 12 classes of risk.

It is also possible that the organization uses the PRINCE 2 methodology for risk management. In this case we can see that risk management is a component with a very early intervention in the project, starting with the project launch and during the entire life of project. Moreover, "is recommend to the post project risk reviews, to use the experience to future projects" (D. Constantinescu, T. Nistorescu, Project Management, pag.184)

Reflecting at the risk sources (D. Constantinescu and T. Nistorescu, Project Management, pp. 184-197), PRINCE2 method considers six directions for risk arising: project management, team project, nature of the project, maturity of the organization, customer and contract, third party providers.

"Risk management systems are designed to do more than identify risk. They need to measure the risk and to estimate the impact on the project in case of event." (D. Constantinescu and T. Nistorescu, Project Management, p. 154).

Risk management is more and more observed as "a function of overall organization management whose objective is to identify, analyze and control the causes and effects of uncertainty and risk in an organization" (Arthur Williams, Risk Management and Insurance, page 27).

The purpose of risk management is to support the organization to progress towards achieving its goals and objectives in the most efficient, direct and effective way. (A Risk Management Standard, The Association of Insurance and Risk Managers, AIRMIC, and The Institute of Risk Management, MRI, 2002, page 2).

From this perspective, Standard & Poor's has developed a Quality Risk Management standard is divided into four categories: Excellent, Strong, Fair and Poor.

Synthesizing a series of international standards (A Risk Management Standard, The Institute of Risk Management) recommend that a risk management system should meet at least the following characteristics: be a continuous process integrated in the organization's strategy, to consider all risks affecting the organization's activities, to be integrated into organizational culture, to translate strategy into tactical and operational objectives, each manager and employee designating responsibilities involved in risk management as part of the job description.

Regardless of the methodology of project management or risk management system used must be agreed that the risk management strategies are essentially the same: acceptance of risk, risk reduction, either in terms of event probability or impact or both, risk transfer, avoid risk, contingency plan.

From this perspective the ways to chose appropriate strategies for responding to risks are two.

The first way would be to develop appropriate financing structures to distribute the risks among the project participants. Richard Tinsley says that project financing is the method by which bankers classify and distribute risks affecting cash flows of the project ("Advanced Project Finance - Structuring risk", p. 72).

Scot L. Hofmann mentions that funding method for financing projects that are "all risks are allocated in such way then a financing without recourse is possible" ("The law on international business and project finance", p. 53).

The second way would be documenting the whole structure of financing and completing it with specific terms and conditions. This is the legal way, as all details are captured in the credit documentation, financing and collateral agreements.

This stage was considered particularly important so that both Scot L. Thomas and ER Yescombe have an entire chapter detailing many elements that need to be found in a financing agreement.

Another important process is the monitoring and control of risk identification, risk analysis and response planning for all risks that manifests as Risk Management Plan. Also known risks are monitored, how the response to risk, evaluating the effectiveness of the strategy is used for that risk and gets involved if necessary for the purposes of risk adjustment strategy for each part.

Monitoring requires the use of various techniques to assess project status at least in the key moments in its schedule. Typical findings of the monitoring process would be: project assumptions made were correct, as risks were identified and evaluated are accordingly with the evolution of project, risk response plan is properly

used and results are as expected, contingency plans have been set forth or not used and reports the result, adjustments in strategy in response to specific risks.

Among the techniques used in controlling and monitoring risks we mention: reassessment of risk, audit risk, trend analysis and variations, technical performance measurement, analysis of reserves, periodic meetings.

Basically we talk about two distinct phases of response strategies to control risk:

- Until the end of the project, during which it monitors risks that may arise in project development influencing the expected financial results;
- During the operation of the project product, after completion of the project, during which risks materialize in influencing the operation of the project or its results.

Whichever is the method used, monitoring and control are important not only to complete the project itself, but because it represents an important legacy that the project management team and project manager leaves to the organization for the collection of "best practices".

6. CONCLUSION

Although the image of the banking system was much wrinkled it will remain an essential component in any major investment.

To date the project assessment was limited to analysis of cash flow analysis and collaterals provided. Regarding the market and sponsor studies were made only brief, without detailed analyses of all the risks that could arise from them.

The analysis structure proposed in this paper extends the analysis of financial performance objectives of the project and guarantees to the entire assembly that defines a project. The first step proposed in the analysis, organizational maturity and project participants, can exclude many projects that otherwise would enter into detailed analysis, phase of analysis whereas are used intensive resources and time. The symbolic images offered by the "Angel Project" as well as interested person matrix are extremely useful tools in the detection of elements and components of risk.

Since this phase can point out some general lines of action for response to risks, lines can be clearly defined strategies detailed later in response to risk.

The proposed analysis of the interesting groups of persons not only bring a clear image of the participants, but also provides a clear picture of their expectations, the reactions in the past and predict future behavior. This is an essential tool in understanding the risks that come from participants in the project.

Since the project financing is a method of sharing risks between project participants, the more it is essential that this analysis to be performed.

Following that the stress tests for the projected cash flow has to be treated more seriously. Until now only calculate the sensitivity to various factors was considered enough, without taking into account all the risks that can occur simultaneously.

The risk matrix and the way in which each component of cash flow can be influenced by certain risk provides a more realistic picture of cash flow, although this picture is tributary how risks are analyzed and projected during the analysis. In our example, while market risk was evident still was considered a minor risk considering that when the market analysis was performed the market was on a continuous increase trend.

Last but not least the picture provided by Fig. 1.5. clearly highlights the risk profile of the project, whereas the collateral is extremely low, leading all the idea of a major market risk.

Observing and subsequent evolution of the market we can only observe the confirmation of the analysis based on the three components and related stress tests.

Considering such analysis, risk management strategies will be significantly better designed and targeted.

Is necessary to point out two major components of risk response strategies, structuring which is very important. The first component is related to structure the financing so the risks to be distributed to all project participants. At this stage, are developed risk management strategies and are established the conditions in which the bank is willing to finance the project. In some cases the major parts of the projects are redesigned or added to the original plans.

The second part that is maybe even more important is the legal component, namely, when the entire financing structure is then transposed in documents that will govern the relationship between the bank and developer.

We consider this crucial step, because no matter how good was the analysis and structuring financing, if it is subsequently transposed into bad contracts there is a high risk to have problems in running the financing properly.

Project Finance aims to find workable financing structures, without claim to offer solutions for any project. I would say that project financing provides more likely a set of working principles, setting up the lending conditions depends on the lender risk appetite and participants in the project.

No matter from which perspective we observe the project finance for sure it's remaining the more likely way to finance large scale projects. What is certain is that the method of analysis of projects should step to the next level to identify risks that apparently now does not influence in any project.

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