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PROJECT RISKS: IDENTIFICATION AND MINIMIZATION

Мақолада лойиҳавий молиялаштиришда мавжуд бўлган рискларни аниқлаш ва камайтиришнинг муҳимлиги ёритилган. Лойиҳавий молиялаштиришда кредиторлар дуч келадиган асосий муаммолар кўрсатиб ўтилган. Мақолада ноаниқлик, риск, лойиҳанинг фазалари бўйича лойиҳавий рискларнинг туркумланиши кўриб чиқилган ва рискларни камайтириш йўллари ёритилган. Тадқиқот натижалари асосида таклиф ва хулосалар келтирилган.

В статье рассматривается важность определение и минимизирование рисков связанное с проектной финансирование. В нем рассматриваются ключевые проблемы, что кредиторы сталкиваются в проектной финансирование. В статье рассматриваются неопределенности, риски, классификация рисков проекта в соответствии с фазами проекта и обсуждается пути минимизации рисков. Приводятся соответствующие рекомендаций и заключение в зависимости от результатов исследования.

Key words: *Project financing, risks, types of risks, assessment, risk identification, risk minimization.*

In project financing where debts and loans are provided with non-recourse or limited recourse bases there are more risks than other method of financing. As a feature of project financing, debts and loans are only repaid when the project is operating accordingly. If the project by any chance fails to operate, the lenders are likely to lose a substantial amount of money. Assets of the project are usually specialised to the project and they may have less value as collateral outside the project. Because of high possibility of risks, lenders always give effort to reduce or eliminate the project risks. It is time consuming to provide financing and the cost of project financing is higher as a result of high risks.

In project financing sponsors and lenders face following key challenges:

- Management of multiple parties with individual interests, including construction companies, suppliers, governments, off-takers, sponsors, and guarantors
- Long standing horizon of projects makes estimating revenues and cash flows from the financed asset difficult
- Dependence on a cash-flow stream from a single project
- Intensely changing risk profile through the project lifecycle, from construction to start-up to operation
- Distinctive default characteristics and minimal historical data due to great variety of project types and few defaults
- Fairly high risk of construction delays, cost overruns, and start-up problems
- Several, and potentially conflicting, regulatory requirements
- Unsatisfactory information and markets

- Complex or weak structural aspects of transactions (1).

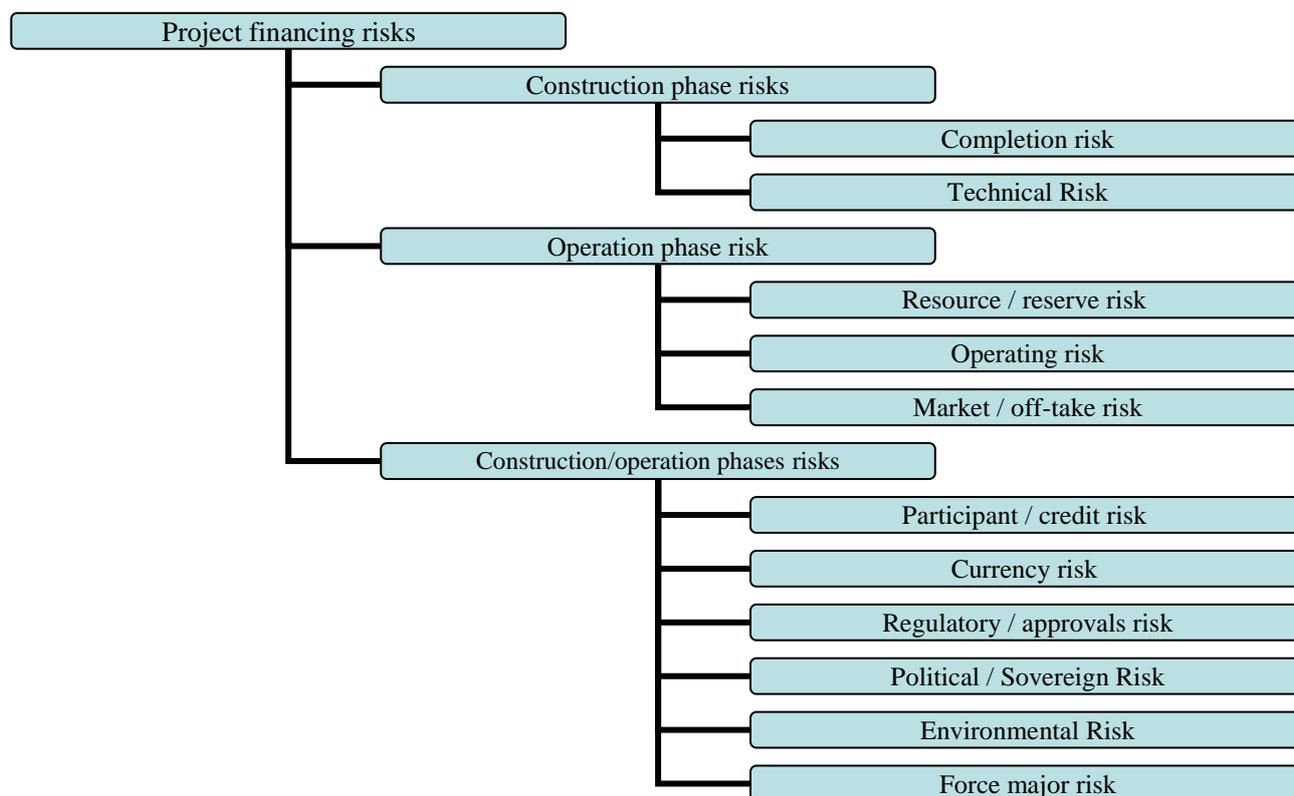
Sponsors are concerned with minimising the dangers of any events which could have a negative impact on the financial performance of the project, in particular, events which could result in:

- The project not being completed on time, on budget, or at all;
- The project not operating at its full capacity;
- The project failing to generate sufficient revenue to service the debt;
- The project prematurely ending (2).

Economists, scholars, risk theorists and statisticians have given various concepts of risk. However, risk traditionally has been defined in terms of uncertainty. Various types of risks are involved during the project life cycle. Every undertaken project is different and it is not possible to rank the project risks in order of priority. A major risk for one project may not be important for another project. Some risks may occur during the construction phase of the project, some during the operation phase and some other risks in both construction and operation phases. It is useful to divide the project financing risks according to the phases of the project because the nature and the allocation of risks usually change between the construction phase and the operation phase as shown in Diagram-1.

Diagram-1

Types of Project Financing Risks



Source: Developed by researcher depending on other sources.

Construction phase risk/Completion risk

The risk is related to the problems with completion of the project. This phase carries the greatest risk for the sponsors and lenders. While the lender(s) already released funds for the land acquisition and initial start-up of construction but the

borrower / project developer does not initiate construction then the lender may have to foreclose on raw or only partially improved land that does not have sufficient value to cover the initial release of funding. If a certain amount of funding is released and the project developer becomes insolvent or there is some type of problem that halts the project then the lender may have to foreclose on assets / infrastructure that is incomplete and not of sufficient value to recover all or a partial amount of funding from the borrower. The assets may be very highly specialised and possibly located in a remote area. Because the assets are project specific they may have not have any value (other than scrap) outside of the project itself. The lenders may have to hire a new company to come in and complete the project and provide additional funding to that new developer, and may have to re-negotiate off-take contracts due to perceived problems connected to the project. Construction phase risk reflects all risks and factors: difficulties with suppliers during construction, natural conditions and weather, political and force major, environmental regulation, labour and technical / construction issues (3).

Following mechanisms were identified for minimising completion risk before lending takes place include:

(a) Gaining completion guarantees requiring the sponsors to pay all debts and liquidated damages if completion does not occur by the required date;

(b) Guaranteeing that sponsors have a significant financial interest in the success of the project so that they remain committed to it by insisting that sponsors inject equity into the project;

(c) Demanding the project to be developed under fixed-price, fixed-time turnkey contracts by reputable and financially sound contractors whose performance is secured by performance bonds or guaranteed by third parties;

(d) Gaining independent experts' reports on the design and construction of the project.

This kind of risk is managed throughout the loan period by methods such as making pre-completion phase drawdowns of additional funds conditional on certificates being issued by independent experts to confirm that the construction is progressing as planned.

Operation phase risk - Resource / reserve risk

Resource/reserve risk is for a mining, rail, power station and toll road projects. There may be scarce inputs that can be processed or serviced to generate sufficient return. This risk may occur when there are insufficient reserves for a mine, fuel for a power station or outsourcing delays. These kinds of resource/reserve risks can be minimised by:

(a) Experts' reports as to the existence of the inputs (e.g. detailed reservoir and engineering reports which classify and quantify the reserves for a mining project) or estimates of public users of the project based on surveys and other empirical evidence (e.g. the number of passengers who will use a railway);

(b) Demanding long term supply contracts for inputs to be entered into as protection against shortages or price fluctuations (e.g. fuel supply agreements for a power station);

(c) Gaining guarantees that there will be a minimum level of inputs (e.g. from a

government that a certain number of vehicles will use a toll road);

Operating risk

Operating risks may occur when operating costs increase or when project does not operate qualitatively and quantitatively according to planned output which affect the cash flows generated from the project. These risks include scarcity of skills of the operators, insufficient level of skilled labour force. The most acceptable way for minimising operating risks before lending takes place is to require the project to be operated by a reputable and financially sound operator whose performance is secured by performance bonds and to minimise and manage operating risks during the loan period lender(s) should require the provision of detailed reports on the operations of the project and control cash-flows by requiring the proceeds of the sale of product to be paid into a tightly regulated proceeds account to ensure that funds are used for approved operating costs only.

Market / off-take risk

Loan can be repaid if the project's products/services can generate cash and actual cash flow of the project can be affected by interest rates, exchange rates, inflation, labour costs and prices of resources, machinery and outputs of the project which lead to market risk as project would be unable to repay the debt or loans. The cost of inputs may have increased which increases the price of the output and there may not be customers who can buy or use products/services of the project when offered at the market. The most acceptable way of minimising market risk before lending takes place is signing forward sales contracts with financially stable purchasers and allocate market/ off-take risks to the purchasers.

Risks common for construction and operational phases-Participant / credit risk

Participant/credit risks are associated with both sides: sponsors and the borrowers themselves. The issue is whether borrowers have sufficient resources to construct, operate and manage the project and resolve problems that may occur. To minimise and manage participant/credit risks, the lenders have to make sure that the participants of the project have gained enough experience from previous projects of the same nature, have sufficient experienced human resources, and do not have financial problems.

Technical risk

Technical risks occur when there are technical difficulties and defects in the plant, machinery and equipment in both construction and operational phases of the project which lead technology to function at lower capacity or cannot provide demandable products/services or abuse environmental regulations. To minimise technical risk sponsors preferably try to use tested technologies rather than unproven new technologies; use experts advices and reports on suggested technology. Sponsors can manage technical risks by signing maintenance contracts with maintenance companies by allocating risks to the maintenance company and reserve a certain amount of cash to cover maintenance expenditure.

Currency risk

Currency risks occur when construction items bought from different country in foreign currencies and the change of exchange rate may increase the cost of construction or obtained loan may be in foreign currency and the change of exchange

rate of revenue currency may lead to cash flow problems. Sponsors can use following mechanisms to minimise currency risks:

- Corresponding the currencies of the sales contracts with the currencies of supply contracts as far as possible;
- Denominating the loan in the most relevant foreign currency;
- Demanding suitable foreign currency hedging contracts.

Regulatory / approvals risk

Regulatory/ approval risks occur when required government approvals or licences are really difficult to get issued by host country to construct and operate the projects or strict requirements to supply and distribute locally, extra taxation and payments. To reduce these kinds of risks sponsors need to get legal advice from reputable law firms about relevant laws.

Political / Sovereign Risk

Political risk may occur during both the construction and operation phases of the project, particularly in unstable developing countries and emerging markets as a host country. These kinds of risks may be caused by followings:

- Expropriation by the host nation
- Currency convertibility and transferability
- Political violence / terrorism
- Unforeseen changes in regulations or the failure by the government to implement tariff adjustments (critical to power projects) because of political considerations
- Government licenses and approvals required to construct or operate the project are not issued
- Project operation is subject to state-owned suppliers or customers
- Taxation and royalty payments are individually augmented.

Common mechanisms for sponsors to minimise political risks include: (a) demanding host country agreements and assurances that project will not be interfered with; (b) gaining legal opinions as to the applicable laws and the enforceability of contracts with government entities; (c) demanding political risk insurance to be obtained from bodies which provide such insurance (traditionally government agencies); (d) including lenders from a number of different countries, national expert credit agencies and multilateral lending institutions such as a development bank; and (e) creating accounts in stable countries for the receipt of sale proceeds from purchasers.

Environmental Risk

Environmental risk may occur during the project life cycle. Because of the defect technology or inappropriate usage during the construction or operation period of the project some kind of dangerous material may spill and contaminate the ecosystem around the project's location or the operation of the plant may abuse the environmental regulations like CO₂ emissions limits. In order to minimise environmental risks participants have to allocate these risks to right parties by signing contracts and transferring responsibilities.

Force major risk

Force major risk may cause the construction or operation of the project to stop completely (fire, earthquake, volcanic eruption) or temporarily (strike, minor fire or minor floods). To minimise these kinds of risks, sponsors may share out such risks to other parties accordingly; demand sufficient insurances that show lenders interests appropriately.

Taking into account limited recourse financing as a main lending, in order to minimise project risks, participants have to reallocate these risks to those participants who best able to bear them as shown in Table-1.

Table-1

Project risks, hedging tools and sources of coverage

Risk	Hedging tool	Source
Construction and completion risks		
Supply and availability of raw material and building materials	Supply or pay contract	Supplier
Adequate communication	Project’s network	Sponsors
Contractor’s performance	Feasibility study	Sponsors
Force major	Insurance	Insurance agency
Cost overruns	Completion guarantee Standby credit	Contractor Lenders
Delays	Completion guarantee	Contractor
Operational risks		
Energy supply	Long-term supply contract	Energy supplier
Output	Take and pay contracts	Purchaser of output
Transportation	Long-term transportation contract	Sponsors
	Project’s transportation infrastructure	Sponsors
Operator performance	Feasibility study Compensation agreements	Sponsors
New technology	Licensing agreement	Licensor/Sponsor
Conflicts of interest among sponsors	Inter-sponsor contracts	Sponsors
Resources	Feasibility study	Sponsors
Force major	Insurance	
Financial risks		
Exchange rates	Options, futures, swaps, and so on	Financial Institutions
Inflation	Long-term supply and output contracts	Suppliers and purchasers
Interest rate	Fixed-rate loan, interest ceilings, interest rate derivatives	Financial institutions, lenders
Political risks		
Availability of licences and	Good working relationship	Sponsors

permits	with government	
Expropriation	Participation of local sponsors, international agencies, lenders	Sponsors
Country risk	Feasibility study Insurance	Sponsors Insurance agency
Sovereign risk	Feasibility study	Sponsors

Source: Developed by researcher depending on other sources.

In conclusion we can say that lenders will generally not give funds to a project if their loans would be exposed to business or economic risks. Lenders are typically willing to bear some financial risk but they will insist on being compensated for bearing such risk. A critical aspect of financial engineering for a large project involves identifying all significant project risks and then crafting contractual arrangements to allocate those risks (among the parties who are willing to bear them) at the lowest ultimate cost to the project. But there are risks which can not be identified and analysed at early stages of the project life cycle. If those risks occur at any stage of the project management in order to minimise the possibility of risk occurrence and its consequences, take the risks and manage them. Of course, greater the risk lender bear, the more they know about the risk and they control the project broadly. Lenders monitor the project closely to bear the risks and be ready if the borrower defaults. Financial or commodity derivatives and instruments are used in modern project risk management to manage efficiently the risks even though by accepting to incur extra costs. These instruments allow diversifying risks according to assets, regions, sectors, markets and timing scale and hedge the risks through the whole period of assets. Various types of swaps, options and forwards are used broadly to hedge and manage efficiently project finance risks by lenders.

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