



Everyone's Smart
University

Project Financial Management

Prepared by
Dr. Walaa Mohamed
Lecture 4

PMG 615

Types of risks (part one)

Objective of this lecture

This lecture covers the various types of risks inherited in risk periods in a project financing:

- engineering and construction;
- start-up



Due diligence in project financing is an important process for risk identification. It encompasses legal, technical, environmental and financial matters, and is designed to detect events that might result in total or partial project failure. Participants involved in this process, besides the project sponsors, are lawyers, construction companies, fuel consultants, market consultants, insurance consultants, financial advisers and environmental consultants. The level of due diligence undertaken involves considerations of time available, cost and the type of project.

Risk evaluation is at the heart of project finance. Project-finance risk analysis is based on:

- a due-diligence process intended to ensure that all the necessary information about the project is available.
- identification of project risks, based on this due diligence.
- allocation of risks (to the extent possible) to appropriate parties to the project through provisions in the Project Contracts.
- quantifying and considering the acceptability of the residual risks that remain with the Project Company, and hence with its lenders.

Risk and the Project Company. Other parties to Project Contracts have to recognize that the Project Company's ability to absorb risk is limited if it wishes to raise highly-leveraged project finance: it is no use allocating risk to a party who cannot sustain the financial consequences if the risk materializes. Similarly, if the Offtaker/Contracting Authority wishes to achieve the lowest possible Contract Payments, this usually implies that it must absorb a higher level of risk. A common error in the early development and negotiation of Project Contracts is to leave too much risk with the Project Company, which causes problems later when raising the finance. On the other hand, transfer of all risk away from the Project Company to other parties is not viable; if other parties are asked to assume too much of the risk, they will also expect the appropriate equity return for doing so, with obvious consequences for investors in the Project Company.

Risk and Value for Money. When an Offtaker/Contracting Authority is considering the extent to which risks should be transferred to a Project Company, a key issue is whether such risk transfer can be considered 'Value for Money' ('VfM'). Almost any risk can be transferred at a price, but if the Offtaker/ the Contracting Authority tries to push risks onto the shoulders of the Project Company which the latter cannot easily manage, the Project Company will include a large safety margin to cover such risks in its Contract Payment proposals. Paying for this safety margin may be a wasted expense for the Offtaker/Contracting Authority, and so it may therefore be better VfM for the Offtaker/Contracting Authority to retain the risk itself.

Risk and the Lenders. As to risk allocation between Sponsors and lenders, one basic fact has to be kept in mind: the Sponsors and other investors have ‘upside’ and ‘downside’, *i.e.* if the project goes well, they will earn a better return on their investment, but if it goes badly they may lose money. Lenders only have ‘downside’: if the project goes well they don’t benefit, as their loan terms are fixed, whereas if it goes badly they may lose money. It follows from this that risk minimization is a key principle for the lenders—so, as the saying goes, ‘a banker is a man who lends you his umbrella when it’s not raining.’

Risk periods

There are three main risk periods in a project financing:

- engineering and construction;
- start-up;
- operational.

- Figure 2.1 shows how the risks increase throughout this phase. The lenders become more exposed as funds are drawn down but until the start-up and operation phase there is no certainty that the project will succeed.

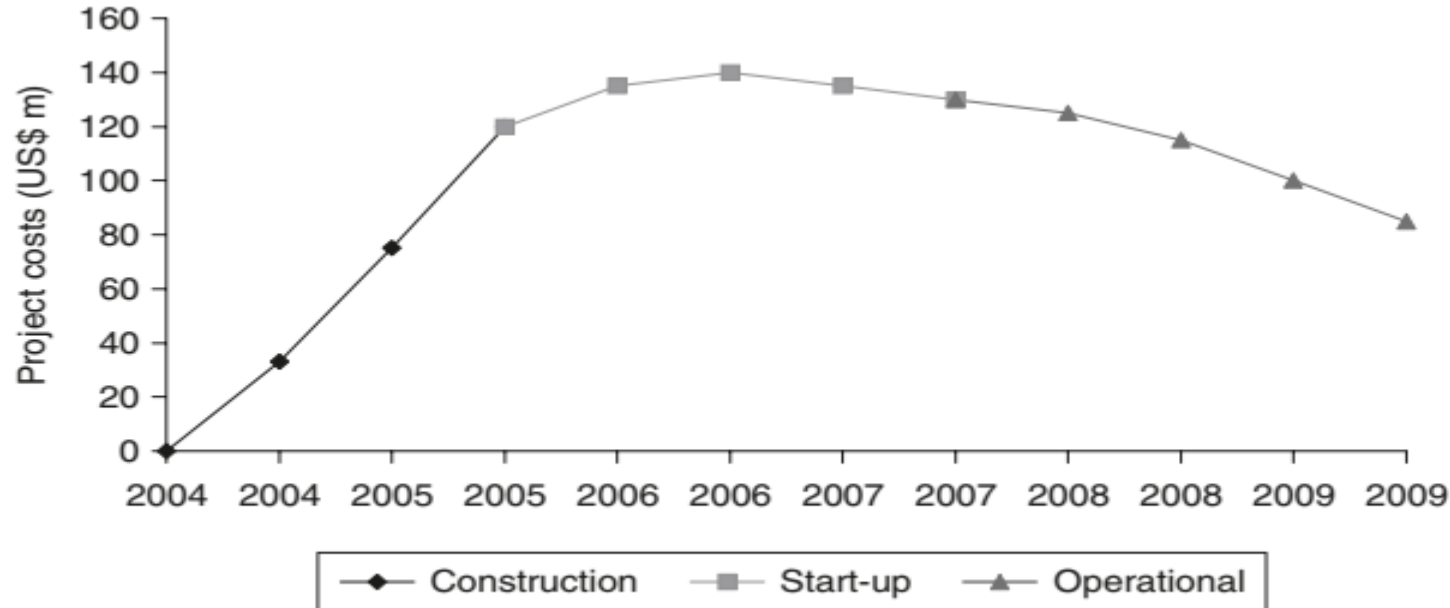


Figure 2.1 Risk phases and project costs

1- Engineering and construction phase risks

- This first stage is when the risk is highest funds begin to flow from the financiers to the project entity. No cash flow is being generated from the project, however, so no interest can be paid and in many financings the borrower is allowed to 'roll up' interest or draw down further funds to make interest payments. The length of this phase can vary from several months (for example, the construction of a short toll road) to several years (for example, the construction of the Channel Tunnel). The lenders become more exposed as funds are drawn down but cash flows have yet to be generated.
- Risks associated with the project during the construction phase include:
 - **Sponsor risk** is closely associated with completion risk. The bank's view on completion risk will be strongly influenced by their view on sponsor risk, which may be broken down into two elements: Equity commitment and corporate strength and experience, also called 'corporate substance' Regarding equity commitment, lenders will normally require a contribution of anything from 15% to 50% of the project cost to ensure the sponsor's continued commitment. In addition, lenders prefer to work with corporate sponsors that have substantial technical expertise and financial depth.

1- Engineering and construction phase risks

- Risks associated with the project during the construction phase include (continued):
- **Pre-completion risk** The engineering and design review focuses on the suitability of the technology and design chosen for the project. These objectives recognize that construction risk levels vary among different technologies and the size of certain projects. Banks may well hesitate to finance projects using unproven technology.
- **Siting risks:**
 - ***Geological Structure.** Generally speaking the Construction Contractor should accept the risk of problems with the geology (e.g. affecting foundation or piling costs). Test borings before the Construction Contract is signed—perhaps carried out by the Project Company or the Offtaker/Contracting Authority— can be helpful in this respect, although this can never provide 100% certainty that there is not a problem that has not been picked up by the survey. The problem can be especially acute in linear projects—*i.e.* projects not occupying one site, but being built over a long stretch of land where detailed site investigation may be impossible, such as a road, pipeline or electricity gridline.

1- Engineering and construction phase risks

- Risks associated with the project during the construction phase include (continued):
- **Siting risks (continued):**
- **Previous Use.** The way in which a project site has been used in the past may create risks for construction on the site. Lenders certainly prefer to see projects being built on 'greenfield' rather than 'brownfield' sites. Previous heavy commercial or industrial use is one warning sign. Conversely, land which has been used for farming, residential property, offices or warehouses would usually be considered low risk.
- **Permitting risk.** Lenders generally require construction Permits to be obtained before any funds are advanced, to ensure that failure to obtain such permits does not delay Project Completion. If, for good reason, such Permits cannot be obtained at this stage, a specific timetable for obtaining them is normally established with the lenders. Where possible lenders prefer the risk of obtaining these later Permits to be placed on the Construction Contractor, who thus becomes responsible for any delay caused by failure to obtain them.

1- Engineering and construction phase risks

- Risks associated with the project during the construction phase include (continued):
 - **Completion risks** In essence, the risk is whether or not the project can be built on time, on budget and in accordance with the applicable specifications and design criteria.
 - **Experience and resources of contractor** The contractor's experience, reputation and reliability should provide an indicator of the possibility of achieving timely completion of the project at the stated price. In projects, especially international projects, elements to analyze include human and technical resources necessary to satisfy contractual requirements, as well as ability to work with the local labor force.
 - **Building materials** A project finance risk often overlooked. Of particular concern is the impact of import and export laws when the project is either located abroad or where imported materials are contemplated for construction.

Risk periods

1- Engineering and construction phase risks

- Risks associated with the project during the construction phase include (continued):
- **Facility site** Pre-existing conditions on the project site can affect both construction and long-term operations, especially if the site has hazardous waste problems.
- **Construction of related facilities** International projects, particularly in developing countries, often require simultaneous construction of facilities related to the project. These various facilities will all be inter-related and may need simultaneous construction to ensure project success. It is therefore important to analyze construction synchronization, since this may be the most important initial concern to the promoters of the underlying project.

1- Engineering and construction phase risks

- Risks associated with the project during the construction phase include (continued):
 - **Cost overruns** The risk that construction costs start to increase uncontrollably is perhaps the most important risk for the participants in a project financing. This may result in liquidity crises, as well as impact on long term cash flows.
 - **Completion delays** Construction delays can have a similar impact to cost overruns, as it may affect the scheduled flow of project revenues necessary to cover debt service and operations and maintenance expenses, and result in higher than expected financing costs.

2- Start-up risks

During the start-up phase the banks need to be satisfied that the project will operate at the costs and according to the specifications agreed at the outset. The phase is especially significant if the loan becomes 'non-recourse' once the project has been completed (this is known as 'conversion').

The basis on which conversion takes place will require much thought and negotiation prior to the loan being signed. At this point, however, it is important to understand that the start-up phase may last for a period of many months. The technical assessment of a project therefore includes an evaluation of the facility's acceptance testing and start-up procedures, since they are an integral part of construction completion.

2- Start-up risks (continued)

- **Operational risks**

Once the project is complete the lenders in many project financings become dependent on stable cash flows to service the project loans. The lending risk is similar to the risks encountered in commercial loans in similar businesses. The future cash flows of the project company are subject to the usual operating costs, raw material costs, regulatory risks and markets for the products.

Types of operational risks:

- **Operating/performance risk** is the risk that normal ongoing operations will fail to generate the cash flow required to run the project and service debt. The main concern to lenders therefore is whether the project company has the experience and resources to manage the project.

2- Start-up risks (continued)

- **Types of operational risks (continued)**
 - **Raw material/supply risk** This is another key risk category: input and supply risk relates to obtaining the requisite energy and raw materials for the project. The flow of these inputs must be assured, and within the parameters set by the project financial projections. This is why it is important to identify alternate sources should they be needed. Moreover, elements such as import or export fees, transportation charges, storage costs, can adversely impact the cost basis of these inputs. These factors should be factored into the financial projections in order to reassure the lenders that appropriate cash flow exists to meet operating costs and debt servicing commitments.

2- Start-up risks (continued)

- **Types of operational risks (continued)**
 - **Off-take and sales risk** The off-take and sales risk is the risk that the project will fail to generate sufficient cash flow. This is why the sales, or off-take risk, is the key risk that banks will look at. Off-take agreements such as long term contracts to purchase electricity at fixed prices will substantially eliminate any sales volatility or instability, and will be considered as a positive element by the banks. Banks may therefore require the project sponsors to obtain off-take agreements, which leads to more basic questions such as: Is there a ready market for the project's products? How are the products going to be transported to market? Lenders will want to have the proper structures in place to insulate them from any potentially adverse effects arising from delays in the transportation process.

2- Start-up risks (continued)

- **Types of operational risks (continued)**
 - **Counterparty risk** Counterparties include parties such as the contractor, bank providing bonds, purchasers or off-takers, insurance companies, etc. If any of these parties defaults in the performance of their respective obligations, then the project may run into difficulties.
 - **Technology/obsolescence risk** Banks tend to want to avoid new technology risk until it becomes proven technology. However, project sponsors cannot ignore new technology since often the success of such projects resides in cost efficiencies arising from new technology. Therefore, as a minimum, the contractor must have experience with the technology and provide adequate guarantees to support the underlying debt.

2- Start-up risks (continued)

- **Financial risks**

The project is now operating as a regular operating company and cash flow are being generated. As long as the project is performing according to plan, the risks to the lenders will reduce from their peak in the start-up phase. The borrower should not only be able to make interest payments but also repay the principal. As long as correct financial planning has been carried out, the company should be in a position to service debt. Once the project is on stream, the project financial advisers should identify and mitigate for any risks that may occur outside of the project and scope of the project sponsor's control.

Some of these risks are:

- **Foreign exchange (FX) risks** are those risks resulting from movements in the exchange rate between one currency and another.

2- Start-up risks (continued)

- **Financial risks (continued)**

Some of these risks are:

- **Interest rate risk** Project financings may rely on floating interest rate loans. Most project financings remove interest rate risk by financing with fixed interest rate debt. Some projects however have incorporated debt with interest rates tied to a floating reference rate. Where projects chose to use floating rate debt, the financial projections should demonstrate that in a high interest rate scenario the project will still have enough available cash flow to service financing commitments.

2- Start-up risks (continued)

- **Financial risks (continued)**

Some of these risks are:

- **Inflation risk** This risk exists when certain of the inputs can be subjected to price inflation (e.g. rising fuel costs). In such cases, the project sponsor must be able to pass on these price increases to customers. If the project output is a product whose price levels are fixed by the government (e.g. electricity cost), the ability to pass on the cost increase will be limited. Similar risks exist when the inputs are denominated in one currency and the project outputs in another. Thus, it is important to identify any such risks and the ability to pass them on to the customers.

2- Start-up risks (continued)

- **Financial risks (continued)**

Some of these risks are:

- **Liquidity risk** is the risk that a project will have insufficient funds to meet its financial commitments in a timely manner.
- **Product pricing** In the absence of off-take contracts, the lender needs to analyze the likely market price of the good or service being provided and evaluate the likelihood that the price levels achieved will suffice to cover operating costs and debt servicing requirements.

2- Start-up risks (continued)

2. Country/political risks

Country risk is the exposure to a loss in cross-border lending caused by events in a particular country which are, at least to some extent, under the control of the government but definitely not under the control of a private enterprise or individual.

Three types of events can cause country risk:

- **Political events** such as war, ideology, neighboring countries, political unrest, revolution, etc. comprise political risk. Political risk is the risk that a country is not willing or able, due to political reasons, to service/repay its foreign debt/obligations.

2- Start-up risks (continued)

2. Country/political risks (continued)

- **Social factors** such as religious, ethnic, or class conflict, trade unions, inequitable income distribution etc. comprise social risk. Social risk is the risk that a country is not able, or is unwilling, to repay its foreign debt/obligations due to social reasons.
- **Economic factors** such as internal and external debt levels, GDP growth, inflation, import dependency etc. comprise economic risk. Economic risk is the risk that a country is not willing or able, due to economic reasons, to service/repay its foreign debt/obligations.

2- Start-up risks (continued)

2. Country/political risks (continued)

Typical examples of political risk are:

- expropriation or nationalization of project assets;
- failure of a government department to grant a necessary consent or permit;
- imposition of increased taxes and tariffs;
- withdrawal of valuable tax holidays and/or concessions;
- imposition of exchange controls, restricting the transfer of funds to outside the host country;
- changes in law adversely impacting project parties' obligations with respect to the project.

Political stability is an important ingredient for cross-border project financing success.

2- Start-up risks (continued)

3. Legal risks (continued)

By legal risk is meant that the application of laws in the host country may not necessarily be consistent with that of the lender's home countries, and that judgements may yield results substantially different than those expected. It is therefore essential that project lenders review the legal risks at an early stage. Some banks may require the host country to pass specific legislation favorable to a project, which lends a new meaning to 'interference in domestic affairs'! Getting such legislation implemented no doubt requires numerous cash commissions to key government officials to accelerate lengthy procedures.

2- Start-up risks (continued)

3. Legal risks (continued)

A breakdown of legal risks includes:

- **Identifying and establishing applicable laws and jurisdiction** Project finance requires the establishment of a stable legal framework required for ongoing business operation. It is therefore important to identify the strengths and weaknesses of a given legal system and plan for the shortcomings appropriately.
- **Security** In a project finance - particularly where recourse is limited - the ability to take effective security can assume crucial importance. Laws on the taking and enforcement of security, particularly in the case of moveable assets, cash flows and contractual rights (such as receivables) might be less than satisfactory, and should be evaluated.

2- Start-up risks (continued)

3. Legal risks (continued)

- **Permits and licensing** There is a risk when permits and licenses must be obtained and renewed before the plant will operate. Effectively, this means that the lenders are assuming the risk that the requisite permits and licenses will be obtained in a reasonable time should the sponsors not provide any commitment to assume the costs arising from such delays.
- **Limited rights to appeal** The local lawyers and the judiciary might lack the requisite experience to judge project related disputes; resulting judgements may therefore be slower than expected and, yield unpredictable results.
- **Enforceability of contracts** Even if a project is supported by take- or-pay contracts with adequate escalation clauses, enforceability may very well be an open question, as well as the ability or motivation of the contracting party to honor its contractual commitments.

Question

One of the following risks is not a type of Siting risks:

A) Geological Structure

B) Previous use

C) Building materials

introduction to project finance



ESSENTIAL CAPITAL MARKETS

Reference

Fight, A. (2005). *Introduction to project finance*. Elsevier.

Thank you for your
attention!