

Project Finance Teaching Note

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written by

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I. Definition of project finance

The term “project finance” is used loosely by academics, bankers and journalists to describe a range of financing arrangements. Often bandied about in trade journals and industry conferences as a new financing technique, project finance is actually a centuries-old financing method that predates corporate finance. However with the explosive growth in privately financed infrastructure projects in the developing world, the technique is enjoying renewed attention. The purposes of this note are to contrast project finance with traditional corporate financing techniques; to highlight the advantages and disadvantages of project finance and ; to propose that a single structure underlies every project finance transaction; to explain the myriad of risks involved in these transactions; and, to raise questions for future research.

Project financing techniques date back to at least 1299 A.D. when the English Crown financed the exploration and the development of the Devon silver mines by repaying the Florentine merchant bank, Frescobaldi, with output from the mines.¹ The Italian bankers held a one-year lease and mining concession, i.e., they were entitled to as much silver as they could mine during the year. In this example, the chief characteristic of the project financing is the use of the project’s output or assets to secure financing.

Another form of project finance was used to fund sailing ship voyages until the 17th century. Investors would provide financing for trading expeditions on a voyage-by-voyage basis. Upon return, the cargo and ships would be liquidated and the proceeds of the voyage split amongst investors.² An individual investor then could decide whether or not to invest in the sailing ship’s next voyage, or to put the capital to other uses. In this early example the essential aspect of project financing is the finite life of the enterprise. In corporate finance terms, we can also think of this mandatory liquidation as a fixed dividend policy. The idea of project finance predated the idea of permanent capital entrusted to a group of professional managers who would decide rather autonomously between paying dividends and reinvestment.

Project financing has evolved through the centuries into primarily a vehicle for assembling a consortium of investors, lenders and other participants to undertake infrastructure projects that would be too large for individual investors to underwrite. The more recent prominent examples of project finance structures facilitating projects are the construction of the Trans-Alaskan pipeline and exploration and exploitation of the North Sea oil fields. In the late 1990s, the technique has become rather prevalent and is frequently used to finance independent power plants and other infrastructure projects around the world as governments face budgetary constraints.

¹ John W. Kensinger and John D. Martin. “Project Finance: Raising Money the Old-Fashioned Way,” in Donald H. Chew, Jr., ed. 1993. *The New Corporate Finance: Where Theory Meets Practice*. New York: McGraw-Hill, p. 326.

² Kensinger and Martin, p. 326.

There is no singular definition of project finance. In a article in the *Harvard Business Review*, Wynant defined project finance as “a financing of a major independent capital investment that the sponsoring company has segregated from its assets and general purpose obligations.”³ A major player in sponsoring infrastructure projects and providing financing in developing countries, the World Bank defines project finance as the “use of nonrecourse or limited-recourse financing.” Further defining these two terms, “the financing of a project is said to be *nonrecourse* when lenders are repaid only from the cash flow generated by the project or, in the event of complete failure, from the value of the project’s assets. Lenders may also have *limited recourse* to the assets of a parent company sponsoring a project.”⁴ These two definitions along with the historical examples above begin to establish the characteristics of project finance. In building a more robust picture of project finance, it is helpful to articulate the full list of characteristics and to contrast project finance with corporate finance.

How can a project financing be identified? What details should we expect to find about the transaction? Not every project financing transaction will have every characteristic, but the following provides a preliminary list of common features of project finance transactions.

Capital-intensive. Project financings tend to be large-scale projects that require a great deal of debt and equity capital, from hundreds of millions to billions of dollars. Infrastructure projects tend to fill this category. A World Bank study in late 1993 found that the average size of project financed infrastructure projects in developing countries was \$440 million. However, projects that were in the planning stages at that time had an average size \$710 million.⁵

Highly leveraged. These transactions tend to be highly leveraged with debt accounting for usually 65% to 80% of capital in relatively normal cases.

Long term. The tenor for project financings can easily reach 15 to 20 years.

Independent entity with a finite life. Similar to the ancient voyage-to-voyage financings, contemporary project financings frequently rely on a newly established legal entity, known as the project company, which has the sole purpose of executing the project and which has a finite life “so it cannot outlive its original purpose.”⁶ In many cases the clearly defined conclusion of the project is the transfer of the project assets.

³ Larry Wynant. “Essential elements of project financing,” *Harvard Business Review*. May-June 1980, p. 166.

⁴ World Bank. 1994. *World Development Report 1994*. New York: Oxford University Press, p. 94.

⁵ World Bank, p. 95.

⁶ Kensinger and Martin, p. 324.

For example, in a build-operate-transfer (BOT) project, the project company ceases to exist after the project assets are transferred to the local company.

Non-recourse or limited recourse financing. The project company is the borrower. Since these newly formed entities do not have their own credit or operating histories, it is necessary for lenders to focus on the specific project's cash flows. That is, "the financing is not primarily dependent on the credit support of the sponsors or the value of the physical assets involved."⁷ Thus, it takes an entirely different credit evaluation or investment decision process to determine the potential risks and rewards of a project financing as opposed to a corporate financing. In the former, lenders "place a substantial degree of reliance on the performance of the project itself. As a result, they will concern themselves closely with the feasibility of the project and its sensitivity to the impact of potentially adverse factors."⁸ Lenders must work with engineers to determine the technical and economic feasibility of the project. From the project sponsor's perspective, the advantage of project finance is that it represents a source of off-balance sheet financing.

Controlled dividend policy. To support a borrower without a credit history in a highly-leveraged project with significant debt service obligations, lenders demand receiving cash flows from the project as they are generated. This aspect of project finance recalls the Devon silver mine example, where the merchant bank had complete access to the mine's output for one year. In more modern major corporate finance parlance, the project has a strictly controlled dividend policy, though there are exceptions because the dividends are subordinated to the loan payments. The project's income goes to servicing the debt, covering operating expenses and generating a return on the investors' equity. This arrangement is usually contractually binding. Thus, the reinvestment decision is removed from management's hands.⁹

Many participants. These transactions frequently demand the participation of numerous international participants. It is not rare to find over ten parties playing major roles in implementing the project. The different roles played by participants is described in the section below.

Allocated risk. Because many risks are present in such transactions, often the crucial element required to make the project go forward is the proper allocation of risk. This allocation is achieved and codified in the contractual arrangements between the project company and the other participants. The goal of this process is to match risks and corresponding returns to the parties most capable of successfully managing them. For example, fixed-price, turnkey contracts for construction which typically include severe penalties for delays put the construction risk on the contractor instead on the project

⁷ Clifford Chance. 1991. *Project Finance*. London: IFR Publishing, p. 3.

⁸ Clifford Chance, p. 3.

⁹ Kensinger and Martin, p. 324.

company or lenders. The risks inherent to a typical project financing and their mitigants are discussed in more detail below.

Costly. Raising capital through project finance is generally more costly than through typical corporate finance avenues. The greater need for information, monitoring and contractual agreements increases the transaction costs. Furthermore, the highly-specific nature of the financial structures also entails higher costs and can reduce the liquidity of the project's debt. Margins for project financings also often include premiums for country and political risks since so many of the projects are in relatively high risk countries. Or the cost of political risk insurance is factored into overall costs.

Another means of understanding project finance is to relate it to corporate finance. Kensinger and Martin draw this comparison,

Generally when a corporation chooses to undertake an investment project, cash flows from existing activities fund the newcomer; and management has the option to roll over the project's capital into still newer ventures within the company later on -- without submitting them to the discipline of the capital market.

With project financing, by contrast, the assets and cash flows associated with each project are accounted for separately. Funding for the new project is negotiated from outside sources, and creditors have recourse only to the assets and cash flows of a specific project. As the project runs its course, furthermore, the capital is returned to the investors, and they decide how to reinvest it.¹⁰

Most actual projects probably fall somewhere between the two theoretical definitions. When evaluating a project, however, it is useful to think of it falling somewhere along a *Corporate Finance-Project Finance Continuum*.¹¹ The following chart summarizes the key differences between the two types of financing.

¹⁰ Kensinger and Martin, 324.

¹¹ The idea of a continuum comes from Jechoutek and Lamech, p. 36.

Corporate Finance-Project Finance Continuum

Dimension	Corporate finance	Project finance
Financing vehicle	Multi-purpose organization	Single-purpose entity
Type of capital	Permanent - an indefinite time horizon for equity	Finite - time horizon matches life of project
Dividend policy and reinvestment decisions	Corporate management makes decisions autonomous from investors and creditors	Fixed dividend policy - immediate payout; no reinvestment allowed
Capital investment decisions	Opaque to creditors	Highly transparent to creditors
Financial structures	Easily duplicated; common forms	Highly-tailored structures which cannot generally be re-used
Transaction costs for financing	Low costs due to competition from providers, routinized mechanisms and short turnaround time	Relatively higher costs due to documentation and longer gestation period
Size of financings	Flexible	Might require critical mass to cover high transaction costs
Basis for credit evaluation	Overall financial health of corporate entity; focus on balance sheet and cashflow	Technical and economic feasibility; focus on project's assets, cash flow and contractual arrangements
Cost of capital	Relatively lower	Relatively higher
Investor/lender base	Typically broader participation; deep secondary markets	Typically smaller group; limited secondary markets

II. Project finance: when and why?

Given the previous discussion the advantages of project finance as a financing mechanism are apparent. It can raise larger amounts of long-term, foreign equity and debt capital for a project. It protects the project sponsor's balance sheet. Through properly allocating risk, "it allows a sponsor to undertake a project with more risk than the sponsor is willing to underwrite independently."¹² It applies strong discipline to the contracting process and operations through proper risk allocation and private sector participation. The process also applies tough scrutiny on capital investment decisions.¹³ By involving numerous international players including the multilateral institutions, it can provide a kind of *de facto* political insurance. Kensinger and Martin further argue that the finite life and fixed dividend policy aspects of project finance "mean that investors rather than managers get to make the decisions about reinvesting the cash flows from the project."¹⁴

On the other hand, the financing technique also presents certain disadvantages. It is a complex financing mechanism that can require significant lead times. High transaction costs are involved in developing these one-of-a-kind, special-purpose vehicles. The projects have high cash flow requirements and elevated coverage ratios. The contractual arrangements often prescribe intrusive supervision of the management and operations that would be resented in a corporate finance environment.

III. Structures of project finance transactions

Despite the complexity inherent in the nature of the financing, some contend that every project financing can be fitted into the same basic structure and essentially has the same components. One proponent of such thinking is Thomas H. Pyle, Managing Director of the Princeton Pacific Group and project finance lecturer with the Euromoney Institute of Finance.

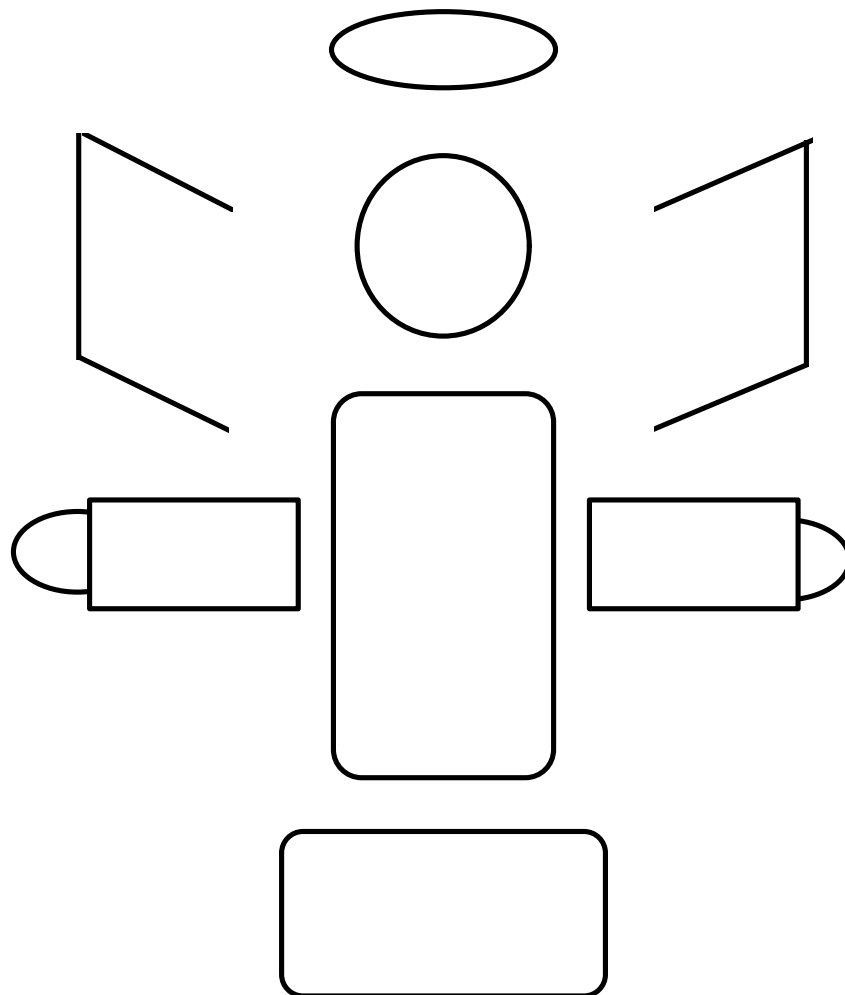
¹² J. Paul Forrester. "The Role of Commercial Banks in Project Finance," *Journal of Project Finance*. Summer 1995, p. 54.

¹³ "In a project financing, furthermore, the investment is subjected to outside scrutiny before being undertaken. The investors, that is, have a direct say in the capital investment decision, thus enhancing the efficiency of resource allocation." See Kensinger and Martin, p. 333.

¹⁴ Kensinger and Martin, p. 332.

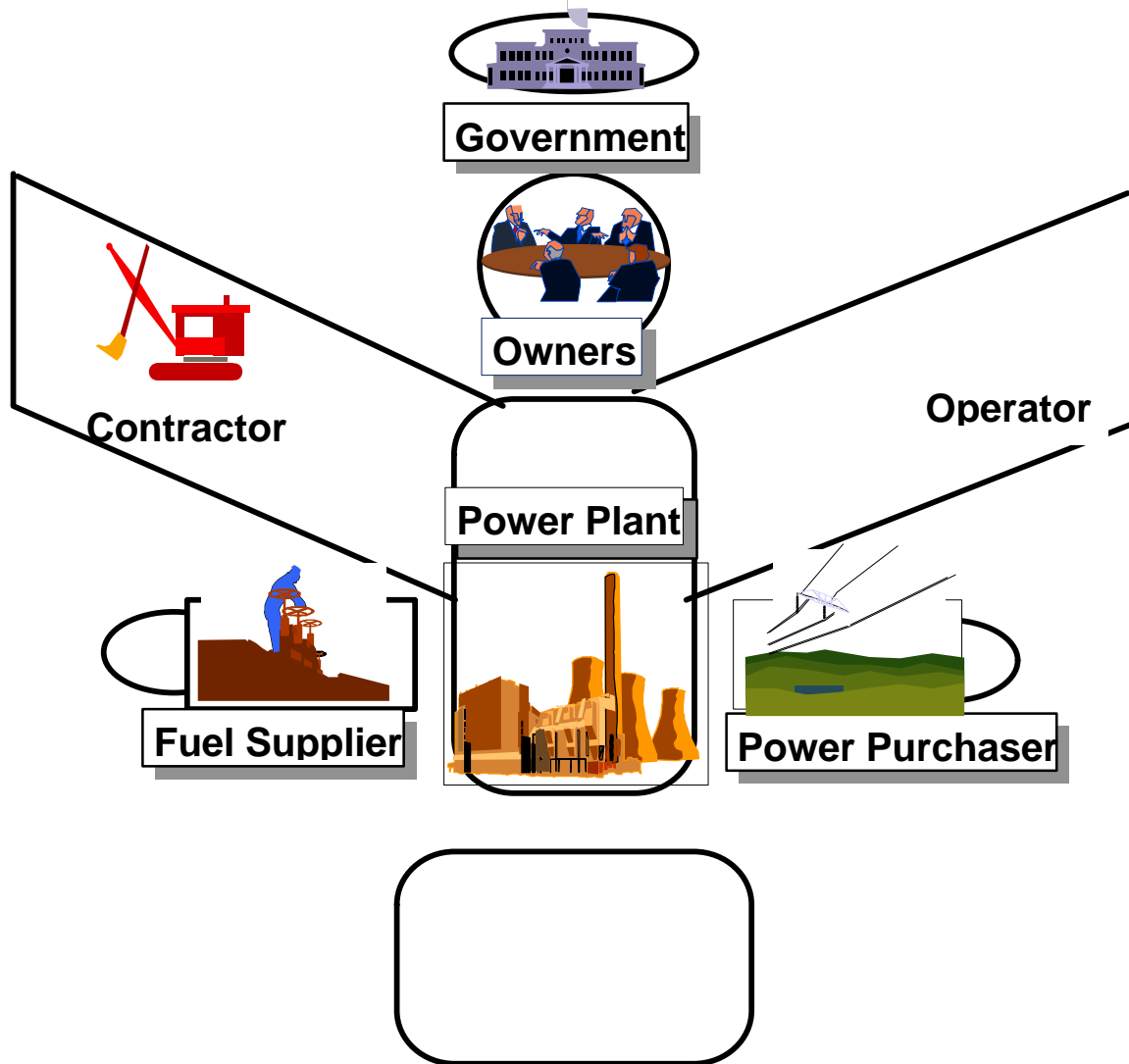
Pyle calls this prototypical structure “the project finance angel.” The halo of the angel is the government; the project sponsor is the head; the contractor and operator serve as wings; the project company is the body; the supplier and customer represent the arms; and, the banks are the angel’s feet. The outspread arms and the body together also symbolize the project’s throughput - the tollable commodity that creates the cashflow. The following diagrams illustrate the transfiguration of the angel into a power plant. Of course, as transactions become more complex, it is necessary to modify the basic structure.

The Project Angel

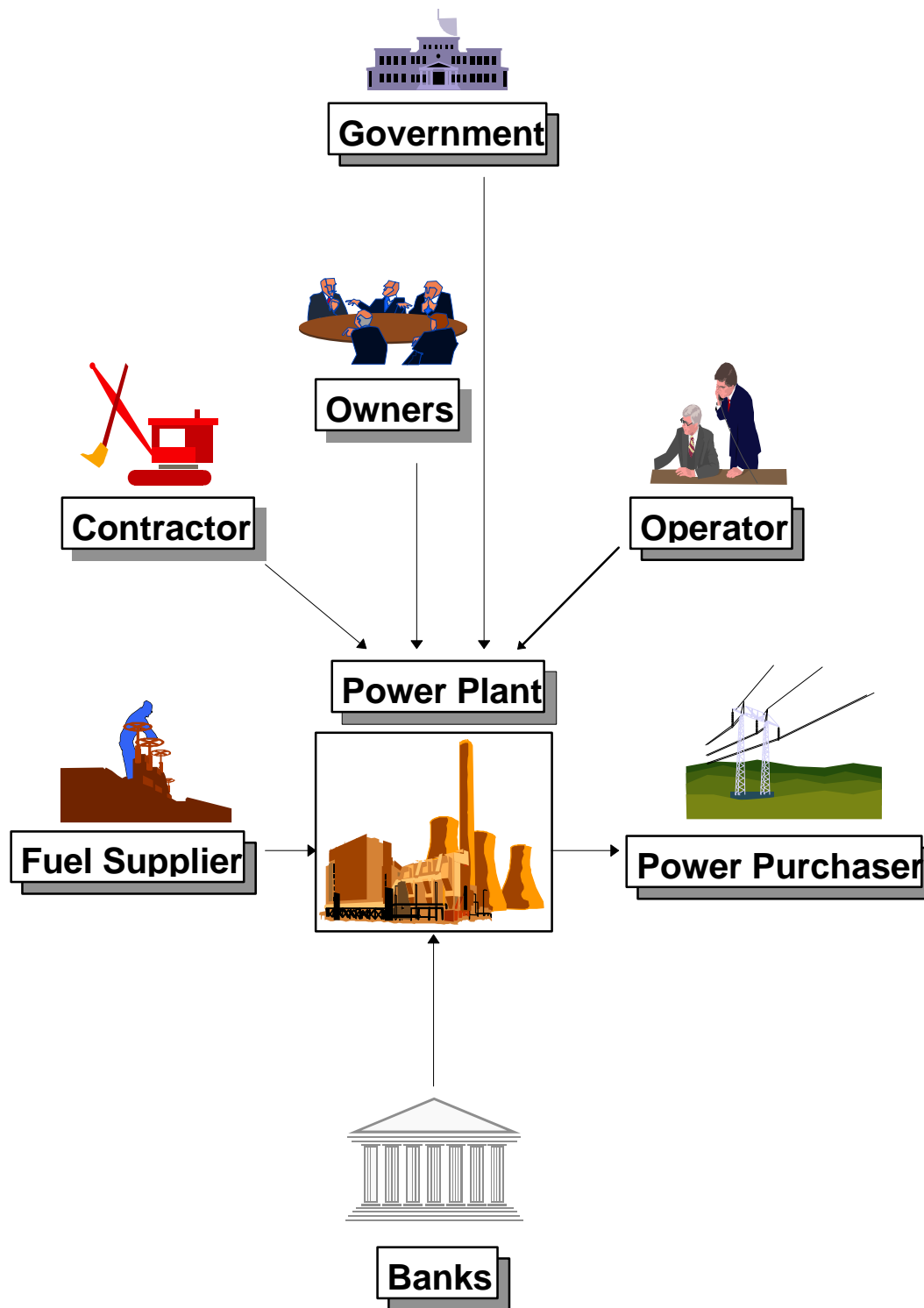


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“Transfiguration”



Project Finance Structure



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This section describes the roles of these major participants.

Government. Though local governments generally participate only indirectly in projects, their role is often most influential. The local government's influence might include: approval of the project, control of the state company that sponsors the project, responsibility for operating and environmental licenses, tax holidays, supply guarantees, and industry regulations or policies, providing operating concessions.

Project sponsors or owners. The sponsors are the generally the project owners with an equity stake in the project. It is possible for a single company or for a consortium to sponsor a project. Typical sponsors include foreign multinationals, local companies, contractors, operators, suppliers or other participants. The World Bank estimates that the equity stake of sponsors is typically about 30 percent of project costs.¹⁵ Because project financings use the project company as the financing vehicle and raise non-recourse debt, the project sponsors do not put their corporate balance sheets directly at risk in these often high-risk projects. However, some project sponsors incur indirect risk by financing their equity or debt contributions through their corporate balance sheets. To further buffer corporate liability, many of the multinational sponsors establish local subsidiaries as the project's investment vehicle.

Project company. The project company is a single-purpose entity created solely for the purpose of executing the project. Controlled by project sponsors, it is the center of the project through its contractual arrangements with operators, contractors, suppliers and customers. Typically, the only source of income for the project company is the tariff or throughput charge from the project. The amount of the tariff or charge is generally extensively detailed in the off-take agreement. Thus, this agreement is the project company's sole means of servicing its debt. Often the project company is the project sponsors' financing vehicle for the project, i.e., it is the borrower for the project. The creation of the project company and its role as borrower represent the limited recourse characteristic of project finance. However, this does not have to be the case. It is possible for the project sponsors to borrow funds independently based on their own balance sheets or rights to the project.

Contractor. The contractor is responsible for constructing the project to the technical specifications outlined in the contract with the project company. These primary contractors will then sub-contract with local firms for components of the construction. Contractors also own stakes in projects. For example, Asea Brown Boveri "created a fund, ABB Funding Partners, to purchase stakes in projects where ABB is a contractor. Subscribers to the fund are a mixture of institutional investors focused on the energy sector, and the financing arms of big contractors."¹⁶ Richard Ingham, managing director of the project finance group at Chase Manhattan, argues that much of the

¹⁵ World Bank, p. 95.

¹⁶ Ben Edwards. "Too much money, too few deals," *Euromoney*. March 1995, p. 110.

infrastructure development “is being driven by the contractors which may ultimately view equity investment as a cost of doing business.”¹⁷

Operator. Operators are responsible for maintaining the quality of the project’s assets and operating the power plant, pipeline, etc. at maximum efficiency. It is not uncommon for operators to also hold an equity stake in a project. Depending on the technological sophistication required to run the project, the operator might be a multinational, a local company or a joint-venture.

Supplier. The supplier provides the critical input to the project. For a power plant, the supplier would be the fuel supplier. But the supplier does not necessarily have to supply a tangible commodity. In the case of a mine, the supplier might be the government through a mining concession. For toll roads or pipeline, the critical input is the right-of-way for construction which is granted by the local or federal government.

Customer. The customer is the party who is willing to purchase the project’s output, whether the output be a product (electrical power, extracted minerals, etc.) or a service (electrical power transmission or pipeline distribution). The goal for the project company is to engage customers who are willing to sign long-term, offtake agreements.

Commercial banks.¹⁸ Commercial banks represent a primary source of funds for project financings. In arranging these large loans, the banks often form syndicates to sell-down their interests. The syndicate is important not only for raising the large amounts of capital required, but also for *de facto* political insurance.¹⁹ Even though commercial banks are not generally very comfortable with taking long term project finance risk in emerging markets, they are very comfortable with financing projects through the construction period. In addition, a project might be better served by having commercial banks finance the construction phase because banks have expertise in loan monitoring on a month-to-month basis, and because the bank group has the flexibility to renegotiate the construction loan.²⁰

¹⁷ Edwards, p. 110.

¹⁸ This section as well as the capital markets section benefited greatly from comments from Tunde Onitiri at Sanwa Bank.

¹⁹ “A syndicate of banks might be chosen from as wide a range of countries as possible to discourage the host government from taking action to expropriate or otherwise interfere with the project and thus jeopardize its economic relations with those countries.” See Clifford Chance, p. 11.

²⁰ The recent advent of capital market funding for project finance, however, has underscored the limitations of the commercial banks. First, the short-term nature of their deposits results in a limitation in the amount of long-term funds available. One author has pointed out the broader reasons why commercial banks are facing increased competition for transactions: the international debt crisis; disintermediation of the largest and most creditworthy commercial bank customers; increased competition from money market mutual funds and investment banks for funds; increased competition from investment banks in arranging and syndicating commercial loans; imposition of minimum risk-

While not part of the project finance angel, the following components make the angel diagram even more complex.

Capital markets. Major investment banks have recently completed a number of capital market issues for international infrastructure projects. Through the private placement market, the banks have successfully raised capital from institutional investors. As a consequence, many pundits are touting the capital markets as the instrument of choice for financing emerging markets transactions. The capital market route can be cheaper and quicker than arranging a bank loan. In addition, the credit agreement under a capital market is often less restrictive than that in a bank loan. Furthermore, these financings might be for longer periods than commercial bank lending; might offer fixed interest rates; and can access wider pool of available capital and investors such as pension funds.²¹

The disadvantages of capital market financings include: the necessity of preparing a more extensive disclosure document; capital market investors are less likely to assume construction risk; the bond trustee plays a greater role; more disparate investors - not a club of banks; unlike bank debt, proceeds are disbursed in a single lump sum, leading to negative carrying costs.²² Credit agency ratings for project finance transactions, however, are making the capital market route much smoother by making credit evaluations more transparent.

Direct equity investment funds. Private infrastructure funds represent another source of equity capital for project financings. Examples of these funds include AIG Asian Infrastructure Fund (\$1.1 billion), Peregrine's Asian Infrastructure Fund (\$500 million), Global Power Investments²³ (\$500 million) and the Scudder Latin America Infrastructure Fund (\$100 million, with target of \$600 million).²⁴ These funds raise capital from a limited number of large institutional investors. Then their advisory teams screen a large number of infrastructure projects for potential investment opportunities. The funds typically take minority stakes of the infrastructure projects in which they invest.

Multilateral agencies. The World Bank, International Finance Corporation and regional development banks often act as lenders or co-financiers to important infrastructure projects in developing countries. In addition, these institutions often

based capital requirements; a general decline in commercial bank credit quality. See J. Paul Forrester. "The Role of Commercial Banks in Project Finance." *Journal of Project Finance* Summer 1995, p. 55.

²¹ Paul Simpson and Nicholas Avery. "The Role of the Capital Markets in Project Financings," *Journal of Project Finance* Spring 1995, p. 43.

²² Simpson and Avery, p. 47.

²³ Global Power Investments' sponsors are Soros Fund Management, GE Capital and the International Finance Company.

²⁴ Edwards, p. 109.

play a facilitating role for projects by implementing programs to improve the regulatory frameworks for broader participation by foreign companies and the local private sector. In many cases, the multilateral agencies are able to provide financing on concessional terms. The additional benefit they bring to projects is further assurance to lenders that the local government and state companies will not interfere detrimentally with the project.

Export credit agency. Because infrastructure projects in developing countries so often require imported equipment from the developed countries, the export credit agencies (ECAs) are routinely approached by contractors to support these projects. Generally, the ECA will provide a loan guarantee or funding to projects for an amount that does not exceed the value of exports that the project will generate for the ECA's home country.²⁵ ECA participation has increased rapidly. "In just four years, ECA involvement in project finance has risen from practically zero to an estimated \$10 billion a year."²⁶ Again, ECA participation can bolster a project's status and give it a certain amount of *de facto* political insurance.

A range of other participants also play important roles. **Insurers**, such as national agencies, private insurers and multilateral institutions, offer political risk and other insurance to project sponsors. **Legal advisers** play a role in assembling project finance transactions given the number of important contracts and the need for multi-party negotiations. Legal advisers also play a role in interpreting the regulatory frameworks in the local countries. From the outset, the project sponsors might work with a **financial adviser**, e.g., commercial bank, investment bank or independent consultant, to structure the financing for the project. The **trustee** is typically responsible for monitoring the project's progress and adherence to schedules and specifications, usually working with the independent engineer to coordinate fund disbursements against a project's actual achievement.

IV. Risks and mitigants involved in project financing

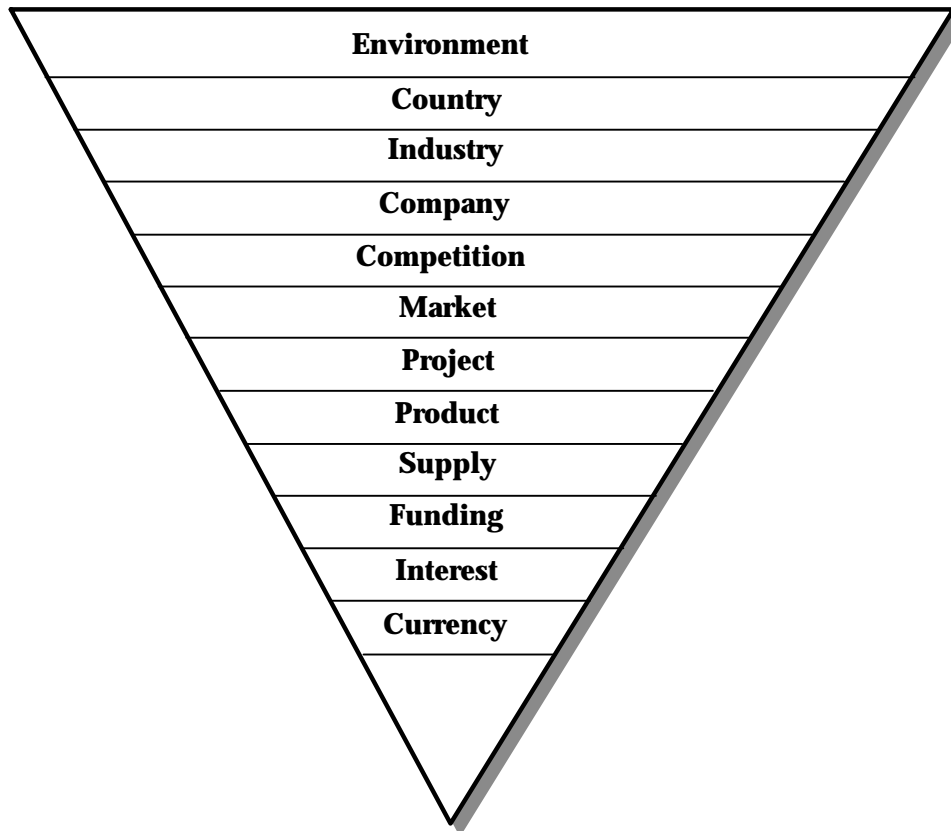
Financing infrastructure projects, especially in developing countries, entails a formidable set of risks. It is the role of the project finance advisor, the project sponsor and other participants to structure the financing in such a manner that mitigates these risks. Lenders and investors always are initially concerned about financing immobile assets in distant, politically-risky areas of the world. The project finance advisor's role is to carve out the risks, assigning them to the party who is best suited to be responsible for controlling them. The purpose of this section is to provide a checklist of the risks that a project finance transaction faces rather than a strict taxonomy of these risks.

²⁵ In some cases the funding amount is capped below the export value.

²⁶ Gopinath, p. 39.

Therefore, some of the categories listed below are naturally related and it is possible that some overlap exists between categories.

Risks and Mitigants Pyramid



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Country. Country risks cover the political economy. Examples of country risk include civil unrest, guerrilla sabotage of projects, work stoppages, any other form of *force majeure*, exchange controls, monetary policy, inflationary conditions, etc. The country risk in some cases serves as the ceiling for a project's risk rating. For instance, Standard & Poor's credit rating agency limits specific project ratings by the sovereign credit rating that the agency assigns the country.²⁷ That is, no project, despite its particular circumstances, can have a higher credit rating than the country's credit rating. Specific mitigants might include political risk insurance against *force majeure* events or allocating

²⁷ "Global Project Finance." *Standard & Poor's Creditreview*, March 27, 1995, p. 17.

risk to the local company. Involving participants from a broad coalition of countries also gives the project sponsors leverage with the local government.

Political. These risks cover changes within the country's political landscape, i.e., change of administration, as well as changes in national policies, laws regulatory frameworks. Environmental laws, energy policies and tax policies are particularly important to pipeline projects. These risks are not confined to the most unstable regimes in the developing world. It is a mistake to simplify political risks into only the most drastic actions such as expropriation. In the political environment of the 1990s, these drastic actions are rare. Nevertheless, infrastructure projects in developing countries continue to face significant political risks, albeit in more subtle forms "such as price regulation, restrictions on working permits for foreign managers, renegotiation of contracts, and even buyouts."²⁸

In a recent article in *Harvard Business Review*, Louis Wells and Eric Gleason cite an example in Thailand where the government "unilaterally ordered a private toll road opened and lowered the amount its foreign owners could charge in tolls." The local sponsor, Thai Expressway and Rapid Transit Authority obtained a court order to force the project sponsors to open the toll road at a lower.²⁹ It would be a mistake to confine these political risks to the developing world. State regulatory bodies in the United States can be just as fickle with rate regulations for power plants as any foreign ministry of energy.

Mitigants include, again, political risk insurance as well as flexible tariff agreements that incorporate adjustments for these types of contingencies. An intimate acquaintance with the local political environment also increases a project sponsor's ability to foresee trouble spots.

Industry. Competitive forces within the industry represent significant risks to the project. It is necessary for project sponsors to analyze the potential risks that their particular project faces vis-à-vis global and local industries. The prices of substitute products, inputs and outputs are critical factors in determining the economics of the project. Other competing projects within the country or in the neighboring region have competitive implications for the project. Standard and Poor's checklist for competitive forces for pipelines provides an example of the types of industry risks that creditors emphasize:

- the influence of other existing or planned pipelines in the area;
- cost of transportation - the economics of the pipeline to the end users;

²⁸ Louis T. Wells and Eric S. Gleason. "Is Foreign Infrastructure Investment Still Risky?" *Harvard Business Review* September-October 1995, p. 50.

²⁹ Wells and Gleason, p. 44.

- substitutes - other sources of energy that could compete with the fuel being transported;
- the potential for other uses and/or users of the feedstock being transported by the pipeline, which could render the pipeline obsolete;
- present and prospective commodity price and supply situation;
- potential for supply disruptions and exposure to price fluctuations.³⁰

The primary mitigant against industry or competitive risk is thorough industry analysis and insight into the industry's underlying dynamics.

Project. Project risk is generally associated with the adequacy and track-record of the concerned technology and the experience of the project's management. The chief mitigant in this area is the selection of contractors, developers and operators who have proven track records. Independent consulting engineers can play a role in assessing the technical feasibility of projects by making technical risks transparent to lenders.

Customer. The risk with customers is that demand for the product or throughput declines or widely fluctuates. Given the high fixed costs of infrastructure projects, it is difficult, if not impossible, for these projects to reduce costs to match lower demand. Thus, the chief mitigant against this type of risk is an offtake agreement, i.e., a contract which guarantees purchase of the throughput. Essentially, a project company agrees to sell a large share of its output (minerals, electricity, transportation services through a pipeline, etc.) to a customer or group of customers for an extended period of time. The price per unit of output can be fixed, floating or adjusted for inflation or other factors. The customer benefits from this arrangement by securing a long-term, guaranteed source of supply for the output, but generally forfeits a certain amount of flexibility in sourcing. The project company benefits by eliminating or substantially reducing its marketing risk.

Supplier. The general issue here is with securing supplies for the project - electricity, water, etc. - and, again, long-term agreements that guarantee that the project will have access to critical inputs for the duration of the project's life are the chief instruments used to mitigate the risk. The three critical dimensions of supply are quality, quantity and availability. Does the input meet the necessary quality requirements of the project? Can the project get enough of the input? Is the supply reliable or are interruptions likely? For pipeline projects, rights-of-way might also be considered critical inputs because without them the project company would not be able to build the pipeline.

Sponsor. The project sponsor is typically an entrepreneur or consortium of entrepreneurs who provide the motivating force behind the project. Often, the project sponsor is an entrepreneur without sufficient capital to carry out the project. In other cases, the sponsor might have the necessary capital but is unwillingly to bet the parent

³⁰ "Global Project Finance", p. 9.

corporation's balance sheet on a high-risk venture. The primary risks with sponsors revolve around the sponsor's experience, management ability, its connections both international and with the local agencies, and the sponsor's ability to contribute equity. Investors and lenders can mitigate these risks by carefully evaluating the project sponsor's track record with similar transactions.

Contractor. The principal construction risks are schedule delays and budget overruns. Standard & Poor's, in fact, "believes that it would be difficult for a project to achieve investment-grade ratings prior to substantial completion of the project and initial start-up."³¹ Mitigating these risks involves scrutinizing the contractor, specifically the contractor's experience with similar projects, reputation in the field, backlog of other projects and cash flow. The primary method of putting the burden of successful completion on the contractor, as opposed to on the lenders and investors, is a turnkey contract. A turnkey contract essentially binds the contractor to finish construction by a specified date for a fixed amount. The completed project must also meet the agreed upon technical specifications as certified by an independent engineer before payment is made. Additional mechanisms to ensure compliance with schedules and budgets include performance bonus and penalty clauses in the construction contract. Penalties for delays can be severe, as much as \$750,000 per tariff day.³² It is also important to review the contractor's bidding history. A contractor which has a history of consistently bidding too low presents a greater risk of cost overruns. Additionally, independent engineers can play a role in monitoring the project's progress and certifying that the contractor has achieved the milestones on schedule.

Operating risk. The operator is the company or entity charged with the responsibility of maintaining the quality of the assets that generate the project's cash flow. Of course, lenders and investors want to make sure that the assets remain productive throughout the life of the project, or more importantly from their perspective, the life of the loan or investment. Hence, operating risks center around the efficient, continuous operation of the project, whether it is a mining operation, toll road, power plant or pipeline. Contracted incentive schemes are one way to allocate this risk to the operator.

Product. Product risks might include product liability, design problems, etc. The underlying risk here is unperceived risks with the product, e.g., unforeseen environmental damages. For instance, an electrical transmission project running through a populated area might carry the risk of affected the population through the detrimental health effects of the electro-magnetic radiation. Using older, tested designs and technologies reduces the risk of unforeseen liabilities. For instance, the Asian infrastructure developer Gordon Wu built his reputation by recycling one straight-forward power plant design in his many projects instead of re-designing each individual project. Through using a tested design, Wu was able to not only reduce

³¹ "Global Project Finance", p. 10.

³² Some contractual agreements cap such penalties.

product and construction risks, but also to reduce design costs through economies of scale.

Competitor. This risk is related to industry risk, however it focused more directly on resources with which the competitor might be able to circumvent competitive barriers. Exclusive agreements, offtake agreements and supply arrangements all contribute to defending a long-term competitive advantage.

Funding. The funding risk is that the capital necessary for the project is not available. For example, equity participants might fail to contribute their determined amount. Or, the underwriters might not be able to raise the target amount in the market. Another funding risk is re-financing which occurs if the duration of the initial funding does not match the duration of the project. Funding risks can also relate to the division between local and foreign currency funding. As funding is often the linchpin of project financings, it is difficult to reduce the risk of not finding the funding. The choice of an experienced financial advisor as well as seeking capital from a broad range of sources represent two ways to mitigate this risk. Also, it is sometimes possible to restructure transactions to delay drawdown dates or to change the amounts of foreign versus local currency.

Currency. There are two currency risks facing project companies. The first risk is exchange rate fluctuation, i.e., devaluation erodes the value of a contract or payment in the project company's home currency, or the currency in which it must service its debt. The second risk is currency controls, i.e., the sovereign government limits the project company's access to foreign exchange or curtails its ability to make foreign currency payments outside of the country. Another possible means of mitigating currency risk is to engage in a currency swap.

Interest rate. Interest rate fluctuations represent a significant risk for highly-leveraged project financings. Arranging for long-term financing at fixed rates mitigates the risk inherent in floating rates. Furthermore, projects can enter into interest rate swaps to hedge against interest rate fluctuations.

Risk allocation. Just as important as identifying the risks, is the need to allocate the risks to the parties that are most suited to control and address the risks. Thus, risk allocation is a form of risk mitigation at the macro level. If the wrong parties are responsible for risks they are not suited to manage, the entire structure is at risk. Therefore, the crux of every project finance transaction is the proper allocation of risk. It might also be the most difficult aspect of assembling a transaction. As one project financial advisor argues, "the most significant characteristic of project finance is the

'art' of minimizing and apportioning the risk among the various participants, such as the sponsors, contractors, buyers and lenders."³³

How are the risks in a project finance transaction allocated? The principal instruments for allocating the risks and rewards of a project financing are the numerous contracts between the project company and the other participants. "While often the cause of delay and heavy legal costs, efficient risk allocation has been central to making projects financeable and has been critical to maintaining incentives to perform."³⁴

V. Conclusions and remaining questions

Project finance is a centuries-old form of financing high-risk, development-oriented ventures. Today, project financings generally require large amounts of capital. They are highly leveraged ventures that are funded on a non-recourse or limited recourse basis. At the center of these transactions is the project company - a single-purpose entity with a finite life - which is linked to the numerous participants by contractual arrangements that cover the details of how the project will be implemented and operated. The crucial task for the project advisers, however, is properly allocating risk to the parties who are most capable of managing the specific risk.

Project finance has enjoyed explosive growth in the past five years. Its emergence has resulted from a number of favorable trends, e.g., privatization, deregulation of industries, new attitudes towards the role of the private sector in developing countries and at the multilateral agencies, etc. Despite this success, some underlying questions remain about project finance as the financing vehicle of choice:

- Infrastructure projects in developing countries require critical evaluation of political risk as well as the incorporation of, sometimes significant, risk premiums in interest margins. How are the investors and lenders evaluating and quantifying these risks? Are they underestimating the risk of immobile assets in, sometimes, highly unstable countries?
- Both sovereign governments and private project sponsors have access to capital at lower rates than through project financings. Will competitive pressures compel project sponsors to turn more often to these less expensive sources of capital in the future?
- Project financing entails high transaction costs due to the project specific nature of the financing vehicles being used. Will financial advisers find more ways to inject

³³ Victor Traverso. "The Rules of the Game: Project Finance Challenges in Latin America." *LatinFinance* Project Finance in Latin America Supplement, June 1994, p. 5.

³⁴ World Bank, 98.

more formulaic approaches into the process and thereby reduce the enormous transaction costs of project finance?

- In the past few years, the capital markets have witnessed a number of project finance issues. The credit rating agencies have supported this trend by evaluating project finance offerings. Large institutional investors have participated in these issues through private placements. Will the private placement market continue to support these offerings? To what extent will the capital markets substitute commercial bank lending to projects? What factors does a project sponsor consider in deciding between commercial bank loans and capital market issues?

Both academic and popular literature on project finance is scarce. However, the growing number of projects being financed throughout the world is rapidly providing a stockpile of case studies for further research. These projects' successes and failures will also generate additional questions about the contemporary application of this time-honored financing technique.