

E L S E V I E R F I N A N C E



public-private
partnerships

Principles of Policy and Finance

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Project Finance and PPPs

§8.1 INTRODUCTION

The recent growth of PPPs is closely linked to the financing technique known as ‘project finance’, itself a relatively recent development. An understanding of project-finance techniques and their application in PPPs is therefore necessary when considering policy-related financing issues in PPPs.

Project finance is a method of raising long-term debt financing for major projects. It is a form of ‘financial engineering’, based on lending against the cash flow generated by the project, and depends on a detailed evaluation of a project’s construction, operating and revenue risks, and their allocation between investors, lenders, and other parties through contractual and other arrangements. As such, it is well-suited to financing PPP projects. ‘Project finance’ is not the same thing as ‘financing projects’, because projects may be financed in many different ways—it is evident that a project could be financed by public-sector debt using public-sector procurement instead of a PPP; alternative approaches to financing PPP projects are discussed in Chapter 17.

This chapter therefore provides a general background on project finance:

- its development (§8.2);
- key features (§8.3);
- the scale of the project-finance market and its links to related forms of financing (§8.4);
- why project finance is used for PPPs (§8.5).

Chapter 9 looks in detail at sources for project finance, and subsequent chapters at financial structuring.

§8.2 DEVELOPMENT OF PROJECT FINANCE

The growth in project finance is linked to some of the same factors which have led to the growth in PPPs. Some successive waves of development in project-financing techniques and coverage can be identified:

- Finance for natural resources projects (mining, oil and gas), from which modern project finance techniques are derived, developed first in the Texas oil fields in the 1930s; this approach was first used in Europe for development of North Sea oil fields in the 1970s, and has seen a new boom with commodity price rises over the last few years.
- Finance for independent power projects (IPPs) in the electricity sector (primarily for power generation) using BOO/BOT structures developed in the 1980s as discussed in §1.4.2. Linked to this is the more recent growth in the use of gas for power generation, which has led to project financing of gas pipelines and liquefied natural gas (LNG) receiving terminals (*i.e.* gas delivery as opposed to gas production).
- Finance for public infrastructure (*i.e.* PPPs) was revived with the Channel Tunnel project and thereafter with the creation of the British PFI programme from the early 1990's (*cf.* §1.4.5).
- Finance for mobile-telephone networks was also a large part of the market from the mid-1990s until the build-out of most of these networks was complete in the early 2000s.

So the three main legs on which project finance stands today are the natural resources, energy and infrastructure sectors.

Other changes in financing techniques, developed in the early 1970s, which helped the evolution of project finance included:

- long-term commercial bank lending to corporate customers—previously commercial banks only lent on a short-term basis, to match their deposits (*cf.* §11.2);
- the use of export credits for financing major projects, albeit the risk in such cases is substantially borne by host governments rather than the private sector, and insured by government export-credit agencies (see Chapter 11 of *Principles of Project Finance*);
- shipping finance, where banks make loans to pay for construction of large vessels, on the security of long-term charters—*i.e.* construction lending against a contractual cash flow, with the borrower being a separate special-purpose company owning the ship, in a way very similar to later project-finance structures;
- property (real estate) finance, again involving loans for construction secured against long-term cash-flow (rental) projections;
- tax-based financial leasing, which accustomed banks to complex cash-flows (*cf.* §8.4.2).

The final vital element in the development of project finance was the creation (in the mid-1980s) of spreadsheet software, without which project financing would be practically impossible.

§8.3 FEATURES OF PROJECT FINANCE

Project-finance structures differ between various industry sectors and from deal to deal: there is no such thing as ‘standard’ project finance, since each deal has its own unique characteristics. But there are common principles underlying the project-finance approach. Some typical characteristics of project finance are the following:

- It is provided for a ‘ring-fenced’ project (*i.e.* one which is legally and economically self-contained), carried out through an SPV (*cf.* §7.6.1).
- It is usually raised for a new project rather than an established business (except for sales of Franchises; also project-finance loans may be refinanced).
- There is a high ratio of debt to equity (‘leverage’ or ‘gearing’)—roughly speaking project finance debt may fund 70–95% of a project’s capex.
- There are no guarantees from the investors in the Project Company (‘non-recourse’ finance), or only limited guarantees (‘limited-recourse’ financing), for the project-finance debt.
- Lenders rely on the future cash flow of the project for payment of their interest and loan repayments (‘debt service’), rather than the value of its assets or analysis of historical financial results.
- Therefore the Project Contracts are the main security for lenders; the Project Company’s physical assets are likely to be worth much less than the debt if they are sold off after a default on the financing.
- Therefore lenders exercise a close control over the activities of the Project Company to ensure the value of these Project Contracts is not jeopardised, *e.g.* by performance failures.
- The project has a finite life, based on such factors as the length of the contracts or licences, or the reserves of natural resources.
- Therefore the project finance debt must be fully repaid by the end of this life.

Hence project finance differs from a corporate loan, which:

- is primarily lent against asset values in a company’s balance sheet, and projections extrapolating from its past cash flow and profit record;
- assumes that the company will remain in business for an indefinite period and so can keep renewing (‘rolling over’) its loans;
- has access to the whole cash flow from the spread of the borrower’s business as security, instead of the limited cash flow from a specific project—thus even if an individual project fails, corporate lenders can still reasonably expect to be repaid;
- can use buildings and equipment as security;
- generally leaves the management of the company to run the business as they see fit, so long as this does not have significant adverse financial consequences.

Project finance is made up of a number of ‘building blocks’. One set of blocks relates to the funding for the Project Company, which has two elements:

- equity, provided by investors in the Project Company (*cf.* Chapter 7);
- project finance-based debt, provided by one or more groups of lenders to the Project Company.

The project-finance debt has first call on the Project Company's net operating cash flow—it is thus 'senior' to other claims, especially that of the investors (equity shareholders). The investors' return is therefore at a higher risk because it is more dependent on the success of the project—hence investors' returns are higher than lenders'.

The other major building blocks relate to the Project Contracts entered into by the Project Company—namely the PPP Contract, and Subcontracts for construction, operation and maintenance of the Facility. These are the means by which risks are transferred from the Project Company to the other parties (*cf.* Chapter 14), and form the most important part of the lenders' security package. Of course, none of these structures or contractual relationships is unique to project finance. However, the relative importance of these matters, and the way in which they are linked together, is a key factor in a project-financed PPP.

The close resemblance between the use of project finance for a power-generation project, as described in §1.4.2, and its subsequent development in different types of PPP, can be seen from the structural diagrams in Chapter 1 for a PPA (Figure 1.1), a Concession (Figure 1.2) and a PFI-Model PPP (Figure 1.3).

§8.4 THE PROJECT-FINANCE MARKET

§8.4.1 SCALE OF THE MARKET

Table 8.1 sets out the overall scale of the world project-finance market (for both bank loans and bond issues—*cf.* Chapter 9), from which the division into the three legs of infrastructure, energy and natural resources, as well as the decline in telecommunications-related financing mentioned above, are evident. Infrastructure, of which PPPs form the largest component, has shown continued and steady growth in business volume. The recent years of commodity-price boom have meant that the natural resources sector (which includes oil and gas as well as mining), which had been declining in the 1990s, is now expanding again. The power industry suffered badly from events in the United States and elsewhere following the Enron *débâcle*, but has since revived.

Table 8.1
Project-finance loans by sectors, 2000–5

(US\$ millions)	2000	2001	2002	2003	2004	2005
Infrastructure	18,393	21,003	27,056	32,873	44,736	55,246
Power	56,512	64,528	24,517	36,417	46,633	51,683
Natural Resources	16,518	18,859	15,778	23,039	40,948	44,254
Telecoms	36,735	25,445	7,286	5,849	7,341	10,193
Other	3,538	3,646	1,324	3,543	5,428	4,241
Total	131,696	133,481	75,961	101,721	145,086	165,617

Source: *Project Finance International*, issues 233, 257, 281, 305, 329 (data summarised)

These ‘market’ statistics have to be treated with some care:

- Financial institutions draw the boundaries between project finance and other types of lending based on convenience rather than theory, taking into account that skills used by loan officers in project finance may also be used in similar types of financing. Many deal with project finance as part of their structured-finance operations (§8.4.2). As a result, project-finance market statistics may be affected by inclusion or exclusion of large deals on the borderline between project finance and other types of structured finance.
- The figures do not distinguish between new projects and projects which have become established and are then refinanced (*cf.* §16.2), or financing acquisitions of infrastructure projects such as toll-road Franchises (*cf.* §3.5).
- The statistics are based on figures provided by financial institutions to database companies, and hence do not necessarily include projects funded by development banks or other public-sector sources of finance, or projects where commercial-bank debt is not a major component of the funding (*cf.* §17.3.2).
- Not all private-sector financial institutions active in PPPs provide statistics either.
- Conversely, the financial institutions which do supply the figures have an interest in making the market, and their own involvement, look as large as possible.
- The figures from different financial databases differ quite widely (*cf.* Table 3.1 and the individual country statistics in Chapter 3), again because of issues of reporting and classification.
- Specifically in relation to PPPs, lender figures relate to the amount of debt raised, whereas figures produced by the public sector relate to the ‘cost’ of the project, which may mean either the capex (including equity investment), or the NPV of the Service Fees.

Nonetheless, the year-to-year figures give a fair picture of overall trends in the project-finance market.

Table 8.2 sets out the key geographical areas of activity in project financing. As can be seen, the most important areas of growth in recent years have been in Europe and the Middle East—the latter has been mainly due to the boom in oil, gas and petrochemicals, but PPPs have played a substantial part in the growth of the European project-finance market. In the Asia-Pacific region the most important countries in the PPP field have been Australia and South Korea. (PPP activity in these and other countries is discussed in Chapter 3.) The U.S. figures reflect the decline in the power sector post-Enron. It is also worth remarking that project finance to developing countries is highly concentrated in the power, natural resources and telecoms areas, rather than infrastructure of a PPP nature—*i.e.* private-sector project finance for PPPs is predominantly a product for developed countries.

§8.4.2 PROJECT FINANCE AND STRUCTURED FINANCE

The broad term ‘structured finance’, covers any kind of finance where an SPV has to be created to raise the funding, with its debt structured to fit the cash flow, unlike corporate loans, which are made to a borrower already in business, as discussed above. Various types

Table 8.2
Project-finance lending in selected countries, 2000–5

(US\$ millions)	2000	2001	2002	2003	2004	2005
Americas						
Brazil	10,092	5,611	1,788	5,112	4,715	3,061
Canada	3,015	622	505	538	1,575	2,488
Chile	3,236	5,442	1,490	718	3,198	3,452
Mexico	3,984	4,412	4,422	5,186	9,094	3,675
U.S.A.	44,886	47,588	13,233	15,448	23,587	25,581
Asia-Pacific						
Australia	5,099	4,459	8,948	6,511	13,129	9,745
China	0	0	3,842	3,930	2,787	759
India	129	114	1,016	122	1,187	3,123
Japan	131	2,265	498	1,629	3,720	2,205
Malaysia	0	1,709	2,368	1,983	3,233	2,935
South Korea	718	1,415	1,141	2,732	6,341	4,575
Taiwan	0	222	613	76	4,968	216
Thailand	1,718	536	1,436	1,496	2,010	1,444
Europe						
France	49	360	721	136	201	1,997
Germany	12,806	4,978	401	492	705	2,006
Hungary	500	125	226	596	1,640	1,413
Italy	5,602	13,787	7,952	12,406	3,795	9,824
Netherlands	300	1,176	1,527	769	92	1,159
Portugal	1,537	1,643	1,249	870	2,606	2,995
Spain	567	6,371	1,410	8,167	5,602	16,147
U.K.	13,988	6,329	10,579	14,485	17,692	21,594
Middle East & Africa						
Azerbaijan	0	0	0	0	1,600	780
Kazakhstan	0	0	0	60	1,100	75
Bahrain	0	0	255	1,350	1,925	153
Egypt	0	651	0	950	1,853	2,183
Oman	513	2,030	677	908	1,608	5,671
Qatar	0	1,132	300	1,295	6,778	16,326
Saudi Arabia	852	2,176	280	820	3,726	2,466
UAE	1,096	1,638	0	1,855	1,933	2,367
Nigeria	0	0	1,000	879	1,650	1,702
South Africa	127	718	333	318	261	600

Source: *Project Finance International*, as for Table 8.1

of structured finance overlap with project finance to a certain extent, and also compete with it for resources within the financial institution concerned (*cf.* §9.3.1).

Asset finance. This is based on lending against the value of assets easily saleable in the open market *e.g.* aircraft or real-estate (property) financing, whereas project

finance lending is against the cash flow produced by the asset, which may have little open-market value.

Receivables financing. This is based on lending against the established cash flow of a business and involves transferring a cash-flow stream to an SPV similar to a Project Company (but normally off the balance sheet of the true beneficiary of the cash flow). This cash flow may be derived from the general business (*e.g.* a hotel chain) or specific contracts which give rise to this cash flow (*e.g.* consumer loans, sales contracts, *etc.*). The SPV then borrows against this cash flow, without any significant recourse or guarantee to the owners of the original business, who are thus able to raise funding off-balance sheet, as well as reducing their own business risks.

The key difference from project finance is that the latter is based on a projection of cash flow from a project yet to be established. However, the sale of a Franchise for an already-constructed road is a form of receivables finance, even though it may be classified by the parties concerned as project financing.

Securitisation. If receivables financing is procured by raising funds in the bond market (*cf.* §9.4), it is known as securitisation of receivables. There have also been a few securitisations of receivables due from banks' project-finance loan books, but so far this has not been a significant feature in the market. PPP projects are quite suitable for securitisation because of their low risk, and further growth in this sector can be expected. Such securitisations can take two forms—a transfer of the loans from the bank to an SPV, to provide a pool of security for bond-holders ('real' securitisation), or a 'synthetic' securitisation, where the risk is transferred but the loans remain on the bank's balance sheet (albeit with a low or nil capital requirement for the bank, because of the risk transfer), funded by a bond issue.

Leveraged buyout (LBO) or management buyout (MBO) financing. This highly-leveraged financing provides for the acquisition of an existing business by portfolio investors (LBO) or its own management (MBO). It is usually based on a mixture of the cash flow of the business and the value of its assets. It does not normally involve finance for construction of a new project, nor does this type of financing use contracts as security as does project finance.

Acquisition finance. Probably the largest sector in structured finance, acquisition finance enables company A to acquire company B using highly-leveraged debt. In that sense it is similar to LBO and MBO financing, but based on the combined business of the two companies. The risks and returns on these sectors are higher than those for PPPs, but as the funding sources overlap they have tended to drag up pricing for PPP projects (*cf.* §7.3.2).

Leasing. Leasing is a form of asset finance in which ownership of the asset financed remains with the lessor (*i.e.* lender), with the lessee (*i.e.* borrower) paying for the right to use it (*cf.* §5.5.2). A major motive for leasing in the past was that it enabled tax benefits from large capital investments to be transferred to the lessor, and fed back to the lessee *via* lower lease payments than would have been made under an equivalent loan (*cf.* §8.2). These tax benefits have been substantially eroded in most countries over recent years, and leasing finance is now seldom used in the PPP field, especially as many PPPs involve substantial investment in buildings or civil works (such as for a road), which generally do not receive as favourable tax treatment as investing in equipment.

§8.5 WHY USE PROJECT FINANCE FOR PPPS?

Like PPPs, project finance is complex, slow and has a high up-front cost. Adding the two together obviously makes these problems worse. It also severely restricts the ability of the owners of a project to manage it freely. Nonetheless, there are good reasons why project-financing is commonly used for PPP projects, since it has benefits both for the private-sector investors in such projects and for the Public Authority.

§8.5.1 BENEFITS FOR INVESTORS

There are a number of reasons why investors use project financing for PPP projects.

High leverage. As has been seen, investors in PPPs typically require a hurdle-rate Equity IRR which—despite corporate-finance theory—looks more at the risk of the project than its funding structure (*cf.* §7.3.2). It follows arithmetically from this that the higher the leverage the easier it is to earn a high level of equity return, taking advantage of debt being cheaper than equity, and the fact that in a project-finance transaction higher leverage does not imply proportionately higher risk for lenders, and hence although the cost of debt goes up this is not in proportion to the increase in leverage.

Table 8.3 sets out a very simplified example of the benefit of leverage on an investor's return. Both the low-leverage and high-leverage columns relate to the same investment of 1,000, which produces revenue of 75 *p.a.* If it is financed with 50% debt, as in the low-leverage column (a typical level of debt for a good corporate credit) the return on equity is 10%. On the other hand, if it is financed with 90% (project finance-style) leverage, the return on the (reduced level) of equity is 21%, despite an increase in the cost of the debt (reflecting the higher risk for lenders).

But it must be emphasised that this example is highly simplified, and as will be seen below, leverage is dictated largely by the lenders' requirements for a cash-flow cushion, which in turn may actually dictate the equity return on the project (*cf.* §10.7).

Table 8.3
Benefit of leverage on investors' return

	Low leverage	High leverage
Project cost	1,000	1,000
(a) Debt	500	900
(b) Equity	500	100
(c) Revenue from project (<i>p.a.</i>)	75	75
(d) Interest rate on debt (<i>p.a.</i>)	5%	6%
(e) Interest payable	[(a) × (d)]	54
(f) Profit	[(c) – (e)]	21
Return on equity	[(f) ÷ (b)]	21%

Another important factor encouraging a high level of debt in Project Companies is that it is generally more difficult to raise equity than to raise debt, and makes the project more complex to manage (especially during the bidding and development phases) if the result of having to raise more equity is that more investors have to be brought in. Moreover if more investors have to be brought in, this means that the original Sponsors may lose control of the project.

Risk spreading and limitation. Project finance is a structure under which groups of investors can easily work together, thus easily enabling the risk of the investment to be divided up.

Moreover, an investor in a project raising funds through project finance does not normally guarantee the repayment of the debt—the risk is therefore limited to the amount of the equity investment only, and the investor's business as a whole is not usually at risk from failure of the specific project, *i.e.* there is limited 'risk contamination' between the project and the rest of the investor's business. In effect, in return for a relatively small fee (its equity share), a Sponsor has established an 'option price' at which it may retain the investment if successful or walk away if its failure could otherwise have a high impact on its other business.

It is also worth noting that one of the highest areas of risk for a PPP project is the expenditure on bidding, and so forming a partnership at the bidding stage obviously reduces this risk too.

Unequal partnerships/combining skills. Thanks to high leverage, the relatively small amount of equity required for a major PPP project where project finance is used enables parties with different financial strengths to work together. It would be quite normal for example, for the investors in a PFI-Model school project to consist of a financial investor (say a large bank), a construction company, and an FM company, whose balance-sheet strengths would probably be very different, but with each bringing particular skills to this partnership. This aspect of a project-finance structure also makes it easy for the Public Authority to be brought in as a shareholder in the case of a Joint-Venture PPP.

Long-term finance. Project-finance loans typically have a longer term than corporate loans. Long-term financing is necessary if the assets financed normally have a high capex, which cannot be recovered over a short term without pushing up the cost that must be charged for the project's end-product. So loans for PPP projects may run for 20–30 years, compared to a normal corporate loan of perhaps 5–7 years.

Paradoxically, a longer-term loan may reduce the risk of default during a PPP project's early years of operation, when the cash flow may be most uncertain, by reducing the level of cash flow required for annual debt-service payments.

Borrowing capacity. Non-recourse finance raised by a Project Company affiliate is not normally counted against corporate-credit lines. It may thus increase an investor's overall borrowing capacity, and hence the ability to undertake several major projects simultaneously. Similarly, a company's credit rating is less likely to be downgraded if its risks on project investments are limited through a project-finance structure, again enabling it to invest in more projects.

Off-balance sheet. If the investor has to raise the debt and then inject it into the project, this will clearly appear on the investor's balance sheet. A project-finance structure may allow the investor to keep the debt off the consolidated balance sheet, but usually

only if the investor is a minority shareholder in the project—which may be achieved if the project is owned with other partners.

Keeping debt off the balance sheet is sometimes seen as beneficial to a company's position in the financial markets, but a company's shareholders and lenders should normally take account of risks involved in any off-balance-sheet activities, which are generally revealed in notes to the published accounts even if they are not included in the balance sheet figures; so project finance is not usually undertaken purely to keep debt off the investors' balance sheets.

However there is another related benefit, which is that investment in a project through an unconsolidated affiliated company is useful during the construction phase of a project, when it is a 'dead weight' on the rest of a company's business, because it requires a high capital investment in the balance sheet which is producing no revenue.

Also a project-finance structure enables Subcontractors to make a clearer separation between their contracting and investment activities (*cf.* §7.2.1).

§8.5.2 BENEFITS FOR THE PUBLIC AUTHORITY

Equally, encouraging investors to use project finance for PPP projects may bring benefits to the Public Authority, and to the overall PPP programme in the country concerned.

Lower cost. The higher leverage inherent in a project-finance structure helps to ensure the lowest cost to the Public Authority. This can be illustrated by doing the calculation in Table 8.3 in reverse: suppose the investor in the project requires a return of at least 15%, then, as Table 8.4 shows, to produce this revenue of 100 *p.a.* is required using low-leverage finance, but only 69 using high-leverage finance, and hence the Service Fees reduce accordingly. (But as with Table 8.3, it must be emphasised that this example is highly simplified.)

So if the Public Authority wishes to achieve the lowest long-term cost for the project, and is able to influence how it is financed, this suggests that the use of project finance should be encouraged, *e.g.* for example, by agreeing to sign an PPP Contract which fits project-finance requirements as to risk transfer between public and private sector.

Table 8.4
Effect of leverage on the Service Fees

		Low leverage	High leverage
Project cost		1,000	1,000
(a) Debt		500	900
(b) Equity		500	100
(c) Return on equity required	[(b) × 15%]	75	15
(d) Interest rate on debt (<i>p.a.</i>)		5%	6%
(e) Interest payment	[(a) × (d)]	25	54
Revenue required	[(c) + (e)]	100	69

Increased competition. For the reasons set out above, project finance enables investors to undertake more projects by increasing their financial capacity, the effect of which should be to create a more competitive market for projects, to the benefit of the Public Authority.

Rôle of lenders. The Public Authority may benefit from the independent due diligence and control of the project exercised by the lenders (*cf.* §9.3.4), who will want to ensure that the project is viable, and that all obligations to the Public Authority can be safely fulfilled. Project-finance techniques are based on risk allocation, and so this due diligence fits well with the overall philosophy of risk transfer which is one of the arguments for PPPs (*cf.* §2.6). The involvement of third parties, especially lenders and their advisers, in a PPP structure should therefore mean that a rigorous review of the risk transfer is carried out, and any weaknesses exposed, before the Public Authority has made a commitment to go ahead. However, it must be borne in mind that lenders will always want to ensure that project risks are taken primarily by Subcontractors or the Public Authority rather than the Project Company (*cf.* §14.2), and so their objectives are not the same as those of the Public Authority. Moreover lenders are frequently used as proxies by Sponsors to re-open PPP Contract negotiations—*i.e.* if they are on anybody's side it is the Sponsors rather than the Public Authority.

In addition, once a PPP Contract has been signed, project-finance lenders exercise continuing controls on the activities of the Project Company (*cf.* Chapter 12), thus helping to ensure that the requirements of the PPP Contract are fulfilled.

Transparency. As project financing is self-contained (*i.e.* it deals only with the assets and liabilities, costs and revenues of the particular project), the true costs of the service can more easily be measured and monitored. This fits well with the need for transparency in a PPP (*cf.* §2.10).

§8.5.3 CORPORATE FINANCE

While project finance provides the commonest method of financing PPPs, there are many cases where a corporate-finance approach—in which the funding for the project is provided from the investor's own balance-sheet resources, *i.e.* as a corporate loan—is a suitable alternative. In this case, the investor's available cash and credit lines are used to pay for the project, or if necessary new credit lines or even new equity capital are raised to finance the project's cost. Provided it can be supported by the investor's balance sheet and earnings record, a corporate-finance loan to finance a project is normally fairly simple, quick, and cheap to arrange. In a corporate-finance structure for PPPs, the Project Company is usually a wholly-owned subsidiary of the investor, or the investor may enter directly into a Project Agreement with the Public Authority.

Clearly both the cost of finance and ancillary costs will be lower in this case than in a project-financed transaction. This may translate into a lower cost for the Public Authority, depending on the overall level of the investor's cost of capital. But this approach is obviously dependent on the investor having the necessary balance-sheet and financial capacity, and is therefore typically used for smaller PPPs, or ones in which the level of capital investment, as opposed to long-term service provision, is lower.