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# Why Study Large Projects? An Introduction to Research on Project Finance

Benjamin C. Esty

*Morgan 381, Harvard Business School, Soldiers Field Road, Boston MA 02163, USA*
*e-mail: besty@hbs.edu*

**Abstract**

*Despite the fact that more than $200 billion of capital investment was financed through project companies in 2001, an amount that grew at a compound annual rate of almost 20% during the 1990s, there has been very little academic research on project finance. The purpose of this article is to explain why project finance in general and why large projects in particular merit separate academic research and instruction. In short, there are significant opportunities to study the relationship among structural attributes (i.e., high leverage, contractual details, and concentrated equity ownership), managerial incentives, and asset values, as well as improve current practice in this rapidly growing field of finance.*

**Keywords:** *Project finance*; *capital budgeting*; *contracting*; *agency theory*; *capital structure*; *corporate governance*

**JEL classification:** *G*32, *G*34, *L*22, *G*31

## 1. Introduction

Project finance involves the creation of a legally independent project company financed with equity from one or more sponsoring firms and non-recourse debt for the purpose of investing in a capital asset.[1] Although this definition makes project finance sound esoteric, it is not: total project-financed investment grew at a compound annual rate of almost 20% through most of the 1990s and peaked at $217

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[1] There is no single, generally agreed upon definition of project finance. A recent article in the *Wall Street Journal* illustrates the confusion that surrounds the definition. The article defined project finance as, '...a term that typically refers to money lent to build power plants or oil refineries' (Pacelle *et al.* 2001).

billion in 2001 (Esty, 2002a).[2] In the USA, approximately 10–15% of total capital investment is financed on a project basis, and over half of the capital assets costing more than $500 million are financed on a project basis. The most common applications are in the natural resource (mines, pipelines, and oil fields) and infrastructure (toll roads, bridges, telecommunications systems, and power plants) sectors.

Despite growing rapidly in recent years, total project-financed investment fell by 40% in 2002 due to a slowdown in the global economy combined with various regional and sectoral crises (e.g., in US power, global telecommunications, and Argentina). Nevertheless, the long-term demand for capital and infrastructure investment remains large given the globalisation of product markets, deregulation of key business sectors such as power, telecommunications, and transportation, and privatisation of government-owned entities in both developed and developing countries. In fact, project-financed investment rebounded in 2003 to $165 billion, well below the peak in 2001 but up more than 30% over 2002. Given the demand for investment and the growing importance of project finance as a financing tool, corporate executives, bankers, lawyers, and government officials need to understand what project finance is, why it creates value, and how to structure transactions that have a high probability of succeeding both operationally and financially. Unfortunately, academic theory and research on project finance distantly lag the state of current practice. Additional research is clearly needed not only to guide practice, but also to refine existing finance theories and to generate new ones.

The purpose of this article is to explain why project finance in general and why large projects in particular merit separate academic research and instruction. The short answer is that project companies are 'strategic research sites'[3] for people interested in learning more about how structural attributes such as high leverage, separate legal incorporation, and concentrated equity ownership affect managerial incentives and asset values. Standalone project companies are attractive research sites because they provide a relatively clear window into the process by which managers make important financing and structuring decisions. In contrast to many corporate financing decisions, which are made for reasons of expediency, the structuring decisions associated with large projects reflect conscious attempts to increase value or manage risk. On a more practical level, research on large projects can help document the significant financial, developmental, and social benefits that accrue to project participants and host nations when projects succeed. Yet many of the largest projects have encountered financial distress in one form or another (e.g., EuroTunnel, EuroDisney, Enron's Dabhol Power Plant, Iridium, Globalstar, Global Crossing – the Atlantic Crossing and Pacific Crossing cables, Canary Wharf, etc.). As a result, there are significant opportunities to improve the way managers make major investment decisions, and then structure and finance them.

This article is organised in two parts. In the first section, I address the more general question of why academic researchers should study project finance. Unlike other

[2] As a basis of comparison, the total amount invested in US projects in 2001, $68 billion, is approximately twice the amount raised in IPOs or invested by venture capital firms in 2001.

[3] Robert Merton (1987), the sociologist, defines a 'strategic research site' as a setting, event, or object '...that exhibits the phenomena to be explained or interpreted to such advantage and in such accessible form that it enables the fruitful investigation of previously stubborn problems and the discovery of new problems for further inquiry'.

relatively new sub-fields such as entrepreneurial finance and behavioural finance which have already been mined quite extensively, the field of project finance is relatively unexplored territory for both empirical and theoretical research. Positioned as we are at the beginning of the learning curve, even small improvements in theory and practice can yield large financial, social, and academic returns. I then address the more specific question of why *large* projects offer a particularly attractive subset of all projects to study. Implicit in both arguments is the idea that academics should not only study project finance, but also teach it as part of standalone courses on project finance or as part of existing courses on advanced corporate finance, international finance, risk management, development economics, contract theory, or financial institutions.[4]

## 2. Why study project finance?

Currently, there are very few published papers on project finance. In fact, there has been only one article directly on project finance published in the four leading finance journals, and not more than 15 articles in all finance journals over the past 20 years.[5] Similarly, there is little coverage or discussion of project finance in the leading corporate finance textbooks. Only three of the five leading corporate finance textbooks even mention project finance in their latest editions, and they do so in a total of only six pages.[6] In contrast, all of these textbooks discuss initial public offerings (IPOs), leasing, and venture capital for an average of 15, 10, and 4 pages each, respectively. But, as I will argue, this dearth of attention is unfortunate given the potential for new insights on the relationships among financial structure, managerial incentives, and asset values.

As a starting point, the growing use of project finance challenges the Modigliani and Miller's (1958) 'irrelevance' proposition, the idea that corporate financing decisions do not affect firm value under certain conditions. One of the key assumptions underlying their irrelevance proposition is that financing and investment decisions are separable and independent. When this assumption holds, various financing decisions such as the firm's organisational, capital, and ownership structures do not affect asset values or investment decisions. Building on this theoretical foundation, much of the empirical research in the field of corporate finance over the last 25 years has attempted to show that financing structures do, indeed, matter. In other words, that financing structures are value relevant.

Research on project finance falls within this broader line of inquiry, but offers a potentially more informative setting in which to illustrate why 'structure matters'. Project companies are attractive research subjects because they possess unique

[4] Besides Harvard Business School, Columbia, Georgetown, Kellogg, London Business School, New York University (Stern), Helsinki School of Economics, and SAIS (Johns Hopkins), among others, now offer courses on project finance. Many law schools and private companies (executive education courses) also offer project finance courses.

[5] The four journals are: *Journal of Finance* (JF), *Journal of Financial Economics* (JFE), *Review of Financial Studies* (RFS), and *Journal of Financial and Quantitative Analysis* (JFQA). The one article is by Esty and Megginson (2003) in the JFQA.

[6] Brigham and Gapenski (8th ed., 1997); Grinblatt and Titman (2nd ed., 2002); Brealey and Myers (7th ed., 2003); Damodaran (2nd ed., 2001); Ross *et al.* (6th ed., 2002).

structural attributes. For example, project companies are standalone entities. Thus, there is an organisational decision to finance assets *separately* rather than *jointly*, which is the case with corporate-financed investment. They have highly leveraged capital structures (the average project company has a debt-to-total capitalisation ratio of 70% compared to 35% for public companies), concentrated equity ownership (the typical project has two or three shareholders compared to hundreds or thousands of shareholders in public companies), and concentrated debt ownership (they are funded with bank debt primarily rather than bonds) – see Esty (2003a, 2002a) for a more extensive description of the institutional details. Finally, there are numerous legal contracts: a typical project can involve 15 or more parties united in a vertical chain from input supplier to output buyer through 40 or more contracts. For this reason, some people refer to project finance as 'contract finance'.

At first, many of these structural features appear counter-intuitive especially when compared to the alternative of using corporate finance. For example, creating a standalone project company takes more time (from 6 to 18 months more), entails significantly greater transaction costs, and, in most cases, involves higher debt rates than financing the same asset as part of an existing corporate balance sheet.[7] Given the large transaction costs – which can equal 5–10% of the project's total cost – the dramatic increase in the use of project finance over the past decade appears even more puzzling. Moreover, the combination of high leverage and extensive contracting increases the probability of default and severely restricts managerial discretion. For long-lived projects with uncertain futures, it is not clear why governance by rules is better than governance with managerial discretion.

In practice, however, the individual structural components fit together in a very coherent and symbiotic way, and can reduce the *net* financing costs associated with large capital investments – Esty (2003a) explains why firms use project finance and how it affects financing costs. The research and pedagogical challenge is to understand why. And unlike traditional research in economics where researchers can assert or impose the *ceteris paribus* assumption, thereby allowing them to observe the impact of changing one attribute at a time, researchers cannot take this approach in the world of project finance because the attributes are interdependent and endogenously determined. Using an analogy from econometrics, research on project finance requires one to think in terms of a system of equations rather than a single equation.

A second reason why project companies make attractive research sites is that we can observe the determinants and impacts of various structural decisions in a cleaner and more transparent way than in most corporate settings. Whereas the vagaries of history, past profitability, and previous strategic commitments limit the range of financing and structural choices available to managers of existing companies, these factors have less impact on managers as they design *new* project companies. As a result, research on existing companies such as leveraged buy-outs (LBOs), privatisations, and initial public offerings (IPOs) is more subject to the confounding effects of history. For example, bad luck can lead to operating losses and reductions in retained earnings, which in turn affects leverage. Project companies, as new companies, are less

[7] When the $3.6 billion financing for the Baku–Tbilisi–Ceyhan pipeline closed in February 2004, it required 208 finance documents and 17,000 signatures from 78 parties. The deal had been in negotiations for more than 10 years (Pope, 2004).

influenced by previous periods of bad luck. While it is true that project structures result from complex, multiparty negotiations, the final structures must be attractive to the sponsoring firms or else they would not proceed with the transactions.

The fact that project companies are stand-alone entities is also beneficial from a research perspective because it means the structural details and the performance outcomes are more readily observable to outsiders. When structural decisions are made inside diversified corporations, both the decisions and the subsequent outcomes can become obscured by other corporate activities. For these reasons, project companies provide a new and, potentially, very powerful laboratory to analyse structural decisions and to show why they matter.

One example of a unique structural attribute is high leverage. The extensive use of leverage in project companies provides new insights about debt finance in the same way the extensive use of equity in venture-backed organisations provides new insights about equity finance.[8] By studying companies in the tails of the leverage distribution, we can test the boundaries of existing capital-structure theories and, potentially, develop new ones. In the case of project companies, leverage plays an important disciplinary role: it prevents managers from wasting or misallocating free cash flow, and deters related parties, including host governments, from trying to appropriate it. Thus it provides strong empirical support for agency-based theories of capital structure in the presence of incomplete contracts (Jensen and Meckling, 1976; Jensen, 1986; Stulz, 1990; Hart, 1995; Esty, 2003b). Because leverage mitigates these costly incentive conflicts among capital providers, managers, and deal participants, it increases expected cash flows available to capital providers, thereby establishing a link between financing structure and asset values. As it turns out, it is difficult and often undesirable or impossible for companies to replicate the structural attributes of project companies within a corporate setting. The discipline of project leverage on a project manager is much stronger than the discipline of corporate leverage on a divisional manager. Similarly, project-specific compensation provides stronger incentives than compensation linked to corporate performance. Because high leverage at the corporate level can affect future investment decisions, it is often not desirable.

Whereas leverage affects expected cash flows available to capital providers, other structural attributes affect real investment decisions. The ability to create a stand-alone project company and finance it with non-recourse debt reduces the opportunity cost of underinvestment due to managerial risk aversion (Stulz, 1984) or debt overhang (Myers, 1977). Managers are particularly reluctant to invest in large, risky assets even when they have positive net present values (NPVs) in expectation. By segregating risky assets in a project company, managers can prevent a failing project from dragging the parent firm into default.[9] Project finance allows the firm to isolate asset risk in a separate entity where it has limited ability to inflict collateral damage on the sponsoring firm; in essence, it allows firms to truncate large left-hand tail

[8] See, for example, the research done by Sahlman (1990), Gompers and Lerner (1999), or Kaplan and Strömberg (2003) on venture-backed firms.

[9] Smith and Stulz (1985) note that hedging can help prevent underinvestment in positive NPV projects due to managerial risk aversion. Kunreuther *et al.* (1993) find that insurance agents are particularly concerned with pricing ambiguous risks (i.e., the probability distribution for an occurrence is not known) with uncertain or unpredictable losses. These kinds of risks are commonplace in large – often one-of-a-kind – projects located in developing countries.

outcomes, which Stulz (1996) claims is the primary goal of risk management. This example shows how organisational structure – the choice between project finance (financing assets separately) and corporate finance (financing assets jointly) – affects firm value by helping firms avoid the opportunity cost of underinvestment in positive NPV projects. The idea that financing assets separately (project finance) can be more valuable than financing them jointly (corporate finance) challenges the idea that diversification is beneficial.[10]

Finally, project finance can help reduce under investment due to asymmetric information. Myers and Majluf (1984) show that underinvestment occurs only when the value of *both* assets-in-place and investment opportunities is uncertain. Myers and Majluf recommend two solutions: financing assets separately (i.e., project finance) and holding financial slack. While financing assets separately clearly improves information flow, this information-based motivation for using project finance has trouble explaining why non-recourse debt, the *sine quo non* of project finance, is needed. Most of the information advantages could be obtained with corporate debt (e.g., secured debt) or some form of equity restructuring (e.g., equity carve-out, targeted stock, etc.).

In summary, research on project companies can shed new light on existing theories of capital structure, corporate governance, and risk management. There is an opportunity to tackle research questions such as what determines the boundaries of the firm, a long-standing yet unresolved issue in industrial organisation economics. Along these lines, Leland and Skarabot (2003) argue in a recent paper that financial synergies help explain why firms finance assets jointly or separately. A second area for research is the idea that organisational form can be used as a risk management tool. Most of the research to date has focused more narrowly on risk management through financial instruments. Given the extensive contracting that supports project companies – project companies truly fit the description of firms as a 'nexus of contracts' – there is a great opportunity to analyse contracting issues for durable assets in the presence of agency conflicts and extensive transaction costs (e.g., Joskow, 1985).

## 3. Why study *large* projects?

Within the broader context of project companies, there are important reasons to focus on the subset of large projects, those costing $500 million or more, which account for 25% of the projects by number by 75% by value (Esty, 2002a). While there has been some academic research on project finance and some on large capital investments, there has been relatively little research on the joint subset of *large* projects. The research on project finance (e.g., Finnerty, 1996; Fabozzi and Nevitt, 2000) does not differentiate between large and small projects – Cell 1 vs. Cell 3 in Figure 1 below. At the same time, the research on large capital investments (e.g., Fox, 1984; Merrow

[10] The costs and benefits of diversification appear in many contexts in the field of finance. On the one hand, the Capital Asset Pricing Model (CAPM) is built on the idea that diversification is beneficial because it eliminates idiosyncratic risks, leaving only systematic risks to be priced in the market. On the other hand, diversification in operations is typically viewed as a disadvantage. In fact, there is evidence, albeit unresolved, that conglomerate firms trade at a discount relative to pure play firms (Berger and Ofek, 1995; Campa and Kedia, 2002). This finding argues for financing assets separately. Option pricing theory provides yet another reason to finance assets separately: the value of a portfolio of options (i.e., project finance) is more valuable than an option on a portfolio (i.e., corporate finance).

| | | Type of Financing | |
|---|---|---|---|
| | | **Project Finance** | **Corporate Finance** |
| **Investment Size** | **Large** | Box 1 | Box 2 |
| | **Small** | Box 3 | Box 4 |

Fig. 1. Distribution of capital expenditures by investment size and type of financing.

*et al.*, 1988; Miller and Lessard, 2000) does not differentiate between project and corporate finance – Cell 1 vs. Cell 2 below.

Yet there are academic, managerial, and pedagogical reasons to focus on large projects exclusively (Cell 1). The academic reasons relate to the ability to conduct research in a productive and informative environment. Large projects are more attractive than small projects because they allow us to observe managers as they make very conscious investment and financing decisions. When managers make large investment and financing decisions, they have the ability and the economic incentive to make careful, value-enhancing decisions. They have the ability because large projects require at least one and up to five years to structure; they have the incentive because significantly more money is at stake – both their personal wealth and their professional reputations are on the line as well as substantial amounts of capital from other investors.

Of course, there are alternative ways to interpret observed managerial actions – they can have no effect on value or they can be manifestations of incentive conflicts between managers and capital providers (i.e., the decisions reflect value destroying agency conflicts as suggested by Jensen, 1986). For the very largest projects, where powerful political agendas and numerous influential parties inevitably enter the decision-making calculus, the structural decisions may not reflect true value maximisation. A critical constraint on managerial discretion in the investment process is the need to raise *external* funds, usually in the form of bank debt. Convincing debt holders that a particular investment and financing structure makes sense, particularly risk averse bankers who supply the majority of the capital and bear downside risk without the benefit of upside payoffs, is not easy. For this reason, it seems reasonable to assume that the financing and investment decisions do, in fact, reflect careful and deliberate attempts to increase firm value.

Some of the most interesting managerial decisions reflect attempts to mitigate costly capital market imperfections. These imperfections – agency conflicts, asymmetric information, distress, etc. – impose 'deadweight' financing costs on firms. By focusing on large projects, the researcher is able to transform small *relative* costs into large *absolute* costs, thereby increasing the probability of detecting their existence and observing managerial responses to them. For example, an agency conflict that causes a deadweight cost of 5% of asset value is worth only $1 million in a $20 million investment, but is worth $100 million in a $2 billion investment. Facing a potential loss in value of $100 million, capital providers willingly undertake costly actions, such as using project finance and changing organisational form, to achieve a *net* reduction in total financing costs. Analysis of project-financed investments shows how capital

providers respond to market imperfections and how much they are willing to spend to mitigate these costly imperfections. These expenditures provide a lower bound estimate of the magnitude of deadweight costs, something that has been exceedingly difficult to estimate in other settings. Thus, project companies provide an interesting setting in which to study the nature and magnitude of market imperfections.

At a more practical, managerial level, the decision to make a 'mega' investment turns out to be a defining moment for most companies. It is, in Ghemawat's (1991) terminology, an act of 'commitment' that can establish (or destroy) a trajectory of sustainable competitive advantage. A good example is Airbus Industrie's decision to develop a new super jumbo jet, the A380, at a cost of $13 billion (see Esty, 2001a). For a company with $17 billion in sales when it decided to launch the plane, developing this plane represents a 'bet-the-company' type of investment. History contains several examples of plane manufacturers that went bankrupt after failed product launches. This development effort will have major ramifications for both Airbus as a company and its senior management for many years to come.

Asset size has a particularly important effect on a manager's incentive and ability to finance new investments. Asset size clearly affects a manager's willingness to bear risk. For example, when the amounts at stake are small, people typically exhibit risk-seeking behaviour (they buy lottery tickets). Yet when the amounts at stake are large, people often exhibit risk averse behaviour (they buy car insurance) and, ultimately, even reject positive NPV investments if the risk is sufficiently high. Thus, in contrast to the prescription taught in most introductory finance classes – accept all positive NPV investments – managers often reject large, risky investment opportunities, especially if they have the potential to inflict sizeable distress costs or, in the extreme, cause the sponsoring firm to go bankrupt. Size also affects a manager's ability to finance a particular investment. In the extreme, a manager trying to finance a large project in an emerging market will quickly encounter capital constraints.[11] Local capital providers are likely to be small and have limited resources, while international capital providers may have limited interest and, in the extreme, be forbidden by internal credit policies from investing in specific countries. For these reasons, asset size tends to exacerbate agency conflicts and other market imperfections.

Large projects not only affect key decision makers and the companies in which they work, they also affect the communities and nations where they are located. When large projects succeed, they can dramatically improve the social and economic conditions in a given region. The Mozal project, notwithstanding Easterly's (2001) criticism of World Bank and International Finance Corporation (IFC) activities, is a wonderful example of how a mega project can change a country, in this case Mozambique, for the better (Esty, 2001b). The aluminum smelter cost $1.4 billion to build, a sum that was approximately equal to the country's gross domestic product (GDP) at the time. The success of the initial investment led to a follow-on investment of another $1 billion, as well as several other infrastructure and industrial investments. For a developing country like Mozambique, with a per capita GDP of less than $100 per

[11] In countries with poorly developed financial systems, foreign banks must provide a larger share of project debt. Yet Esty (2003c) shows that foreign banks are reluctant to finance projects in countries with weak creditor rights and poor legal enforcement, and charge more when they do lend funds to such projects.

year, large-scale investments can dramatically change the business climate and economic conditions for local citizens.

Unfortunately, the anecdotal and limited quantitative evidence that exists on the performance of large projects is not particularly favourable. The few empirical studies that have been done on the performance of large projects, however, corroborate the anecdotal evidence.

- Miller and Lessard (2000) studied 60 large engineering projects with an average size of $1 billion undertaken between 1980 and 2000. They found that almost 40% of the projects performed very badly and were either abandoned totally or restructured after experiencing some kind of financial crisis.
- Merrow *et al*. (1988) studied 47 'megaprojects' and found that only four of them came in on budget – the average cost overrun was 88%. Of the 36 projects that had sufficient data, 26 of them (72%) failed to achieve their profit objectives.
- Flyvbjerg *et al*. (2003) analyse the performance of large transport infrastructure projects (toll roads, bridges, railroads, etc.) and conclude '...over-optimistic forecasts of viability are the rule for major investments rather than the exception'. Cost overruns of 50% to 100% and revenue shortfalls of 20% to 70% are common.

The general conclusion from these studies, although none of them analysed project-financed investments specifically, is that large investments frequently fail to achieve their intended financial and operating objectives. Determining whether these findings are, in fact, valid for large project-financed investments, or if the means of financing (corporate, project or public finance) plays a role, will require additional research. It is important to note, however, that the results for large projects do not appear to reflect the performance of all project-financed investments. The most comprehensive study on the performance of project loans done to date was recently completed by four of the leading project finance banks and S&P Risk Solutions, a division of Standard & Poor's Corporation. Their analysis shows that project loans have lower default rates and higher recovery rates than corporate loans (see Esty, 2002b). While more research is clearly needed, there is sufficient evidence to suggest that large projects may be a unique sub-group with different performance characteristics. Analysis of large projects, therefore, has the potential to not only generate new academic insight, but also improve current practice.

Finally, there are important pedagogical reasons for studying large projects. To make optimal investing, financing, and operating decisions, managers must possess functional expertise across a broad range of disciplines – with smaller projects, the cost associated with inexperience is much less. In addition to the financing issues, managers must understand issues related to competitive strategy (should one enter the aluminum smelting industry?), business-government relations (how do you reduce the probability of expropriation?), marketing/sales (how do you estimate long-term demand for a new product or service?), negotiations (how do you conduct and resolve multi-party negotiations?), ethics (should you fund projects in countries with oppressive political regimes?), and human resources management (how do you hire and organise 5,000 people in a developing country, most of whom have never had a formal job, in only one year?). In the classroom, discussion of project companies forces students to adopt a more integrated perspective and wrestle with the interconnectedness of managerial decision-making. For this reason, a course on project finance is an ideal capstone class for an MBA programme because it both sharpens the students' finance skills and broadens their perspective.

## 4. Conclusion

In answering the question posed in this article's title – why study large projects – I have broken it into two related questions: why study projects (project finance) and why study large projects. The reasons to study project finance are because it vividly illustrates why financial structure matters, has the potential to extend and even develop new financial theories, and is an increasingly important financing vehicle used in practice. Just as securitisation, leasing, and joint ventures are important financing tools, project finance is, too, and should be included in the financial manager's toolkit. The answer to the second question regarding the focus on large projects is because they provide a clean setting in which to analyse how managers make important structuring and financing decisions in response to capital market imperfections.

Studying large projects, however, can be difficult, which partially explains why there is not much academic research and only a few project finance courses in MBA programs today. First, and foremost, there are relatively few large projects (approximately 40–80 per year), they have long lives, and they have idiosyncratic features. As a result, statistical tests are weak and the lessons are not always applicable to other projects. Second, studying projects requires significant up-front investment to understand the institutional details. Moreover, obtaining data can be exceedingly difficult because most project companies are private. This combination of few observations, complex institutional details, and private information necessarily implies that the primary research methodology will be in depth and field based rather than broader and large sample statistical analysis. With regard to theoretical research, the research questions have not been clear and the institutional details needed to build models have not been readily apparent.

These barriers-to-entry, however, have been falling in recent years. There is now a sizeable body of scholarly research on project finance, including numerous case studies, books (see Esty, 2002c, 2004), and related articles. In addition, there are several commercially available databases containing information on project-financed transactions.[12] As the body of knowledge grows, it will improve the way managers make important financing and investing decisions. After all, and unlike the Modigliani and Miller irrelevance proposition, financing and investment are *not* separable and independent activities. How a company finances an asset directly affects whether it gets financed and how much it is worth. Project finance, as it turns out, just happens to be a particularly interesting and effective setting in which to illustrate the simple yet critical idea that 'structure matters'.

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[12] The Project Finance web portal (http://www.hbs.edu/projfinportal/) contains references for books, articles, and case studies on project finance as well as more than 900 links to related web sites. With regard to data, Dealogic (the Projectware database) and Thompson Financial Securities Data Corporation both provide project finance databases. Dealogic also provides a database of loans that contains information on project loans (the Loanware database).

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