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An Overview of Project Finance—2001 Update

This note provides an introduction to the field of project finance and a statistical overview of project financed-investments over the last five years. Recent examples of project-financed investments include the \$4 billion Chad-Cameroon pipeline, \$6 billion Iridium global satellite project, €900 million A2 Toll Road in Poland, and the \$1.4 billion aluminum smelter in Mozambique known as Mozal. Globally, firms financed almost \$220 billion of capital expenditures using project finance in 2001; domestically (in the U.S.), firms financed \$68 billion of capital expenditures using project finance. By way of comparison with other financing mechanisms in the United States in 2001, the U.S. project finance market was smaller than the \$434 corporate bond market, the \$354 billion asset backed security market, and the \$242 billion equipment leasing market, but substantially larger than the \$38 billion raised in initial public offerings (IPO) and the \$36 billion invested by venture capitalists.¹

Project finance has historically been a financing vehicle for the public sector. More recently, however, private firms have begun to finance infrastructure development (roads, power plants, telecommunications systems, etc.) using project finance.² According to World Bank estimates, the demand for investment in infrastructure is enormous: Asian countries alone, which historically have accounted for only 15% of the project finance market, need \$2 trillion of infrastructure investment over the next decade to maintain their current rate of development.³ Similarly, Latin America needs \$50 billion of infrastructure investment per year for the next decade.⁴ Most studies on economic development find that infrastructure investment is associated with one-for-one percentage increases in gross domestic product (GDP).⁵ Similar country-specific studies of development find that inadequate infrastructure severely hinders economic growth. For example insufficient or irregular power supply reduces GDP by 1% to 2% in India, Pakistan, and Colombia.⁶ Despite the growing demand and opportunities for private sector involvement, private firms still provide only a small fraction of total investment.

This note focuses exclusively on private sector investment in infrastructure and non-infrastructure projects, and contains four sections. The first section defines project finance and contrasts it with other well-known financing structures. The second section describes the evolution of project finance from its beginnings in the natural resources industry in the 1970s, to the U.S. power industry in the 1980s, to a much wider range of industry applications and geographic locations in the 1990s. The third section provides a statistical overview of project-financed investment over the last five years (1997 – 2001) in terms of industry, project, and participant data. The final section discusses current and likely future trends. For further information on project finance, see the Harvard Business School

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Project Finance Portal at www.hbs.edu/projfinportal/ (see the **Appendix** to this note). This portal is intended to be a reference guide for students, researchers, and practitioners seeking to obtain information about project finance. In addition to bibliographical references to books, articles, and case studies, the site contains more than 900 links to related sites.

Definition and Use of Project Finance

There is no single agreed upon definition for project finance. For example, Finnerty (1996, p. 2) defines project finance as:

. . . the raising of funds to finance an economically separable capital investment project in which the providers of the funds look primarily to the cash flow from the project as the source of funds to service their loans and provide the return of and a return on their equity invested in the project.

while Nevitt and Fabozzi (2000, p. 1) define it as:

A financing of a particular economic unit in which a lender is satisfied to look initially to the cash flow and earnings of that economic unit as the source of funds from which a loan will be repaid and to the assets of the economic unit as collateral for the loan.

Although neither definition uses the term “non-recourse debt” explicitly (i.e. debt repayment comes from the project itself rather than any other entity), both recognize that it is a critical feature of project finance.^a The following definition allows one to distinguish project finance from other financing vehicles, something the previous two definitions cannot do:

Project finance involves a corporate sponsor investing in and owning a single purpose, industrial asset (usually with a limited life) through a legally-independent entity financed with non-recourse debt.

This definition recognizes three key decisions related to the use of project finance. First, there is an investment decision involving an industrial asset. Bruner and Langohr (1992, p. 2) differentiate between stock and flow-type projects. In *stock-type* projects, firms extract resources like oil or copper, sell the output, and use the proceeds to service debt and generate equity returns until the resource is exhausted. In contrast, *flow-type* projects—highways, pipelines, telecommunications systems, and power plants—rely on asset use to service debt and generate equity returns. The definition also highlights an organizational decision to create a legally-independent entity that owns the asset. As a result, project finance typically represents a form of off-balance sheet finance, meaning that project assets and liabilities do not appear on the sponsor’s balance sheet. The exact accounting treatment, however, is a function of the chosen organizational form (corporation, partnership, etc.) and the sponsor’s fractional interest in and control over the project. Finally, there is a financing decision involving non-recourse debt. Because the project company is legally independent, the debt can be structured without recourse to the equity investors, who are known as *sponsors*. Legal independence also ensures that capital providers have a clear claim on the project’s asset and cash flows without concern for the sponsor’s financial condition or for pre-existing claims on its assets.

^a *Limited* recourse debt—debt that carries a repayment guarantee for a defined period or time, for a fraction of the total principal, or until a certain milestone is achieved (e.g. construction is completed, the project achieves a minimum level of output, etc.)—is a subset of non-recourse debt. The key is that the debt becomes non-recourse at some point in time.

This formal definition stipulates a number of qualifications which may seem trivial at first, but which are needed to distinguish project finance from other financing structures. For example, the difference between asset-backed securities and project finance—a portfolio of financial assets vs. a single industrial asset—has ramifications for how you finance the assets because the former exhibits greater statistical regularity. It also affects how you manage the assets because the industrial assets require active management. To clarify the definition, it helps to compare project finance with other financing structures—the carefully worded definition allows one to differentiate project finance from these other structures. Consider the following financing structures—which are project finance?

- **Secured debt:** No, because the debt has recourse to corporate assets.
- **Subsidiary debt:** Not if it the debt has recourse to corporate assets.
- **Lease:** No, because the obligation has recourse and it does not involve asset ownership.
- **Joint ventures:** Not unless funded with non-recourse debt (*note:* many projects are structured as incorporated joint ventures).
- **Asset backed securities (ABS) or Real estate investment trusts (REITs):** No, because they hold financial not single purpose, industrial assets.
- **Privatizations or municipal development:** No, because they lack a corporate sponsor.
- **Leveraged buy-outs (LBOs and MBOs):** No, because they lack a corporate sponsor.
- **Commercial real estate development:** Yes, but real estate tends to have different institutional arrangements.
- **Project holding companies:** Maybe, but as the number of projects increases, it begins to look more like a corporation with cross-collateralized debt.

Despite the fact one can distinguish project finance from these other financing vehicles, the boundaries are not precise. For example, building power plants resembles commercial real estate development except that projects often involve more relationship or transaction specific assets (i.e. the assets are more valuable to certain transacting parties). Other projects such as satellite telecommunications systems resemble venture-backed start-up companies. Similarly, LBOs and project companies share highly leveraged capital structures and concentrated equity ownership. Because of these and other similarities, research on real estate finance, LBOs/MBOs, securitization, secured debt, and leasing provides insights about project finance and how it creates value. At the same time, research on project finance yields new insights for these and other related fields such as real estate finance, development economics, and organizational economics.

The definition also highlights the fact that project finance involves the confluence of interacting structural decisions (separate legal incorporation, unique capital structure, extensive contracting among participants, etc.) At first, many of the features appear counter-intuitive. For example, establishing a new project company involves incremental structuring (transaction) costs and higher debt rates than financing the same asset as part of an existing company. Why incur the incremental cost? In addition, projects also employ higher leverage: the average project has a debt-to-total capitalization ratio of 70% compared to 20-30% for a publicly-traded company. Because leverage increases the probability of default, *ceteris paribus*, this choice seems puzzling. And finally, the extensive contracting restricts managerial discretion. For long-lived assets with uncertain futures, it is not clear why strict rules are preferred over discretion. It turns out, however, that project finance is a cheaper and more effective way to finance certain kinds of assets. This note does not cover the reasons for or benefits of using project finance, which are covered in other sources such as Esty (2002), Finnerty (1996), or Hoffman (1998). To summarize this research, the tightly integrated set of organizational, financial, and contractual features generates a low-cost financing vehicle and creates an effective governance structure for large, tangible assets.

History of Project Finance

Most people think of project finance as a relatively recent phenomenon, yet its history goes back hundreds if not thousands of years. One of the oldest recorded applications of project finance dates back to 1299, when the English Crown enlisted a leading Florentine merchant bank to aid in the development of the Devon silver mines. The bank received a one-year lease for the total output of the mines in exchange for paying all operating costs without recourse to the Crown if the value or amount of the extracted ore was less than expected.⁷ Today, this type of loan is known as a production payment loan. Early trading expeditions in the seventeenth and eighteenth centuries were also financed on a project basis. Investors provided funds to the Dutch East India Company and the British East India company for voyages to Asia after which they were repaid according to their share of the cargo once sold.⁸ Over time, as other forms of more permanent capital became available, firms curtailed their use of project-specific financing.

Some of the earliest applications of project finance in the United States were in natural resources and real estate. In the 1930s, “wildcat” explorers in Texas and Oklahoma used production payment loans to finance oilfield exploration.⁹ Similarly, real estate developers built and financed stand-alone commercial properties through much of the 20th century on a project basis. In both cases, the creditors had recourse to the project’s cash flows only.

During the 1970s, project finance began to develop into its modern form, partly in response to several large natural resource discoveries and partly in response to soaring energy prices and the resulting demand for alternative energy sources. British Petroleum raised \$945 million on a project basis in the early 1970s to develop the “Forties Field” in the North Sea. At roughly the same time, Freeport Minerals project financed the Ertzberg copper mine in Indonesia and Conzinc Riotinto of Australia project financed the Bougainville copper mine in Papua New Guinea.

The use of project finance took-off in the early 1980s as the United States scrambled to build new power plants. The persistence of high energy prices motivated the U.S. Congress to pass the Public Utility Regulatory Policy Act (PURPA) of 1978 as a way of encouraging investment in alternative (non-fossil fuel) energy generators. This Act required local utilities to purchase all of the output from qualified power producers under long-term contracts. Project finance became the structure of choice for financing new generating plants with long-term power purchase agreements. Equity investors (known as *sponsors*) created new companies to own power plants, and financed them with non-recourse debt. These plants were known as independent power producers (IPPs).

Exhibit 1 shows a typical project structure involving 15 or more parties united in a vertical chain from input supplier to output buyer through 40 or more contractual agreements. To develop a new generating plant, an IPP typically signed four major contracts: (1) a construction and equipment contract, usually on a fixed-price, turnkey basis with an experienced contractor; (2) a long-term fuel supply contract; (3) a long-term power purchase agreement with a creditworthy public utility; and (4) an operating and maintenance contract. Once these, and numerous other contracts were signed, sponsors could finance the “contractual bundle” on a project basis.

Project finance was particularly attractive for IPPs because it offered high leverage with limited or no recourse to the sponsor’s balance sheet. Lenders became comfortable with terms that were aggressive by conventional standards because IPPs had long-term, steady streams of cash flow from creditworthy counter-parties. During the 1980s, financing power projects accounted for more than two-thirds of total project-financed investment.¹⁰ For this reason, project finance was essentially synonymous with domestic (U.S.) power finance until the early 1990s.

A separate, but concurrent, antecedent of modern project finance was the public sector's use of tax-exempt municipal bonds to finance roads, water treatment plants, and other infrastructure projects. Municipalities originally financed these projects using general obligation bonds backed by their full faith and credit. Over time, they began to use revenue bonds backed by profit-specific cash flows. By the early 1990s, municipalities began to marry project finance with private sector involvement. While the stated objective was to encourage better management and promote more efficient risk sharing, these public/private structures could also be used to expand the pool of available funds in the face of limited government budgets.

Public/private partnerships (known by the acronym PPP) have become formalized in many countries. For example, the United Kingdom established the Private Finance Initiative (PFI) in 1992 to involve the private sector in financing and managing infrastructure projects. By 1999, the United Kingdom had signed agreements for more than 250 PFI projects with a total value of £16 billion. Based on its early success, the government has identified over 1,000 other projects for possible inclusion in the PFI program including proposals for hospitals, schools, and prisons.¹¹ In recent years, many countries including Ireland, Italy, Australia, and South Africa have established similar PFI programs.

Since the early 1990s, privatization, deregulation, and globalization have spurred the use of project finance across both developed and developing countries. The rate of privatization of state-owned companies has increased substantially, particularly in the emerging markets. During 1990-1996, privatization revenues in the emerging markets totaled more than \$155 billion, reaching \$25 billion in 1996 alone.¹² As governments exited businesses, private sector companies stepped in to fill the void. Newly privatized companies such as YPF (the former state-owned oil and gas company in Argentina) used project finance to fund their growth. Concurrent deregulation of key industrial sectors (e.g. power) has also created new opportunities for investment. In many cases, project finance has been the vehicle of choice to finance this investment. And finally, globalization of markets has increased the minimum efficient scale for many industries while depletion of existing natural resources has forced firms to search in increasingly remote locations to find new reserves. As a result of these changes, sponsors began using project finance for a much broader range of assets in a much broader range of countries by the mid-1990s. No longer is project finance confined to the U.S. power industry. Examples of the reach and versatility of project finance are the \$3.7 billion Paton power plants in Indonesia (1995-1996), \$217 million Centragas pipeline in Colombia (1994), \$57 million Andacollo gold mine in Chile (1994), \$1.6 billion FLAG multinational telecommunications project (1995), and \$3.4 billion Malaysian North-South expressway (1989-1993).¹³

Project Financed-Investment Over the Last Five Years (1997-2001)

This section provides an overview of the project finance market over the last five years. It uses data from *Project Finance International* and SDC (trade journal and database, respectively, both of which are divisions of Thomson Financial, a leading supplier of project finance data).

Industry Data

In 2001, the total global project finance market was approximately \$220 billion including both debt and equity investments (see **Exhibit 2**). This number represents private-sector investment in the form of commercial bank loans and bonds as well as investments made by international financial institutions (development institutions and export credit agencies). The total investment by international financial institutions in private-sector projects was \$25.0 billion in 2001 of which an estimated \$19 billion came in the form of debt and equity investments; the rest came in the form of

guarantees and insurance. Since 1996, total project finance investment has been growing at a compound annual rate of 18% per year and has increased every year since 1998 when it experienced a decline due to the Asian financial crisis. Within the total market, the use of project bonds is becoming more prevalent: bond finance has grown at a compound annual rate of 39% per year since 1996 and reached a level of \$25 billion in 2001. Despite the recent growth, the use of project bonds is a relatively recent phenomenon. The Midland Cogeneration Project, an IPP in Michigan, issued the first project bond in 1991—it received a sub-investment grade rating from S&P.¹⁴ The following year, S&P issued its first investment grade rating for a project, the \$560 million Coso Funding Corporation, and its first rating for a project in an emerging market country, the \$200 million Toluca Toll Road refinancing in Mexico. Whereas bonds accounted for 10% of total project debt in 1996, they now account for almost 20% of total debt. In terms of the number of deals financed in 2001, 314 projects were financed with bank debt with an average loan size of \$345 million; 79 projects were financed with bonds with an average issue size of \$316 million (an undisclosed number of projects used both bank and bond finance and are double counted).

Exhibits 3, 4, and 5 show the distribution of bank lending by region, sector, and region/sector, respectively. In the last five years, 28% of total lending has occurred in North America (see **Exhibit 3**). Following the Asian financial crisis in 1997, North American and Western European volume increased from 36% of the total in 1997 to 63% of the total in 2001. Central and South American volume slid from 15% of the total in 1997 to 9% of the total in 1999, and then recovered to 14% of the total in 2001. And, Asian volume fell from 16% of the total in 1997 to 6% of the total in 1998, and has remained at this level in recent years. The change in regional lending highlights the recent flight to quality in the project finance market.

In terms of sectors, bank lending remains concentrated in power (44%), though telecom (22%) and infrastructure (10%) are also important sectors (see **Exhibit 4**). Combined, these three sectors represent more than three-fourths of the total market in 2001. Interestingly, the volume of power deals still reflects the industry's historical roots in the power sector. In fact, power financing has increased significantly from 25% of the total in 1997 to 44% of the total in 2001. The most significant shift in 2001 was the decline of bank lending to the telecom sector, because of the technology fallout.

Exhibit 5 shows the distribution of bank lending by both region and sector over the past five years. The most active sectors/regions are shaded: power in the Americas (\$96.8 billion), telecom in Europe/Middle East/Africa—EMEA (\$69.7 billion), power in EMEA (\$36.1 billion), infrastructure in EMEA (\$31.6 billion), telecom in the Americas (\$31.5 billion), power in Asia Pacific (\$23.0 billion), oil and gas in the Americas (\$18.6 billion), and oil and gas in EMEA (\$16.7 billion). These eight sector/region pairs account for 78% of all bank lending over the past five years. The top sector alone—power in the Americas—accounts for almost a quarter of the total bank lending.

Turning from the bank loan to the bond market, **Exhibit 6** shows that project bond issuance has largely been concentrated in the United States, which accounts for 56% of the five-year total. However, project bonds have recently been used in a growing number of developing countries including Chile, Israel, Malaysia, and South Korea. Like bank lending, project bonds tend to be used in power deals (52% of the total), though they have also been used regularly to finance oil and gas, infrastructure, and telecom projects (see **Exhibit 7**). Once again, the flight to quality is evident as power deals accounted for almost 70% of the market in 2001.

Exhibit 8 shows the distribution of Standard & Poor's (S&P) ratings for project bonds over the last six years. Most project bonds have low investment grade ratings (BBB-). It is important to note that most of these bonds have "negotiated" ratings, which means the sponsors adjust leverage, covenants, and deal structure until the projects achieve an investment grade rating, at least at issuance. The reason for targeting an investment grade rating is that the largest advantage in pricing and volume

occurs at the BBB- threshold due to institutional restrictions against investing in sub-investment grade securities. For this reason, the general rule of thumb is that bonds must be investment grade in order to sell in the market. As a result, sponsors with projects in emerging markets may find it prohibitively expensive, if not impossible, to use project bonds. Since 1996, the volume of S&P-rated bonds has increased at a compound annual rate of 33%, reaching \$81 billion in 2001. During this time, there was an overall decline in credit quality. Between 1996 and 2001, the percentage of bonds with an investment grade rating decreased from 83% to 65%, another manifestation of the Asian financial crisis and the associated concerns about emerging markets. The downgrades also reflect concerns about merchant power plants in the US and elsewhere—merchant power plants (MPPs) are like IPPs except they lack long-term supply and off-take agreements with fixed prices and quantities.

Project Data

Thomson Financial's SDC database, which contains information on almost 1,200 deals signed between 1997 and 2001, permits detailed analysis of project size, leverage, and contractual maturities. This analysis reveals that projects tend to be larger than \$100 million in size, have highly leveraged capital structures, and long, but limited lives. **Exhibit 9** shows the size distribution of projects by year and by sector. When broken down by the number of projects, **Exhibit 9A** shows that 27% of the projects by number are under \$100 million in size. At the other end of the size spectrum, 26% of the projects are larger than \$500 million in size, but they account for 74% of total lending volume (see **Exhibit 9B**). The majority of expenditure comes from the projects greater than \$1 billion in size: they account for 12% of projects by number and 53% by total cost over the last five years. According to the breakdown by sector shown in **Exhibit 9C**, the petrochemical, telecom and oil and gas sectors have the greatest number of large projects (i.e., greater than \$1 billion). When measured in terms of value, these sectors show even greater concentration in large deals. Per **Exhibit 9D**, the oil and gas, petrochemical and telecom sectors have 74%, 67% and 59% of their total volume, respectively, in deals greater than \$1 billion.

Exhibit 10 analyzes project leverage ratios over the last five years. The mean and median debt-to-total capitalization has been 70%, though the ratios vary over time as a function of the mix of projects in any given year. Only 10% have leverage ratios below 50%, which is still much higher than the typical publicly traded company. The most noticeable finding is that leverage ratios vary by project sector: the median leisure and property deal has a leverage ratio of 85% compared to 73% for power deals and 64% for industry deals (see **Exhibit 10B**). Other sectors fall somewhere in the middle.

Exhibit 11 analyzes the length of various project contracts. Despite a limited number of observations—not all variables are reported in the database for each deal—the data reveals several interesting facts. **Exhibit 11A** shows the distribution of construction contracts by the number of years to complete the project. The mean and median numbers are both 2.0 years. The long construction period increases uncertainty and project risk. **Exhibit 11B** shows the distribution of off-take agreements in years (the number of years with output purchases under contract). The mean and median numbers are both approximately 20 years, though 20% of the agreements are longer than 25 years. Having long-term off-take contracts makes project revenues more predictable and reduces lender risk as long as the counter-parties are creditworthy. Concession agreements—agreements that govern project management and operations—typically run for 25 to 30 years although there is a clear difference between projects in low-rated countries and projects in high-rated countries. **Exhibit 11C** shows the distribution of concession agreements in years. The median concession contract in high-rated countries (AAA to A-) is 30 years compared to 21.5 years in low-rated countries (BBB+ to B-). Debt maturities provide a final way to analyze project lives. According to **Exhibit 11D**, banks provide shorter-term financing (over 60% of bank loans mature in less than 10 years), while bonds

provide longer-term financing (over 75% of bonds mature in more than 10 years). The median term for bank loans is 8.0 years, which is much shorter than the median bond maturity of 13.3 years.

Participant Data

Exhibit 12 provides “league tables” from *Project Finance International* showing the major participants in four areas of the project finance market: arrangers, managers, advisors, and lawyers. In the 2001 Global Lead Arrangers category (the institution responsible for arranging the bank financing), Citigroup remained in the top spot for the second year in a row (see **Exhibit 12A**). The top 10 players did not change substantially from 2000 to 2001. Only Bank of America fell out of the top 10—it fell to the thirteenth position. It was replaced by Dresdner Kleinwort Wasserstein, which finished in seventh place. The league tables provide an example of where the various industry data sources can differ. In contrast to the rankings in **Exhibit 12A**, *Project Finance* magazine ranks WestLB, Citigroup, Royal Bank of Scotland, ABN AMRO, and Credit Suisse First Boston (CSFB) as the top five Global Arrangers in 2001 (in descending order).¹⁵ Whereas the ordinal ranks differ somewhat among the top 10, the set of institutions in the top 10 is approximately the same.

Exhibit 12B shows the league table for lead managers (the institutions responsible for bond financing). Lehman Brothers tops the list in 2001 with 31% share of volume, about 50% more than the number two-ranked institution, Citigroup. CSFB, Goldman Sachs, and Bank of America round out the top five. Collectively, the top five institutions control about 80% of the bond market, which is significantly more concentrated than the bank market where the top five control 37% of the bank market. The bond market rankings also more dynamic than the bank market rankings. There were four new entrants to the top 10 in 2001, compared to only one new entrant in the bank market.

Exhibit 12C ranks firms based on advisory mandates, defined as paid contracts for advisory services won in 2001. PricewaterhouseCoopers has garnered the top spot in the Global Advisory Mandates league table for the past five years and holds commanding lead. It is important to note, however, that this exhibit ranks firms by the *number* of mandates, not the dollar value or profitability of specific mandates.

Finally, in the legal advisory role in terms of the number of “major” deals—those with total value above \$500 million—the top four firms are Allen & Overy, Clifford Chance, Millbank, Tweed, Hadley & McCloy, and Shearman & Sterling (see **Exhibit 12D**). What is most striking about the law firm league table is that eight of the top ten law firms are from either the United States or the United Kingdom. Whereas German, French, and Dutch firms play prominent roles in the arranger market, they are less of a factor in the manager and legal advisory markets.

Exhibit 13 identifies the major international financial institutions (IFIs) and details their investment in private sector projects from 1991 to 1998. There are two types of IFIs: development finance institutions (DFIs) and export credit agencies (ECAs). The DFIs try to spur economic development while the ECAs try to help domestic firms export their goods and services into international markets. According to data from the International Finance Corporation (IFC, 1998), these institutions invested \$24.7 billion in *private-sector* projects around the world in 1998. Of this amount, medium to long-term loans and equity accounted for an estimated \$19 billion while guarantees and insurance products accounted for the remaining \$6 billion.

Current and Future Trends

Analysis of likely future trends can be divided in two parts: the nature of project assets and the financing of project assets. During the early to mid-1990s, project finance penetrated new geographic regions and new industries. As it evolved into new applications, lenders loosened covenants, extended maturities, and tightened lending spreads. But a series of crises in the late 1990s and early 2000s stopped this evolution into new locations and new asset types. The Asian crisis in July 1997, the Russian crisis in August 1998, the Brazil devaluation in January 1999, and the financial crisis in Argentina in 2001 decreased sponsor interest in emerging markets and reduced lender appetite for emerging market credits. The net result has been heightened concern over project finance in general and emerging markets investments in particular. In response, risk premiums have widened, internal corporate hurdle rates have increased, the range of projects now being financed has narrowed considerably.

The projects that are being financed in non-traditional sectors (i.e. outside of the power industry) or in emerging markets are utilizing greater support from IFIs and other forms of insurance. Investors are looking for new ways to mitigate sovereign and manage exposure to macroeconomic risks. For example, they are using political risk insurance (PRI) to cover currency devaluation, expropriation, and breach of contract.¹⁶ As one might expect, pricing for PRI is increasing as demand is beginning to outstrip the available supply. In addition, standard business interruption and other forms of commercial insurance are becoming more expensive as well. In particular, providers have escalated the price for terrorism coverage after the tragic events of September 11th. Since then, insurance companies have demanded separate coverage for terrorist events, which previously was included in the general property and casualty insurance. This additional cost has made it more difficult to finance many kinds of projects as well as refinance existing projects.

Within the United States, the energy crisis in California has raised concerns about the commercial viability of merchant power plants while the collapse of Enron Corporation in 2001 has raised concerns about financial reporting and disclosure. Besides highlighting the problems with current disclosure and the need for greater transparency, the Enron debacle has sparked calls for new regulation and reporting requirements. At a more general level, it has raised skepticism of all off-balance sheet and subsidiary financing structures, and increased the cost of executing these kinds of transactions. It is too early to tell what the fallout will be, but there are numerous calls for reform.

As sponsors revert to more traditional assets in safer countries, there are a number of changes taking place on the financing side of the equation that will also affect the project finance market. First, the new Basel Capital Accord, which is scheduled to take effect in 2005, could have a major impact on bank lending to projects. Although the specific details are still being debated, the current proposal views project finance loans as more risky than other kinds of corporate loans. Because of the higher perceived risk, project loans will carry higher capital requirements, which in turn could increase project loan rates. What eventually happens will depend on bankers' ability to influence the process. In fact, early evidence from both S&P and several leading project lenders shows that "... project loans perform better than corporate loans, especially when going down the credit spectrum."¹⁷ Whether the bankers will be able to assemble credible evidence to support their point remains to be seen.

A second concern in the bank market is the shrinking number of participants in the syndicated loan market due to industry consolidation. Because banks have historically provided 80-90% of total project debt, this trend has the potential to shrink funding availability considerably. Chris Beale, Global Head of Project Finance at Citibank Salomon Smith Barney, described the problem this way:

When two banks merge, where each would have held \$30 million in a (project-financed) transaction, the new bank isn't going to hold \$60 million. The new bank is going to hold—guess what—\$30 million!¹⁸

Like bank loans, the use of project bonds as a funding source reflects the recent flight to quality and increased skepticism over non-traditional assets. Bond covenants, maturities, and spreads now reflect the perceived increase in risk and the decline in investor appetite for particular risks. Nevertheless, sponsors remain very interested in using the capital markets to finance new projects. Financial institutions are building infrastructure to support the expanding project bond market. For example, CSFB recently launched a return index for project bonds, which shows that investor interest is growing.¹⁹

In addition to bond infrastructure, banks are developing capital markets capabilities to securitize project loans and to create a new asset class of project loans for institutional investors. CSFB started the trend when it securitized the first portfolio of project loans in 1998. Other banks have since followed suit with similar collateralized debt obligation securities (CDOs and collateralized loan obligations, CLOs). Some of the more recent deals have been open-ended funds (i.e., pools of money not yet earmarked for specific projects). For instance, CSFB launched a \$5 billion Project Finance Program and Chase launched a \$3 billion Global Project Finance Fund in 2001. Sponsors benefit from securitization by gaining quicker access to funds, which improves execution, while banks benefit by increasing the velocity of lending and improving liquidity in the project loan market.

Another recent trend in the financing of projects is the creation and use of hybrid structures. These structures are better suited for certain types of assets and risk profiles, solve some of the disadvantages of the traditional project finance structures, and have the potential to expand the boundaries of project finance. Examples include project holding companies and revolving construction facilities for power plants. Rather than financing a single merchant power plant, firms like Calpine are financing portfolios of merchant plants. Because the lenders do not have recourse to Calpine itself, the structure has an element of project finance. Yet because there is more than one asset in the portfolio, the structure also resembles corporate finance. These structures can reduce the time it takes to structure a deal, increase the flexibility inside the project company, and reduce up-front financing costs.

In conclusion, in the short-term investors will focus on safer locations and more traditional assets, which means growth will be fueled by the U.S. power sector. According to one recent estimate, the U.S. needs to build between 1,300 and 1,900 new generating plants in order to meet projected demand over the next two decades and to avoid crises like what occurred in California.²⁰ However, in the longer-term, project finance will continue to expand into new regions and non-traditional assets because of the enormous need and opportunity for global investment. Sponsors will continue to structure and investors will continue to finance large-scale and challenging projects such as the \$3.7 billion Caspian oil pipeline, \$2.6 billion China petrochemical plant, and the £13 billion London underground PPP project. Given the trends in the global marketplace and the ever-growing demand for private capital to finance new infrastructure and services, project finance will find increasing relevance in both developed and developing markets.

Exhibit 1 Typical Project Structure for IPP

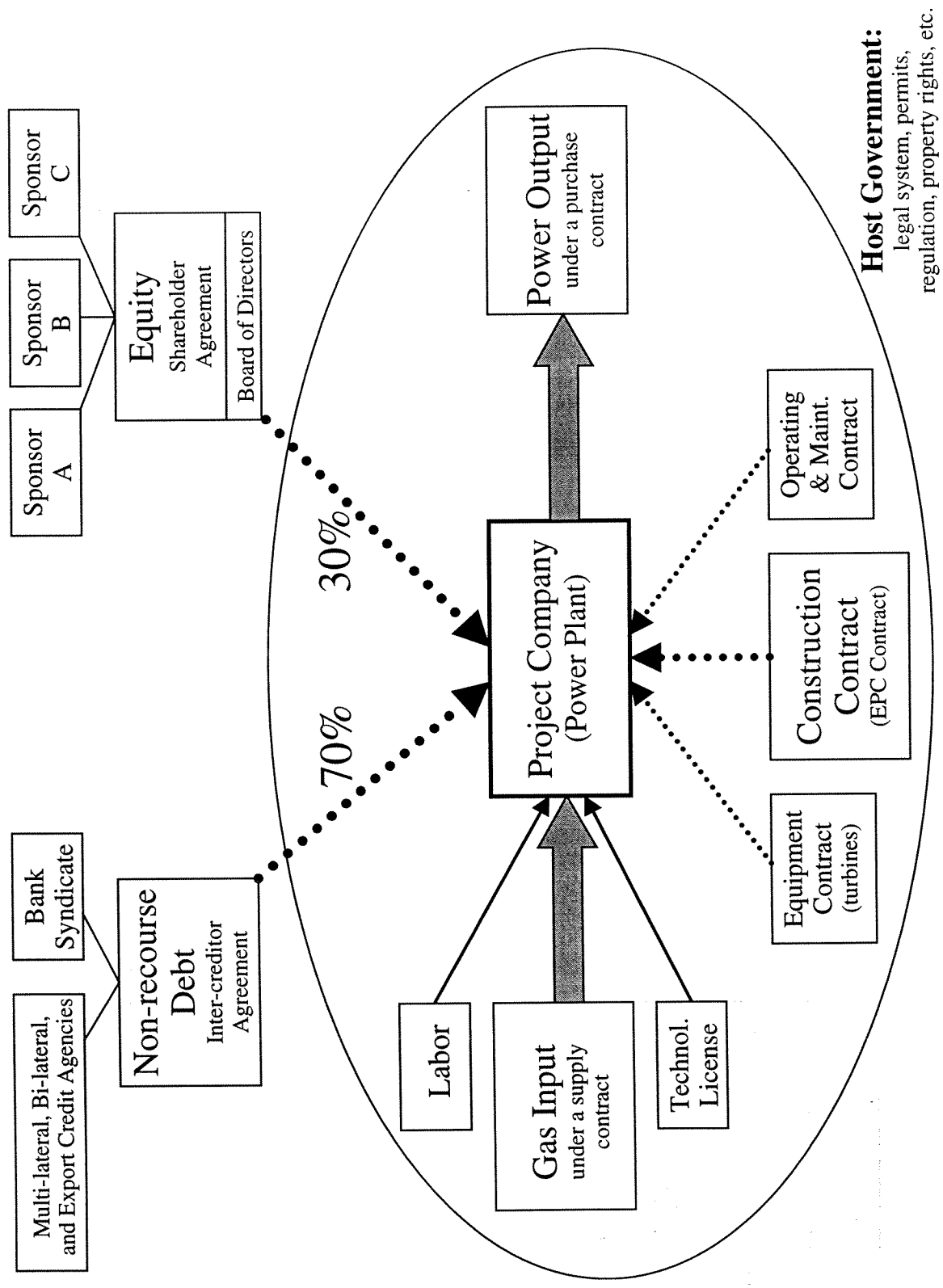


Exhibit 2 Project Finance Investment

	Total Project-Financed Investment (US\$ billion)										5-Year CAGR
	1994	1995	1996	1997	1998	1999	2000	2001			
Bank loans	\$13.68	\$23.33	\$42.83	\$67.43	\$56.65	\$72.39	\$110.89	\$108.48			20%
Bonds	<u>3.99</u>	<u>3.79</u>	<u>4.79</u>	<u>7.50</u>	<u>9.79</u>	<u>19.97</u>	<u>20.81</u>	<u>25.00</u>			39
Total Project Lending	17.67	27.12	47.62	74.93	66.44	92.36	131.70	133.48			23
Year-to-Year Change in Lending		53%	76%	57%	-11%	39%	43%	1%			
MLA/BLA development agencies ^a	11.25	17.61	18.95	21.90	18.53	16.62	17.69	18.75			0
Equity Financing (estimate) ^b	<u>12.39</u>	<u>19.17</u>	<u>28.53</u>	<u>41.50</u>	<u>36.42</u>	<u>46.70</u>	<u>64.02</u>	<u>65.24</u>			18
Total Private Sector Investment (including debt and equity)	\$41.31	\$63.89	\$95.10	\$138.32	\$121.39	\$155.68	\$213.40	\$217.47			18%

	Percent of Lending by Type of Debt				
	1994	1995	1996	1997	1998
Bank loans	77%	86%	90%	90%	85%
Bonds	<u>23</u>	<u>14</u>	<u>10</u>	<u>10</u>	<u>15</u>
Total	100%	100%	100%	100%	100%

	Number of Projects and Average Amount of Debt				
	1994	1995	1996	1997	1998
Number of projects:					
with bank loan financing	NA	NA	341	407	419
with bond financing	NA	22	19	25	43
Average amount of debt per project:					
projects with bank loans (\$ millions)	NA	NA	\$126	\$166	\$135
projects with bonds (\$ millions)	NA	\$172	\$252	\$300	\$228

Source: Adapted from *Project Finance International* (IFR Publishing, London, United Kingdom), 3/2/95, 2/28/96, 1/29/97, 1/28/98, 1/27/99, 1/26/00, 1/24/01 and 1/23/02.

Notes: ^a Private sector investment made by bilateral development agencies (BLA), multilateral development agencies (MLA), export credit agencies (ECA), and export financing institutions. Adapted from "The Private Sector Financing Activities of International Financial Institutions: 1991-1997" (IFC, Washington D.C., USA), 1/98. The numbers for 1994 and 2001 are casewriter estimates. Some of the reported total is for guarantees; we assume 75% of the total is for equity and debt investments.

^b Assuming a total debt/total capitalization ratio of 70%.

Exhibit 3 Project Finance Lending by Region: 1997-2001

Region	Amount of Project Lending by Region (US\$ billion)											
	1997		1998		1999		2000		2001		Total 1997-01	
	\$B	%	\$B	%	\$B	%	\$B	%	\$B	%	\$B	%
Western Europe	\$18.84	28%	\$14.67	26%	\$15.76	22%	\$33.61	30%	\$37.35	34%	\$120.24	29%
North America	5.58	8	12.66	22	30.69	42	36.10	33	31.88	29	116.91	28
Americas	9.92	15	12.46	22	6.84	9	16.70	15	15.60	14	61.52	15
Asia	10.89	16	3.67	6	4.40	6	7.79	7	7.17	7	33.92	8
Australia/New Zealand	7.73	11	6.16	11	8.05	11	4.30	4	4.17	4	30.40	7
Middle East	6.03	9	3.26	6	3.95	5	6.25	6	8.28	8	27.77	7
Eastern Europe	6.78	10	2.13	4	0.62	1	4.59	4	1.06	1	15.18	4
Africa	1.66	2	1.65	3	2.07	3	1.56	1	2.97	3	9.90	2
Total	\$67.43	100%	\$56.65	100%	\$72.39	100%	\$110.89	100%	\$108.48	100%	\$415.83	100%

Source: Adapted from *Project Finance International* (IFR Publishing, London, United Kingdom), 1/28/98, 1/27/99, 1/26/00, 1/24/01, and 1/23/02.**Exhibit 4** Project Finance Lending by Sector: 1997-2001

Sector	Amount of Project Lending by Sector (US\$ billion)											
	1997		1998		1999		2000		2001		Total 1997-01	
	\$B	%	\$B	%	\$B	%	\$B	%	\$B	%	\$B	%
Power	\$16.81	25%	\$17.21	30%	\$29.99	41%	\$44.59	40%	\$47.26	44%	\$155.86	37%
Telecoms	18.61	28	14.06	25	19.70	27	34.70	31	23.96	22	111.04	27
Oil & Gas	14.39	21	9.34	16	4.97	7	9.27	8	8.83	8	46.78	11
Infrastructure	5.03	7	7.70	14	9.00	12	13.36	12	11.28	10	46.36	11
Petrochemicals	4.60	7	3.13	6	4.68	6	3.34	3	3.90	4	19.65	5
Industrial	2.14	3	2.64	5	1.40	2	3.36	3	3.65	3	13.19	3
Mining	5.38	8	2.21	4	1.38	2	0.63	1	2.32	2	11.92	3
Leisure & Property	0.47	1	0.37	1	1.27	2	1.64	1	6.53	6	10.28	2
Other	0.00	0	0.00	0	0.00	0	0.00	0	0.76	1	0.76	0
Total	\$67.43	100%	\$56.65	100%	\$72.39	100%	\$110.89	100%	\$108.48	100%	\$415.83	100%

Source: Adapted from *Project Finance International* (IFR Publishing, London, United Kingdom), 1/28/98, 1/27/99, 1/26/00, 1/24/01, and 1/23/02.

Exhibit 5 Project Finance Bank Loans by Sector and Region (US\$ billion):^a 1997-2001

Sector	Americas	Europe, Middle East and Africa	Asia Pacific	Total	Percent
Power	\$96.78	\$36.09	\$22.99	\$155.86	37.5%
Telecoms	31.51	69.72	9.81	111.04	26.7
Oil & Gas	18.55	16.70	11.54	46.78	11.3
Infrastructure ^b	5.84	31.62	8.90	46.36	11.1
Petrochemicals	7.41	11.05	1.19	19.65	4.7
Industrial	5.46	3.23	4.53	13.21	3.2
Mining	6.60	1.55	3.76	11.91	2.9
Leisure & Property	6.28	2.82	1.18	10.28	2.5
Water & Sewage	0.00	0.35	0.41	0.76	0.2
Total	\$178.43	\$173.12	\$64.30	\$415.85	100.0%
Percent	42.9%	41.6%	15.5%	100.0%	

Source: Adapted from *Project Finance International* (IFR Publishing, London, United Kingdom), 1/28/98, 1/27/99, 1/26/00, 1/24/01, and 1/23/02.

Notes: ^aShaded boxes show market segments with the greatest amount of bank financing.

^bInfrastructure includes roads, bridges, and other transportation projects.

Exhibit 6 Project Finance Bonds by Country (US\$ million): 1997-2001

Country	1997	1998	1999	2000	2001	1997-2001 Total	Percent of Total
United States	\$2,551	\$4,018	\$11,944	\$11,313	\$16,334	\$46,160	55.6%
United Kingdom	936	1,034	1,212	2,498	240	5,920	7.1
Mexico	309	770	892	1,831	1,250	5,052	6.1
Australia	680	1,160	492	1,293	460	4,085	4.9
Canada	0	335	1,863	489	0	2,687	3.2
Venezuela	1,000	850	0	200	500	2,550	3.1
Argentina	610	513	296	625	363	2,407	2.9
Chile	0	362	0	430	1,289	2,081	2.5
Brazil	0	0	0	875	1,050	1,925	2.3
Malaysia	0	0	0	0	1,709	1,709	2.1
Puerto Rico	0	0	1,000	195	0	1,195	1.4
Spain	0	0	728	0	340	1,068	1.3
South Korea	0	0	132	0	652	784	0.9
Israel	0	0	250	175	0	425	0.5
Other	1,411	750	1,157	887	816	5,021	6.0
Total	\$7,497	\$9,792	\$19,966	\$20,811	\$25,003	\$83,069	100.0%

Source: Adapted from *Project Finance International* (IFR Publishing, London, United Kingdom), 1/28/98, 1/27/99, 1/26/00, 1/24/01, and 1/23/02.

Exhibit 7 Project Finance Bonds by Sector (US\$ million): 1997-2001

Sector	1997	1998	1999	2000	2001	1997-2001 Total	Percent of Total
Power	1,906	4,458	\$7,270	\$11,920	\$17,273	\$42,827	51.6%
Infrastructure	2,411	1,307	3,676	3,394	2,430	13,218	15.9
Oil & Gas	1,000	1,330	2,822	3,285	3,813	12,250	14.7
Telecoms	1,250	2,212	5,227	2,036	1,487	12,212	14.7
Mining	930	485	0	0	0	1,415	1.7
Petrochemical	0	0	672	0	0	672	0.8
Leisure	0	0	299	0	0	299	0.4
Industrial	0	0	0	176	0	176	0.2
Total	7,497	9,792	\$19,966	\$20,811	\$25,003	\$83,069	100.0%

Source: Adapted from Project Finance International (IFR Publishing, London, United Kingdom), 1/28/98, 1/27/99, 1/26/00, 1/24/01, and 1/23/02.

Exhibit 8 Standard & Poor's Rated Project Debt Distribution: 1996-2001

S&P Rating	Percent of Total Ratings by Number of Bonds					
	June 1996	June 1997	August 1998	August 1999	June 2000	June 2001
AAA	2%	1%	2%	7%	9%	9%
AA	4	4	2	4	2	2
A	7	5	4	6	6	7
A-	9	6	8	7	7	6
BBB+	4	5	4	3	4	4
BBB	7	14	11	12	12	12
BBB-	51	41	31	29	22	26
BB+	2	4	5	6	12	10
BB	7	6	11	14	9	10
BB-	5	9	11	5	5	6
B+	0	1	2	1	1	1
B	1	1	2	2	1	3
B-	0	1	2	1	0	1
CCC and below	2	1	4	4	8	5
Total	100%	100%	100%	100%	100%	100%
Total rated volume (US\$ billion)	\$19.6	\$27.6	\$37.5	\$50.4	\$62.5	\$81.3
Number of bonds	57	78	113	152	161	196
% investment grade	83%	77%	63%	67%	64%	65%

Source: Adapted from Standard & Poor's *Infrastructure Finance: Criteria and Commentary*, 9/98 and 9/99, 10/00 and 10/01; *Global Project Finance*, 7/96; casewriter estimates.

Note: Bonds rated BBB- or better are considered investment grade.

Exhibit 9 Size Distribution of Projects: 1997-2001 (includes project debt and equity)**Exhibit 9A** Size Distribution by Year (**Number** of Projects)

Size	1997	1998	1999	2000	2001	Total
< \$50 million	6%	14%	12%	19%	13%	14%
\$50-\$100	12	11	13	15	13	13
\$100-\$500	44	48	51	46	47	47
\$500-\$1 billion	21	15	12	11	15	14
> \$1 billion	<u>16</u>	<u>11</u>	<u>12</u>	<u>9</u>	<u>12</u>	<u>12</u>
Total	100%	100%	100%	100%	100%	100%

Exhibit 9B Size Distribution by Year (**Value** of Projects)

Size	1997	1998	1999	2000	2001	Total
< \$50 million	0%	1%	1%	1%	1%	1%
\$50-\$100	1	2	2	3	2	2
\$100-\$500	15	27	28	25	27	24
\$500-\$1 billion	23	25	18	17	23	21
> \$1 billion	<u>60</u>	<u>46</u>	<u>51</u>	<u>55</u>	<u>47</u>	<u>53</u>
Total	100%	100%	100%	100%	100%	100%

Exhibit 9C Size Distribution by Sector (Number of Projects, includes all projects from 1997-2001)

Sector	Size of Project						Number of Projects	% of Total
	< \$50 million	\$50-\$100 million	\$100-\$500 million	\$500 m - \$1 billion	> \$1 billion	Total		
Power	8%	12%	52%	16%	12%	100%	408	34%
Leisure & Property	36	16	41	3	5	100	160	13
Telecoms	5	8	45	24	18	100	154	13
Transportation	15	13	44	17	11	100	142	12
Industry	10	12	52	18	8	100	83	7
Oil & Gas	10	14	46	14	16	100	80	7
Mining	27	20	38	3	13	100	64	5
Petrochemical	2	11	43	17	26	100	53	4
Water & Sewage	17	24	54	5	0	100	41	3
Other	33	11	56	0	0	100	9	1
Total	14%	13%	47%	14%	12%	100%	1,194	100%

Exhibit 9D Size Distribution by Sector (Value of Projects, includes all projects from 1997-2001)

Sector	Size of Project						Project Value (\$M)	% of Total	Mean Size	Median Size
	< \$50 million	\$50-\$100 million	\$100-\$500 million	\$500 m - \$1 billion	> \$1 billion	Total				
Power	0%	2%	29%	24%	45%	100%	\$202,003	34%	\$495	\$279
Telecoms	0	1	16	24	59	100	113,269	19	736	361
Transportation	1	2	18	22	58	100	82,139	14	578	210
Oil & Gas	0	1	13	12	74	100	70,090	12	876	250
Petrochemical	0	1	15	16	67	100	40,741	7	769	420
Leisure & Property	5	6	43	9	38	100	33,849	6	212	91
Industry	1	2	32	34	31	100	32,795	5	395	271
Mining	3	5	30	6	57	100	19,711	3	308	125
Water & Sewage	4	13	64	19	0	100	5,685	1	139	120
Other	12	5	83	0	0	100	959	0	107	120
Total	1%	2%	24%	21%	53%	100%	\$601,241	100%	\$504	\$234

Source: Calculated using the Thomson Financial Securities Data Project Finance database and casewriter estimates.

Exhibit 10 Project Leverage (Debt-to-Total Capitalization Ratios)**Exhibit 10A Distribution of Initial Debt-to-Total Capitalization Ratios by Year: 1997-2001**

Debt/Total Capital	1997	1998	1999	2000	2001	Total
< 50%	12%	9%	7%	8%	20%	10%
50% - 59%	13	12	13	9	10	11
60% - 69%	21	22	24	16	15	20
70% - 79%	26	28	23	28	23	26
80% - 89%	16	18	21	20	20	19
> 90%	12	12	12	19	12	14
Total	100%	100%	100%	100%	100%	100%
Mean	68%	69%	70%	73%	66%	70%
Median	70%	70%	70%	75%	70%	70%

Exhibit 10B Distribution of Initial Debt-to-Total Capitalization Ratios by Sector: 1997-2001

Sector	Debt/Total Capitalization Ratio						Total Number	% by Number	Debt/Total Capital	
	< 50%	50%-59%	60%-69%	70%-79%	80%-89%	> 90%			Mean	Median
Power	9%	8%	17%	37%	21%	8%	254	35%	70%	73%
Transportation	8	8	22	24	22	16	97	13	72	72
Leisure & Property	8	7	12	15	19	39	95	13	78	85
Telecom	13	15	32	18	14	9	79	11	66	65
Industry	12	19	33	19	14	3	58	8	63	64
Oil & Gas	16	14	18	16	27	9	44	6	65	70
Mining	14	35	19	16	9	7	43	6	63	60
Petrochemical	6	9	30	27	15	12	33	4	70	70
Water & Sewage	4	7	11	37	15	26	27	4	76	77
Other	0	0	17	33	33	17	6	1	81	81
Total Number	72	84	148	192	139	101	736	100%	70	70
Total %	10%	11%	20%	26%	19%	14%				

Sources: Calculated using the Thomson Financial Securities Data Project Finance database and casewriter estimates.

Note: Tables exclude projects with debt-to-total capitalization ratios of 100%. These projects are typically additions to existing projects.

Exhibit 11 Contract Length: 1997-2001**Exhibit 11A** Distribution of Construction Contracts by Number of Years

	Number of Years						Mean	Median
	≤ 1.0	1.1 to 2.0	2.1 to 3.0	3.1 to 4.0	4.1 to 5.0	> 5		
Number	56	178	79	20	11	7	2.0	2.0
Percent	19%	60%	27%	7%	4%	2%		

Note: The construction period is the number of years to construct the project.

Exhibit 11B Distribution of Offtake Agreements by Number of Years

	Number of Years						Mean	Median
	≤ 5	6 to 10	11 to 15	16 to 20	21 to 25	> 25		
Number	6	15	45	71	40	45	19.5	20.0
Percent	3%	7%	20%	32%	18%	20%		

Note: The offtake period is the number of years with contracted purchase of output.

Exhibit 11C Distribution of Concession Agreements by Number of Years

	Number of Years						Mean	Median
	≤ 10	11 to 20	21 to 30	31 to 40	41 to 50	> 50		
Number	14	70	166	18	13	15	28.3	25.0
Percent	5%	25%	59%	6%	5%	5%		
Projects by Sovereign Rating								
AAA to A-	3%	11%	64%	8%	5%	8%	31.5	30.0
BBB+ to B-	5%	45%	44%	3%	2%	1%	23.5	21.5

Note: The concession period is the number of years the project sponsor will operate a given project.

Exhibit 11D Distribution of Debt Instrument Maturities by Number of Years (1998 data only)

	Number of Years						Mean	Median
	< 5	5 to 9.9	10 to 14.9	15 to 19.9	20 to 24.9	≥ 25		
Bank Loans	16%	47%	18%	11%	4%	4%	9.4	8.0
Bonds	6%	18%	44%	9%	21%	3%	13.6	13.3
# of deals	25	72	41	19	13	6		

Source: Calculations in Exhibits 11A, 11B and 11C use the Thomson Financial Securities Data Project Finance database. Calculations in Exhibit 11D use Capital DATA, Ltd., ProjectWare database and casewriter estimates.

Exhibit 12 Project Finance 2001 League Tables

Exhibit 12A Global Lead Arrangers—Bank Loans (US\$ million)

2001 Rank	Name	2000 Rank	Number of Issues in 2001	Amount Underwritten in 2001	Percent of Total in 2001
1	Citigroup	1	54	\$15,512	14.3%
2	WestLB	7	27	8,235	7.6
3	BNP Paribas SA	9	21	6,429	5.9
4	Societe Generale	2	17	5,301	4.9
5	CSFB	6	8	4,742	4.4
6	JP Morgan	5	18	4,333	4.0
7	Dresdner Kleinwort Wasserstein	11	17	4,038	3.7
8	ABN AMRO	4	19	4,019	3.7
9	Deutsche Bank	8	14	3,623	3.3
10	Barclays	10	18	3,612	3.3
	Other		101	48,634	44.8
Total Market			314	\$108,478	100.0%

Exhibit 12B Lead Managers—Bonds (US\$ million)

2001 Rank	Name	2000 Rank	Number of Issues in 2001	Amount Underwritten in 2001	Percent of Total in 2001
1	Lehman Brothers	4	13	\$7,621	30.5%
2	Citigroup	3	17	4,966	19.9
3	CSFB	1	11	4,640	18.6
4	Goldman Sachs	6	2	1,825	7.3
5	Bank of America	na	3	1,045	4.2
6	Korea Development Bank	na	1	555	2.2
7	ABN AMRO	8	2	474	1.9
8	Morgan Stanley Dean Witter	5	1	421	1.7
9	Banco Bilbao Vizcaya Argentaria	na	2	418	1.7
10	Bank Utama	na	1	398	1.6
	Other		26	2,640	10.6
Total Market			79	\$25,003	100.0%

Exhibit 12C Global Advisory Mandates

2001 Rank	Name	Total Mandates in 2000	Percent of Total in 2000	Total Mandates in 2001	Percent of Total in 2001
1	Pricewaterhouse Coopers	95	12.9%	98	15.4%
2	Ernst & Young	42	5.7	83	13.1
3	Macquarie	71	9.6	72	11.3
4	Societe General	23	3.1	38	6.0
5	KPMG	27	3.7	33	5.2
6	Taylor de Jongh	32	4.3	30	4.7
7	Investec European Capital	23	3.1	29	4.6
8	Arthur Andersen	13	1.8	24	3.8
9	ABN AMRO	38	5.2	24	3.8
10	Babcock & Brown	15	2.0	20	3.1
	Other	357	48.5	184	29.0
	Total for all firms	736	100.0%	635	100.0%

Source: Adapted from *Project Finance International* (IFR Publishing, London, United Kingdom), 1/ 24/01 and 1/23/02.

Exhibit 12D Global Top 10 Law Firms:^a 1998-2000

Rank	Name	Location	Number of Financings Closed
1	Allen & Overy	U.K.	28
2	Clifford Chance	U.K.	23 (tie)
3	Millbank, Tweed, Hadley & McCloy	U.S.	23 (tie)
4	Shearman & Sterling	U.K.	23 (tie)
5	Latham & Watkins	U.S.	22
6	Skadden, Arps	U.S.	18
7	Linklaters & Alliance	Global	17
8	Allens Arthur Robinson	Australia	14
9	Sullivan & Cromwell	U.S.	14
10	White & Case	U.K.	10

Source: Adapted from *Project Finance International*, 11/28/01.

Notes: ^aIncludes only deals over \$500 million and only the main roles are counted.

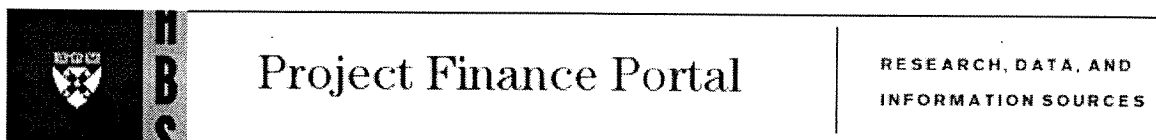
Exhibit 13 Private Sector Investment Volume in Developing Countries (Medium/Long-Term Loans, Equity, Guarantees, and Insurance) in \$US millions

Type	Name	Acronym	Country	1991	1995	1996	1997	1998
Multilateral Development Agencies								
	Asian Development Bank	ADB	Regional, based in Manila	\$ 174	\$ 174	\$ 263	\$ 119	\$ 198
	African Development Bank	AFDB	Regional, based in Abidjan	8	13	24	50	157
	European Bank for Reconstruction and Development	EBRD	Regional, based in London	43	1,863	1,920	2,002	2,121
	European Investment Bank	EIB	Regional, based in Luxembourg	422	780	468	760	1,896
	Inter-American Development Bank	IDB	Regional, based in Washington, DC	0	146	198	320	576
	The Inter-American Investment Corporation	IIC	Regional, based in Washington, DC	102	37	72	150	223
	Nordic Investment Bank	NIB	Regional, based in Helsinki	0	73	118	67	141
	Subtotal			749	3,085	3,063	3,467	5,313
Bilateral Development Agencies								
	Agence Francaise de Development	AFD	France	254	420	329	278	312
	Commonwealth Development Corporation	CDC	United Kingdom	156	411	447	474	365
	Deutsche Entwicklung Gesellschaft	DEG	Germany	189	329	446	404	399
	Finnish Fund for Industrial Cooperation Ltd.	Fintfund	Finland	9	21	14	25	70
	The Netherlands Development Finance Company	FMO	Netherlands	105	333	333	363	415
	The Industrialization Fund for Developing Countries	IFU	Denmark	16	54	52	48	28
	The Investment Fund for Central and Eastern Europe	IO	Denmark	4	53	54	58	43
	The Investment Fund for Emerging Markets	IFV	Denmark	0	0	0	0	3
	Kreditanstalt fur Wiederaufbau (fin. coop. only)	KfW	Germany	35	153	299	172	195
	Overseas Economic Cooperation Fund	OECE	Japan	88	190	60	10	6
	Overseas Private Investment Corporation	OPIC	United States	290	1,911	2,255	709	695
	Swedfund International AB	Swedfund	Sweden	11	9	40	31	11
	Subtotal			1,157	3,884	4,328	2,573	2,543
	International Finance Corporation	IFC	International, Washington, DC	1,300	2,112	2,398	2,699	2,800
	Total for Development Agencies			3,206	9,081	9,789	8,739	10,655
Export Credit Agencies/Export Financing Institutions								
	The Export-Import Bank of the United States	USEXIM	United States	500	2,179	2,932	3,193	599
	The Export-Import Bank of Japan	JEXIM	Japan (now JBIC)	424	2,386	3,142	3,894	3,766
	Compagnie Francaise d'Assurance pour le Commerce Exterieur	COFACE	France	373	2,519	1,480	1,586	931
	Export Credits Guarantee Department	ECGD	United Kingdom	300	600	700	729	811
	Export Development Corporation	EDC	Canada	300	700	808	1,130	1,369
	Hermes Kreditversicherungs-AGS	Hermes	Germany	3,122	5,388	5,404	6,831	3,793
	Kreditanstalt fur Wiederaufbau (w/out fin. coop. & w/out Hermes cover)	KfW	Germany	500	500	833	1,826	1,544
	Sezaine Speciale per l'Assicurazione del Credito all'Esportazione	SACE	Italy	0	121	183	1,272	1,243
	Total for Export Financing Institutions			5,519	14,393	15,482	20,461	14,056
	Grand Total			\$8,725	\$23,474	\$25,270	\$29,200	\$24,711

Source: Adapted from The Private Sector Financing Activities of International Financial Institutions: 1991-1997, International Finance Corporation, Washington, DC (1998), Appendix A.

Appendix

Project Finance Portal (www.hbs.edu/projfinportal/)



This portal is intended to be a reference guide for students, researchers, and practitioners seeking to obtain information about project finance. In addition to bibliographical references for books, articles, and case studies, the site contains more than 800 links to related sites.

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This site is based on the Harvard Business School Note on Project Finance Research, Data, and Information Sources written by Research Associate Fuaad A. Qureshi under the supervision of [Professor Benjamin C. Esty](#).

If you have any suggestions for additional content, please contact [Professor Benjamin C. Esty](#).

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Endnotes

- ¹ Corporate bond volume is from Thompson Financial Securities Data Corporation (SDC); asset-backed security volume data is from The Bond Market Association (*Research*, February 2002); leasing volume data is from the Equipment Leasing Association web site (<http://elaonline.com/>); IPO volume is from SDC; and venture capital volume data is from the Venture Economics web site (<http://www.ventureeconomics.com>). All figures are for 2001.
- ² Infrastructure includes investments in water, transport, electricity, natural gas, and telecommunications projects.
- ³ Boey Klt Yin, "Reality Bites—A Quieter PF Horizon," *PFI Asia Pacific Review: News and Comment*, 1998, pp. 2-3.
- ⁴ "Latin Report: Project Trends," *ProjectFinance* (June 2000).
- ⁵ The World Bank, *World Development Report: Infrastructure for Development*, Oxford University Press (New York, N.Y., 1994), pp. 2-4. The endogenous nature of investment creates an econometric problem: does increased infrastructure result in economic growth or does economic growth result in increased infrastructure spending? Other studies note very high rates of return from infrastructure investments (see pp. 13-16).
- ⁶ International Finance Corporation, *Lessons of Experience #4: Financing Private Infrastructure*, (Washington, D.C.: The World Bank, 1996), pp. 43-44.
- ⁷ J. W. Kensinger, and J. D. Martin, "Project Finance: Raising Money the Old-fashioned Way," *Journal of Applied Corporate Finance* (1988), pp. 69-81.
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- ¹⁵ Dealogic ProjectWare, "Project Poll," *ProjectFinance* (January 2002), p. 43.
- ¹⁶ Kenneth Hansen, "Spotlight on Political Risk Insurance," *Infrastructure Journal* (January 2002).
- ¹⁷ "React or Die," *ProjectFinance* (February 2002), p. 40.
- ¹⁸ S. Kahn, and T. Leander, "The New Paradigms of Project Finance," *Global Finance* (August 1998), p. 33.
- ¹⁹ "Comment—AES is Close to Home," *Project Finance International*, issue 236 (March 6 2002), p. 2.
- ²⁰ Report of the National Energy Policy Development Group, U.S. National Energy Policy (May 2001), p. 11.

