

Project Finance: Practical Case Studies

Second Edition

VOLUME II

Resources and Infrastructure

Henry A. Davis



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Foreword

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Although they are different in many ways, natural resource and infrastructure projects share an important theme: despite difficult markets for project finance, both continue to be completed.

Views differ on why projects in these sectors continue to advance while other types of projects, notably merchant power projects, find financial markets effectively closed for both debt and equity. Sponsors argue that natural resource and infrastructure projects, by design, have inherent strengths that lenders recognise, while lenders argue that project loans in these sectors represent attractive long-term risk exposures. Such appeal may be because, as one intermediary aptly put it, lenders find comfort as long as they can conclude that they have not yet lost money in these sectors. With the exception of some toll roads and telecommunications projects, both natural resource and infrastructure projects to date often have performed well. However, the more likely reason that resource and infrastructure projects continue to advance is that the stronger ones still provide prospects for attractive risk-adjusted returns for debt and equity while offering attractive capital costs and terms to their owners.

The critical word here, however, is strong. Not all projects are created equal.

As current markets demonstrate with a vengeance, there is a major gap between stronger and weaker projects. In difficult markets, that gap widens. The challenge for project sponsors and for their sources of capital is to distinguish between the two.

The cases collected here — from diverse sectors, including toll roads, telecommunications, government facilities, mines, pipelines, oil and gas — illustrate the key factors in making these distinctions. Of necessity, they come from past experience. The value of the cases, however, is that this experience illustrates many of the challenges that resources and infrastructure projects are likely to face in the current and more distant future. Only time will tell whether or not the upheavals of the current financial markets will generate fundamentally new factors. However, as demonstrated in these cases, one of the best places to start when identifying how the project dynamics may change is to look at how projects have fared in past and current markets. For infrastructure and resources projects these cases are particularly relevant. Unlike other project types, notably power, infrastructure and resources projects have seen past problems — from traffic shortfalls to input and output price surprises — that anticipate the future risks they face. Thus, when assessing project risk and how to mitigate it, detailed cases such as these collected here are a particularly good place to begin.

Introduction

The scope of project finance both changed and expanded in the 1990s. The growing need for power and other infrastructure facilities increased the demand for project financing, while the sources of project finance broadened to include the capital markets. Financial tools such as pooling, securitisation and derivatives provided new ways to mitigate project risks. As investors and lenders became more familiar with project finance, they showed increasing risk tolerance. As a result the boundaries of project finance have widened. In the mid-1990s banks and institutional investors financed projects with structures and terms that would have been hard to imagine just five years before. The total worldwide volume of project finance increased rapidly from 1994 to 1997, lessened after the Asian financial crisis in 1997 and then increased to a new high in 2000. Project finance then declined once again along with the collapse of equities, particularly in technology and telecommunications; the related decline in technology and telecom capital expenditures; and the Enron bankruptcy and associated scrutiny of power companies' trading activities and balance sheets (see Exhibit A).

Project Finance: Practical Case Studies consists of 38 case studies of recent project financings. *Volume I* covers power and water (irrigation) projects, and this second volume covers resources and infrastructure projects. The project case studies were selected to exhibit the types of projects most frequently financed in a variety of countries. Because these case studies illustrate different aspects of project finance across the major geographical areas, the

Exhibit A

Global facility-type breakdown for project financings closed, 1994–2002

Year	Loan		Bond		Sponsors' equity		Total (US\$ million)	Number of deals	Average deal size
	amount (US\$ million)	% of total	amount (US\$ million)	% of total	amount (US\$ million)	% of total			
1994	28,603.44	85.3	564.00	1.7	4,380.70	13.0	33,548.14	85	394.68
1995	59,361.72	76.8	3,920.90	5.1	14,055.58	18.1	77,338.20	323	239.44
1996	113,810.40	64.6	13,789.45	7.8	48,649.81	27.6	176,249.66	649	271.57
1997	142,545.29	66.3	18,654.07	8.7	53,714.85	25.0	214,914.21	560	383.78
1998	115,103.37	61.3	18,141.53	9.7	54,545.66	29.0	187,790.56	485	387.20
1999	119,139.82	61.0	23,673.62	12.1	52,571.89	26.9	195,385.33	464	421.09
2000	161,556.30	67.3	23,544.30	9.8	54,893.64	22.9	239,994.24	459	522.86
2001	96,033.69	69.2	14,573.22	10.5	28,166.74	20.3	138,773.65	308	450.56
2002	56,062.16	72.7	7,782.03	10.1	13,252.75	17.2	77,096.94	247	312.13

Source: Dealogic ProjectWare.

Exhibit B

Summary of projects by industry and geographical area

	<i>Africa</i>	<i>Asia</i>	<i>Europe (including the United Kingdom)</i>	<i>Latin America (including Mexico)</i>	<i>North America</i>	<i>Multi- national</i>
Power project portfolios	1	6	1	6	1	
Power and water (irrigation)		1				
Pipelines	1			3		
Mines	3			2		
Oil field				1		
Refinery				1		
Toll roads			3	1	1	
Airports			1	1		
Telecom				2		1

nature of their content varies considerably. For example, some contain a detailed description of project documentation while others do not cover documentation at all. Some power project case studies are concerned primarily with negotiating contracts in countries that are just beginning to privatise their electricity sectors, while others concentrate on new financing techniques and adapting to a merchant power environment.

The case studies in these volumes cover a broad range of industries and geographical areas, as illustrated in Exhibit B.

Industry sectors

Volume I – Power and Water covers issues such as the privatisation and deregulation of the electricity industry, adaptation to merchant sales and pricing environments, negotiating initial independent power projects in developing countries, political risk, recent financing innovations, and the worldwide ripple effect of the California power crisis and the Enron bankruptcy, including the pullback of large international power players.

In *Volume II – Resources and Infrastructure*, the pipeline project case studies discuss the increasing willingness of both the bank and capital markets to take risks in a developing country; the requirements for multilateral agency participation; and the need to address environmental, social, and sustainability issues. The oil field production project case study demonstrates how the credit rating of a solid export-oriented project with strong sponsors can pierce the sovereign ceiling of a country with political difficulties. Similarly, the refinery case study presents an example of a project with pure emerging-market risk that can survive in a difficult economic environment. The mining project case studies demonstrate sensitivity to commodity price risk, the negotiation of a basic legal structure with a host government and the construction and operating difficulties involved. The toll road project case studies outline bridge construction challenges, and issues related to the respective roles of the government and the private sector in assuming construction and traffic risks, a flexible repayment mechanism to cope with traffic risks, and problems when traffic does not meet projections. The airport case studies present an example of a whole-business securitisation, and describe

difficulties related to lower-than-projected passenger traffic and ongoing negotiations with the government on concession issues. Finally, the three telecommunications project case studies discuss topics, such as a creative lease structure, that provided financing for a state-owned telephone company; an aggressive multinational network expansion that could not be supported when telecom capital expenditures collapsed; and an international consortium's overpayment for a local cellular telephone licence.

Geographical areas

The case studies in these volumes were intentionally selected to provide geographical diversity. Although, over the long term, there is not a great deal of difference between project financings in geographical areas *per se*, recent regional economic difficulties, such as the Asian financial crisis, the Russian default and the Brazilian devaluation, have had medium-term effects both on sponsors' abilities to finance projects and the terms of available financing. There also is a significant difference between financing projects in member states of the Organisation for Economic Cooperation and Development (OECD) and developing countries. Among worldwide emerging-market considerations for projects across all industry sectors are prolonged negotiations; the familiarisation of government officials, lawyers and bankers with financial and legal concepts new to the local market; and the enactment of new laws to cover a broad range of issues, including commercial contracts, collateral and security interests, power and fuel purchase agreements, mineral rights and repatriation of profits and capital. These issues are particularly apparent in Africa, which became a significant project financing venue in the 1990s.

Content and research method

Before delving into the case studies in this volume, and those in *Volume I – Power and Water*, this introductory, analytical chapter, replicated in each volume, discusses current trends in project finance and important themes that run through the case studies. When a specific case is referred to, the chapter in which it is discussed is noted if it appears in this volume and a note to see *Volume I – Power and Water* is provided if it appears in *Volume I*. Information for both this chapter and the case studies was gathered from the financial press; credit rating agency analytical reports; and on-site and telephone interviews with commercial bankers, investment bankers, project sponsors, institutional investors, rating agency

Exhibit C

Author's project finance interview protocol

- Description of project, including type, location, size and other specifications
 - Reason for project and sponsors' needs
 - How project participants were assembled
 - Legal structure of project entity, including a diagram of project structure
 - Analysis of project risks and economic viability
 - Most important project contracts and principal provisions
 - Alternative sources of finance considered
 - How the financing team was assembled
 - Structure of financing
 - Pricing, maturity, and other financing terms, including guarantees and other third-party sources of support; insurance, collateral, and other forms of protection; and important features of financing documentation
 - Accounting and tax considerations for sponsors and investors
 - Credit analysis from the investors' and lenders' perspectives
 - Credit rating
 - Principal problems encountered with project and financing
 - Investors' and lenders' concerns before and since notes were issued
 - Most innovative features of the project
 - Most important lessons learned
 - How the project illustrates current regional and country trends
-

analysts and others. On-site interviews generally ranged between one hour and two hours. The interviews were taped and the case studies were approved for accuracy by the interviewees. To help focus the interviews and the content of the case studies, the author developed an interview protocol and used the ‘Checklist for a successful project financing’ from *Project Financing Seventh Edition*¹ (see Exhibits C and D). For more than 25 years, the seven editions of *Project Financing* have been one of the most widely used sources of basic information on project finance. For each project, it was understood that some items on the interview checklist were more applicable than others. The interviewees’ comments and the contents of the case studies generally concentrate on aspects of the project financings that were the most interesting, unusual or useful to the practitioner. Each project has its own purpose and momentum, and the case studies are not intended to touch on all of the same issues.

The nature of project finance

Project finance is generally defined as the provision of funds for a single-purpose facility (or facilities) that generates cash flow to repay the debt. Debt is secured by the project’s assets and cash flows, not by the assets or general credit of the project’s sponsor(s). Therefore the debt generally is issued with no recourse, or, in some cases, with limited recourse, to the project sponsors. Project finance is often used for capital-intensive facilities such as power plants, refineries, toll roads, pipelines, telecommunications facilities and industrial plants. Before the 1970s the majority of project lending was for natural resource ventures such as mines and oil fields. Since then the applications of project finance have broadened considerably, but power has been the largest sector.

For lenders and investors the essence of project finance is the analysis of project risks, including construction risk, operating risk, market risk (applying to both inputs and outputs of

Exhibit D

Checklist for successful project financing

1. A credit risk rather than equity risk is involved.
2. A satisfactory feasibility study and financial plan have been prepared.
3. The cost of product or raw material to be used by the project is assured.
4. A supply of energy at a reasonable cost has been assured.
5. A market exists for the product, commodity, or service to be produced.
6. Transport is available at a reasonable cost to move the product to the market.
7. Adequate communications are available.
8. Building materials are available at the costs contemplated.
9. The contractor is experienced and reliable.
10. The operator is experienced and reliable.
11. Management personnel are experienced and reliable.
12. New technology is not involved.
13. The contractual agreement among joint venture partners, if any, is satisfactory.
14. A stable and friendly political environment exists, licences and permits are available, contracts can be enforced, and legal remedies exist.
15. There is no risk of expropriation.
16. Country risk is satisfactory.
17. Sovereign risk is satisfactory.
18. Currency and foreign exchange risks have been addressed.
19. The key promoters have made adequate equity contributions.
20. The project has value as collateral.
21. Satisfactory appraisals of resources and assets have been obtained.
22. Adequate insurance coverage is contemplated.
23. *Force majeure* risk has been addressed.
24. Cost-over-run risk has been addressed.
25. Delay risk has been considered.
26. The project will have an adequate return for the investor.
27. Inflation rate projections are realistic.
28. Interest rate projections are realistic.
29. Environmental risks are manageable.
30. The project complies with US Foreign Corrupt Practice Act 1977.

Source: Project Financing Seventh Edition.

a project), regulatory risk, insurance risk and currency risk. These risks often are allocated contractually to parties best able to manage them through construction guarantees, power purchase agreements (PPAs) and other types of output contracts, fuel and raw-material supply agreements, transportation contracts, indemnifications, insurance policies, and other contractual agreements. However, with projects in all sectors, sponsors, lenders and bank investors are exposed to significant market risk. Although recourse to sponsors is usually limited, they often provide credit support to the project through guarantees or other contractual undertakings. For example, an industrial sponsor of a cogeneration project may contract to buy steam from a project and another sponsor may contract to sell power to it. Sponsors' economic interests in the success of a project make important contributions to the project's creditworthiness.

Project financing generally is done without recourse to project sponsors, and projects are often, but not always, off corporate sponsors' balance sheets. As it does with a subsidiary, a sponsor includes a project's assets and liabilities on its balance sheet when a project is consolidated. When the equity method of accounting is used, the sponsor's investment in a project is shown as a single amount on its balance sheet, and gains or losses on the project are shown as a single amount on its income statement. A sponsor generally uses the equity method to account for an investment in a project of which it owns less than 50 per cent, but can still influence its operating and financial decisions. If a sponsor has less than a 20 per cent interest in a project it is presumed to lack significant influence over the project's management and neither consolidation nor the equity method is required. Presumably, a sponsor's investment in a project and the related income or losses would be combined with other items on its balance sheet and income statement. It would be considered good practice on the part of the sponsor to include some mention of the project investment in the footnotes, particularly given the emphasis on disclosure and transparency in today's post-Enron environment.

Why project finance is used

Project finance can be more leveraged than traditional on-balance-sheet financing, resulting in a lower cost of financing. In countries with power and other infrastructure needs, project finance allows governments to provide some support without taking on additional direct debt. The growth of project finance in recent years has coincided with a trend toward privatisation.

For sponsor companies project finance may accomplish one or more of the following objectives:

- financing a joint venture;
- undertaking a project that is too big for one sponsor;
- assigning risks to parties that are in the best position to control them;
- insulating corporate assets from project risk;
- keeping debt off the corporate balance sheet;
- protecting their corporate borrowing capacity;
- maintaining their credit rating;
- improving corporate return on equity (ROE);
- restricting proprietary information to a limited number of investors;
- avoiding double taxation;
- sharing ownership of projects with employees; and/or
- establishing a business venture in a foreign country.

Sources of capital

Historically, commercial banks have provided construction financing for projects, while insurance companies have provided take-out financing with terms of 20 years or more. Banks have been relatively more comfortable with construction risks and short-term loans, while insurance companies have been more comfortable bearing the long-term operating risks after construction has been completed and the project has demonstrated its capability to run smoothly.

In the early 1990s, however, the investor base for project finance began to broaden. It now includes institutional investors, such as pension and mutual funds, and investors in the public bond markets in a growing number of countries around the world. Two important developments made institutional investors more receptive to project finance investments than they had been in the past: a ruling by the US Securities and Exchange Commission (SEC), and the issuance of project credit ratings by the major credit rating agencies.

SEC Rule 144a allows the resale of eligible, unregistered securities to qualified institutional buyers and eliminates the requirement that investors hold on to securities for two years before selling them. Recently, sponsors of some large power projects have aimed their financing solely at the institutional 144a market. Others have been able to reduce their financing costs by committing themselves to full registration for sale in the public markets within six months after their 144a securities are issued, thereby providing a more liquid market for the institutional investors that hold the securities.

With respect to project credit ratings, as the capital markets became an important source of funding the amount of rated project debt grew rapidly. For example, in 1993 Standard & Poor's (S&P) portfolio of rated project debt was US\$5.8 billion. The agency then established a project rating team in 1994. By mid-1996 it had rated US\$16.3 billion and by the end of 2002 US\$106 billion of project debt had been rated. Debt rated by the two other leading credit rating agencies, Moody's and Fitch Ratings, has grown in a similar fashion.

Institutional investors' needs

For institutional investors project finance offers a way to diversify and earn very good returns for the amount of risk taken. As more power and other infrastructure projects are financed and demonstrate a track record, more investors are becoming comfortable with the risk. William H. Chew, Managing Director of Corporate and Government Ratings at S&P, sees project finance as not just another Wall Street invention, but a growing investment vehicle with a strong demand on both the buy and the sell sides. It provides the uncorrelated returns for which portfolio managers have been looking, and risks that are different from the credit of the sponsor or the offtaker of the project's product.

Trends in project finance

Recent trends in project finance include the following.

Infrastructure requirements

There continue to be massive infrastructure requirements, particularly in developing countries. The World Bank estimates that infrastructure needs for developing countries will amount to roughly US\$250–300 billion per year over at least the next decade.

Privatisation

This is a worldwide trend that both reflects political currents and provides a way to supply needed infrastructure in the face of government budgetary limitations. Variations on this trend include public/private partnerships, notably the Private Finance Initiative in the United Kingdom.

Legislative and regulatory frameworks

Historically, the lack of legislative and regulatory frameworks has been an impediment to project financing in developing countries. Some case studies in these volumes, however, show how sponsors of first-of-their-kind projects have worked with host governments to develop legal and regulatory structures for future projects in emerging markets in Africa, Asia and Latin America.

Financial innovation

As innovations are made in other financial disciplines, such as leasing, insurance and derivatives-based financial risk management, they are applied quickly to project finance.

Broadened sources of funding

An ongoing trend since the early 1990s has been the growing use of bonds, both investment-grade and high-yield, for project financing. These bonds have been sold to a broadening base of institutional investors, leading to a growth in credit-rated project debt. Connected to this trend, power project portfolios and investment funds comprising projects from different industries are providing investors with a way to spread risks and project sponsors with an additional source of financing. Also related is the growing flexibility between bond and bank financing, which is helped by the increasing number of financial institutions with both commercial and investment banking capabilities that can offer both loan and bond alternatives in a single project financing package.

Local currency financing

As the role of pension funds and other institutional investors broadens in many emerging markets, local-currency funding is increasingly becoming available for project financing. This development is particularly helpful to sponsors of infrastructure projects that generate local-currency revenues, as it allows them to avoid mismatches between those revenues and dollar-denominated debt.

Blending of project and corporate finance

A lack of risk tolerance and market liquidity sometimes prevents projects from being financed off the corporate balance sheet on a pure non-recourse basis. Projects today are financed along a spectrum ranging from pure project finance to pure corporate finance. A company such as Calpine, which is essentially a power plant portfolio, is one example of the blurring of the line between corporate finance and project finance.

Insurance

The role of insurance in project finance has increased steadily in recent years. Historically, the insurance industry has provided property and casualty coverage, and political risk coverage. Recently, insurers have become more active in covering completion risk, operating risk, off-take risk and residual value risk.

Residual value insurance, for example, can help sponsors and lenders to refinance risk when projects require loan pay-outs with longer terms than are available in the bank market. If a balloon payment (the prepayment of most or all of the principal at maturity) is not made, or a project cannot be refinanced and the loan goes into default, the lender can seize the asset. If liquidation proceeds are less than the amount of residual value coverage, a claim for the difference can be made against the policy.²

Highly rated insurance companies with dynamic risk management capabilities can close the gaps in capital structures of projects exposed to market risks. For example, in 1999 Centre Group guaranteed the subordinated debt tranche for the Termocandelaria merchant power project in Colombia. If the project's cash flow was insufficient to make a debt payment, the insurance company agreed to step in and make that payment. An insurer can provide a take-out guarantee for project lenders when a PPA matures before a loan. Insurers can guarantee that a project receives a minimum floor price, regardless of what happens to the market price of its output. Insurers can provide standby equity and subordinated debt commitments and residual-value guarantees for leases.³

The events of 11 September 2001 exacerbated an already difficult insurance market and created a new problem for the insurance industry: how should exposure to terrorism be managed? The combination of reduced capacity, underwriter defections and shock losses from 11 September has, at the time of writing, created one of the most difficult insurance markets in history. Among the implications for project sponsors are increases in deductibles, which require projects to assume additional risk; the reduced availability of coverage for terrorism, new or unproven technologies, and catastrophic perils, such as earthquakes and floods; and substantial premium increases.⁴

Over recent years the credit ratings of many infrastructure bond deals have been raised to the 'AAA' level by guarantees or 'wraps' from triple-A-rated monoline insurance companies. However, as the monoline insurers themselves have diversified from their US municipal bond base their own risks have increased, leading to higher spreads on monoline-wrapped paper.

An emerging trend in project and concession financing is the use of targeted risk coverage, a structured financial mechanism that shifts specifically identified project risks to a third party, such as a multiline insurance or reinsurance company, a designated creditor, or, conceptually, any party that is willing to assume those risks, including project sponsors.

The following have been among recent applications of targeted risk coverage:

- revenue risk mitigation, including coverage against commodity pricing risk, revenue guarantees for toll road projects and coverage against default of offtakers;
- substitutes for liquidity mechanisms, such as fully funded debt-service reserves and standby letters of credit; and
- political risk coverage.

Contingent capital is a form of targeted risk coverage that can reduce a project's cost of financing. The insurer provides a facility under which capital is injected into the project in the

form of debt, equity or hybrid securities upon the occurrence of a predefined trigger event or set of events. In this way contingent capital allows the project to increase its capital base only when necessary, thereby increasing its return on invested capital.⁵

Recent crises in Asia, Latin America and Eastern Europe have reminded lenders and investors that political/economic events do not merely have the potential to cause losses, but actually cause them, according to Gerald T. West, Senior Advisor at the Multilateral Investment Guarantee Agency in Washington, DC.⁶ These events have stimulated the demand for political risk insurance, leading to expanded coverage and new products from multilateral agencies, national agencies and private insurance providers. In recent years private insurers have lengthened the terms of their coverage and increased their share of the political risk insurance market. Recent innovations include capital markets political risk insurance, which can be used to raise the credit ratings of bonds that finance projects in emerging markets.

Increasing and then decreasing risk tolerance

Until 1997, there were trends of lengthening maturities, thinning prices (which were reflected in spreads over benchmark funding indices), loosening covenants, extending project finance to new industries and geographical regions, and a willingness on the part of lenders and investors to assume new risks. This was partly a result of more institutional investors becoming interested, and developing expertise, in project finance. These trends reversed as a result of the worldwide ripples caused by the Asian financial crisis starting in 1997, the Russian default in 1998 and the Brazilian devaluation in 1999. Banks became less willing to commit themselves to emerging-market credits, and spreads on emerging-market bonds widened. To be financed, projects required increasing support from sponsors, multilateral agencies, export credit agencies (ECAs) and insurance companies. Since the Enron debacle investors and lenders have reduced their tolerance for risk related to power companies with trading activities, overseas operations and difficult-to-understand financial statements.

Commodity price volatility

Prices below long-term forecast levels sometimes place commodity-based projects such as mines, petrochemical plants and oilfields 'under water' in terms of profitability. With deregulation and merchant power, the 'spark spread', the difference between a power plant's input (fuel) costs and output (electricity) prices, may at times not be sufficient for profitability.

Interest rate volatility

In the early 1990s, declining interest rates increased the number of financially viable projects. Although interest rates then rose slightly, they are again, at the time of writing, relatively low.

Bank capabilities

The number of financial institutions with broad project finance syndication capabilities is shrinking, as is the number with specialised project finance groups. Institutions with broad geographical scope and with both commercial and investment banking capabilities have a competitive edge in today's market.

Bank capital requirements

In 2002 the Basle Committee on Banking Regulation charged its Models Task Force with the role of analysing the unique credit considerations of structured credit products that merited special attention, including project finance. In its initial hypothesis the Task Force determined that project finance should have a higher capital weighting than unsecured corporate loans because of its unique risk characteristics. Higher capital requirements for project loans could both impair the profitability of such loans for banks and raise loan pricing to uncompetitive levels, deterring banks from participating in loan syndications. An initial four-bank study conducted by S&P Risk Solutions indicated that project finance loans have lower losses subsequent to defaults than unsecured corporate loans, partly because of credit enhancements that mitigate risk, such as first-priority liens, cash-flow sweeps, covenant triggers and limitations on indebtedness. Banks often use such features as early-warning mechanisms to both alert themselves to project difficulties and encourage sponsors to cure defaults by providing equity or other forms of sponsor support, or to work with the banks to restructure the loans.⁷

Rating triggers

The fall of Enron and numerous recent power company defaults have been caused by ‘rating triggers’, which are provisions in loan agreements that define credit-rating downgrades below certain levels, often the minimum investment-grade level, as events of default.

Merchant power

Because of power price volatility and other recent market events, merchant power businesses have been downgraded by credit rating agencies and have had increasing difficulty in raising new financing.

Refinancing of mini-perms

In the past several years, numerous merchant power plants have been financed by four-to-six-year ‘mini perm’ bank loans. Refinancing these loans will be a challenge in the current environment. S&P notes that to do so power companies may be required to put up increased equity, structure cash sweeps and provide increased security.⁸

Declining importance of trading

In an article published in October 2002, Robert Sheppard, a consultant and attorney based in North Carolina, predicted that the role of trading in the electric power industry would diminish in the coming years. He pointed out that supply/demand imbalances and price uncertainty in the 1990s were caused largely by an uncertain and changing regulatory environment, and that the electricity market does not have many of the characteristics of other commodity markets in which users need to hedge, such as the unpredictability of supply or the potentially ruinous consequences for producers or users who do not hedge. The majority of consumers can bear electricity price risk without the benefit of risk-management intermediaries. Sheppard believes that the historical business practices of the electric power industry will reassert themselves as distribution companies once again recognise the benefits of stable,

long-term sources of supply, and that project developers will rediscover the advantages of long-term debt supported by long-term contracts with highly rated power purchasers.⁹

Regulation of trading

As abuses such as power swaps transacted simply to inflate the revenues of counterparties come to light, attempts are being made to reign in the largely unregulated energy trading market. For example, in the summer of 2002 Richard Green, Chairman of Aquila, testified before the US Senate Agriculture, Nutrition and Forestry Committee in favour of more regulation and overseeing of the energy derivatives trading market, to remove uncertainty and increase competitive power price transparency. He was in support of a bill introduced by Senator Dianne Feinstein that would mandate the US Commodity Futures Trading Commission (CFTC) and the Federal Energy Regulatory Commission (FERC) to oversee all energy transactions with respect to fraud, and to require all energy derivatives trades to be subject to registration, reporting, disclosure and capital requirements. (It is noted in the Panda–TECO case study, in *Volume 1 – Power and Water*, that later in 2002 Aquila decided to withdraw from energy trading and return to its roots as a traditional utility, having acknowledged its own difficulty in managing risk and making a profit in this volatile and shrinking market.)

Scepticism about deregulation

Along with privatisation, deregulation in the power industry was intended to attract capital and ultimately result in lower consumer prices. However, the crisis that resulted from a flawed and poorly implemented deregulatory structure in California has caused scepticism and slowed the pace of worldwide power industry deregulation. In an article published in October 2002, Eric McCartney, Head of Project Finance for the Americas at KBC Global Structured Finance, pointed to the overall questioning and reassessment of why there has been such a push for electricity deregulation in the United States and other markets. Some interest groups are making pleas to roll back electricity reform and return to the concept of vertically integrated monopolies and cost-of-service regulation. McCartney notes that electricity prices in the United States dropped 35 per cent in real terms between 1985 and 2000 but questions whether deregulation had any influence on it. He also cites studies that conclude that less than 5 per cent of retail consumers care about electricity deregulation because differences between suppliers would amount to only a few dollars per month on their electricity bills. Industrial power users, on the other hand, may stand to benefit more from deregulation.¹⁰

Uncertainties concerning transmission

One of the problems cited in the Panda–TECO merchant power case study is that insufficient transmission capacity limits the potential of an Arizona power plant to sell electricity in the California market. As substantial numbers of new electric generation facilities are added to the US grid, transmission congestion can be expected to intensify, particularly in high-growth urban areas, causing bottlenecks and pricing aberrations.¹¹ McCartney of KBC notes that one of the reasons for inefficiency in the US electricity market is the lack of investment in the transmission sector. This in turn is the result of regulatory uncertainty concerning transmission siting, transmission pricing methodologies, interconnection rules and practices, the

authority of the FERC over regional transmission organisations (RTOs), and a scheme for investors in transmission facilities to recover their costs and earn a fair profit. McCartney believes that the transmission sector has potential for the application of the project finance model and financing in the commercial market, but the development of that market is not yet sufficiently advanced and the risks are not adequately quantified. He observes that the project finance model needs a stable regulatory regime and a dependable stream of cash flow on which it can depend to service debt. He sees the FERC's regulated-return concept as a proven model that would have a stabilising effect on the development of the transmission and distribution business, thus encouraging much needed investment.¹²

Telecoms meltdown

The bankruptcy described in the FLAG (Fiberoptic Link Around the Globe) case study (see Chapter 10) illustrates problems faced by highly visible undersea cable competitors, such as Global Crossing and other recent projects, throughout the telecommunications industry. Aggressive network expansion financed with high leverage may have been a viable strategy while internet use, telecom traffic and related capital spending were growing rapidly, but when the telecom market collapsed, FLAG and many other telecom projects did not have the cash flow to service their debt.

Effect of Enron

Many trends in project finance over the past year have been related to the collapse of Enron. The role of off-balance-sheet, special-purpose entities in Enron's loss of confidence and subsequent bankruptcy has led some to question what the proper boundaries of project finance are. However, a survey that the author conducted for an article in *The Journal of Structured and Project Finance* (Spring 2002) found traditional project finance to be alive and well, and not adversely affected by the Enron debacle.

The Enron bankruptcy and related events have changed neither the nature nor the usefulness of traditional project finance, but they have led to a slowing down of some of the more innovative forms of structured project finance. Among the other direct and indirect effects of Enron have been increased caution among lenders and investors about the energy and power sectors; increased scrutiny of off-balance-sheet transactions; increased emphasis on counterparty credit risk, particularly with regard to companies involved in merchant power and trading; and deeper analysis of how companies generate recurring free cash flow. There is now increased emphasis on transparency and disclosure, even though disclosure in traditional project finance has always been more robust than in most types of corporate finance. At the time of writing, in the market environment, for reasons that extend beyond Enron, some power companies have been cancelling projects and selling assets to reduce leverage, resorting to on-balance-sheet financing to fortify liquidity, and reducing their trading activities.

The immediate cause of the Enron bankruptcy was the loss of confidence among investors caused by Enron's restatement of earnings and inadequate, misleading disclosure of off-balance-sheet entities and related debt. However, because Enron was a highly visible power and gas marketer, and involved in far-flung activities ranging from overseas power plants to making a market in broadband capacity, its failure brought scrutiny to all aspects of the energy and power business, and particularly to the growing sectors of merchant power and trading.

Even before the Enron bankruptcy, as Jacob J. Worenklein, Managing Director and Global Head of Project and Sectorial Finance at Société Générale points out, the confidence of many power and gas companies was shaken by other devastating events during 2001, including the California power crisis; the related bankruptcy of Pacific Gas & Electric Company (the regulated utility subsidiary of PG&E Corporation); falling spot-power prices in US markets; the effects of 11 September; and the collapse of the Argentine economy and financial system. The California power crisis, as evidence of a flawed deregulation structure, caused a global setback in power deregulation and paralysed US bank markets for much of the first half of 2001. Worenklein explains that falling spot power prices were caused primarily by the overbuilding of new projects and overdependence on the spot market.

Worenklein observes that the combination of these events in 2001, accentuated at the end of the year by the Enron bankruptcy, caused a dramatic change in the perception of risk among investors, lenders and rating agencies. In particular, these parties began to perceive independent power producers (IPPs) and traders to be riskier than they ever had before. They considered trading businesses difficult to evaluate. They suspected earnings manipulation through the marking to market of power contracts and off-balance-sheet vehicles, particularly in the case of thinly traded contracts that companies marked to market purely on the basis of their own calculations. They feared sustained low power prices in the US market. After problems in countries such as Argentina, Brazil, India and Indonesia, emerging-market IPP projects began to seem to offer more danger than opportunity. Investors and lenders started to perceive earnings in the IPP and trading business to be less predictable and sustainable than they had before. As a result, they discounted the growth prospects of these companies, and focused on liquidity and leverage in the light of higher perceived risk.

By the beginning of 2003 the US power market seemed to be at a much greater level of crisis than Worenklein and others had anticipated just a few months earlier. The collapse of forward prices in the merchant power market was far worse than anyone had anticipated. Forward prices in late 2002, for delivery in 2003, were one quarter to one third of comparable prices two years earlier. Worenklein notes that the effect of these prices on the economic viability of merchant power was greatly aggravated by gas price increases, which compressed spark spreads to levels that did not provide an adequate margin for capital recovery. This greatly exacerbated the power crisis in the United States, resulting in project downgrades by the credit-rating agencies and significantly contributing to the collapse of two major unregulated power suppliers in 2002: PG&E National Energy Group, which had been one of the most highly respected developers and owners of merchant power plants in the United States, and NRG. At the same time, financial pressure was increased on such players as El Paso, Dynegy and Mirant.

From a credit market perspective, the effect of all this was a significant increase in both the level of writeoffs and the provisioning for losses by the major commercial banks and other investors in the US power and project finance sectors. Worenklein believes that the result is likely to be a reduction in the amount of capital that will be available to the power sector in the United States, even outside the merchant power and trading arenas, as some players decide to reduce their overall exposure to the US power sector.

Some energy players have been hit by what Dino Barajas, an attorney with Milbank, Tweed, Hadley & McCloy, describes as a 'perfect storm'. They have had exposures in foreign markets that have collapsed; they have had to cancel advance-purchase orders for turbines because of a slowing US power market; their stock prices are tumbling as a result of reduced

growth prospects; and they are facing a credit crunch from lenders, some of which are 'gunshy' from recent losses related to PG&E or Enron. The energy and power market has been affected by both the Enron bankruptcy and other situations, caused by a combination of all the factors discussed above. Before going further, let us look at how Enron has affected pure, traditional project finance.

Effect on traditional project finance

Jonathan B. Lindenberg, Managing Director at Citigroup, reminds us that traditional project finance is cash-flow-based, asset-based finance that has little in common with Enron's heavily criticised off-balance-sheet partnerships. According to Roger Feldman, Partner and Co-Chair of the Project and Structured Finance Group at Bingham McCutchen, the historic elements of project finance are firmness of cash flow, counterparty creditworthiness, the ability to execute contracts over a long time frame and confidence in the legal system. Barry P. Gold, Managing Director at Salomon Smith Barney, points out that project finance is a method of monetising cash flows, providing security and sharing or transferring risks. The Enron transactions had none of these characteristics. They were an attempt to arbitrage accounting treatment, taxes and financial disclosure.

Traditional project finance, in Lindenberg's view, is based on transparency, as opposed to the Enron partnerships where outside investors did not have the opportunity to do the due diligence upon which any competent project finance investor or lender would have insisted. Those parties are interested in all the details that give rise to cash flows. As a result there is a lot more disclosure in project finance than there is in most corporate deals.

Gold points out that, in traditional project finance, analysts and rating agencies do not have a problem with current disclosure standards; project financing is not hidden and it never has been. First, analysts and rating agencies know that project financing is either with or without recourse, and either on or off the balance sheet. For example, in the case of a joint venture where a company owns 50 per cent of a project or less, the equity method of accounting is used. On both the income statement and the balance sheet, the company's share of earnings from the project is included below the line in the equity investment in unconsolidated subsidiaries. Therefore, whether a project is financed on or off the balance sheet, analysts know where to look.

Off-balance-sheet treatment, Lindenberg explains, may not be the principal reason for most project financing. It usually is carried out to transfer risk or to provide a way for parties with different credit ratings to jointly finance a project (if parties provided the financing on their own balance sheets, they would be providing unequal amounts of capital because of their different borrowing costs). None of these considerations has anything to do with the Enron partnerships, where a 3 per cent equity participation from a financial player with nothing at risk was used as a gimmick to get assets and related debt off the balance sheet. This abuse has caused the US Financial Accounting Standards Board (FASB) to re-examine the accounting for special-purpose entities.

Structured project finance

Even though pure project finance has not been affected greatly by Enron, both Lindenberg and Worenklein see some slowing of activity in the more innovative types of structured

finance, such as synthetic leasing, structured partnerships and equity share trusts – at least for the time being. Lindenberg notes that synthetic leases are a mature product, understood by rating agencies and accountants, in which billions of dollars-worth of deals have been done. (A synthetic lease is an operating lease for accounting purposes, but structured as a debt financing for tax purposes. The lessee retains the tax benefits of depreciation and interest deduction. A true lease is structured as a lease for both accounting and tax purposes.) The problem, however, is ‘headline risk’: one can hardly pick up a newspaper today without seeing yet another company with disclosure issues. Even though synthetic leases are transparent and well-understood, they have an off-balance-sheet element that creates headlines in today’s environment. More synthetic leases may be arranged in a year or two.

Special-purpose entities

Feldman of Bingham McCutchen believes that, by using corporate stock as collateral, and by creating conflicts of interest, Enron undermined the pristine nature of the special-purpose, non-recourse entity and caused all such structures to look suspect. He stresses that, in traditional project finance, a special-purpose, non-recourse entity must be clean and fully focused on the transaction concerned. In the immediate aftermath of the Enron bankruptcy, project sponsors, and the bankers and lawyers who support them, will have to make a special effort to explain the legitimate business reasons for these entities.

Caution among lenders and investors

Because they may have been stung by PG&E or Enron, and because of other recent market factors such as declining power prices and emerging-market problems, lenders and investors recently have approached all energy and power companies with increased caution. They are scrutinising merchant power and trading businesses with particular care, and they are doing deals mainly with prime names that have proven staying power. Lindenberg sees bankers focusing on straightforward project deals with healthy sponsors, conservative structures and strong offtakers. Although that always has been a banker’s focus, it is more intense now.

Rating agency downgrades

Rating agencies are downgrading hitherto fast-growing independent power companies, or requiring them to reduce their leverage to maintain a given rating. Among the agencies’ concerns in the current market environment are the exposure of these companies’ merchant plants to fluctuating fuel and electricity prices and the companies’ reduced access to equity capital. Having been criticised for not downgrading Enron soon enough, the rating agencies are particularly sensitive about the energy and power sector. In the context of these volumes, however, it is important to remember that the fast-growing power companies using innovative revolving credits to finance the construction of new power plants are single sponsors with fully disclosed on-balance-sheet debt. Even though the collapse of Enron is one of the factors that have discouraged banks from increasing their industry exposure, most of the restrictions that the markets are placing on the growth of independent power companies are related to the market factors discussed above, all of which were evident before the Enron bankruptcy.

Like lenders and investors, companies that trade with each other are becoming more concerned about counterparty credit risk. In evaluating the creditworthiness of a given counterparty, they are looking at the whole portfolio to see if – diversification benefits aside – one risky business, such as merchant power or energy trading, could drag the others down. For example, a company with primarily merchant plants in its portfolio is more vulnerable to overbuilt power plant capacity than a company with mainly power purchase agreements.

Sources of free cash flow

William H. Chew, Managing Director of Corporate & Government Ratings at Standard & Poor's, recalls that, immediately after Enron filed for bankruptcy protection, some questioned whether project and structured finance would survive in their current form. Indeed, some corporations with large amounts of off-balance-sheet financing and inadequate disclosure were subjected to increased scrutiny, and sustained sharply reduced valuations for both their equity and debt. In response such companies expanded their liquidity and reduced their debt to the minimum possible. Chew, however, believes that as time passes, the main fallout of the Enron bankruptcy and other recent market shocks may not be a turning away from project finance, but rather a greater stress on bottom-up evaluation of how companies generate recurring free cash flow and what might affect that cash flow over time. Chew believes that, in this process, both project and structured finance probably will continue to play an important role. The change, in his view, is that the focus will be not only on the project structures, but also on how these structures may affect corporate-level cash-flow and credit profiles. Examples of these effects might include springing guarantees and potential debt acceleration, calling on contingent indemnification and performance guarantees, negative pledges and their limits at both the project and the corporate holding company level, and the potential for joint-venture and partnership dissolution to create sudden changes in cash flows. S&P reminds us in its project as well as its corporate credit analysis that there can be a big difference between GAAP accounting and cash-flow analysis.

Security interests

Feldman of Bingham McCutchen notes that the power business, in part, has shifted from a contract business to a trading, cash-flow kind of business in which the counterparty becomes critical to the viability of a transaction. The security in the transaction is less the asset itself and more what the trading counterparty does with the asset. That asset has an option value in the hands of a counterparty, and a very different value if a bank has to foreclose on it – a value that the bank would rather not find out.

Enron's alleged tendency to set its own rules for marking gas, electricity and various newer, thinly traded derivative contracts to market raises some interesting questions about collateral and security, in Feldman's opinion. Historically, the security in a power plant financing has consisted of contracts, counterparty arrangements and assets. However, if a lender's security depends on marking certain contracts to market and there is some question as to the objectivity of the counterparty that is marking them to market, additional questions are raised. For example, what is an adequate sale, what is adequate collateral, how does a lender take an adequate security interest, how does a lender monitor the value of its security interest, and what does a lender need to do to establish a sufficient prior lien in the cash flow

associated with the transaction? Feldman believes that in the case of a structured finance transaction the key questions remain the same: is the security real and can lenders get their hands on it?

How companies have responded

Worenklein of Société Générale has seen affected companies respond rapidly and decisively to the current market environment, strengthening their liquidity by issuing new equity, cancelling projects, selling assets, unwinding structured finance deals or putting them on the balance sheet, and increasing transparency and disclosure (further discussed below).

Even though traditional project finance has little to do with the off-balance-sheet entities that brought Enron down, Barajas of Milbank Tweed fears a backlash that could affect project finance in the event of a credit crunch. If that happens, one possible solution could be simply to finance more projects on the corporate balance sheet. Some power companies have set up massive credit facilities for doing just that on the basis of their overall corporate cash flow and creditworthiness. Another option for a company is to borrow against a basket of power projects, allowing the lenders to diversify their risks. Such a facility, however, is still largely based on the credit fundamentals of the corporation. Barajas believes that project financing on an individual-plant basis may be preferable to either of these approaches, for both project sponsors and lenders. For example, say a company is financing ten projects and three of them run into trouble. The company can make a rational economic decision as to which of these projects are salvageable and which do not merit throwing good money after bad. The company might let one go into foreclosure, to be restructured and sold. If a company is financing ten projects together, however, its management may feel compelled to artificially bolster some of its other projects so that the failure of one does not bring the entire credit facility down. Making such an uneconomic decision for the near term would not be in the company's long-term interests.

Increased transparency and disclosure

Worenklein reports that major players generally are releasing much more information about their businesses and financing arrangements than before. Similarly, Gold of Salomon Smith Barney sees an overriding atmosphere of conservatism in disclosure – for example, in conference room discussions while drafting prospectuses for project finance deals. Bankers are making an extra effort to confirm that deals are being disclosed and explained correctly. Given the current tarnishing of the merchant power sector, bankers might explain that a company's trading is not speculative and that it is using accepted risk-management measures such as Value-at-Risk (VaR). They also might break out the percentage of sales from power sales and from 'marketing' – a term that sounds better than trading in today's environment.

To go forward, Worenklein believes that strong management actions are needed to restore belief in the honesty of numbers. A company's management needs to demonstrate the same passion for integrity as it has for growth in the past. It needs to get rid of gimmicks, and consistently communicate and execute a simple, clear strategic vision. This involves cleaning up the balance sheet by putting transactions that have significant recourse to the sponsor back onto it. Only true non-recourse deals should be left off the balance sheet. To convey an accurate, fair picture of the business, companies need to communicate – to the

point of obsession – information and assumptions about how earnings, including mark-to-market transactions, are recognised. In Worenklein’s view, managing earnings is out and managing cash flow is in, and, as Chew notes above, that is what the rating agencies are looking at.

Some of the measures that Worenklein recommends go beyond financial reporting. Companies may need to re-examine their strengths and weaknesses, and refocus and simplify their basic business strategies. As companies implement the US Sarbanes–Oxley Act of 2002 their boards of directors and audit committees might become more helpful in this process with the addition of non-executive members who understand the business. (The corporate governance reforms in Sarbanes–Oxley apply not only to US companies but to other companies that list their securities on US exchanges.) For companies with low stock prices, it is too late to panic, so Worenklein recommends looking at the bright side. Now might be the time to fix the business, clean up earnings, take losses and rebalance. Unfortunately, now is not the greatest time to clean out the attic and sell non-strategic assets, because there are more sellers than buyers. However, the key, in Worenklein’s view, is to be patient and thoughtful about prospective buyers, including, in some markets, local buyers that can see the greatest value in such assets.

Lessons learned from Enron

A great deal has been written about the Enron debacle, but we are not yet far enough away from the event to give proper weight to the various lessons to be learned, according to James F. Guidera, Senior Vice President and Head of Project Finance at Crédit Lyonnais Americas. Nonetheless, Guidera sees some general lessons that can be learned from Enron that go beyond the realm of structured and project finance, and that others are more particular to project and structured finance. The following are among the more general lessons.

- It is risky to over-invest in business sectors such as broadband or water.
- A power trading business, though potentially profitable, is highly vulnerable to liquidity crises and has a low liquidation value.
- Trading to hedge a power company’s inherent physical position in power or gas should not be regarded as a suspect business *per se*, but it can involve the risk of sudden liquidity crises – especially for companies rated ‘BBB-’ that don’t want to slip below investment-grade status.
- Mark-to-market accounting rules can mislead investors, lenders and analysts about the extent of non-recurring earnings, even in the absence of fraud.

Among the lessons more directly related to project and structured finance, Guidera identifies the following.

- The transfer of assets, intangible and otherwise, into non-consolidating vehicles controlled by a sponsor may mislead investors as to the extent of non-recurring earnings or deferred losses, even in the absence of fraud.
- There is a risk of low recovery rates on structured transactions secured by intangible assets (such as investments, contracts and company stock) or by tangible assets whose values are not established on an arm’s-length basis.

- Having been badly burned by the Enron bankruptcy, banks and investors in Enron's structured and project financings, and in the energy sector generally, will be especially conservative, limiting credit and capital access for many clients in the sector, and creating a general liquidity issue for these customers.

Christopher Dymond, Director of Taylor-DeJongh, a boutique investment bank based in Washington, DC, that specialises in project finance, has several recommendations concerning accounting treatment and disclosure.

- An effort must be made by all in the project finance industry and investor relations to underscore the distinction between true non-recourse structures and Enron's activities.
- The terms 'non-recourse' and 'off balance sheet' should remain synonyms. Liabilities that truly have no recourse to a company's shareholders can justly be treated as off-balance sheet. Enron appears to have violated this principle because the undisclosed liabilities in the off-balance-sheet partnerships actually had significant recourse to Enron shareholders through share-remarketing mechanisms.
- Many project finance structures are 'limited' rather than 'non-' recourse, and thus there is potentially a grey area in which accounting rules allow off-balance-sheet treatment, but there is nonetheless some contingent liability to the parent company's shareholders. Full footnote disclosure of any potential shareholder recourse was advisable before Enron and is absolutely necessary now.

John W. Kunkle, Vice President at Fitch Ratings, reminds us of two basic tenets of project finance:

- the financing of hard assets has ongoing value through economic cycles; and
- high levels of sponsor expertise and commitment are required.

Kunkle observes that as Enron grew and expanded it seemed more interested in whether or not businesses or transactions would generate a certain return than if ventures would complement its existing core businesses. Enron invested in a number of businesses in which it did not have the required expertise and was not particularly committed to those businesses when expectations were not met.

Common themes

As mentioned above, the project case studies in these volumes were selected to exhibit the types of projects most frequently financed in a variety of countries. As a result common themes can be identified across the two volumes. Some of these are summarised below.

Infrastructure requirements

Power shortages motivated the privatisation of the electricity sector in China, Colombia, Côte d'Ivoire, India, Indonesia, Mexico and the Philippines, and to commercial project financing of power projects in these countries.

Legal and regulatory

First-of-their-kind projects in developing countries typically introduce new legal concepts. In China, India, Indonesia, Mexico and the Philippines existing legal and regulatory frameworks meant that negotiating contracts according to international standards for each country's first IPP required both the introduction of legal issues, contract structures and financial concepts new to each country, and lengthy negotiations with government officials. A similar process was evident in contract and financing negotiations for Greece's first build-operate-transfer (BOT) toll road and Uruguay's first cellular telephone system (see Chapters 3 and 8). Lack of coordination among government agencies and weak provisions in privatisation statutes created problems for the SCL Terminal Aéreo Santiago project in Chile (see Chapter 6). Project negotiations highlighted the need for concession contract law in Côte d'Ivoire (see *Volume I – Power and Water*) and for mining law in Tanzania (see Chapter 14).

The availability of international arbitration was an issue in many project contract negotiations, including those for power projects such as Meizhou Wan in China, Azito in Côte d'Ivoire, Dabhol in India and Paiton I in Indonesia. International arbitration was used, but largely failed, with Dabhol and Paiton I. See *Volume I – Power and Water* for more on these projects.

The refusal of host governments to honour contracts and guarantees is highlighted in the Dabhol (India) and Paiton I (Indonesia) case studies.

Credit risk

Political risk insurance is a necessity for project financing in most emerging markets. It was required to attract lenders to the Azito (Côte d'Ivoire) and CBK (Philippines) power projects (see *Volume I – Power and Water*) and the three Tanzanian gold mine project loans (see Chapter 14). The CBK power and Geita gold mine (Tanzania) projects highlight the growing use of private political risk insurance.

The International Finance Corporation's (IFC) A/B loans, which provide private commercial banks the comfort of lending alongside a multilateral agency with so-called 'preferred creditor' status, were part of the financing for the Azito (Côte d'Ivoire) and Chad-Cameroon Pipeline projects (see Chapter 16).

IPPs' increasing assumption of merchant power risk and requirement to manage their spark spreads are important issues in the Mexican power projects, where PPAs and fuel supply contracts are being delinked; the Panda-TECO projects, the two largest merchant power plants in the United States; and the Drax power plant in the United Kingdom, where the termination of a hedging contract, combined with high leverage and debt-service obligations, has led to debt restructuring. See *Volume I – Power and Water* for more on these projects.

Although capital-markets financing in the past had not been possible for emerging-market projects before construction, bonds were issued in 1995 for the TransGas pipeline project in Colombia (see Chapter 19) and a flexible commercial bank/capital markets financing was arranged in 1997 for the TermoEmcali power plant, also in Colombia (see *Volume I – Power and Water*), before construction began. Market conditions have changed since then and pre-construction financing would not be available today for similar projects in Colombia or in many other emerging-market countries.

Because their exports generate hard currency captured in offshore accounts, credit ratings for the Mega project in Argentina and the Petrozuata project in Venezuela pierce their

respective sovereign credit rating ceilings. Fitch maintained the credit rating for Ocesa, the Colombian oil pipeline, above its sovereign ceiling because lenders have access to the oil as collateral if transport fees are not paid. See Chapters 20, 15 and 18 respectively for case studies on these projects.

Social and environmental

The need for local government and community support, and the implementation of sustainable development programmes, are discussed in the Quezon Power (Philippines) case study in *Volume I – Power and Water*, and the Chad–Cameroon pipeline and Tanzanian gold mines case studies in Chapters 16 and 14.

Strategic

The Enron bankruptcy has resulted in more intensive investor and lender scrutiny of power companies with trading operations, international networks and difficult-to-understand financial statements. Calpine and AES, owner of the Drax power plant in the United Kingdom, have scaled down their capital-expenditure programmes, sold assets and reduced their leverage (see *Volume I – Power and Water*). After TXU, a diversified energy company based in Dallas, Texas, decided to withdraw support for its European operations, which are now in administration (bankruptcy), a British TXU subsidiary's fixed-price contract to purchase 60 per cent of Drax's power output was cancelled. Aquila, soon to be replaced as a risk manager for the Panda–TECO project (see *Volume I – Power and Water*), is discontinuing its energy trading operations and returning to its roots as a Midwestern US utility.

Reasons for financial difficulty

Among the 38 projects studied, 11 have defaulted, come close to default or encountered some degree of financial difficulty. The reasons for financial difficulty fall into eight categories. Exhibit E lists these categories and shows the number of projects in each. For many of the projects, there were several reasons for financial difficulty.

By far the most frequent cause of financial difficulty was market risk, which relates to passenger traffic, vehicle traffic or customers' capital expenditures not meeting projections; a decline in power or commodity prices to uneconomic levels; and financial market conditions that made refinancing difficult. Currency risk was evident in four infrastructure projects that generated local-currency revenues but had to service US dollar-denominated debt. Counterparty risk was evident in the case of three power project off-takers and one bank issuer of a standby letter of credit. High leverage was a problem with three projects; in two of these cases the sponsors took on high debt to acquire the projects, for prices

Exhibit E

Reasons for financial difficulty

<i>Cause of difficulty</i>	<i>Number of projects</i>
Market risk event	8
Counterparty risk event	4
Currency risk event	4
High leverage	3
Political risk event	3
High purchase price	2
Construction risk event	1
Operating risk event	1

that some observers considered excessive. The need for political risk insurance to attract lenders to developing countries is evident in many of the case studies. For two of the projects political risk materialised when government entities refused to honour contract obligations. For another a deteriorating political situation was the primary cause of a depressed economy. Construction and operating risks are apparent in the financing of most projects, but measures to protect against them are usually successful. Each of these risks materialised in just a single case study.

The reasons for financial difficulty in 11 of the case studies are summarised below.

Market risk

Vehicle traffic for the PYCSA toll road in Panama did not meet the projections made at the time of the project financing. Similarly, air passenger traffic through the Arturo Merino Benitez International Airport in Santiago, Chile, did not meet projections made by the airport concessionaire, SCL Terminal Aéreo Santiago, at the time of the project financing. See Chapters 4 and 6 for more on these projects.

Market risk, high leverage, high purchase price

Among others, Ofgem, the UK power industry regulator, warned that electricity prices would decline when the New Electricity Trading Arrangements (NETA) were implemented. Despite these warnings international power companies such as AES continued to pay high prices for assets such as Drax. The effects of NETA on the Drax power plant in the United Kingdom were underestimated. After a fixed-price contract for 60 per cent of its output was cancelled Drax faced the prospect of operating on a merchant basis with a heavy debt load in an unfavourable electricity-price environment. When default on its debt became inevitable Drax entered into restructuring negotiations with its bondholders and lenders. As a high-growth, high-leverage company Drax's parent AES was vulnerable to the combination of a worldwide drop in wholesale electricity prices, economic collapse in Argentina and the ripple effects of the Enron bankruptcy. AES has recently implemented its own restructuring to avoid bankruptcy. See *Volume I – Power and Water* for more information on the Drax power plant and AES's restructuring plan.

Market risk, political risk

The Maharashtra State Electricity Board cancelled the PPA for the Dabhol power project in India (see *Volume I – Power and Water*) because it could not afford to pay the tariff and there was an oversupply of power in the state. Regulations prevented the plant from selling electricity to other states that needed it. Both the federal and the state government dishonoured their guarantee obligations.

Market risk, counterparty risk, currency risk, political risk

Perusahaan Listrik Negara (PLN), the Indonesian state-owned utility, refused to make US dollar-indexed payments for electricity to Paiton Energy after the value of the Indonesian rupiah plunged during the Asian financial crisis (see *Volume I – Power and Water*). PLN and Paiton reached an interim agreement in 2000 that allowed the utility to purchase power at reduced rates. The original 1994 PPA was amended in 2002.

Counterparty risk, political risk

In May 2002 the Fujian provincial government reportedly reneged on its obligations under its PPA with the Meizhou Wan power project (see *Volume I – Power and Water*) and proposed that the tariff be reduced. After prolonged negotiations with the provincial government the project sponsors were reportedly trying to replace the project's US dollar-denominated loans with local-currency financing because the reduced revenues proposed by the provincial government would not be sufficient to service the original project financing provided by the foreign bank consortium and the Asian Development Bank.

Market risk, currency risk, political risk, high purchase price

BCP paid US\$2.5 billion, an unexpectedly high price, for its cellular telephone licence in São Paulo, Brazil, and financed it with a high level of debt. Although operating performance, and earnings before interest, taxes, depreciation and amortisation (EBITDA), exceeded its business plan, BCP had difficulty rolling over its local-currency paper every two years and servicing its US dollar-denominated debt as the value of the Brazilian real declined. Debt restructuring was impeded by a disagreement between two deadlocked 47-per-cent shareholders.

Market risk, high leverage

FLAG was able to repay its original project debt, but then continually borrowed and reinvested to expand its undersea cable network, and could not service its debt after a worldwide drop-off in spending by major telecom carriers. The company declared bankruptcy in early 2002 and then re-emerged six months later (see Chapter 10).

Market risk, operating risk

The Andacollo gold mine in Chile was closed earlier than projected and its parent, Dayton Mining, merged because of higher-than-expected production costs and lower-than-expected gold prices (see Chapter 13).

Counterparty risk, political risk

TermoEmcali, a natural-gas-fired power plant that serves Cali, Colombia's second largest city, has been a successful project aside from a minor construction delay. Its problems stem from the financial difficulty of Emcali, its sole offtaker, which relates to a weak underlying economy and financial mismanagement (see *Volume I – Power and Water*).

Counterparty risk, construction risk

The Casecan Water & Energy project in the Philippines is viable under the ownership of MidAmerican Energy Holdings despite a construction delay, but its original Korean engineering, procurement and construction (EPC) contract contractor defaulted, and Korea First Bank refused to honour its standby letter of credit backing the contractor's obligations. The bank finally paid MidAmerican after a prolonged legal battle in US courts (see *Volume I – Power and Water*).

Lessons learned

The case studies in *Volume I – Power and Water* and this book allow the identification of certain lessons that may benefit future sponsors and investors of project financing. Among the lessons learned from the 38 case studies in these volumes are the following.

Negotiating process

Brandon Blaylock of the GE Capital Services Structured Finance Group believes that project participants in emerging-market projects must be prepared to both learn and teach. A successful project requires close teamwork among all project participants, and sensitivity to each other's issues and needs. As those involved in concurrent IPP ventures in other developing countries would agree, financing takes longer than expected in any first-of-its-kind project, especially when there are difficult risk-allocation issues. Often the process is just as important as the substance.

Local community sensitivity and sustainable development programmes

The success of the Chad–Cameroon pipeline project (see Chapter 16), the Quezon Power project in the Philippines (see *Volume I – Power and Water*), and the Tanzanian gold mine projects (see Chapter 14) depended partly on sensitivity to local community concerns, as they provided local communities with needed infrastructure improvements and other resources in return for dislocations and other inconveniences related to the projects, and on implementing environmentally sensitive, sustainable development programmes.

Banks with local branch presence

ABN AMRO, in the Ancel cellular-telephone project in Uruguay, and Barclays, in the Tanzanian gold mine projects, benefited from local branch presence, the ability to deal in local currency and contact with local government officials at all levels (see Chapters 8 and 14).

Government and legal system

Laibin B's high visibility as a pilot for future BOT projects in China helped the often-cumbersome multi-agency government approval process (see *Volume I – Power and Water*). Multiple letters of support at the central government level and the local need for power are helpful factors that reduce project risk at a time when governments are reluctant to issue guarantees. However, recent experience in India and Indonesia shows that support letters and even guarantees can be unreliable.

Foreseeing a trend towards less government support in the future, the sponsors of the Meizhou Wan power project demonstrated that true limited-recourse project financing could be achieved outside the BOT scheme in China (see *Volume I – Power and Water*).

Among the critical factors behind the success of the Azito project financing in Côte d'Ivoire (see *Volume I – Power and Water*) were the government's acknowledgment of the need for concession laws; the financial, managerial and negotiating skills of the government team; and the government's clear notions concerning the role of private participants and social goals such as rural electrification as a result of its recent work in power sector reform.

The lack of concession law and a government template for infrastructure financing contributed to the length of negotiations and the complexity of documentation for the Athens Ring Road project in Greece (see Chapter 3).

Role of government, market and construction risk

The case study of Highway 407 (see Chapter 1) in the Greater Toronto area describes how the government assumed environmental, technology, construction and traffic risks to build the first 69-kilometre section of a 108-kilometre toll road. After these risks had been reduced significantly, a private firm was best equipped to manage and develop the road's future growth. Amid controversy the privatisation process was facilitated by the Ontario government's consistent and unwavering commitment to carry it through, and the sale of the road was facilitated by a clean, clear and transparent bidding process.

Financing of the A2 motorway in Poland, a country with virtually no toll-road experience, was made possible by a strong mandate from the government, a government guarantee of 40 per cent of the debt, a strong commitment from the European Investment Bank and concessions by all the major parties, including senior lenders that accepted a flexible repayment schedule, and sponsors that increased their equity participation and provided a contingent equity facility (see Chapter 5).

Role of multilaterals

The case study on the Chad–Cameroon pipeline project demonstrates that project sponsors wishing to involve the World Bank Group in future projects may have to accept some degree of monitoring to assure that they meet their environmental commitments and that project revenues are directed as planned (see Chapter 16). By the same token, such an organisation of the World Bank's stature was required to make a convincing statement that the environmental and social concerns of special-interest groups would be addressed in a responsible manner.

Commercial bank versus capital market financing

The TermoEmcali power project in Colombia (see *Volume I – Power and Water*) demonstrated that it is efficient to provide a bond issue and a standby commercial loan facility from the same financial institution, with flexibility between bank and capital-market debt depending on market conditions. Common terms between commercial lenders and bondholders, as defined in the Common Security Agreement for the Petrozuata financing in Venezuela (see Chapter 15), provided the flexibility to adjust the respective amounts of bank and bond financing depending on market conditions.

Construction risk

The TransGas (see Chapter 18) and TermoEmcali (see *Volume I – Power and Water*) projects in Colombia showed that infrastructure projects, such as power plants and pipelines, that generate local revenues in a developing countries can be financed 'out of the box' (before construction) under the right circumstances. However, these circumstances have changed

considerably since the project financing of these projects was done in 1997, particularly in Colombia, where the economic and political situation has deteriorated considerably.

Based on his experience in lending to three gold mining projects in Tanzania (see Chapter 14), Milo Carver of Barclays Capital concludes that lenders need to be assured that sponsors are not relieved of their pre-completion support undertakings before a project has passed meaningful completion tests. Such projects require documented tests covering categories such as operating performance, environmental management, cost control and budgeting.

The South Korean EPC contractors were recognised as weak links at the time of the Casecanan Water & Energy project financing (see *Volume I – Power and Water*). EPC contractors often do not fail, standby letters of credit often are not called upon and, when they are, they often are dishonoured by their opening parties. Casecanan Water & Energy reminds us that these risks do materialise from time to time.

Counterparty risk

The Maharashtra State Electricity Board's failure to honour its obligations under its PPA with the Dabhol power project in India (see *Volume I – Power and Water*), PLN's refusal to pay under its PPA with Paiton Energy in Indonesia (see *Volume I – Power and Water*) and the Fujian (China) provincial government's disavowal of its PPA obligations related to the Meizhou Wan project (see *Volume I – Power and Water*) showed that contract parties – even when they are government organisations – do not honour their contractual obligations when it is beyond their economic ability, or not in their economic interest, to do so. The unwillingness of the Indian federal and state governments to make policy changes that would allow Dabhol to sell electricity to out-of-state entities illustrates a painful principle of project restructuring: preventative restructuring is rare. Contract parties usually do not make concessions until there is a crisis.¹³

The Paiton Energy case study shows that contracts are of diminished value when a project participant can no longer afford to abide by their terms. Nonetheless, the PPA provided a framework and set the boundaries for several years of negotiations. The strength of the agreement, and the likelihood of litigation and arbitration ultimately favouring Paiton Energy, were important restraints on the government-owned utility and power off-taker.

Political risk

The TermoEmcali case study (see *Volume I – Power and Water*) shows that in a developing country such as Colombia the political and economic situation, as well as the creditworthiness of the off-taker, can change considerably in just a few years, not to mention over the term of a PPA or a bond.

By not honouring their guarantee and counter-guarantee obligations the governments of India and Maharashtra undermined the foundation of the Dabhol power project. Such political decisions could be considered creeping forms of expropriation. International arbitration was relatively ineffective for both projects.

Persistence, including consistent, steadfast denial of corruption charges and willingness to explore alternatives such as extending the term of the contract and building new power capacity, helped the sponsors of Paiton Energy to salvage a difficult situation.

An International Development Agency partial risk guarantee for the Azito power project (see *Volume I – Power and Water*) was critical in attracting lenders to Côte d'Ivoire, which

was not yet an established international borrower. With respect to the Golden Pride, Bulyanhulu and Geita gold mining projects (see Chapter 14), Carver of Barclays comments that the maximum size of a deal in a country such as Tanzania is driven by how comfortable the bank and insurance markets are with the political risks.

Market risk

For a project such as the El Abra copper mine in Chile, which depends on commodity prices, lenders must know where prices are in relation to long-term cycles. The Andacollo gold mine in Chile showed that mining projects are subject to the risk of falling commodity prices and the risk that, despite the results of expert feasibility studies, ore grades and production costs will not meet expectations. (See Chapter 13 for case studies on these projects.)

Carver of Barclays observes that gold price hedging has been a one-way bet during a long period of falling gold prices. Through hedging gold projects consistently have been able to sell at above-market prices. If the gold market were to reverse and enter into a long-term price upswing, Carver wonders whether gold producers would maintain their appetite for hedging.

The leverage of the Drax power plant in the United Kingdom (see *Volume I – Power and Water*) was too high to withstand the deterioration of wholesale electricity prices and the related upheaval in the UK electricity market. The effect of the NETA on wholesale electricity prices was greatly underestimated.

Lower-than-expected power demand in one market served by the Panda Energy–TECO Power joint venture (see *Volume I – Power and Water*), combined with lagging development of transmission facilities in another, highlights the risk of merchant power when combined with high leverage. A few credit problems with prominent merchant power players, combined with scepticism concerning the purpose and benefits of electricity deregulation, could begin to push power companies back toward the traditional integrated-utility business model.

The financial difficulty of the PYCSA toll road project in Panama (see Chapter 4) shows that the rate of growth in the use of a new toll road is difficult to predict. It is easy to be unrealistically optimistic when estimating how rapidly people will change their habits, especially when tolls are relatively high considering the average personal income in the area. Given these risks and Poland's lack of experience with toll roads, financing of the A2 Motorway (see Chapter 5) required significant government and multilateral agency support, as mentioned above.

Currency and financial market risk

Financial problems with the BCP cellular telephone project in São Paulo, Brazil (see Chapter 9), remind us that, given currency volatility, it is difficult for a project generating revenues in a domestic currency to depend on US dollar debt. On the other hand, the project required financing with longer terms than were available in the Brazilian market and therefore faced constant risks related to the rolling over of most of its debt every two years.

High leverage

Unexpectedly high purchase prices financed with high leverage accentuated problems with the Drax power plant in the United Kingdom (see *Volume I – Power and Water*) and the BCP cellular telephone project in Brazil (see Chapter 9). For the FLAG under-sea cable project, aggressive network expansion financed with high leverage may have been a viable strategy

RESOURCES AND INFRASTRUCTURE

while internet use, telecommunications traffic and related capital spending were growing rapidly, but FLAG did not have sufficient cash flow to service its debt when the telecommunications market collapsed (see Chapter 10).

¹ Nevitt, Peter K. and Frank J. Fabozzi, 'Checklist for a successful project financing', *Project Financing Seventh Edition*, London, Euromoney Books, 2000, p. 3.

² Percopo, Bob and Peter J. Haller, 'Insurance Solutions for Project Finance', *The Journal of Project Finance*, Summer 1999, p. 23.

³ Marti, Stephan and Lowell Keith, 'Cash Flow Volatility as Opportunity: Adding Sophisticated Insurance Capital to the Project Finance Mix', *The Journal of Project Finance*, Fall 2000, p. 9.

⁴ Moreland, Ron and Bruce Wineman, 'Insuring Projects After September 11', *The Journal of Structured and Project Finance*, Spring 2002, p. 5.

⁵ Hsiao, Henry, 'The Use of Financial Guarantees and Contingent Capital in Project Finance', *The Journal of Project Finance*, Spring 2001, p. 19.

⁶ West, Gerald T., 'Political Risk Investment Insurance: A Renaissance', *The Journal of Project Finance*, Summer 1999, p. 5.

⁷ Beale, Chris, Michel Chatain, Nathan Fox, Sandra Bell, James Berner, Robert Preminger, and Jan Prins, 'Credit Attributes of Project Finance', *The Journal of Structured and Project Finance*, Fall 2002, p. 5.

⁸ Standard & Poor's, 'Refinancing of Over \$90 Billion Medium-Term Debt May Strain Power Sector and Associated Banks', 6 November 2002.

⁹ Sheppard, Robert 'Why Energy Trading Will Decline in the U.S. Electricity Market', *Project Finance International*, 2 October 2002, p. 56.

¹⁰ McCartney, Eric 'The Transmission Buzz – A Financing Paradox', *Project Finance International*, 2 October 2002, p. 62.

¹¹ Ken Brown, Anthony Damiano, Brian Jenkins, and Michelle Tisdale, 'Congestion Pricing: New Risks for Lenders', *The Journal of Project Finance*, Winter 2001, p. 21.

¹² McCartney, Eric, Op. Cit, p. 63.

¹³ Joshi, Piyush, 'Dabhol: A Case Study of Restructuring Infrastructure Projects', *Journal of Structured and Project Finance*, Spring 2002, p. 28.

Highway 407, Canada

Type of project

Toll road.

Country

Canada.

Distinctive features

- World's first all-electronic toll road.
- Largest privatisation in Canadian history.
- Largest Canadian-dollar bond issue sold in Canadian market.
- Largest corporate debt programme arranged in Canada in one year.

Description of financing

The initial central section was financed by the Province of Ontario partly with a C\$500 million long-term debenture.

Project cost of C\$4 billion for purchase of highway, and construction of east and west sections, was initially financed with:

- C\$2.3 billion as a senior bridge credit facility;
- C\$150 million as a junior bridge credit facility;
- C\$775 million as a sponsors' subordinated credit facility; and
- C\$775 million in sponsors' equity.

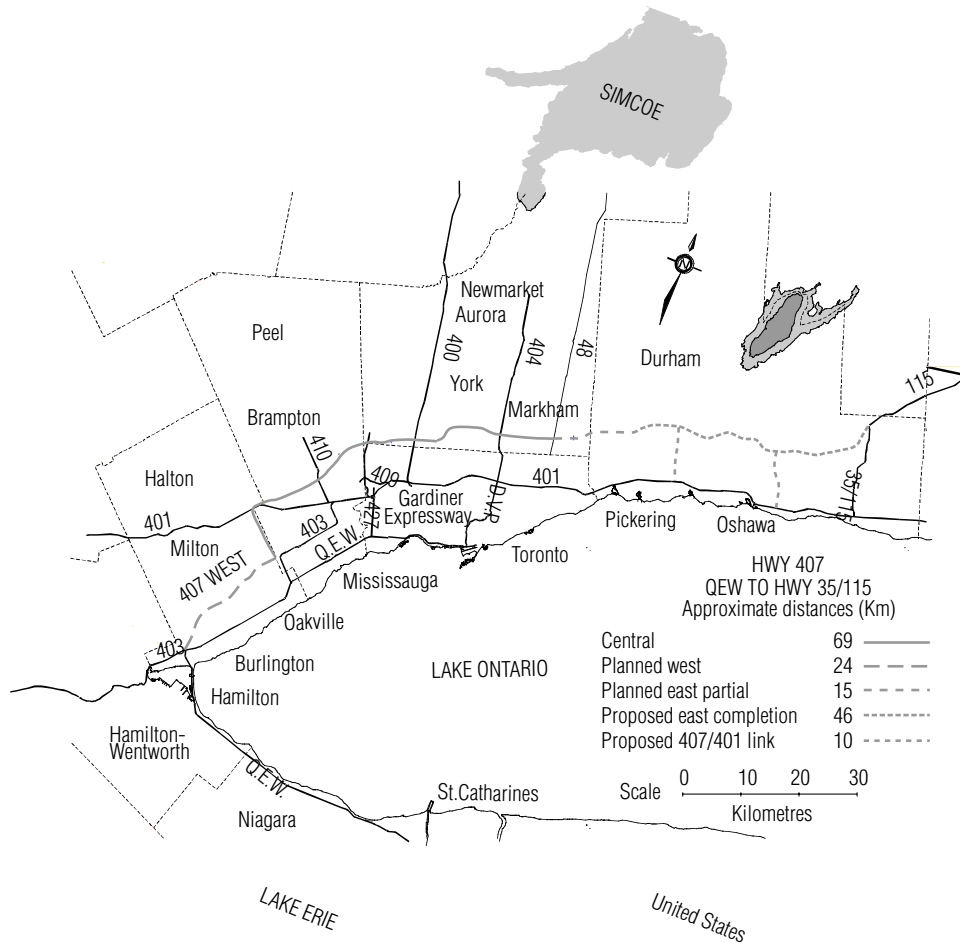
Long-term financing included the following:

- C\$2.8 billion in bonds with 2-year to 40-year maturities; and
- C\$1.2 billion in inflation-linked bonds with 17-year to 40-year maturities.

Project summary¹

Highway 407 is a 108-kilometre (km) toll road running generally from east to west through the greater Toronto area. It runs north of and parallel to Highway 401, one of North America's busiest highways (see Exhibit 1.1).

Exhibit 1.1
Map of Highway 407



Source: Highway 407 International Inc.

The provincial government of Ontario built the first 69 km section of Highway 407, which was opened in 1997. The C\$3.1 billion sale price two years later represented more than twice the province’s initial investment. The province considered a 99-year concession term to be long enough, but not longer than required, to extract the highest possible value from the road. The toll regulation structure provided the owners with an unusual degree of pricing freedom as long as they met the province’s congestion objectives.

Highway 407 is the world’s first all-electronic toll road and, following a policy decision by the government of Ontario, the world’s first open-access toll road. There are no barriers, toll booths or machines for tickets, coins or tokens. Using state-of-the-art vehicle identification and tracking technology, gantries placed over the roadway at each entrance and exit identify each vehicle, the length of each trip and the correct toll charge. If the vehicle has a transponder the toll is added to the customer’s monthly bill. (A transponder, which the customer leases, is a

small electronic device attached to the interior of the car's windscreen, behind the rear-view mirror.) If no transponder is detected the system takes a video picture of the vehicle's licence plate and a bill is sent to the driver. Home addresses are drawn from the licence plate database of the Ministry of Transportation of Ontario (MTO), and through agreements with neighbouring provinces and several US states to identify and bill out-of-province drivers.

In addition to being more convenient for drivers, the all-electronic tolling system has advantages for the road's operator. First, the technology facilitates variable toll-rate pricing, in which tolls per kilometre are based on vehicle class (light, heavy single unit, or heavy multi-unit), and time of day (daytime peak, daytime off-peak, or night-time). Thus the charge can be higher for heavier vehicles and for peak daytime usage and lower for lighter vehicles and off-peak or night-time usage. Second, the system allows the operator to track traffic patterns and driving habits continuously, accurately and inexpensively. The combination of variable pricing and a continually updated electronic usage database helps the operator to make planning and pricing decisions. According to the operators, only 4.8 per cent of trips between 1 January and 30 June 2002 had been unbillable.

Background

In the 1980s and 1990s the number of licensed drivers in Ontario nearly doubled and the number of registered vehicles increased at an even higher rate. During this period the highway system in the greater Toronto area was not expanded fast enough to keep pace with demand. Traffic congestion in the area has been estimated to cost Ontario businesses more than C\$2 billion a year in lost time and productivity.

History to 1998

Highway 407 was originally conceived in the 1940s, but formal development began in 1987, when the government of Ontario started construction of a 9 km section of free highway. In 1989 the government commissioned Wilbur Smith and Associates, a traffic consulting firm, to forecast traffic levels and conduct a feasibility study on developing Highway 407 as a toll road. In 1993, based on the positive results of the study and a desire to use private-sector financing, the MTO decided to develop the highway through a build-operate-transfer (BOT) concession. Ontario was one of several Canadian provinces that turned to the private sector at this time because of conflicting needs to trim public spending and to start construction of badly needed highway and bridge projects.²

However, the two consortia that submitted proposals at this time for Highway 407 demanded significant provincial financing support because of perceived risks in constructing a new toll road, even in such a growing metropolitan service area. Despite its preference for shifting financing to the private sector, the MTO found it cheaper to provide its own financing for the project than to provide credit support for a costlier financing by the winning bidder. The MTO chose Canadian Highways International Corporation (CHIC), a consortium of four Ontario-based international project management and construction companies, as the winner. Construction of the first 36 km section of the highway began in the spring of 1994. The province financed the initial phase of construction through a C\$500 million long-term debenture sold in December 1995.

By June 1997 construction of the 69 km central section was finished and Highway 407 was opened to traffic. The road was such an immediate success that the volume of traffic temporarily

ly overwhelmed the electronic tolling system. As a result the road was free to all drivers during the following four months while the system was enhanced to accommodate higher volume. By October 1997 the system had been modified and tolling was resumed. During the first four months of operation, when no tolls were charged, average workday trips exceeded 300,000. After tolling resumed usage dropped to 100,000, but it then began to climb steadily. Within a year traffic had risen to an average of more than 200,000 workday trips and more than 250,000 transponders had been leased. As of mid-2002 the average number of workday trips is about 300,000.

Despite a decision to construct the initial segment of Highway 407 using government funds, a change of governing party following elections prompted further consideration of ways to involve the private sector in the highway's future operation and financing. With the central 69 km central section completed, the new provincial government wanted to begin construction of the 24 km west section and the 15 km east section as soon as possible. To help it to determine how to carry out that expansion, the government commissioned three studies between 1996 and 1998 and developed several options for consideration.

- *Retain and improve.* Continuing on its existing path, the province could retain ownership and responsibility for financing new construction. Private-sector involvement in construction and operations could possibly help achieve cost and performance benefits.
- *Not-for-profit.* The province could create a nonprofit entity, similar to the one that managed Canada's major airports, that would be responsible for operating and financing the highway. Some management and operational efficiencies might result from this quasi-private structure.
- *BOT.* The province could continue to own the highway, but would grant a concession to a private firm to finance and construct the east and west sections. Private-sector involvement would be assumed to lower costs and improve service.
- *Full equity sale.* The highway and its operating company could be divested through a strategic sale to a private consortium or sale of shares to the public. The new owners would assume all responsibility for development, financing and operation of the road.

The privatisation process

On 20 February 1998 the provincial government announced its decision to sell Highway 407 to the private sector. Following rigorous analysis it had decided that a full equity sale to a private entity would realise the most value for Ontario taxpayers, and was the most effective way to finance the east and west partial sections.

The Privatization Secretariat of Ontario led the privatisation process, working with the MTO and the provincial Ministry of Finance. It selected Merrill Lynch & Co. as lead implementation adviser and assembled a multidisciplinary advisory team, including RBC Dominion Securities as co-implementation adviser, KPMG as process adviser, Goodman, Phillips & Vineberg and Fasken Campbell Godfrey as legal advisers, Wilbur Smith & Associates as traffic consultants, Dillon Consulting and Parsons Brinckerhoff Quade & Douglas as engineering consultants, and PricewaterhouseCoopers as process auditor. The privatisation team began working in the autumn of 1998 on the specific terms of the privatisation and bidding process. Legislation to permit the sale of Highway 407 was introduced in the provincial legislature on 19 October 1998 and was passed shortly afterwards.

The advisory team's first task was to identify and confirm the provincial government's

primary objectives. The financial objectives were to maximise proceeds from the sale and to ensure that fair value was received for Ontario taxpayers. There were numerous transport policy objectives, including the following:

- protecting the safety of the travelling public;
- maintaining open, unimpeded access;
- developing, designing, constructing, operating and maintaining the highway to meet provincial standards and environmental laws;
- beginning construction of the east and west partial sections promptly;
- planning the highway so as to relieve traffic congestion from other transport arteries and to allow for expansion to meet future needs; and
- transferring substantially all risks of highway ownership and construction to the private sector.

As the advisory team began to consider the optimal structure of the concession and the bidding process, it identified several challenges that could either lower the value received for the road or derail the project completely.

- *Unsuccessful prior attempt.* After soliciting bids for a BOT concession and allowing two teams to do significant work to prepare BOT bids, the provincial government had backed off and decided to use a traditional design-build program for the central section. Serious bidders might stay away this time, fearing the government's lack of resolve to truly privatise.
- *Fair value.* Despite the best efforts of the advisory team, and a properly structured concession and bid process, there remained the risk that no bid would meet a minimum level acceptable to the government. If, in that case, the bids were simply rejected and the privatisation was cancelled, it would be impossible to begin a design-build tender process from scratch and meet the province's target of the spring of 1999 for starting construction. A second unsuccessful privatisation probably would doom any attempt to privatise Highway 407 or any other provincial asset in the foreseeable future.
- *Timing.* The target for the beginning of construction, in the spring of 1999, gave the team, at most, six months to develop the concession structure, create and conduct a bid process, choose a winner, negotiate documentation, and close the transaction. Further, Canadian custom suggested that the provincial government would call elections early in 1999. A new government opposed to privatising Highway 407 might be elected during the bidding process.
- *Electronic tolling technology.* The highway's state-of-the-art electronic tolling system was an extraordinary asset, but it was also the first in the world and had experienced early technical difficulties. Bidders could perceive it as increasing either the project's value or its risk.
- *CHIC as bidder.* The provincial government had insisted that the bidding process be scrupulously fair and transparent, and be perceived to be so by bidders and the public. The advisory team did not know which firms or consortia would submit bids, but it did know that a bid from CHIC would present special challenges. CHIC had built the road, and had been involved in every aspect of implementing and operating the electronic tolling technology. The firm's unique understanding of the road and the tolling system could be perceived as giving it an unfair advantage over other bidders.
- *Millionaire's highway.* Highway 407 was built to relieve congestion on Highway 401 and

other nearby roads, and the provincial government had the ability to set tolls on Highway 407 low enough to ensure that traffic was diverted and its objectives were achieved. However, it was possible that the new owners could find that they earned more revenue by increasing tolls, even though they were reducing the number of drivers using the road. The provincial government could impose strict regulations on toll rates or profits on the new owners, but that might discourage potential bidders or reduce the prices that they were willing to bid, for fear they could not effectively manage the road.

- *East completion section.* The provincial government eventually foresaw construction of the 46 km 'east completion section' continuing from the east partial section. However, the area in which that section would be built was rural farmland and would remain so for some time, making construction of that section uneconomic for the time being. The route was not firmly established and neither land acquisition, environmental assessment or environmental permitting had begun. These processes would take years and there was no assurance of federal environmental approval. Nonetheless, there appeared to be popular and political support for such a road. Given the enormous uncertainties, the advisory team wondered whether bidders for Highway 407 should eventually be obliged to build the east completion section.

Structuring the concession and the bid process

Given the tight time frame, the Privatization Secretariat and the advisory team had to make a number of decisions on structuring the concession and the bid process quickly, before sending any material to potential bidders. First, the Privatization Secretariat decided that the provincial government would sell the highway to a construction/operation consortium, rather than to the public through a common share offer, and that bids would not be restricted to Canadian companies. It believed that this approach would produce more value and that such a consortium could best adhere to the aggressive time schedule. Wilbur Smith began work on an updated traffic and revenue study to provide bidders with current traffic information and projections.

Next, the team laid out a time schedule and general parameters for the bid process. First, by October 1998 they would send a Request for Expressions of Interest to potential bidders. Then, by December they would send a Confidential Information Memorandum, setting out the details of the project and bidding terms to bidders that had responded, and that met financial and technical qualifications. Upon receipt of the memorandum bidders would have access to data rooms containing documents and other information on every aspect of the highway. Nonbinding indicative bids were due in January 1999 and final bids were due the following month.

The team defined a strict information and communication policy to ensure a level playing field for all bidders, and a fair and transparent process. In doing so it had to balance conflicting objectives. On one hand, providing unfettered access to information would probably lead to higher bids, because bidders would perceive less risk and uncertainty. Allowing a single bidder to pursue a line of questioning or discuss a unique ownership structure could provide similar benefits. On the other hand, the possibility that a given bidder could obtain more information than any other was deemed unacceptable, because it would violate the level playing field. One-to-one meetings were prohibited, and all questions posed and answers given were to be distributed to all bidders. Potential bidders were allowed to have contact with only two designated representatives of the implementation advisers. Other than at public information sessions, there was to be no contact between any government official and any bidder. Finally, the privatisation team was forbidden to publicly disclose the name of any bidder.

To further ensure the integrity of the bid process, the advisory team decided that bidders would be qualified early in the process and that selection of the winner would be based solely on bid price. Conducting an early assessment to qualify bidders was helpful to both sides. Bidders could find out whether their teams were acceptable before spending a lot of money and time on preparing their bids. The provincial government would be given confidence that all bidders were fully qualified to undertake the concession and could select the winner almost immediately after receiving the bids. Finally, by basing its decision solely on the highest price the government could remove the possibility of political interference or the use of extraneous criteria to select the winner, thus giving bidders and the public confidence in the process.

To assure bidders that the government was determined to sell the road and would not reverse course this time, people at the highest levels of the government clearly and frequently communicated their unwavering commitment to sell Highway 407 as long as the government received fair value for it. Eventually the government's resolve ceased to be an issue.

The provincial government also had to consider what course it would take if it did not receive fair value. If, when it opened the sale bids in late February 1999, the government found the bid prices to be inadequate, it would not have enough time to conduct a design-build tender process, and still meet its commitment to start construction on the east and west partial sections by the spring. The solution was to conduct the two bid processes simultaneously and require that each team submitting a bid to purchase the road must also submit a separate bid for design-build work only. That way, if the government was unable to sell the road for what it considered fair value, it would still have a qualified design-build team standing by to begin construction on time. A consortium could submit a bid only for design-build work, but with the understanding that such a bid would be considered only if the sale did not occur. The privatisation team realised that the design-build provision in the event of a failed sale auction might seem inconsistent with the message that the government was determined to sell the road, but that concern was overshadowed by the government's imperatives of receiving fair value and meeting the construction deadline.

Maintaining the safety of Highway 407 was a priority. The new owner would be required to comply with all existing and future safety regulations, including the MTO's safety regulations for the 400-series highways. Because safety remains very important, the government can terminate the concession after giving proper notice of default, and without compensation, if the owner fails to comply with the regulations.

Another issue concerned disclosure of information about the electronic tolling system. Because some aspects of the technology were the proprietary information of the system's vendors, the privatisation team could not disclose as much as bidders might have liked. There was also the possibility that CHIC, if it chose to bid, would have an information advantage over other bidders. Both of those concerns were addressed by providing as much information as possible in the data rooms, through question and answer sessions, and through strict adherence to the communication policy described above.

The term of the concession generated perhaps the greatest amount of debate. The government's objective was to offer a term long enough, but not longer than required, to extract the highest possible value from the road. After considering terms from 35 to 999 years, the privatisation team chose 99 years. The ownership and financing benefits provided by a very long concession period were likely to generate a significantly higher winning bid than the more common 20-year to 35-year terms, but there were potential legal issues involved in leas-

ing property for more than 99 years and the team did not think that additional value could be achieved with a longer term.

Consistent with the government's wish to truly privatise the road and realise the benefits of private-sector ownership, the toll regulation structure provided the owners with an unusual degree of pricing freedom as long as they met the government's congestion objectives. Unlike most toll road concessions, there was to be neither a rate-of-return restriction nor a requirement for government approval of rate increases. The new owner would be allowed to increase peak hour toll rates by up to 2 per cent per year above the consumer price index (CPI) until after the east and west partial sections had been commissioned and opened. After these sections were opened, a base traffic level 'threshold' would be established, which would grow by 1–3 per cent per year. As long as traffic on the highway exceeded the threshold, the owner could increase or reduce rates without limit. Whatever rates were set, single heavy and multiple heavy vehicles could not be charged more than two and three times the rate for light vehicles, respectively, so that trucks and other commercial vehicles, which cause more wear and tear, would have fair access to the road. At any time when traffic fell below the threshold and tolls exceeded the toll threshold, financial penalties would be severe enough to give the owner an overwhelming incentive to achieve the government's congestion objectives.

Among the last issues to be finalised was the question of whether or not to include a requirement to build the east completion section in the sale. The government believed that this section eventually would serve a useful public purpose and did not want to raise doubts about its commitment to build it. On the other hand, because traffic projections showed that this would not be a profitable endeavour for the next few years, and there were still unresolved land acquisition and environmental issues, the inclusion of such a requirement in the sale could cause bidders to submit significantly lower bids. The solution was to require bidders to submit bids both with and without the east completion obligation. That way, the government could determine whether the benefits of receiving a firm commitment to build the extension outweighed any reduction in value received. It could also compare the value impact against potential proceeds to be derived from a separate sale of the east completion section at a later date. To help in determining the benefits of possible compromise scenarios, bidders were required to bid for the westerly third of the extension (which had the highest near-term traffic prospects), for the westerly and middle sections, and for all three sections.

Bids for Highway 407 were delivered by four groups on 25 February 1999. To ensure that the process was fair and to eliminate any possibility of influence on the decision, only a small subgroup of the privatisation team knew details of the actual bids. The bid amounts, but not the names of the bidders, were disclosed to government officials so that they could decide:

- whether fair value would be received and the sale should proceed; and
- whether to include some or all of the east completion in the sale.

The high bid and at least one other bid were within 5 per cent of each other. The bidding rules held that under such circumstances all bidders within the 5 per cent band would have the opportunity, though not the obligation, to submit improved bids.

Sponsors

The winning bidder, announced on 13 April 1999, was Highway 407 International Inc., a team

led by Cintra Concesiones de Infraestructuras de Transporte and SNC–Lavalin of Montreal, which offered C\$3.1 billion. This represented more than twice the province’s initial investment of C\$1.5 billion and was higher than many recent estimates of the highway’s value. CHIC, then still the operator of the road’s first section, reportedly submitted what it called a ‘compliant bid’ that was well short of the amount that would be required for the company to be a serious contender, because it had run into difficulty arranging sufficient financing.³

On 5 May 1999 the transaction closed and Highway 407 was transferred to the private sector. Bridge financing from a group of banks (described below) funded the purchase price at closing.

Equity was originally divided among the consortium members as follows: Cintra/Grupo Ferrovial accounted for 61 per cent, SNC–Lavalin for 23 per cent and Capital d’Amérique, the third member, for 16 per cent.

SNC–Lavalin is Canada’s largest engineering/construction company. It has offices across Canada and in 30 other countries, and projects in about 100 countries.

Cintra Concesiones de Infraestructuras de Transporte is a subsidiary of Grupo Ferrovial, Spain’s second largest construction company. In January 2002 Macquarie Infrastructure Group, an Australian investment bank, purchased 40 per cent of Cintra from Grupo Ferrovial.

Capital d’Amérique is a subsidiary of Caisse de Depot et Placement de Québec (CDPQ), one of Canada’s largest institutional investors.

In March 2002 Macquarie Infrastructure Group, through its subsidiary Macquarie Infrastructure (Toll Route) SA (MITR) purchased all C\$125 million-worth of the principal amount of convertible debentures held by Capital d’Amérique for approximately C\$495 million. The debentures are convertible into 125 million common shares of Highway 407 International, representing about 16 per cent of the company’s common shares on a fully diluted basis. At about the same time Cintra agreed to purchase 45 million common shares, about 6 per cent of the common shares outstanding, from SNC–Lavalin. As a result of these transactions, including conversion of the debentures, ownership will be divided as follows: Cintra/Grupo Ferrovial will own 67 per cent, SNC–Lavalin 17 per cent and MITR 16 per cent.

SNC–Lavalin and another Grupo Ferrovial subsidiary, Ferrovial Agroman Internacional, were the joint engineering, procurement, and construction (EPC) contractors, with a C\$422 million turnkey contract for construction of the 40 km west extension and the 15 km east partial extension to Highway 407.

How the financing was arranged

The total project cost was C\$4 billion (US\$2.68 billion), which comprised the C\$3.1 billion offered in the bid, and an additional C\$900 million for construction of the west and east partial extensions, along with certain deferred interchanges in the central section, debt service, and working capital.

The initial financing had three components. First, there was C\$2.3 billion as a senior bridge credit facility with a three-year maturity, arranged by Bank of Montreal, Royal Bank of Canada and Citibank. This facility was divided into three tranches:

- tranche A1, C\$1.625 billion to be repaid by 5 May 2001;
- tranche A2, C\$375 million also to be repaid by 5 May 2001; and
- tranche B1, C\$300 million to be repaid by 5 May 2002.

Failure to meet these due dates would constitute an acceleration event of default.

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Second, there was C\$150 million as a subordinated junior bridge credit facility with a 3.5-year maturity, arranged by Bank of Montreal.

Finally, there was C\$1.55 billion in sponsor equity, consisting of approximately C\$775 million cash investment in the project, with the remainder coming from letters of credit and subordinated debt.

SNC–Lavalin’s portion of the sponsor equity consisted of C\$175 million in equity and C\$175 million in subordinated debt. SNC–Lavalin raised part of this through a C\$50 million private placement of its own common shares through Capital d’Amérique. Grupo Ferrovial financed this and another investment through a US\$1.1 billion equivalent public offer.

For the debt a floating rate of interest was based on either the Canadian dollar prime rate, the interbank bid rate for Canadian dollar bankers’ acceptances or Eurodollar rates for Canadian dollar deposits. For the senior bridge facility the spread varied from 1 to 1.75 per cent for borrowings based on the Canadian dollar prime rate and from 1.75 to 2.5 per cent for borrowings based on Eurodollars or Canadian dollar deposits. The effective interest rate was 6.975–8 per cent. The same three reference rates were applied to the junior bridge credit facility. The spread varied from 3.5 to 6.75 per cent for borrowings based on the Canadian dollar prime rate and from 4.25 to 7.5 per cent for borrowings based on Eurodollars or Canadian dollar deposits. The effective interest rate was 9.25–10.5 per cent.

Because the winning bidder was not announced until 13 April the lead banks were not able to syndicate the loan before the deadline, 5 May, for closing with the provincial government. At the beginning, therefore, they provided all of the financing. The spreads were designed to ensure an early takeout, which was particularly important for the bankers because revenues during the early expansion phase of the highway were unlikely to be sufficient to service the bank debt.⁴ Long-term financing to take out the bridge loans was then arranged.

The project company issued C\$1.1 billion-worth of bonds in July 1999, through the lead manager Nesbitt Burns, in 10-year, 30-year, and 40-year tranches, as follows:

- *tranche 1*, C\$400 million due on 27 July 2009, with a coupon of 6.05 per cent, 70 basis points (bps) over the 5.50 per cent Government of Canada bonds maturing in 2009;
- *tranche 2*, C\$400 million due on 27 July 2029, with a coupon of 6.47 per cent, 100 bps over the Government of Canada bonds maturing in 2027; and
- *tranche 3*, C\$300 million due 27 July 2039, with a coupon of 6.75 per cent, 125 bps over the 8.00 per cent Government of Canada bonds maturing in 2027.

This was the largest-ever Canadian-dollar corporate bond issue in the Canadian market. The bonds are classified as revenue bonds because the issuer is allowed to collect tolls in connection with the highway.

In August 1999 Highway 407 International Inc. sold C\$650 million of inflation-linked bonds in a private placement to the Ontario Teachers Pension Plan Board. The bonds, with maturities between 17 and 32 years, pay an interest rate of 5.328 per cent above the CPI. The face value of the bonds, for which they can be redeemed at maturity, is C\$650 million. The investors paid C\$500 million, and then the bonds accrue interest without paying it out for five years. In March 2002 this interest holiday was extended for five years to June 2009, reducing the company’s debt service burden during that period. In return the company increased the face value of the bonds from C\$650 million to C\$833 million.

In October 1999 the company issued C\$400 million of 6.55 per cent senior bonds due on 18 October 2006. Net proceeds were used primarily to repay indebtedness under the senior bank bridge financing and to fund a Prepaid Interest Reserve Account.

In March 2000 the company issued C\$325 million of 5.29 per cent amortising inflation-linked bonds due on 1 December 2039, in replacement of C\$325 million of 5.29 per cent amortising inflation-linked bonds due on the same date, which had been issued by the company on a private placement basis on 2 February 2000. The replacement bonds were issued at a discount, since no cash interest will accrue before 1 December 2004. Net proceeds were used primarily to repay bank indebtedness under the senior credit facilities. Also in March 2000 the company issued C\$430 million of 6.90 per cent senior bonds due on 17 December 2007, exchangeable for 6.90 per cent senior bonds due on 17 December 2030. Net proceeds, approximately C\$396 million after issuance costs and funding of the debt service reserve account, were used primarily to repay the remaining outstanding bank bridge financing arranged at the time of the purchase in May 1999.

In May 2000 the company issued C\$300 million in subordinated bonds and entered into a C\$425 million subordinated term credit facility with a syndicate of banks to repay the sponsors' subordinated credit facilities. The banks were subsequently replaced by bondholders with two issues:

- C\$220 million of 6.4 per cent subordinated bonds due on 16 February 2004, issued in June 2001; and
- C\$205 million of 4.5 per cent subordinated bonds due on 4 December 2003, issued in November 2001.

In July 2000 the company issued C\$165 million in junior bonds bearing an interest rate of 7.0 per cent at first maturity in 10 years. The maturity can be extended from 26 July 2010 to 26 July 2040 at an interest rate of 7.125 per cent. The company used the net proceeds, C\$149.5 million after issuance costs and funding of the debt service reserve account, to fully repay bank indebtedness incurred in connection with a junior-term credit facility and to fund the reserve account in connection with the bonds. With this bond issuance the company completed its initial debt refinancing, which totalled C\$3.37 million in bonds. It was the largest corporate debt programme ever transacted in Canada within one year.

Lessons learned as at 1999

In the conclusion of their article 'The Sale of Highway 407 Express Toll Route: A Case Study' in the *Journal of Project Finance* (Fall 1999), Eugenio Mendoza, Mitchell Gold and Peter Carter of Merrill Lynch, and Jodie Parmar of the Ontario Privatization Secretariat, cited the following lessons learned from the privatisation experience.

- *Risk allocation.* In building the first section, the government took the initial environmental, technology, construction, and traffic risks. By the time the sale took place these risks had been reduced significantly and the value had increased accordingly. At that point, a private firm was best equipped to manage and develop the road's future growth.
- *Concession term.* Contrary to conventional thinking, a 99-year concession term created value.

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- *Regulatory structure.* A simple regulatory structure is better, particularly with regard to the tolling regime.
- *Timing.* Short auctions produce more value.
- *Government commitment.* The consistent and unwavering commitment of the provincial government facilitated the privatisation process.
- *Bid process.* The clean, clear, and transparent bidding process was an important factor in the eventual success of the transaction, outweighing the benefits to the province, foregone by the government, of being able to talk to bidders directly and ‘sell’ the road.
- *Traffic study.* A high-quality traffic study matters.
- *Tolling system.* The new electronic tolling system was a liability during the early debugging process, but quickly turned into an asset and now works well.

Concerning the benefit to Ontario taxpayers, the authors made three observations.

- The taxpayers made a large gain on their ‘investment’.
- Toll regulation and market pricing mean that the owners must ‘earn’ their business.
- Whether taxpayers are better off as a result of extending the tolls from 20 years to 99 years is an open question.

Subsequent events

Standard & Poor’s assigned a preliminary ‘A’ credit rating with a stable outlook to the C\$1.1 billion senior bonds in July 1999. The agency said that the rating reflected several risks, notably:

- ‘concession risks’, including uncertainty concerning the long-term traffic growth rate on the highway and the toll sensitivity of road users under a range of possible future economic conditions;
- possible delays in construction of extensions to the highway, which could require the sponsors to pay substantial damages to the provincial government; and
- risks associated with ongoing operation and maintenance of the highway.

Strengths that the agency cited to support the rating included the nature of the highway as a key transport corridor in the greater Toronto area, and the local economy’s structure and growth prospects, which the agency believed would support stable and relatively inelastic long-term demand. As of mid-2002 Standard & Poor’s rating continued to be ‘A’.

No public deal is without political controversy. In April 1999 David Leonhardt, a spokesman for the Canadian Automobile Association, said that the sale broke the promise made by the former New Democratic Party government that Highway 407 would be a toll road only for the amount of time required to pay off its capital cost, estimated to be about 30 years. Leonhardt said that the province had realised a C\$1.6 billion gain over its cost in building the road, which could be used for other purposes, at the expense of future motorists. The other point of view, expressed by Tony Clement, Ontario’s Transportation Minister, was that the debt has been privatised and that the cost of financing the highway would no longer be a burden to taxpayers.⁵ Ontario’s official opposition party, the Liberals, criticised the 99-year term and the consortium’s exemption from property taxes. Rob Sampson, Ontario’s Privatization Minister, replied that there was no benefit in having the ownership of Highway

407 revert back to the province in 30 years, because by that time it would be due for costly upgrades and reconstruction. He said that the 99-year term was needed to ensure that the private-sector operators made a reasonable profit and that the road's users were protected from paying exorbitant tolls. The consortium could not properly be said to have won an exemption from paying property taxes, Sampson argued, because the province continued to own the land. Like any other business, the consortium would be subject to business taxes. However, there seemed to be little sense in a complicated transaction under which the consortium paid property taxes on land that it did not own.⁶

The west extension was completed in July 2001 and the east partial extension was completed in August 2001. In January 2002 Macquarie Infrastructure Group (mentioned above) estimated that Highway 407 was worth C\$6.3 billion now that the east and west partial sections, totalling 39 km, had been completed, parking lots for car poolers had been built, and tolls had been increased.

In March 2002 SNC-Lavalin sold a 6 per cent interest in Highway 407, Inc. for C\$178 million, which on a *pro rata* basis represented nearly four times its initial investment. Some critics said that this significant increase in valuation was good news for shareholders but bad news for taxpayers and motorists. On the other hand, some industry analysts questioned whether the highway was worth as much as Macquarie estimated. Anthony Zicha, an analyst with Scotia Capital in Montreal, said that it was difficult to determine whether the highway had rapidly increased in value or the provincial government had sold it too cheaply in 1999, but he thought that most of the appreciation in value resulted from investors' changing perceptions of risk.⁷ Similar observations had been made at the time of the sale in 1999, when the first 69 km of the road were already in operation and potential bidders perceived less risk, and were willing to pay a higher price, compared to 1993, when the government tried to commission a BOT project for a toll road that was only on the drawing boards.

In February 2002 Highway 407 International Inc. reported revenues of C\$244.1 million for the calendar year 2001, an increase of 22 percent over revenues of C\$189.5 million in 2000 and a net loss of C\$96.5 million, slightly higher than the C\$87.3 loss reported for 2000. The CFO, Ken Walker, commented that accounting losses, as expected, are high in the first years of a concession, when the interest expenses (not the cash paid for interest) are relatively high because of the high initial purchase price compared to the growth in revenues during the ramp-up years. However, he noted that the concession has been cash-flow-positive since its inception.

After the completion of the east and west partial sections the terms of the concession allow the company to increase tolls without limitation as long as there is sufficient traffic on the road and the provincial government's congestion objectives are met. Some observers speculate that the company has increased tolls more than the government estimated at the time of the sale in 1999. Some have pressed for the company to release the text of its agreement with the government on tolls. The company has said that it is reluctant to release the full text of the agreement because it might disclose information useful to competitors. Dale A. Albers, the company's manager for public relations, says that, despite the company's flexibility to establish its tolls, increasing them by too much would be against its own interests, because it would drive customers away and risk contract penalties for not meeting the provincial government's minimum traffic requirements. Leonhardt of the Canadian Automobile Association contends that meeting the requirements, despite toll increases, is unlikely to be a problem because roads will only get more congested in the future. Albers, however, notes that

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the company opened 40 km of new highway in 2001 and has continuing costs for such things as ploughing snow, cutting grass and removing garbage along the highway.⁸ For a privately run public infrastructure facility pricing disputes seem to be part of the territory.

¹ This case study is based on articles in the financial press, including, with the kind permission of the authors, an article by Mendoza, Eugenio, Mitchell Gold, Peter Carter and Jodie Parmar, 'The Sale of Highway 407 Express Toll Route: A Case Study,' *Journal of Project Finance* (now the *Journal of Structured and Project Finance*) Fall 1999.

² 'Canada Heads Toward Privatized Highways', *Engineering News Record*, 21 February 1994, p. 21.

³ 'Highway 407 Sold for Twice Initial Investment', *Privatization International*, May 1999.

⁴ Gopinath, Deepak, 'Road Rules', *Institutional Investor*, January 2000, p. 114.

⁵ Bourette, Susan, 'Consortium to Boost Spending on Highway 407, to Inject \$800 Million for Extension of Toll Road', *Globe and Mail*, 14 April 1999, p. B1.

⁶ Crone, Greg, 'Paving the Drive to Privatization: The Highway 407 Sale will Bring \$1.6 Billion into Ontario's Cooffers, but Some Wonder What's Down the Road', *Financial Post*, 24 April 1999, p. D10.

⁷ 'Bank Values Highway 407 at Four Times Sale Price', *Guelph Mercury*, 9 January 2002, p. B9.

⁸ Funston, Mike, 'Higher Tolls, More Tie-ups Irk 407 Drivers; Latest Rate Hike Called Highway Robbery by Fed-up Commuters', *Toronto Star*, 8 December 2001, p. 39.

Rion–Antirion Bridge, Greece

Type of project

Suspension bridge.

Country

Greece.

Distinctive features

- Longest cable-stayed deck in the world.
- Engineering challenge presented by deep water; soft seabed; and earthquake risk.
- First major public-private partnership in Greece.
- First project financing in Greece without government guarantee.
- Complex loan and guarantee structure to accommodate requirements of European Investment Bank (EIB).
- Evolving financial market conditions in Greece.

Description of financing

The project cost of Ecu750 million was financed in 1997 as follows:

- Ecu370 million as an EIB facility;
- Ecu310 million in financing from the Greek government; and
- Ecu70 million in shareholders' equity.

A syndicated standby letter of credit for Ecu407 million was provided by commercial banks to back the EIB facility during construction. The commitment fee was 50 basis points (bps) above the London interbank offered rate (Libor) and drawings under the letter of credit are priced at 125 bps over Libor.

Introduction: Greek build-operate-transfer projects

In recent years two broad driving forces have made public-private partnerships – known in the United Kingdom as private finance initiative (PFI) projects – part of the economic land-

scape in the European Union (EU). First, as the European single market began to develop it became apparent that a substantial increase in infrastructure investment would be required to achieve its objectives. Second, the development of economic and monetary union imposed new disciplines on national budgets and public financing policies. The combination of infrastructure needs and budgetary limitations, mixed with an increasingly market- and business-friendly political environment, led governments to look to the private sector.

The European Investment Bank (EIB), the financing arm of the EU, was set up in 1958, under the Treaty of Rome signed the previous year, to provide long-term loans for capital investment for infrastructure development that facilitates European integration. The EIB raises funds in the capital markets for lending on to borrowers in any of the EU's member states. During the 1990s, it made loans worth about €50 billion (or, before the single currency was introduced, Ecu50 billion) in major infrastructure sectors such as transport, energy and telecommunications. Examples of successful public-private partnerships in which the EIB has been involved include oil and gasification power station projects in Italy; the Vasco da Gama bridge in Lisbon; the Tapada independent power project, also in Portugal; and three major projects in Greece: the new Athens International Airport at Spata, the Athens Ring Road that leads to the airport; and the Rion–Antirion Bridge.¹ In this and the following chapter, we discuss the bridge and the road.

During the time these projects have been planned, financed and implemented Greece has undergone considerable financial reform, motivated by its goal of joining the EMU, which it achieved as of the beginning of 2001. In December 1998, having assigned Greece a long-term foreign currency rating of 'BBB-' over the previous four years, Standard & Poor's raised the rating to 'BBB'. The agency noted that the Greek government had managed to reduce the budget deficit from 15 per cent of GDP in 1990 to less than 2.2 per cent in 1998. Consumer price inflation over the same period had declined from 20 per cent to 4.7 per cent. Standard & Poor's said at the time that it expected to be able to raise the rating further because the government's tight fiscal and income policies would ensure that Greece was accepted into the EMU.

For similar reasons Moody's raised its foreign currency rating for Greece from 'Baa1' to 'A2' in July 1999. The agency said that: 'Assuming continued price restraint and no divergence on other economic criteria, the European Council of Finance Ministers was likely in May 2000 to certify Greece's eligibility to join the currency union. This would clear the way for Greece to enter the euro area as of January 2001'.

Moody's also noted that its 'A2' rating reflected the fact that Greece had a number of structural weaknesses compared to higher-rated EU member states.

Standard & Poor's raised Greece's long-term foreign currency credit rating from 'A-' to 'A' in March 2001. This move was intended to reflect the macroeconomic stabilisation that had allowed it to join the euro zone at the beginning of the year.

Fitch made a similar move in June 2001, noting that inflation was down to a single-digit number, the state deficit had declined steadily, and the fiscal debt was less than in Belgium or Italy, although still at an unsatisfactorily high level. The agency said that the Greek government had shown itself to be reformist and that the economy was less rigid than it had been. However, much remained to be done, including speeding up the privatisation programme, deregulating markets, implementing public-sector and social-security reform, and legalising unregistered foreign workers. Fitch noted that the government's good intentions were being undermined by its supporters in the labour movement.

In early 2002 the Greek government's debt management agency, borrowing as the Hellenic Republic, issued its first 20-year syndicated bond under a strategy of establishing

itself as a euro-zone, benchmark issuer. Its long-term plan was to ensure that 80 per cent of Greek debt was in the form of liquid benchmarks, with the average size of each issue eventually reaching €7–8 billion. Syndicated bond issues were replacing several small, illiquid bonds issued in the mid-1990s, when Greece was struggling to finance its public debt from domestic sources. Recently the Greek government had succeeded in selling five-year and ten-year bonds to pension funds, insurance companies and government bond funds outside Greece. By this time Greece was attracting international investors who wanted euro-zone stability but also a yield spread about 38 bps above equivalent German bonds.²

In summary, as of late 2002 Greece clearly had come a long way in just a few years by improving its fiscal management, earning higher credit ratings, joining the EMU and becoming an established international borrower.

Project summary³

The Rion–Antirion Bridge, the outcome of the first major public–private partnership in Greece, will be a cable-span bridge, 3 kilometres (km) long, at the narrow western end of the Gulf of Corinth connecting the Peloponnesus, the large southern peninsula, to the mainland. The bridge will run from Rion, near Patra on the Peloponnesus, to Antirion in northwest Greece.

The project forms part of the Patras–Athens–Thessaloniki (PATHE) main road axis supported by the Community Support Framework II (CSF II) of the European Union (EU) and by the EIB. Thessaloniki is the second largest city in Greece and Patras is the third largest. The Greek authorities and the EU have placed a high priority on a fixed link across the gulf to help develop the northwestern region and integrate it with the country's main economic areas. The bridge will replace a system of slow, unreliable ferries that currently carry 10,000 vehicles on a normal day but can be shut down in poor weather or when there are unfavourable tidal conditions. The only alternative has been a 200 km road trip around the eastern end of the gulf, passing Athens and Corinth. The bridge will reduce the time required to cross the gulf from 45 minutes to 5 minutes, and it will not be affected by weather or tides. However, the project presents an unusual engineering challenge because of deep water, a soft seabed and earthquake risk.

After a seven-year construction period, including two years of design work, the bridge is scheduled to be completed in 2004. Gefyra, the concessionaire, will operate the bridge for an additional 35 years before turning it over to the Greek government in 2039.

Background

Sponsors

Gefyra is a special-purpose joint venture among Greek and French companies, formed to design, construct, finance, maintain and operate the bridge over the 42-year concession period. The initial shareholders were GTM-Entrepose SA (55 per cent), the construction branch of Lyonnaise des Eaux, along with six Greek construction companies: Zeus SA (8 per cent), Elliniki Technodomiki (8 per cent), TEB SA (8 per cent), Athina SA (8 per cent), Prodefteki (8 per cent), and C.I. Sarantopoulos SA (5 per cent). In 2000, after expressing a willingness to break away from its parent, Lyonnais des Eaux, GTM merged to become part of the Paris-based Vinci Group, now one of the world's largest contracting firms. The combined revenues of GTM and Vinci in 2000 were US\$15 billion, just slightly less than Bechtel's.

The Greek financial environment

At the time of the project financing, in 1997, the longest term for debt that the Greek government had been able to arrange was five years, so the capital markets were not ready for a long-term Greek infrastructure project. Not only was the EIB able to provide financing with very long maturities, but a project such as the Rion–Antirion Bridge fitted squarely within its core mission to provide long-term loans for capital investment for infrastructure development that facilitates European integration. However, as a matter of policy the EIB does not assume construction risk. A syndicate of commercial banks therefore was brought into the project to provide standby letters of credit, backing up the EIB in case of construction problems, for the seven-year design-and-construction period. That was a longer term than international banks had provided for so far in Greece, but the advisers thought that the market for Greek exposure would be further developed by the time the standby letter of credit was ready for syndication.

Since 1997 the Greek government has undergone significant financial reform, and Greek financial market conditions and access to worldwide financial markets have improved considerably. Standard & Poor's has increased its long-term foreign currency rating for Greece from 'BBB-' to 'A'; Greece has joined the single currency of the European Union (EU); the Greek government has issued 20-year bonds; and Greek nonrecourse loans with maturities of up to 15 years have been financed in international markets.

Proposal, bidding and concession

A bridge linking Rion and Antirion was first discussed by the Greek legislature in the late 19th century but did not become technically feasible until the late 20th century because of the high level of seismic activity in the area. The Greek Ministry for the Environment, Planning and Public Works originally tendered a design-and-build contract in 1987. Then, in the early 1990s, a new government favoured build-operate-transfer (BOT) concessions. When bids were submitted in 1994 the GTM-led consortium was the provisional winner with the best technical solution. The consortium and the Greek government proceeded to negotiate the terms of the concession, and signed the concession on 3 January 1996. At that point the EIB, already well aware of the project, was willing to consider its financing needs.

How the financing was arranged

When the GTM-led consortium, advised by Bank of America, submitted its bid in 1993, the Greek economy was far less developed, open and known to international banks and investors than it is today. The only available source of financing for a long-term Greek infrastructure project was the EIB. Not only was the EIB able to provide financing with very long maturities, but a project such as the Rion–Antirion Bridge fitted squarely within its core mission.

Throughout 1996 the EIB did its due diligence on the project. Members of its staff talked to the advisers, visited the site, and reviewed engineering studies, designs, construction plans and traffic studies. The EIB's board approved the project at the end of 1996, subject to the drafting and signing of proper documentation with the concessionaire. The EIB invited Bank of America, the adviser, to be the lead arranger for the standby letter of credit. Bank of America thought that it would not be appropriate for the adviser to appear as the only lead arranger. It therefore offered to share the lead-arranger role with Bank of Tokyo Mitsubishi,

one of the other international banks active in the Greek market and also a recognised project finance bank with which Bank of America had worked in the past.

The advisers spent the first half of 1997 refining the funding structure to fit the lenders' requirements, drafting and negotiating various finance documents required by the EIB, and doing due diligence on the technical aspects of the project. The advisers hired New York-based Steinman, Boynton, Gronquist, & Birdsall, a bridge specialist, and Vancouver-based Buckland & Taylor Ltd as their own consulting engineers to review all the designs. These firms were able to suggest several improvements in GTM's designs. The advisers also hired Dorsch Consult GmbH, a subsidiary of Groupe Egis, one of Europe's leading highway operators, and other traffic specialists to forecast usage of the bridge when it was completed. The banks were concerned primarily with construction risk, while the EIB was more concerned with traffic risk. The EIB's loan agreement was signed in July 1997, the commercial bank facility agreements and associated documents were signed in December 1997, and the guarantee facility was syndicated in August 1998.

The project cost was financed as shown in the subsection 'Description of financing' above. The EIB's Ecu370 million Master Facility Agreement provided for financing in tranches that would be advanced at various times during the construction period, between 1997 and 2004. Under the Master Facility Agreement a separate agreement that includes the maturity date is signed for each drawdown. Although the EIB does not commit itself to terms in advance, the notes usually have 25-year maturities. The project sponsors have delayed drawdowns to the extent possible so as to lengthen the overall maturity of the project debt and minimise debt-service obligations during the early years of the project.

Two additional standby loan facilities will be in effect to back the EIB loan when the bridge opens, in case toll revenues do not meet forecasts during the first five years of operation. One of these facilities is provided by international commercial banks and the other by the Greek government through Greek banks.

Gefyra signed a Ecu585 million fixed-price, date-certain construction contract with the Greek government. The remainder of the US\$750 million project cost consists of development costs, fees and interest during construction.

Given the mixture of work and the locations of the contractors, expenses were expected to be in both Greek drachmas and French francs. With an Ecu-denominated loan Gefyra was therefore exposed to currency mismatch risk. While Gefyra originally thought that this risk was adequately covered in the funding structure, the commercial banks were unwilling to accept the mismatch and insisted that the currency of the construction contract must match the currency of the debt. With some reluctance Gefyra conceded to a fixed-price, Ecu-denominated construction contract.

Gefyra was able to arrange insurance for the project for earthquakes up to seven on the Richter scale. The Greek government is assuming the risk for any earthquakes that measure seven or above.

Construction challenges

A 3 km multispan cable-stay bridge is not unique. The deck of the Rion–Antirion Bridge will be just 286 metres longer than the deck of the Golden Gate Bridge in San Francisco. The particular construction challenges posed by this project arise because it is in an active earthquake zone, the slopes of the gulf are steep, the water is about 61 metres deep and there is no

bedrock within 100 metres of the seabed. One million years ago the Gulf of Corinth did not exist and the Peloponnesus was firmly connected to the mainland. Since then the Peloponnesus has drifted steadily south and it continues to move away from the mainland by a few millimetres each year. As a result there are several active faults in the area that can produce intense seismic activity. In the past 35 years three earthquakes exceeding 6.5 on the Richter scale have occurred in the Gulf of Corinth.

Because of these construction challenges the first two years of the seven-year construction contract were allocated to design and preparatory work. Gefyra hired world-renowned experts in seismology and ground conditions as consulting engineers.

The bridge will have a suspended deck, 2,252 metres long and 27 metres wide, which will carry two traffic lanes in each direction. It will incorporate four piers rather than the usual two, with three cable spans of 560 metres suspended between the piers and cable spans of 286 metres at each end. The cables are to be manufactured from parallel galvanised strands; the thickest cable is formed from 70 strands each of 15 millimetres. The top slab of the deck is to be made from precast concrete panels. Four hydraulic damping devices will connect the deck to the top of each pier and limit the pendulum movement that would take place during an earthquake.

Foundations for the piers would normally include piles driven into bedrock, but here a different approach was required. The foundations for the four piers of the Rion–Antirion Bridge are caissons (water-tight boxes) 90 metres in diameter, assembled in a dry dock at the project site. The caissons rest on a soft seabed that is strengthened with the insertion of dozens of hollow steel pipes 25–30 metres long.⁴

Improvement of financial market conditions

Since the financing of the Rion–Antirion Bridge financial market conditions in Greece have improved considerably. Despite scepticism in recent years Greece met the required tests and joined the EU's single currency on 1 January 2001. Now a creditworthy Greek borrower can consider euro-denominated fixed-rate or floating-rate loans, capital market instruments or derivatives to hedge interest-rate and currency exposures. The Greek government has issued 20-year bonds and Greek nonrecourse project loans with maturities up to 15 years have been financed in the international markets. If the Rion–Antirion Bridge were financed today, there would be more options and the structure would be very different.

Lessons learned

Given the development of the Greek financial market and Greece's sovereign credit ratings in 1997, the European Investment Bank was the only available source of financing for a long-term infrastructure project.

¹ Cannon, Jacquie, 'Building Intelligence – Future of PPP in Europe', *Building*, 15 June 2001, p. 80.

² Hope, Kerin, 'Capital Markets – Greece Plans First 20-year Bond Issue', *Financial Times*, 27 February 2002.

³ This case study is based on an interview with Alan S.G. Douglas, then Vice President, Global Project Finance – Infrastructure, Bank of America.

⁴ Teyssandier, Jean-Paul, 'Corinthian Crossing', *Civil Engineering*, 1 October 2002, p. 44.

Athens Ring Road, Greece

Type of project

Ring road (beltway).

Country

Greece.

Distinctive features

- One of the largest infrastructure projects in Greece.
- Long time required to reach financial closing because of legal and financial structures that were new to Greece.

Description of financing

The project required financing of about €1.73 billion (equivalent), which was provided from the following sources (with equivalent amounts in drachma):

- Dr220 billion (approximately €650 million) as a European Investment Bank (EIB) loan facility;
- €480 million as an international commercial bank loan and guarantee facilities;
- Dr30 billion (about €90 million) as a Greek commercial bank loan;
- Dr128 billion (about €380 million) as a funding grant from the Greek government; and
- Dr 43.7 billion (about €130 million) in sponsors' equity.

Introduction: Greek build-operate-transfer projects

The European Investment Bank (EIB) has been involved in many public-private partnerships, including three major projects in Greece: the new Athens International Airport at Spata, the Athens Ring Road that leads to the airport, and the Rion–Antirion Bridge. In this and the previous chapter, we discuss the bridge and the road. Please refer to the 'Introduction' in Chapter 2 for more background information on Greek build-operate-transfer projects.

Project summary¹

The project will provide a dual three-lane ring road running 65 kilometres (km) north of Athens. The road is intended to reduce traffic congestion and to connect the city to its new airport at Spata, 50 km to the west. Forming part of the Patras–Athens–Thessaloniki trunk road, it will also connect many of the facilities that are being developed for the Summer Olympic Games, to be held in Athens in 2004. The road is being developed in six sections, to be completed and opened over two years, and will have a capacity of 207,000 vehicles per day when fully operational in 2003.

The build-operate-transfer (BOT) concession, including a fixed-price construction contract, runs 23 years from financial closing, when all loan and guarantee agreements were signed, performance bonds were issued, and insurance was procured. Closing was delayed (as discussed below) until March 2000. The concessionaire is a consortium of 11 leading Greek construction companies and Egis Projects, one of Europe's main roadway operators.

Background

The Greek state began to consider a ring road to connect about 30 municipalities around Athens in the 1950s. The need for such a road became more apparent when construction began for the new Athens International Airport at Spata, scheduled to open in 2001, and Athens was selected to host the Olympics in 2004. In August 1994, after prohibiting property development along the proposed route for several years, the Ministry of Environment, Physical Planning and Public Works extended a tender offer for a BOT project to build and operate a motorway. In May 1996 it awarded a concession to design, build, operate and maintain the road to Attiki Odos, a consortium of 11 leading Greek construction companies. Because of the EIB's desire that a strong, internationally recognised motorway operator be committed to the project throughout the life of the concession, Egis Projects became a 49 per cent shareholder. Egis Projects is a subsidiary of Groupe Egis, formerly Transroute, one of Europe's leading motorway operators.

The concession contract was ratified by the Greek legislature and carries the force of Greek law. The contract was drafted on the assumption that the commercial banks' portion of the required financing could be raised in the domestic market. When sufficient funds could not be raised from Greek banks and the concessionaire had to approach international banks, it became apparent that the concession contract and related documents would have to be modified substantially to meet the international banks' more rigorous requirements.

EIB signed its loan agreement with the concessionaire in December 1997, but the agreement was subject to various conditions precedent, including finalising the guarantee structure with the bank syndicate and the Greek government. The financial closing, covering all the financing and project contracts, was not achieved until March 2000, after three years of negotiation.

Risks

The Athens Ring Road project will face normal risks for a new toll road concession, such as the failure of the contractor to finish construction on time and within budget, and insufficient toll revenue because of light traffic, particularly in the first few years of operation. A factor that mitigates traffic and revenue risk is that the road will be used by almost all traffic between Athens and the new international airport.

Another risk arises from the fact that the road will use electronic toll readers. Presumably, however, this project will be able to learn from and avoid the early problems that the operators of Highway 407 in Ontario, Canada, experienced with similar toll readers (see Chapter 1).

At the beginning the project faced some currency risk, but this was eliminated when Greece was accepted into the economic and monetary union (EMU) of the European Union (EU) on 1 January 2001. Before 2001 most of the concessionaire's drawdowns under the EIB facility were in euros, but some were in drachma. Now, with the drachma abolished, all borrowings and project revenues are in euros, eliminating the mismatch between local-currency revenues and foreign-currency debt that has plagued many infrastructure projects.

How the financing was arranged

The EIB's loans cover only construction costs during the construction phase. Because the EIB does not assume construction risk, its advances are backed by guarantees from commercial banks. These banks also have made standby loan commitments in the event that project funding requirements exceed the EIB's commitment.

The structure of the EIB's loan facility is a function of the sectional nature of the project. The project is divided into six sections that will be completed and opened to traffic over two years, starting with the section that connects Athens and the airport. Separate finance contracts apply to each section and the availability of the loans is conditional upon Attiki Odos meeting section-completion deadlines.

The commercial banks' guarantees cover advances made by the EIB under the section-specific finance contracts. They also cover accrued interest, breakage costs, tax gross-ups and any other amounts due to the EIB. In circumstances where the EIB is entitled to withhold funding, the commercial banks have the option to lend in place of the EIB, rather than paying under their guarantees. Once the matters that entitle the EIB to stop funding have been remedied, the EIB extends the loans once again, replacing the bank lenders. When a given section is completed, as evidenced by a completion-test certificate issued by the project's independent engineer, the banks' guarantee for that project is released. This 'partial release mechanism' reduces the maximum size of the guarantee facility that the project requires at any one time.

The EIB requires banks providing the guarantees to have credit ratings of at least 'A2' from Moody's or 'A' from Fitch or Standard & Poor's. If one of the guarantor banks fails to maintain such a rating, it can provide security to the EIB or convert the amount of its guarantees to loans. If the amount of the EIB's advances exceeds the bank guarantee commitments, Attiki Odos is required to put up cash collateral, which may be financed by the commercial banks' standby facilities, among other sources.

An issue that could have caused problems was taxes. Greece has many registration fees, stamp duties, transaction taxes, transfer taxes and other taxes that could have made such a project financing prohibitively expensive. Although the Greek government could have considered giving tax-exempt status to such an important infrastructure project, that could have raised 'state aid' issues under European law. Such issues arise when aid from the government of any one member state of the EU is alleged to be giving an enterprise an unfair advantage over enterprises in the same state or other EU member states. For this financing the Greek government could have argued that the project benefits the EU as a whole and encourages crossborder trade, but the EIB's tax-exempt status solved the problem.

Problems that delayed closing

After the EIB signed its loan agreement with the concessionaire, in December 1997, a number of issues arose that ultimately delayed the financial closing until March 2000.

Land dispute

In early 1999 the American College of Athens, a prominent private college preparatory school, brought a dispute to the Greek supreme court over the compulsory purchase of a section of its land. As a result of the court's final resolution, published in June 1999, the concessionaire had to construct a tunnel, 60 metres long, that was not in the original plans. For several months during the dispute work was stopped on approximately 65 per cent of the surrounding road section. The Greek government agreed to provide a facility of up to €35 million, in the form of either guarantees to the EIB or direct advances to Attiki Odos, to cover shortfalls caused by the delays.

International motorway operator

Egis Projects had been a participant from the beginning because the EIB insisted that an internationally known motorway operator be involved in the project. Provisions were made to ensure that another internationally known motorway operator would be put in place if, for some reason, Egis Projects ceased to participate in the project.

Section-specific financing

A complex structure of bank accounts and rigorous account-operating procedures had to be developed to accommodate the separate financing for each section and to ensure that EIB funds were disbursed for construction costs but not operating costs. This became a particular challenge as some sections of the road were being opened while others were still under construction. Cash had to be quarantined into six different sections, as if there were six separate 'mini-projects'.

Guarantee release mechanism

Project participants had to develop a precise mechanism for the release of commercial bank guarantees and their timely replacement with Greek government guarantees. Their main objective was to ensure that the EIB was fully guaranteed by commercial banks or the Greek government, at all times.

Risk allocation

BOT financing was still relatively new to Greece and the financing structures for recent infrastructure projects had been inconsistent. Nobody in the Greek government or elsewhere had taken any initiative to develop a template for infrastructure financing in Greece. As a result negotiations on how to allocate risks among the project parties were time-consuming and difficult. The Greek government had to adapt to transaction structures and obligations that it had never faced before, such as its commitment to provide state guarantees upon completion of

each section, and the subordination of any claims it might have against Attiki Odos to claims by the EIB and the commercial banks.

One factor that helped in the negotiations was that the EIB and the Greek government did not have an adversarial relationship. Greece, as a member state of the EU, is a shareholder in the EIB and the EIB was more concerned about completed projects than it was with details of matters such as events of default.

Intercreditor relationships

Structuring the intercreditor relationships among the EIB and the commercial banks took an unusually long time. A complex voting mechanism was developed to allow for different majority requirements on different issues, so as to reflect the risk allocation among the financial institutions involved. Among the many issues were the guarantee structure, the refinancing arrangements and the elaborate mechanism that allows the commercial banks to continue financing the project if the EIB withdraws.

Amendments to the concession contract

There is no concession law in Greece. The only way to legitimise a concession contract is to have it passed into law, with the effect that its provisions override, where necessary, the regulations of various administrative departments. Because the concession had been passed into Greek law in 1996, it was not easy to amend. Inevitably, several clarifications were needed to meet changed circumstances and lender requirements. These were done by presidential decree.

Lessons learned

The documentation for this project financing was complex and required lengthy negotiation because of factors such as the Greek government's lack of a template for infrastructure financing in Greece, the lack of Greek concession law and the consequent need to modify the original concession by presidential decree, the separate financing for each section of the road, the guarantee release mechanism and the voting mechanism developed to reflect risk allocation among the lenders.

¹ This case study is based on an interview with Bruce Johnston and Maria Leistner, partners in LeBoeuf, Lamb, Greene & MacRae, LLP; an article by Mr Johnston and Ms Leistner, *Journal of Project Finance*, Summer 2000; and other articles in the financial press.

PYCSA, Panama

Type of project

Toll road.

Country

Panama.

Distinctive features

- First Latin American toll road financing since the Mexican peso crisis.
- First capital-market project financing in Central America.

Description of financing

The construction cost of US\$185.5 million was funded by US\$131 million in Rule 144A senior secured project bonds and US\$54.5 million equity from the sponsor. The bonds, at 10.28 per cent, were issued in 1997. They fall due in 2012. The initial average life of the bonds is 10.92 years. Interest is paid semi-annually beginning in December 1997.

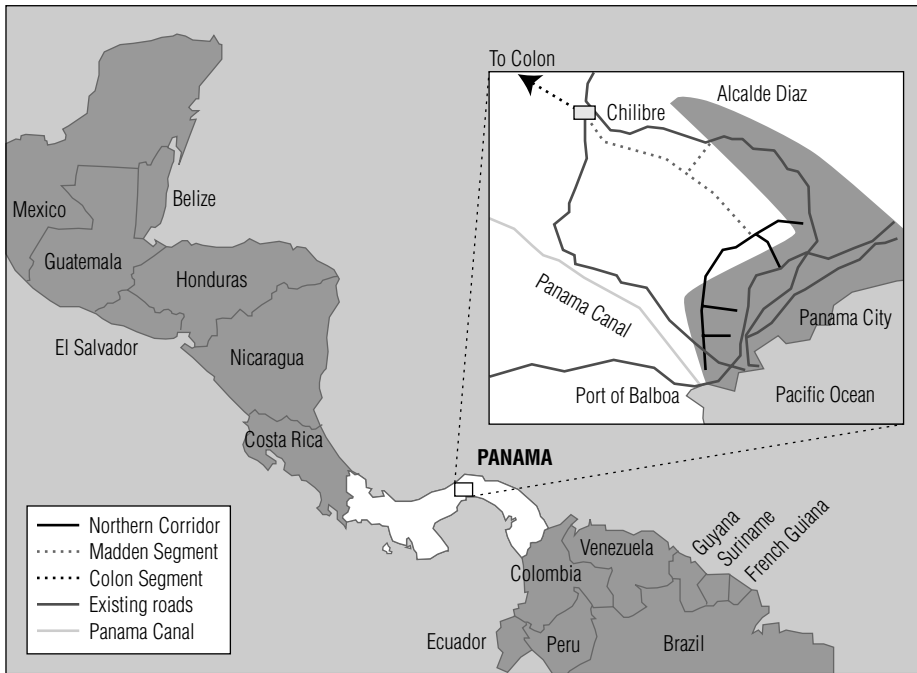
Project summary¹

PYCSA is a toll road project in Panama, designed to relieve traffic congestion in the vicinity of Panama City. The project comprises construction and operation of the Northern Corridor and the Madden Segment, as illustrated in Exhibits 4.1 and 4.2. The Northern Corridor, located along the northwestern side of Panama City, is 13.1 kilometres (km) long. This highway is designed to relieve serious traffic congestion problems in the city and to allow direct access for motorists, a substantial portion of whom are daily commuters, coming from the suburbs to the central urban area. The Madden Segment is 16.3 km long. It connects Panama City and its suburbs on the Pacific Coast with communities along the Trans-Isthmian Highway, which runs parallel to the Panama Canal between Panama City and the port city of Colón on the Atlantic Coast. The Northern Corridor and the Madden Segment are connected to form an integrated toll system.

The project company has a concession from the Republic of Panama to construct, operate and maintain the road for up to 30 years. It grants the company the exclusive right to col-

Exhibit 4.1

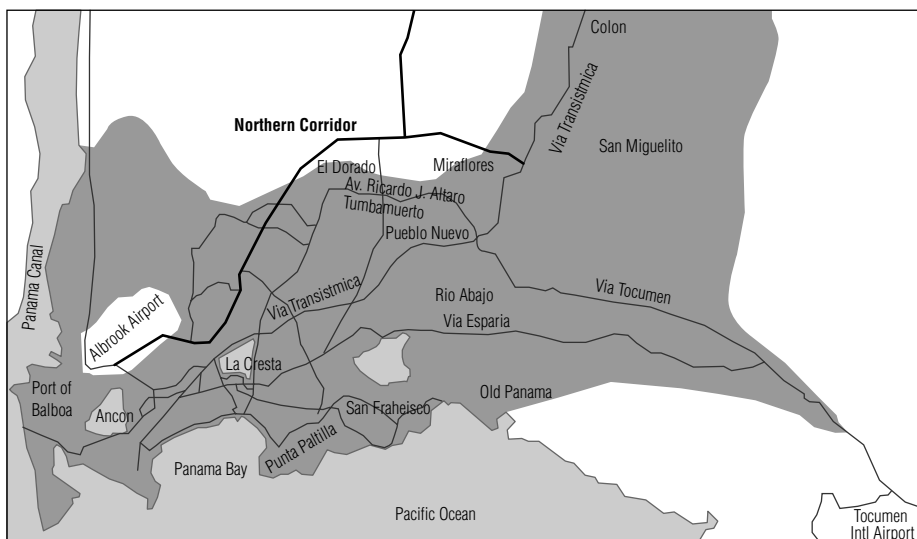
Location and route of the Northern Corridor and Madden Segment



Source: Prospectus for Project Bonds.

Exhibit 4.2

Panama City sketch, Northern Corridor



Source: Prospectus for Project Bonds.

lect tolls. In addition to the project, and outside the scope of this project financing, the concession provides for the completion of an additional segment between the Madden Segment and Colón.

The project is financed by equity from the sponsor and Rule 144A project bonds, originally rated 'BB-'. Security for the bonds includes toll revenues, the concession, the project contracts and shares in the project company.

The project bonds were sold to investors as the market for project financing in Latin America was becoming less affected by the Mexican peso crisis, but just before it began to be affected by the Asian currency crisis. Traffic and revenue risks were offset by several credit strengths, including a full year's debt service reserve, an undertaking by the independent engineer, Parsons Transportation Group, Inc., and substantial construction by the sponsor before the project financing.

Since the road opened, traffic has been significantly below the sponsor's projections and insufficient for the project to meet its financial obligations. As a result default is considered likely unless the sponsor injects additional equity.

Background

Sponsor's interests

PYCSA Panama, SA, the project company, is a special-purpose Panamanian corporation. It is an indirect subsidiary of the sponsor, Grupo PYCSA, SA de CV.

Grupo PYCSA is a major Mexican contractor that has been engaged, through subsidiaries and joint ventures, in major infrastructure and transport projects in Mexico, including toll roads, bridges and tunnels. Between 1990 and 1995 Grupo PYCSA participated in constructing and operating five Mexican toll roads, totalling 497 km and costing the equivalent of about US\$1.9 billion.

Largely because of factors related to the Mexican economy and the peso crisis, traffic on the new toll roads was less than projected and financial performance did not meet projections. Under the Mexican toll road decree 23 road and bridge concessions, including the sponsor's toll roads, reverted to the Mexican government in 1997. The Mexican government assumed debt related to the concessions and repaid liabilities of the concessionaires directly related to highway construction. The sponsor received the equivalent of about US\$140 million when these concessions were terminated.

Financial projections and traffic study

URS Greiner, Inc., a specialised traffic consulting firm, prepared a traffic and revenue report forecasting traffic and toll revenue, on the basis of operating cost data, historic traffic patterns, economic data, planned improvements to the highway system and traffic surveys. The consultant reached a number of conclusions.

- The four-lane, controlled-access highway in the two-road segments had a traffic-carrying capacity of 3,000 vehicles per hour in each direction.
- The Northern Corridor would reduce travel time across Panama City by up to 26 minutes (more than 75 per cent), while the Madden Segment would reduce travel time from Madden Road to the Northern Corridor connection by 11 minutes (more than 50 per cent).

- Existing alternative roads to the two segments were generally signalised urban arterial roads that were heavily congested during peak hours.
- The tolls to be charged in relation to time saved were comparable to those on similar toll roads elsewhere in Latin America.

In its base case URS forecast that between 2000 and 2012 revenues from the Northern Corridor would increase from US\$18.9 million to US\$28.2 million, representing an average annual growth rate of 3.4 per cent, and that revenues from the Madden Segment would increase from US\$8.7 million to US\$12.4 million, representing an average growth rate of 3 per cent.

Other factors cited by the consulting firm as contributing over the longer term to traffic growth were:

- the Panamanian government's plans to develop reverted lands in the former Canal Zone, just north of the Northern Corridor;
- the extension of the Northern Corridor to the Tocumen International Airport, Panama City's main airport; and
- a proposed new bridge over the Panama Canal, connecting the Northern Corridor to reverted lands on both sides of the canal and to the interior of the Republic.

Overall URS estimated that 20 per cent of relevant traffic would choose to use the toll roads over alternative routes.

On the basis of URS's traffic and revenue projections the independent engineer, Parsons Transportation Group, Inc., did a sensitivity analysis to show the average and minimum debt service coverage ratios (DSCRs) under base-case assumptions concerning revenues, costs, traffic growth and inflation. Under the base-case scenario the average DSCR was 1.76 and the minimum was 1.70. The worst case shown was 70 per cent of projected revenues, where the average DSCR was 1.27 and the minimum DSCR was 1.20. A combined worst-case scenario for both revenues and costs was not shown.

These conclusions and projections underlie the data from the bond prospectus shown in Exhibits 4.3 and 4.4.

Risk analysis

Investors in the bonds were advised to consider project risk arising from the project company's sole source of funds being toll revenues net of operating expenses. Nobody could guarantee that these funds would be sufficient to repay the bonds.

Non-recourse obligation

Recourse on the bonds is limited to the trust estate.

Construction risk

The construction of the project entailed many risks, including delays, cost overruns, performance deficiencies and *force majeure*. The Ministry of Public Works (MOP) has the right to

TOLL ROADS

Exhibit 4.3

Projected sources and uses of funds for the project

<i>Sources of funds</i>	<i>(US\$)</i>
Principal amount of the bonds	131,000,000
Equity	54,494,000
Net revenues during construction	10,698,000
Interest earnings during construction	2,573,000
Total	198,765,000
<i>Uses of funds</i>	<i>(US\$)</i>
Previously expended development and construction costs	61,144,000
Remaining construction costs – Northern Corridor	38,270,000
Remaining construction costs – Madden Segment	59,004,000
Contingency reserve	6,382,000
Debt service reserve	16,500,000
Major maintenance reserve	1,000,000
Interest during construction	9,315,000
Transaction costs	7,150,000
Total	198,765,000

Source: Prospectus for Project Bonds.

Exhibit 4.4

Comparison of PYCSA with other relevant toll-road financings

	<i>PYCSA Panama</i>	<i>GS Superhighway China</i>	<i>Autopistas del Sol Argentina</i>	<i>Zhuhai Highway China</i>
Offering size (US\$MM)	131	600	380	200
Offering date	10/97	8/97	7/97	8/96
Sovereign ratings	Ba1/BB+	A3/BBB+	Ba3/BB	A3/BBB+
Project ratings	Ba3/BB-	Ba3/BB	NR/BB-	Ba1/BB
Equity (%)	28	24	24	NA
Construction risk	Yes	No	No	No
Traffic revenue risk	Yes	No	No	No
Currency risk	Dollarised	Yes	Yes	Yes
Debt maturity/average life	15/11	7/7	7/7	7.5/7.5
Pricing over Treasuries (bps)	425	412.5	412.5	475

Source: Prospectus for Project Bonds.

levy fines in the case of construction delay and to declare a breach of concession if it determines that PYCSA is financially incapable of completing the project. In this case PYCSA mitigated the project's construction risk by making substantial progress on the toll roads before approaching the capital markets.

Traffic risk

Toll revenues may be insufficient to pay the operating expenses of the project and the bonds if the project is used by fewer vehicles or by a different mixture of vehicles than anticipated. Naturally, existing free alternatives currently in place remain in operation along with the project. Insufficient use of the project could result from:

- the unwillingness of motorists to pay the tolls, which may be perceived as excessive;
- perceived congestion on the project road;
- construction of competing roads or other means of transport;
- lack of integration with other Panamanian roads; or
- use of existing roads or other means of transport at levels greater than expected.

In addition, another toll road, along what is known as the Southern Corridor, was scheduled for completion in 1999. It could compete for some traffic that would otherwise use the Northern Corridor. URS factored the negative effect of this competition into its projections.

Operating risk

The project had no operating history. Operations and operating costs could be affected by:

- failure of toll equipment;
- labour disputes;
- labour costs;
- inadequate maintenance;
- natural disasters;
- damage to the project;
- equipment, environmental, geological or drainage problems;
- political or governmental interference;
- changes in regulations or laws;
- inability to obtain permits; and/or
- partial or total condemnation or expropriation.

Insurance risk

The indenture requires the project company to maintain insurance against damage or casualty to the project, losses from business interruption and liabilities to third parties. However, the project company is required to maintain insurance only to the extent that it is available on reasonable commercial terms. Such insurance may be inadequate to cover losses or liabilities incurred.

Environmental risk

The project passes near or through environmentally sensitive areas, heavily populated urban areas and lands inhabited or claimed by indigenous peoples. Construction and operation of the project have been subject to regulations and policies on the environment, noise levels, relocation, indigenous peoples, archaeological and cultural artefacts, and other matters. Changes in these regulations and policies could subject the project to unexpected additional costs.

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Comprehensive environmental impact assessments were completed for the Northern Corridor and the Madden Segment, and the company received all permits required for construction. Nonetheless, upon project completion the project company still had to obtain authorisation from the MOP to conduct operations and to collect tolls.

Economic risk

URS's traffic and revenue report assumed low inflation and moderate growth in GDP, motorisation and population throughout the term of the bonds. However, there could be no assurance concerning economic conditions in Panama and their consequences for the project. The annual rate of growth of the Panamanian economy declined from 9.6 per cent in 1991 to 2.5 per cent in 1996.

In 1989 the US military had begun a phased withdrawal of 9,500 personnel stationed on active duty in Panama, so that there were none present by the end of 1999. The impact of this withdrawal on the Panamanian economy was uncertain when the bonds were issued in 1997.

Expropriation risk

Under Panamanian law the government may expropriate private property if it is in the public interest to do so, but it must return the property whenever possible, indemnify the owner for any damage done or pay the value of expropriated property. There is no guarantee that the amount paid in the event of expropriation would be sufficient to compensate the project company for its lost investment and earnings.

Concession risk

Concessions for public works are governed by a special statute, the concession law, that allows the government of Panama to terminate a concession for reasons of public interest declared by the cabinet. In such cases the government is obliged to compensate the project company for both its unamortised investment and its expected profit for the remaining term of the concession. The concession provides for liquidated damages if the government illegally prevents exploitation of the concession. However, compensation would have to be ordered by a court in response to legal action brought by the project company; it could be delayed by government budget constraints; and it could be inadequate to repay the bonds.

The government also may terminate the concession when the company has recovered a predetermined amount of investment and earned an agreed profit. The Distribution Agreement provides for an early termination reserve to pay the bonds if such a termination occurs before the final maturity of the bonds.

Currency risk

The project company must make payments on the bonds in US dollars, but most of its revenue is in Panamanian balboas. By law the US dollar has been the only paper currency in Panama since 1904. The balboa is issued only in coins and circulates jointly with US coins. Panama's laws and policies on foreign exchange and currency could change (although this

seems unlikely for the foreseeable future), adversely affecting the project company's ability to service its US dollar debt from its balboa earnings.

How the financing was arranged

Early stages

Credit Suisse First Boston (CSFB) started working with PYCSA as a financial adviser in 1995, two years before the project financing was completed. Shortly afterwards PYCSA began construction of the toll road with internal financing. CSFB advised PYCSA on structuring the contracts for engineering, procurement and construction (EPC), and for operation and maintenance (O&M), with its subsidiaries, in the same way as if they were being made with outside parties.

Initially PYCSA approached the Inter-American Development Bank (IDB) concerning the possibility of an A/B debt package, in which the IDB would make the A loan and commercial banks would make the B loan. The IDB was concerned about the lack of government guarantees, and about the traffic, construction, land-acquisition and toll risks associated with the construction of a greenfield road. Negotiations were delayed by an extensive environmental review process and the IDB proposed covenant restrictions that PYCSA found unacceptable.

By the spring of 1997 PYCSA had invested US\$50 million of its own funds in the project and was beginning to run short of funds. The company decided to put negotiations with the IDB on hold and look for other funding sources. At this time the capital markets were beginning to open for Latin American projects, essentially having been closed in the aftermath of the Mexican peso crisis. The Asian financial crisis had just begun, but had not yet affected Latin American financing.

Sensing a window of opportunity, PYCSA and CSFB started working on a capital market transaction at the end of June 1997 and brought the bonds to the market in early October. Reflecting the first signs of weakness in the market for emerging-market credits, the bonds were priced at 425 basis points (bps) over the London interbank offered rate (Libor). However, given the fact that the PYCSA project involved both construction risk and revenue risk, the pricing for the bonds compared favourably to that of other similar projects financed at about the same time.

Investors' concerns

The composition of investors in the bonds comprised pension funds and mutual funds (80 per cent), insurance companies (12 per cent), and banks (8 per cent).

The bonds were appealing to high-yield investors and to institutional investors that allocate portions of their portfolios to project finance and structured finance. With a 'BB-' credit rating, the project fell in about the middle of the spectrum of credit ratings for high-yield investments.

During the roadshow to market the bonds, investors expressed concerns about PYCSA's relatively small size, and about the award of both the EPC contract and the O&M contract to PYCSA subsidiaries. CSFB encouraged investors to think positively about the size issue. Because PYCSA had already invested so much of its own capital in the project, the company had a strong incentive to make it succeed. Investors also were concerned about other recent

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toll-road projects where traffic had failed to meet projections, such as the Dulles Toll Road near Washington, DC, and several toll roads in Mexico. CSFB emphasised the amount of traffic congestion near the Northern Corridor, the time that motorists could save by using the toll road and the government's agreement not to build any new competing roads after the Southern Corridor toll road.

Security and sources of repayment for bonds

Recourse on the bonds is limited to the Trust Estate. Except for its liability under the project contracts, the sponsor has no liability for obligations of the project company under the bonds. The Trust Estate that secures the bonds consists of tolls and other revenues from the project, accounts held under the disbursement agreement, the company's rights under the concession, the other project contracts, awards under property and business interruption insurance, condemnation awards, a pledge of 98.5 per cent of the company's shares, and a chattel mortgage on the company's movable equipment.

Contractual relationships and commitments

Construction and operating contracts

The Construction Contract obligated Constructora Vial, SA, a wholly owned subsidiary of the sponsor, to construct the project on a fixed-price, lump-sum, turnkey basis. Construction oversight, including approval of construction fund drawdowns and the certificate of completion, was provided by De Leuw, Cather International Limited, a unit of Parsons Transportation Group, Inc., the independent engineer. The independent engineer also approves the annual O&M budgets, and any revisions to these budgets.

The Operating Contract obliges Autovias, SA, the operator, which is also a wholly owned subsidiary of the sponsor, to operate and maintain the project. The project company reimburses the insurance premiums and the operator's base costs, which exclude the salary, insurance premiums and overheads of the project manager. The project company pays the operator 4 per cent of base costs, to cover the manager's salary and the operator's overheads, and an operating fee of 16 per cent of base costs.

Debt Service Reserve Account

The project company initially funded the Debt Service Reserve Account with a cash deposit of US\$16.5 million from the bond proceeds. It was required to maintain a balance in that account equal to one year's principal and interest due on the bonds until the first anniversary of the completion of the Northern Corridor, and after that an amount equal to one half-year's debt service.

Major Maintenance Account

A Major Maintenance Account was established to accrue funds to pay for forecast major maintenance items. The account was initially funded by a cash deposit of US\$1 million from the bond proceeds and later from available funds in the project account.

Priority of payments

The depository has held proceeds of the bonds – other than those to be deposited in the debt service reserve account and the major maintenance account – and project revenues in the project account. The depository has applied the balance in the project account according to the following order of priority:

- budgeted project expenses;
- approved construction costs;
- compensation and indemnities to the trustee or depository;
- principal and interest on the project bonds and other senior project debt (if any);
- reserve amounts required for the major maintenance account;
- reserve amounts required for the debt service reserve account;
- reserve amounts required for the early termination reserve (if any);
- other amounts due on the senior project debt and under the indenture;
- reserve for anticipated construction costs; and
- permitted distributions to the company.

Distributions

Before project completion no distributions to the project company's shareholders were permitted. After completion distributions could have been made on a payment date if:

- all reserve funds had been fully funded;
- no default was continuing;
- the DSCR for the past 12 months was at least 1.35 to 1; and
- the DSCR was projected to be at least 1.35 to 1 for the forthcoming 12 months.

Additional debt

The project company is allowed to incur additional debt in any of the following ways, provided that the conditions stated are met:

- capital expenditures required either by law or the concession, if the projected DSCR each year through to the final maturity of the bonds is at least 1.3 to 1;
- construction costs that are necessary to achieve project completion and are approved by the independent engineer, if the projected DSCR is at least 1.4 to 1 each calendar year through to maturity of the bonds and the projected average DSCR is at least 1.5 to 1 throughout that period;
- discretionary capital expenditures after project completion, if the DSCR each calendar year through to project completion is at least 1.5 to 1;
- up to US\$5 million short-term in senior project debt to finance working capital; and
- up to US\$10 million of other senior project debt.

The project company may also incur up to US\$50 million in subordinated debt and debt with no recourse to the trust.

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Affirmative covenants

In the indenture the company agreed:

- to comply with the concession, material contracts and law;
- to maintain corporate existence, government approvals and required insurance;
- to provide annual and quarterly financial reports;
- to ensure that obligations on the bonds are senior, secured obligations of the company from the Trust Estate;
- to provide further assurances concerning security interests;
- to pay taxes that may become liens on the project;
- to pursue construction diligently; and
- to construct, operate and maintain the project as required under the concession.

Negative covenants

The company also agreed:

- not to incur obligations other than permitted project debt, obligations to construct and operate the project, and other activities, without recourse to the Trust Estate;
- not to make any investments other than investments in the project and certain other permitted investments;
- not to engage in any activity other than the project as described in the concession;
- not to enter into any transactions with affiliates other than the project contracts, unless on an arm's-length basis;
- not to liquidate or dissolve;
- not to merge, consolidate or otherwise dispose of any assets;
- not to permit other than permitted liens on the Trust Estate;
- not to dispose of property in the trust estate; and
- not to modify the project contracts in any way materially adverse to the bondholders.

Events of default

Events of default include:

- failure to pay principal and interest within 10 days of a due date;
- failure of the project sponsor to make a payment within 10 days of the due date;
- failure to maintain insurance for five days after the due date;
- failure of the project company to comply with any material obligation in the project contracts;
- false representations by the project company;
- failure of the sponsor to maintain 80 per cent ownership of the project company until project completion and, unless credit ratings at the time the bonds were issued were reaffirmed, majority control after project completion;
- failure of the project company to discharge any final judgement in excess of US\$5 million;
- invalidity of any material part of the security;
- unenforceability of any material term of the concession or the construction contract; and
- bankruptcy or insolvency of the project company.

However, no default relating to the EPC contractor was to be considered an event of default under the following conditions:

- the project company was seeking a replacement contractor acceptable to the independent engineer;
- the project DSCR in each calendar year through to maturity of the bonds was projected to be at least 1.4 to 1; and
- the average DSCR through to maturity of the bonds was projected to be at least 1.5 to 1.

Credit analysis

Credit ratings

Among the important issues discussed when CSFB and PYCSA met the rating agencies were traffic and revenue risks, construction risk, and the trust structure. Initially both Moody's and Standard & Poor's proposed 'B' ratings for the PYCSA project bonds, which would have caused problems in marketing the bonds. However, the provision for the independent engineer to assume responsibility for the construction contract if PYCSA ran into trouble, as well as an increase in the debt service reserve from US\$8 million to US\$16 million, helped to persuade the agencies to change their minds. Thus, at the time of issuance in 1997 the bonds were rated 'Ba3' by Moody's, and 'BB-' by Standard & Poor's.

The Republic of Panama at that time was rated two notches higher, at 'Ba1' by Moody's, and 'BB+' by Standard & Poor's. A project such as PYCSA could not have been rated above the sovereign ceiling unless it had a guarantee from an investment-grade corporation. Shortly before rating PYCSA the agencies had gained some insight into Latin American toll roads through their review of Autopista del Sol, a toll road in the suburbs of Buenos Aires, which they also rated 'BB-'.

Moody's noted that its below-investment-grade rating for PYCSA reflected:

- risks associated with a startup project;
- the expectation that the Northern Corridor would support the Madden Segment; and
- the absence of either payment guarantees from the sponsor or government financial support.

However, the agency also cited credit strengths, including:

- the long-term strategic value of the toll road to Panama;
- the country's long history of satisfactory concession agreements with the Canal, the two seaports, a refinery and a mine;
- Grupo PYCSA's broad history in toll road construction; and
- the government's pledge not to construct or concession a road that competes with the project.

In July 1999 Standard & Poor's reaffirmed its 'BB-' rating, but put the bonds on CreditWatch with negative implications. Credit weaknesses cited by the agency included startup traffic on the Northern Corridor in 1998 being about 50 per cent lower than projected, and the completion of the Madden Segment in May 1999 being about 11 months behind schedule. Consequently, the agency projected that between one quarter and one half of the project's debt

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service reserve fund (US\$4–8 million) would be used to make debt service payments in 1999. Based on revised projections of revenue growth, the projected average DSCR was reduced from 1.78 to 1.59 times. Standard & Poor's also cited the project's continued dependence on the economic growth and political stability of Panama, and the limited financial strength of the sponsor. However, the agency also cited numerous credit strengths, including:

- the US\$16.5 million debt service reserve fund;
- the restriction on distribution to equity holders unless the DSCR for the previous four quarters exceeded 1.35 times;
- the completion of the Northern Corridor in January 1998 and of the Madden Segment in May 1999;
- heavy traffic congestion on nearby roadways;
- traffic projections that appeared reasonable over the medium term, with project feasibility requiring only 20 per cent of traffic diversion from exiting roadways;
- strong support from the MOP for a project that it considered to be essential; and
- an effective toll-rate setting mechanism that adjusted rates for changes in inflation and exchange rates without prior government approval.

In December 1999 Standard & Poor's reduced its credit rating on the PYCSA senior secured bonds from 'BB+' to 'B+', reflecting the company's approximate US\$4 million draw on the debt service reserve account to make its bond payment on 15 December 1999. In the agency's opinion, the diminished debt service reserve account added significant risk to a project that was already experiencing financial difficulties. Standard & Poor's noted that traffic volume was well below original forecasts, for several reasons.

- Access to the roads had been impeded by directional lane changes on competing free roads during rush hours, instituted by the MOP, and by reliance on manual traffic control, which slowed access to the toll road from central Panama City.
- Drivers appeared to be more reluctant to pay the toll than had originally been forecast.
- Truck traffic was limited because of delays in the installation of a transponder system.
- The delayed completion of the Madden Segment had reduced traffic and revenues on the Northern Corridor as well as on the Madden Segment itself.

Nonetheless, the agency noted that monthly toll revenues over the past 12 months had grown by 105 per cent, or about 9 per cent per month. If that growth rate continued, PYCSA appeared to be capable of making its bond payments in June and December 2000 without using the remaining debt service reserve. PYCSA recently had informed Standard & Poor's of several efforts to improve traffic flow, including completion of the transponder system, toll restructuring and coordination with the MOP to manage problems concerning access to the road.

Previously management had indicated that it might make an equity contribution to leave the debt reserve intact, but recently it had decided not to provide these funds. Nonetheless, continued increases in toll revenues and financial performance since the opening of the Madden segment in May 1999 made the outlook stable at the 'B+' level.

The rating reflected the following weaknesses, in addition to those cited earlier:

- actual revenues for 1998 and forecast revenues for 1999 about 65 per cent lower than originally projected in the base case;

- the project's inability to service debt from operating cash flow in 1999; and
- the need for continued robust growth in traffic volumes and revenues to achieve financial targets.

In September 2000 Moody's downgraded PYCSA's debt from 'B3' to 'B1', with a negative outlook, because of concerns about the company's ability to meet the debt service payment scheduled for December from operating revenues and balances in the debt service reserve account. Once again the concessionaire indicated that it might make a capital infusion, but Moody's noted that it was not required by the bond documents. Problems that the agency cited included:

- traffic growth that was slower than projected, largely because the MOP was still reversing lanes on a nearby free road;
- traffic signal management problems on the entrance to the Northern Corridor; and
- problems with the toll management system.

Also in early September 2000 Standard & Poor's placed its 'B+' rating on CreditWatch negative because traffic revenues had levelled off at about US\$1.1 million per month and the resulting shortfall could cause the project to miss its next debt service payment in December 2000. Later in September, after meeting PYCSA's management, Standard & Poor's downgraded PYCSA to 'B-' with continuing negative implications. The project now seemed likely to have sufficient cash to make its debt payment in December 2000, but that payment would exhaust the debt service reserve fund, and the company probably would have to defer some O&M payments. PYCSA's management had indicated that it would decide before the end of November whether or not to make an equity infusion to avoid default. It had an incentive to do so because it had already made a US\$55 million equity investment in the project and would need additional financing for a planned expansion of the road in 2001.

On 1 December 2001 Moody's downgraded PYCSA from 'B3' to 'Caa1', with a negative outlook, because it doubted the company's ability to meet the debt service payment due on 15 December from operating revenues and the balance of the debt service reserve account. With the depletion of the reserve, projected revenues would not be sufficient for the debt payment of roughly US\$8 million due in June 2001. The agency also noted that the company was having difficulty tracking cash collections, was unable to provide discounts for frequent users of the toll road, and was having problems with its automated toll systems and ticket sale machines.

On 11 December 2001, following similar reasoning, Standard & Poor's downgraded the project bonds from 'B-' to 'CC', noting that the project sponsor still had not committed itself to providing the additional capital required to keep the project out of default the following June. The agency noted that the MOP had discontinued the lane reversals on the competing free road in September 2000, but traffic had increased only modestly, because now drivers were using the newly completed Southern Corridor to bypass the free road. PYCSA's management planned to expand the project to provide motorists with a superior alternative to either the free road or the Southern Corridor. If undertaken, the first phase of that expansion could be completed by the end of 2001, at a cost of US\$50 million, and the second phase by the end of 2002, for an additional US\$44 million.

In early March 2002 Moody's downgraded PYCSA's debt to 'Ca', reflecting the company's inability to meet its debt service obligations, its unsuccessful attempts to restructure its

debt and concerns about its ability to maintain the concession. Having been in default since June 2001, PYCSA had made just partial payments in September and December. Based on current road-usage projections that provided for traffic growth of about 2 per cent per year, and assuming no construction of extensions to the existing concession, Moody's estimated that bondholders could expect to see about 74 per cent of their expected principal and interest. Project reserve funds at that point were assumed to be exhausted.

On 8 June 2002 Standard & Poor's said that it believed that PYCSA was likely to default on its bond payment of US\$7.8 million, due on 15 June 2002, because traffic growth continued to be insufficient to meet the project's financial obligations and the debt service reserve fund had been fully exhausted. The agency did not expect Grupo PYCSA, the project sponsor, to make a capital contribution to avoid default. It reported that the sponsor was negotiating with the bondholders to restructure the debt. However, any restructuring that led to a deferral or a reduction in interest or principal payments would cause a default under the agency's criteria, which required companies to adhere to their original amortisation schedules. When PYCSA failed to make its payment due on 15 June, the agency dropped its rating from 'CC' to 'D'.

PYCSA proposed two options to the bondholders: It could extend the maturity of bonds, but still provide investors the same returns they expected when they bought the securities; or it could seek US\$94 million for an extension of the Northern Corridor to connect it to the Southern Corridor and use part of the proceeds from that new financing to pay the arrears on its current bond debt.

Despite its financial difficulty with the concession, PYCSA negotiated with the Panamanian government throughout 2002 on an additional phase of the project that would run along the Canal, linking the Madden Segment with Colón on the Atlantic coast. In April PYCSA considered withdrawing from the additional phase because it considered the tolls approved by the government to be too low for it to recoup the required investment. At that time the government considered handing over some public land as partial compensation for the project, as it had done with Mexico's ICA when it built the Southern Corridor. In January 2003, two state-owned Panamanian banks, Banco Nacional and Caja de Ahorros, and a Mexican construction consortium agreed to provide PYCSA with US\$57 million of financing for the additional phase. It was unclear whether entering into a concession for the additional phase would provide PYCSA with the financial wherewithal to fulfil its debt-service obligations for the original phase.

Panama country risk

The Republic of Panama is located in the narrowest part of the isthmus that connects North and South America. Its population is about 2.7 million. Panama City is the capital city. Panama is a constitutional republic of nine provinces and three autonomous Indian reservations. The political system is highly centralised, with executive power being vested in the president and his cabinet of ministers. The president is elected to a five-year term and may not be elected to the office again within 10 years after the term expires. Legislation is in the hands of a unicameral legislative assembly of 72 members.

As of 1997 the service sector of the Panamanian economy, including the Panama Canal, the Colón Free Trade Zone and the International Banking Center in Panama City, accounted for 77 per cent of GDP. The Panama Canal Treaty between Panama and the United States,

signed in 1977, provided for gradual reversion of the operation and management of the Canal to Panama between October 1979 and December 1999.

The Republic of Panama was rated 'Baa1' by Moody's, and 'BB+' by both Standard & Poor's and Duff & Phelps, in late 1999. Positive factors cited by the three agencies included:

- the dollarisation of the economy;
- recent reforms, such as the privatisation of public enterprises, reduction of tariffs, and changes in labour laws and the financial sector; and
- the institutionalisation of democracy after the end of military-appointed governments in 1989.

The country's credit weaknesses included:

- high public-sector debt (77 per cent of GDP and 150 per cent of export receipts);
- high government personnel expenses;
- limited economic development outside Panama City and Colón; and
- risks to asset quality related to a recent rapid increase in bank lending.

In November 2001 Standard & Poor's downgraded Panama's long-term sovereign credit rating from 'BB+' to 'BB', citing the country's high public-sector debt along with the absence of political consensus on tax and social security reforms. As a result Panama's gross public-sector debt was projected to reach about 80 per cent of its GDP. Standard & Poor's expressed concern that unmanageable debt could put Panama in a situation similar to Argentina's. The agency also described a duality in the nation's economy, in which the service sector was export-oriented, capital-intensive, highly productive and largely free from government interference, while agriculture and manufacturing were stagnant, highly regulated and subsidised, inefficient, labour-intensive, and uncompetitive.

Lessons learned

Construction progress and a significant initial equity commitment by the sponsor enhanced the creditworthiness of the project and helped to overcome reservations concerning the relatively small size of the sponsor at the time of the project financing. However, when traffic did not meet projections the sponsor was not willing to provide additional equity to support the project debt-service requirements.

The rate of growth in use of a new toll road is difficult to project. It is easy to be unrealistically optimistic concerning how rapidly people will change their habits, especially when tolls are relatively high considering average personal income in the area.

¹ This case study is based on the prospectus for the bonds and an interview with Reiner Boehning, Vice President of Credit Suisse First Boston Corporation.

A2 Motorway, Poland

Type of project

Toll motorway.

Country

Poland.

Distinctive features

- First greenfield motorway built in Poland on a concession basis.
- Political importance to Poland, to neighbouring countries and, in particular, to the process of accession to the European Union (EU).
- Government guarantee for 40.5 per cent of debt.
- Participation by international financial institutions.
- Uncertain revenue forecasts resulting from lack of relevant precedents.
- Provision of a safety time cushion for extended maturity in the event that traffic was less than forecast.

Description of financing

Total cash financing amounts to €748 million, consisting of:

- €235 million as a bank term loan, including €40 million during construction;
- €275 million as a loan from the European Investment Bank (EIB); and
- €238 million in shareholder financing, including €115 million of the share capital (57.85 per cent from Polish shareholders and 42.15 per cent from international shareholders) and €123 million in subordinated debt.

Project summary¹

The EIB's agreement to participate in a project for Poland's first greenfield motorway to be constructed on a concession basis was largely in response to the government's strong support for the project, which was seen as a critical element in the Berlin–Warsaw–Moscow Trans-European Network. The EIB was willing to accept structural subordination to the senior

lenders and a debt-service profile that capitalised interest payments for the entire expected duration of the senior debt funding, well beyond the construction period.

The senior lenders accepted a sculpted, back-ended repayment profile with a final maturity of 17 years. Their loan would be paid off in 13 years if the level of traffic met the base case. However, if traffic was less than the base case, smaller amounts of principal would be repaid, resulting in a final maturity of 17 years.

Background

The Polish Motorway Programme was approved by the government in September 1993 and the Law on Toll Motorways, passed in October 1994, came into effect in January 1995. The law provided the basic legal framework for awarding build-operate-transfer (BOT) concessions to construct and operate roads, and created the Agency for Motorway Construction and Operation (ABiEA), with a president appointed by the Prime Minister on the recommendation of the Minister of Transport and Maritime Economy. The ABiEA is responsible for coordinating and supervising the programme, purchasing land, and awarding concessions.

At that time the Polish government expected the motorway project to consist of 2,500 kilometres (km) of new highways built over a 15-year period. Four main highways were envisaged, each to be constructed under individual concessions within the BOT framework. The four proposed routes were as follows:

- A1 Gdansk–Lodz–Czestochowa–Katowice–Cieszyn (north to south);
- A2 Swiecko–Poznan–Lodz–Warsaw–Terespol (west to east, linking Germany with Belarus);
- A3 Szczecin–Zielona Gora–Legnica–Lubawka (West Border Line); and
- A4 Zgorzelec–Katowice–Cracow–Medyka interlink with parts of the A12 and the A8 (South Border Line).

The Polish government envisaged construction of 170–180 km each year, which was ambitious in comparison to similar road projects in other countries, with costs ranging from the equivalent of US\$3 million per km in standard construction areas to US\$6–8 million per km in more challenging areas. The estimated costs would have been lower if the new motorways were to be constructed from existing highways, but that was unlikely because the law required that reasonable alternative routes be available to the public free of charge.

State participation in the funding of the programme, estimated at about 15 per cent of total cost, was intended to be primarily for the purchase of land. The government allocated US\$80 million for this purpose in its 1995 budget, not knowing whether or not that amount would be sufficient.

A total investment of about US\$8 billion was expected over the course of the entire programme. It was expected that sponsors interested in obtaining the concessions would provide equity equal to at least 20 per cent of the construction cost, while also taking responsibility for arranging bank loans to cover the remainder. The law provided for a state guarantee of up to 50 per cent of the total investment amount. Concession periods, to be negotiated individually, were expected to range from 25 to 30 years. Concessions could be awarded only to Polish companies with share capital of at least the zloty equivalent of Ecu10 million (currently €10 million). From the list of criteria on which winning bidders would be selected, it

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was clear that contractors with Polish subcontractors would be favoured. The law established a six-month limit on the negotiation period for concessions, which was considered to be short considering the unprecedented and highly complicated nature of the project.

Traffic in the A2 corridor in the year 2000 was projected, based on studies by Kocks Consult, to range between 17,000 and 21,000 vehicles per day on the untolled road. However, some surveys indicated that many other planned motorways would be unprofitable and therefore unsuitable for BOT-type funding in view of insufficient traffic levels.

Risk analysis

Given the history of toll roads in other countries, the Polish government was aware that the ultimate profitability of the toll road programme was subject to numerous risks, including the following.

Traffic and revenue risks

Poland had virtually no toll road experience and a similar project in Hungary recently had failed to meet traffic forecasts.

Political risk

The state was expected to provide 25,000 hectares of land for the motorways, 1,500 of which were already in the hands of the government, with the remaining land to be purchased. Even though the law provided a special procedure for expropriation, land acquisition was expected to be cumbersome.

Foreign exchange risk

Construction costs were partly in foreign currency but all revenue was in local currency.

How the financing was arranged

Concession award and agreement

The tender for the A2 project concession took place in two stages: the preliminary qualification in 1995 and the subsequent tender in 1996. In March 1997, following the bid submissions, ABiEA awarded a concession to build and operate the A2 from Swiecko to Strykow (360 km) over a 30-year period to Autostrada Wielkopolska SA (AWSA).

The driving force behind AWSA has been Jan Kulczyk, the owner of Kulczyk Holding SA, Poland's largest private-sector company, which has investments in telecommunications, insurance, automobiles and brewing. The major Polish shareholders include PSE, the Polish Power Grid Company; Orbis, a hotel chain in which the French hotel group Accor has invested; and BZ Wielkopolski Bank Kredytowy, part of the Allied Irish Group. Among the international shareholders are Strabag from Austria and NCC from Sweden, the two main contractors for the project, and Egis, the operator of the motorway.

Perhaps the most difficult issue the concessionaire and the government faced was project economics. In a study supervised by the European Bank for Reconstruction and Development

(EBRD) and published in 1997, Wilbur Smith forecast growth in the number of vehicles using the toll motorway each day from 9,800 in 2005 to 20,000 in 2022. Motorists' response in the short time since April 2000, when tolls were introduced on the rehabilitated A4 Motorway (Krakow to Katowice in the south), had been encouraging to A2 project investors. However, there never had been a road financing in Poland on the scale proposed for the A2; and the recent failure of the M1/M15 in Hungary to meet forecasts caused the banks, their advisers and the government to take a conservative stance with respect to traffic risk.

Because of the six-month time limit imposed by the law, the concession agreement was negotiated under pressure. All parties recognised that modifications and refinements would be required to make the project bankable. The concessionaire and its advisers, Deutsche Bank and the international law firm Baker & McKenzie, spent the subsequent two years presenting various concession-structure and financing options to three successive Ministers of Transport. The various solutions revolved around the key provision of the Law on Toll Motorways that a Polish state guarantee could be provided for up to 50 per cent of total financing. As they reviewed the proposed solutions, ABiEA, along with the Ministries of Transport and Finance, had three principal concerns.

- They needed to be convinced that project economics were sufficiently robust to make activation of the state guarantee highly unlikely.
- They wanted a multilateral agency to provide a significant amount of the funding.
- They wanted to make sure that no return would flow to shareholders before the state guarantee had been extinguished or defeased. (Defeasance is a process of effectively eliminating a liability with an asset of corresponding size dedicated to paying it off.)

ABiEA and the two ministries were also somewhat sceptical as to how well the zero-coupon bond issue would be received in the markets.

After extensive negotiations the concessionaire and the government finally reached agreement in October 1999. The key points of their agreement were as follows.

- The Polish state would have a maximum exposure of €800 million. This was the largest single amount of borrowing by either a public or private entity that the Polish government had ever guaranteed.
- Required shareholder funding would be increased from 20 per cent to 25 per cent.
- The sponsors agreed to provide a contingent equity facility to meet any shortfalls in debt service that might result from traffic levels falling below the bankers' base case.
- Of the three original concessions on the A2 the term of two (Swiecko to Nowy Tomysl and Nowy Tomysl to Konin, totalling 254 km) was increased to 40 years, until 2037, while the concession covering the section from Konin to Strykow (106 km) was surrendered by the concessionaire.

A second Annex to the Concession Agreement, executed in October 1999, became the basis for negotiations with various international banks concerning potential large-scale financing. During 2000 the prospective senior lenders agreed to accept a sculpted, backended repayment profile with a final maturity of 17 years. However, it was assumed that their loan would be paid off in 13 years if the level of traffic met the base case. If traffic was less than the base case, smaller amounts of principal would be repaid, resulting in a final maturity of 17 years.

This was a built-in ‘shock absorber’ to deal with the uncertainty of traffic forecasts, which was the principal credit issue.

Finally, as a result of amendments and agreements between the parties, the target construction cost of construction of the section from Nowy Tomysl to Konin was reduced to €638 million.

Initial financing plan

The initial financing plan, reflecting the agreement described above, provided for senior bank debt of €240 million and zero-coupon bonds with net proceeds of €235 million. The bonds would have both euro and US dollar tranches, and would be secured by the Polish state guarantee. The senior bank debt was expected to have a maturity of 12 to 13 years and the bonds a slightly longer maturity. Reputable international financing institutions were to be appointed arrangers of the zero-coupon bond issue. Originally the EBRD was expected to provide some of the funding, but, in addition to the prerequisite of another traffic study under its supervision, the EBRD made its participation dependent upon certain other conditions that AWSA found unacceptable.

The viability of the initial financing plan depended on two sets of critical assumptions. First, it was assumed that revenues would meet forecasts and that the borrower would be able to redeem the senior debt before the first maturity of the zero-coupon bonds, so that overlapping of the two facilities would not result in more leverage than the senior lenders would permit. Second, it was assumed that interest rates would remain at levels that allowed the concessionaire to remain within the limit of €800 million for each maturity.

Revisions to the plan

The turning point in the history of the project occurred when the EIB declared its willingness to participate in the project financing with an amount and type of facility that permitted the zero-coupon bond issue to be abandoned.

In February 2000 AWSA appointed Commerzbank AG and Crédit Lyonnais SA as lead arrangers of the senior debt financing. The lead arrangers appointed Steer Davis Gleave to evaluate the earlier forecast prepared by Wilbur Smith. Because that earlier study had been commissioned by the EBRD, it was regarded as a ‘base case’ and it also served as a third study to corroborate earlier studies by Kocks Consult, commissioned by ABiEA, and by Oscar Faber, commissioned by AWSA. The revenue forecast in the Steer Davis Gleave study was more conservative than that in the earlier Wilbur Smith study. As a result the concessionaire and its advisers were advised by the banks that, under the ‘realistic’ downside scenarios, the senior debt was unlikely to be repaid before the first date when the zero-coupon bonds would require refinancing. In view of this, the willingness of the EIB to participate in the financing was of key significance to the project’s success.

The EIB’s agreement to participate was largely in response to the government’s strong support for the project. The EIB was willing to accept structural subordination to the senior lenders and a debt-service profile that capitalised interest payments for the entire expected duration of the senior debt funding, well beyond the construction period. The terms and conditions of the EIB’s offer were highly attractive to AWSA and the government, and subsequent negotiation of the documentation proved to be remarkably straightforward and efficient.

The financial closing on 30 October 2000 involved several sources of funds, including the debt financing described above; toll revenues collected during construction on motorway sections opened for traffic; and interest earned on the EIB's loan deposits. The total amount was €875 million.

The future

In September 2000 both houses of the Polish legislature (the Sejm and the Senate) approved amendments to the Law on Toll Motorways and the establishment of a Motorway Fund. However, the amendments did not materially change the motorway construction programme.

In January 2002 the Polish government launched a new economic strategy providing for a new motorway construction and financing programme. As a result the government will be able to support the construction of future motorways with a wider range of instruments, including toll sticker revenues, securitisation of future revenues and bond issues.

The entire programme is currently under detailed study by the government. One option being considered is to base the settlements with the concessionaires on a 'shadow toll' system. Shadow tolls are tolls paid by the government to the concessionaire on the basis of traffic flow, in lieu of tolls collected from motorists.

Lessons learned

Financing of an important motorway in a country with virtually no experience of toll roads was made possible by a strong mandate from the Polish government; a government guarantee of 40.5 per cent of the debt; a considerable commitment from the EIB; and concessions by all the major parties. In particular, the senior lenders accepted a flexible repayment schedule, while the sponsors increased their equity participation and provided a contingent equity facility.

¹ This case study is based on an interview with Stephen Uhlig, then Managing Director and Head of Infrastructure Finance for Europe, Middle East and Africa, Deutsche Bank, London; 'A2 Motorway Poland', an unpublished article by Krzysztof Link, Vice President, AbiEA, Wojciech Gebicki, Finance Director, Autostrada Wielkopolska SA (AWSA) and Stephen Uhlig; and an article by Graeme Akhurst and Przemyslaw Krzwoz, of Clifford Chance in London and Warsaw, 'Motorway Construction Programme Takes Shape', *East European Business Law*, 1 April 1995. Thanks are also due to Robert Nowak, Vice President – Finance AWSA, for his help in revising and updating the original case study draft.

SCL Terminal Aéreo Santiago SA, Chile

Type of project

Expansion of airport.

Country

Chile.

Distinctive features

- Credit enhancement to facilitate bond offering in a difficult emerging-market credit environment.
- First Chilean airport concession to be financed in the capital markets.
- Largest private-sector infrastructure financing in Chile to date.
- First capital-market project financing for operation and development of an entire airport in an emerging market.

Description of financing

The total project cost of about US\$316 million was financed as follows:

- US\$213 million as secured bonds with a 14-year maturity and a coupon of 6.96 per cent, representing a spread of about 200 basis points (bps) over US treasuries;
- US\$36 million in owners' equity;
- US\$42.5 million as cash flow from commercial operations; and
- US\$24.9 million in interest earned on bond proceeds.

Project summary¹

SCL Terminal Aéreo Santiago is a bond-financed project to expand and operate the Arturo Merino Benítez International Airport in Santiago. The project company has a 15-year concession that may be extended. The construction contractor is a joint venture between the two largest construction companies in Spain, while the operation and maintenance (O&M) contractor is an affiliate of the Vancouver International Airport Authority, a company with broad international airport concession experience. All three of these contractors are shareholders in the project company.

The most important project risks relate to passenger growth and to a partial mismatch between revenues, paid in Chilean pesos, and debt-service obligations, paid in US dollars.

The project bonds received 'BBB' underlying ratings from three rating agencies, but credit insurance, resulting in 'AAA' ratings, was required to sell the bonds in late 1998 in the difficult environment for emerging-market credit that resulted from the Asian currency crisis. Since November 2001 Moody's has reduced SCL Terminal Aéreo Santiago's underlying credit rating three times because the concessionaire's financial condition has been strained by the downturn in civil aviation that followed the terrorist incidents of 11 September 2001, the recession in Chile, the spillover from the financial crisis in neighbouring Argentina, and disputes between the concessionaire and two Chilean regulators, the Ministry of Public Works (MOP) and the Dirección General de Aeronautica Civil (DGAC). Passenger traffic at the airport and the concessionaire's operating revenues have been significantly lower than in the projections made at the time of the project financing. Barring significant changes in traffic trends or compensation measures from the government, Moody's expects that the concessionaire will eventually default on its debt.

Background

Airport financing

Chile is one of several countries in Latin America – alongside Brazil, Colombia, Costa Rica, Ecuador, Mexico and Panama – that recently have turned to the private sector to develop or expand airports while conserving scarce government capital. In 1996, for example, a second runway for the Eldorado Airport in Bogotá, Colombia, was financed with a private-sector bond issue. In 1998 the Office of Privatisation in the Ministry of Communication and Transport in Mexico announced a programme under which 35 airports would be privatised in a first phase, and another 23 in a second phase. While not actually privatising airports, Argentina, El Salvador, Paraguay, Peru, Uruguay and Venezuela also have enhanced the involvement of the private sector through significant contracts to expand and modernise airport facilities.²

In an article in the *Journal of Project Finance*³ Curtis A. Spillers, then Group Vice President of Duff & Phelps (now Fitch), noted that private-sector airport corporations, such as BAA plc, Aéroports of Paris and Vancouver Airport Services, have become global operators. As they gain additional international experience, they are likely to become more efficient, and to offer more uniform products and services, including duty-free shops, cargo and baggage handling, and ground services to airlines and passengers. Spillers also noted that airport infrastructure financing has several distinguishing features making it harder to rate than the more traditional project finance transactions.

- Airport projects are generally public-purpose projects, creating greater uncertainty about the acceptability of user-fee increases.
- The financing structure is dictated by a government-granted concession that is often much shorter than the life of the assets.
- There is no single rateable off-taker that contractually guarantees to use the project.
- Revenues are primarily denominated in the currency of the country in which the project is being carried out, which creates a currency mismatch if debt is denominated in a different currency.

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Arturo Merino Benítez International Airport

Arturo Merino Benítez International Airport, built in the 1960s, provides nonstop flights between Santiago, eight other cities in Chile and 19 destinations in other countries. It was used by 5.2 million passengers in 1997 and began to experience capacity constraints. The renovation and expansion envisaged under the terms of the project were expected to increase the airport's annual passenger capacity to 12 million.

Sponsors

The shareholders of SCL Terminal Aéreo Santiago SA and their respective ownership are as follows:

- Agencias Universales SA (Agunsa) 47.02 per cent;
- Dragados y Construcciones SA (Dragados) 11.82 per cent;
- Fomento de Construcciones y Contratas SA (FCC) 11.82 per cent;
- Dragados FCC Internacional de Construcción SA (DFC) 5.91 per cent;
- Sabco Administradora de Fondos de Inversión SA (Sabco) 13.43 per cent; and
- YVR Airport Services Ltd (YVR) 10 per cent.

Agunsa is a Chilean warehousing and harbour transport company offering passenger and cargo transport services throughout Latin America.

Dragados and FCC are Spain's two largest construction companies, both with substantial international experience. DFC is a joint venture of Dragados and FCC formed for large construction projects outside Spain. In addition to being a sponsor, DFC is the principal construction contractor for the project.

Sabco is an investment fund for Chilean companies, providing capital to new projects and companies that are likely to become publicly traded in the future. Its shares are sold primarily to institutional investors.

YVR, an affiliate of the Vancouver International Airport Authority, is the project manager and operator of the airport. YVR's experience includes a similar expansion project at Vancouver Airport, and the operation of five airports in Canada and one in Bermuda.

Sources and uses of funds

Sources and uses of funds for the project were estimated in 1999, as shown in Exhibit 6.1.

Exhibit 6.1

Sources and uses of funds

<i>Sources of funds</i>	<i>(US\$ million)</i>
Bond proceeds	213.0
Equity	36.0
Cash flow from commercial operations	42.5
Interest earned	24.9
Total sources	316.3
<i>Uses of funds</i>	<i>(US\$ million)</i>
Construction costs	178.4
Non-construction costs	12.5
Withholding and stamp taxes	4.5
Other financing and legal fees, including cash collateralisation of guarantees	40.7
Dividends	10.8
Interest during construction	38.9
Debt-service reserve account	15.0
Other cash	6.8
Initial working capital	2.5
Construction contingency	6.1
Total uses	316.3

Source: Global Project Finance, October 1999, published by Duff & Phelps Credit Rating Company.

Principal contracts

Concession

In February 1998 the MOP awarded an initial 15-year concession to the project company to construct and operate facilities at the airport. The concession can be extended beyond its initial term, from 2013 onwards, if the government and the project company can agree on additional capital improvements permitted during the final two years of the concession. The concession may be terminated for a number of reasons, including a construction delay of more than nine months. If the concession were terminated no payments would be made by SCL or the government. However, the concession would probably be sold at public auction. In such a case the project bondholders would be entitled to the proceeds of the auction and scheduled debt payments would continue under the guarantee provided by the MBIA Insurance Company (discussed below).

Construction

DFC is the principal party to a fixed-price engineering, procurement and construction (EPC) contract representing 73 per cent of the total construction budget. This includes a US\$135 million turnkey contract and additional budgeted construction expenditures of US\$43 million. The first phase, completed several months behind schedule in early 2000, included expansion of the west wing of the existing international terminal, construction of a new air-traffic control tower, expansion of existing airport aprons and taxiways, and construction and improvement of internal roads and car parks. The second phase, completed in 2001, involved expansion of the east wing of the existing international terminal, demolition of the existing control tower, construction of a hotel, and other infrastructure improvements.

In the opinion of the independent engineer, Louis Berger International, the construction schedule was aggressive but achievable. The contractor would be fined for delays unless the delays were caused by the government, in which case deadlines would be extended. The construction delays in the first phase of the project were not considered to be serious enough to result in fines and were partly the result of delays in government approvals. The contractor was required to post substantial bank guarantees, including 15 per cent of the total construction contract price, 15 per cent of each phase of the contract, 15 per cent of monthly payments and a 10 per cent advance payment guarantee.

Operation and maintenance

YVR entered into an O&M contract with the project company for the term of the concession. Compensation is at a rate of 2.5 times the payroll costs. The agreement also includes defined fees for design and construction services, and for operational readiness during both phase one and phase two. Fees are subject to an inflation adjustment and an incentive bonus is paid to YVR when the project company's earnings are above budget. The O&M contract may be suspended in the event of *force majeure* and may be terminated if *force majeure* exceeds 90 days or the contractor fails to perform.

Principal risks

In its analysis Duff & Phelps pointed out that the primary uncertainties for this project related to the forecasts of passenger growth, and to the currency mismatch between revenues and

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debt service. Other risks included construction risk, operation risk and event risk related to future expansion of the airport.

Passenger growth risk (off-take risk)

The project depends on a steady increase in airport revenues to pay operations and maintenance fees, to finance expansion, and to service debt. Total revenues are in three categories:

- passenger-based revenues (64 per cent), for example from airport concessions, public parking, passenger tariffs and duty-free sales;
- aircraft-based revenues (22 per cent), including revenues from ground and cargo handling facilities, warehouse rentals, aircraft loading bridges, remote parking stands, and ground power generation; and
- structural revenues (14 per cent), such as revenues from office rentals, outdoor advertising and new facilities such as a proposed hotel.

A base-case model for the project assumed that passenger volume would grow at a rate of 10 per cent per annum. A minimum growth rate of about 4 per cent per annum would be required to service the project debt. Duff & Phelps estimated that as Chile's per-capita income increased its middle class would become increasingly prosperous, and that as airfares were reduced air travel within the country would increase. Chile is famously long and narrow, making travel by road and rail among the major cities relatively time-consuming and tedious. Airfares are becoming increasingly affordable as a result of competition among domestic airlines and the efforts by these airlines to reduce costs. Barry P. Gold, Managing Director, Salomon Smith Barney, pointed out that once people grow accustomed to travelling by air they tend to go on doing so even in a recession. According to Duff & Phelps, there were about 3 million domestic enplanements in 1997, 40 per cent of which were through the AMB-Santiago International Airport. Dividing total domestic enplanements by Chile's population of 14.5 million resulted in a factor of 20 per cent, representing a very low penetration rate compared to 140 per cent in the United States. A similar comparison could be made for international flights. In 1997 international enplanements in Chile represented 10 per cent of the population while in the United States they represented 50 per cent of the population.

Currency risk

There is a partial currency mismatch because airport revenues are denominated in a combination of US dollars, Chilean pesos and Chilean UFs (*unidades de fomento*, inflation-indexed pricing units that have replaced the local currency for most long-term contracts and large-item purchases in Chile), but debt service is denominated in US dollars. However, a substantial part of the peso-denominated revenues is indexed to US dollars. Barry Gold estimated that US dollar-denominated and dollar-based revenues would be sufficient to service the project debt.

Construction risk

Although this was DFC's first project in Chile, Duff & Phelps's analysis pointed out that construction risk was mitigated by the firm's experience, which included construction and design

of more than 40 airport projects around the world. DFC's previous projects in Latin America had included a toll road and two airports in Colombia.

Operation risk

Duff & Phelps pointed out that operation risks for airports are significant because of the interdependence of electrical, security, baggage handling, information display and other systems, but that this type of risk is greater for new airports than for expansion projects.

There is a risk that operating costs will rise faster than revenues, adversely affecting debt-service ability, but Duff & Phelps considered this risk to be manageable because the primary costs of the project, consisting of salaries, benefits and other service payments, were relatively predictable.

O&M obligations are guaranteed by YVR AS, the parent of the O&M contractor. Although there is no separate reserve for major maintenance, as in many similar projects, the project company is required to have reserves in a maintenance account equal to four months' worth of O&M expenses before making any distributions to shareholders.

Event risk

Approximately US\$67 million, or 21 per cent of the project cost, was to be funded by interest on the bond proceeds and concession revenues beginning in January 1999. If these proceeds were less than forecast the project company might have needed to incur additional debt. Another possibility, considered unlikely by Duff & Phelps, was that the airport would require additional expansion before the end of the 15-year concession. If the project company agreed to take on another expansion project, the additional debt incurred would have equal rank with the existing project debt, subjecting bondholders to the risk that airport revenue would be insufficient to service both existing and new debt. That risk would be mitigated by the prospect of additional revenues from the increased passenger traffic that justified the expansion.

Country risk

Duff & Phelps assigned an 'A' foreign currency rating to Chile in 1995, which it reaffirmed in 1999. This was the agency's highest rating for any country in Latin America. It reflected a sound fiscal policy and a declining public debt burden. The agency pointed out that the project itself would promote economic growth in Chile.

Reserves and guarantees

The project is financially strengthened by a construction contingency reserve, a debt-service reserve and a minimum revenue guarantee from the MOP.

The construction contingency reserve account was funded initially with US\$6.1 million from bond proceeds. The project company was required to deposit additional funds in the account up to a balance of US\$17.5 million in 2001, and still more if project cash flow was below a specified level. Duff & Phelps estimated that the construction contingency reserve could be as high as 24 per cent of the total construction budget, more than with most similar projects.

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The project company is also required to maintain a debt-service account with a balance starting at US\$6.5 million at the beginning of the construction period and rising according to a defined schedule to a maximum of US\$25 million in 2005.

The MOP provided a minimum revenue guarantee rising from US\$3 million in 2001 to US\$6.8 million in 2013. However, that amount in itself would not be sufficient to service the project debt.

Structure of financing

Financing consists of US\$213 million of senior secured bonds with a coupon of 6.96 per cent due 2012. Interest payments began in January 1999 and principal payments began in January 2002. Bond financing was chosen over commercial bank financing because it offered a longer maturity. Barry Gold noted that the project might have opportunities for additional financing in the growing Chilean capital market.

Credit ratings

Initial ratings

The project bonds were initially assigned a 'BBB+' credit rating by Duff & Phelps, as well as by Standard & Poor's, and a 'Baa2' rating by Moody's. The ratings were raised to 'AAA' and 'Aaa' on the basis of an insurance guarantee from the MBIA Insurance Company, a 'monoline' insurance company (providing only one type of insurance, in this case credit insurance).

The strengths cited by Standard & Poor's in its initial credit analysis were:

- the airport's position as the dominant hub for air travel in Chile;
- passenger growth rates exceeding 10 per cent per annum since 1986;
- the use of the airport as headquarters by Chile's two major airlines;
- nonstop service to 8 domestic and 19 international destinations;
- a diverse airline distribution, including 3 domestic and 26 foreign-flag carriers;
- adequate financial protection, with just 4 per cent revenue growth required for debt service;
- a debt-service reserve account funded with 12 months of principal and interest payments; and
- a debt repayment schedule that approximates the period of the concession.

The weaknesses cited by Standard & Poor's were:

- the renovations that had to be made on a timely basis;
- the significant revenue increases required to meet base-case revenue projections;
- dependence on continued economic growth in Chile to drive increases in airline passenger traffic and airport revenue growth;
- the lack of a broader pledge of revenues such as landing fees; and
- the concentrated airline market share, in which two carriers, LanChile and Ladeco, account for 60 per cent of enplaned airport traffic.

Credit enhancement

When Salomon Smith Barney and ABN AMRO started to work with the sponsors to plan the project financing in July 1998, financing for projects in Latin America was beginning to experience the worst side effects from the Asian financial crisis that began in 1997. Barry Gold noted that credit enhancement could be useful in two ways. First, the cost of bonds rated 'AAA' plus the cost of credit insurance was sometimes less than the cost of uninsured bonds. Second, at other times, as with this project, the bonds could not be sold to investors at all unless they were insured. At this time, because of overall concern about emerging-market credits, institutional investors had no room in their portfolios for non-sovereign paper from Latin America. Credit insurance was necessary to get the deal done.

Subsequent developments

On 30 November 2001 Moody's revised its underlying rating on the US\$213 million in bonds from 'Baa2' to 'Ba1' to reflect uncertainties over the financial and operational impacts of the economic recession, the downturn in the civil aviation industry, and the effects of the 11 September 2001 incidents two months earlier. The insured rating, of course, remained 'AAA'. While passenger volume for the whole of 2001 was projected to be 5.9 million, slightly higher than 5.8 million in 2000, this was 20 per cent lower than in the base-case scenario when the debt was sold. The year 2001 was the first year in which debt service was not paid from capitalised interest and airport officials were projecting a debt-service coverage ratio (DSCR) for the year at 1.05. The key factors causing the lower passenger volume were the reduction in airline operations, the recession in Chile and the unfavourable exchange rate.

International traffic, which comprised 30 per cent of the passenger base, was presumably down mostly for reasons related to 11 September 2001. More puzzling was the 14 per cent drop in domestic airline traffic. Airport officials were projecting 5.8 million passengers in 2002, with international traffic down by 7.5 per cent but domestic traffic increasing by 5 per cent. If these numbers prevailed the DSCR for 2002 would be about 1.17.

On 30 April 2002 Moody's downgraded its underlying rating from 'Ba1' to 'Ba3' and kept it on review for further downgrade. The rating and the negative outlook for the airport reflected the increasingly strained financial condition caused by the recession in Chile, the negative effects of 11 September 2001 on air travel, the financial crisis in neighbouring Argentina, and disputes between the concessionaire and its regulators over concession rights, competition for airport services and compensation for delays in airport construction. Moody's noted that the airport continued to be Chile's principal international gateway and domestic air traffic hub, and one of the key projects in the government's privatisation efforts. Negative credit factors cited by the agency included:

- the relative lack of diversity in air carriers using the airport;
- the lack of coordination among various government agencies, particularly the MOP, the DGAC and the Ministry of Finance;
- the weakness of legal provisions relating to cash flow from the airport's concessions, resulting from the fact that the concession law had been written to cover a variety of industries and did not cover some unique features of airports in detail; and
- lack of clarity in the bidding documents that became part of the concession.

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Moody's noted that operating revenues were 65 per cent below the levels projected back in 1997. The debt-service reserve fund was reported to be US\$21 million, of which roughly US\$3 million was expected to be used during the remainder of 2002 for debt service.

In October 2002 Moody's further downgraded its public underlying rating from 'Ba3' to 'B3' with a negative outlook, reflecting the project's continued financial deterioration. The concessionaire was projecting a net deficit of US\$8.3 million after operating expenses and payment of debt service. As a result it expected to use about US\$5.5 million of the US\$21.5 million debt-service reserve fund to meet the US\$12.3 million debt-service payment due in January 2003. Moody's said that, barring any significant changes in traffic trends or compensation measures from the MOP, it expected that the company would eventually default on its debt.

In March 2003, SCL Terminal Aéreo Santiago SA announced a US\$5.41 million loss for 2002 compared to a US\$1.5 million loss for 2001. Moody's once again downgraded its underlying rating for SCL Terminal Aéreo, from 'B3' to 'Caa1', citing the project's worsening financial condition. At the time of writing, company officials indicated that they planned to use US\$6.8 million of the US\$15.3 million debt-service reserve for a US\$15.9 million payment due in July 2003.

Lessons learned

Revenues have declined throughout the airline and airport industries since the terrorist attacks of 11 September 2001. These could not have been predicted at the time the concession was granted, but it seems clear that future airport financings will be affected nonetheless. In addition, the shortcomings in Chile's privatisation and concession laws have proved to be more problematic than was expected: but such problems are common with project finance even in relatively developed countries such as Chile.

¹ This case study is based on a credit analysis by Duff & Phelps Credit Rating Company; telephone interviews with Curtis A. Spillers, then Group Vice President of Duff & Phelps (now Fitch), and Barry P. Gold, Managing Director, Salomon Smith Barney; and articles in the financial press, notably one by Spillers cited in note 3 below.

² 'Airport Opportunities in Latin America', *World Airport Week*, 1 October 1996.

³ Spillers, Curtis A., 'Airport Privatisations – Smooth Flying or Crash Landing?', *Journal of Project Finance*, Winter 2000.

London City Airport, United Kingdom

Type of project

Expansion of airport.

Country

United Kingdom.

Distinctive features

- Full-business securitisation.
- First airport securitisation with no external guarantees.
- Expansion of first entirely new airport in the United Kingdom since the end of World War II, also first short-takeoff-and-landing (STOL) airport in Europe.
- Second fastest-growing airport in Europe.

Description of financing

Financing consisted of £100 million as a full-business securitised bond issue with mortgage-style repayment over 20 years, after three years' grace, priced at 275 basis points (bps) over 8 per cent gilt, maturing in 2015. Average life is 13.8 years; expected maturity is 2019; legal maturity is 2021.

Project summary¹

The project was for a third phase of expansion at London City Airport, which is located six miles from the City financial district and three miles from Canary Wharf in the heart of the London Docklands. It is built on a wharf, about 153 metres wide, between the King George and Royal Albert Docks. After a slow start the airport has become profitable, and today it offers a convenient alternative to the larger and more distant Gatwick and Heathrow airports for relatively short flights to other UK cities, Ireland and the rest of western Europe. The airport appeals to business travellers because check-in time is just 10 minutes, small aircraft take relatively little time to load and unload passengers and baggage, and the taxi ride is just 10 minutes from Canary Wharf, 25 minutes from the City and 35 minutes from Westminster.

The bond offering was structured as a full-business securitisation. The bonds are serviced by cash flow from the business, but they are secured both by that cash flow and by all the assets of four related corporations captured in the 'securitisation ring' of pledged assets.

Background

History 1987–2000

London City Airport was developed as Europe's first STOL airport by John Mowlem and Company, one of the leading construction groups in the United Kingdom, at a cost of £30 million. It was opened in October 1987. It was the first entirely new airport development in the United Kingdom since the end of World War II and the first major development in the Docklands in more than 15 years.

The project had been justified by an expected increase in the number of business travellers from Europe as London became an increasingly important international financial centre. In December 1987, however, public confidence was shaken as the airport's flights to Paris were suspended for a month because of concerns about its air-traffic control system. At the end of 1988 the airport was running at only about 50 per cent of capacity, with 19 flights daily to Amsterdam, Brussels and Paris.

Despite the airport's relative proximity to London many passengers were reluctant to use the airport, for two main reasons. First, at that time the airport's runway could accommodate only the De Havilland Dash 7, a propeller-driven 50-seater capable of short takeoffs and landings, and designed mainly for flights of 400 miles or less. Many passengers found this relatively small plane uncomfortable. Second, getting to the airport was still difficult. Roads in the area were inadequate and heavily congested because construction of Canary Wharf was then under way.

An application was made to the London Docklands Corporation to extend the runway from 1,030 metres to 1,199 metres, providing enough room for larger, more versatile aircraft such as the British Aerospace (BAe) 146 'whisper jet'. The BAe 146 could seat 90 and was capable of flying twice as far as the Dash 7. With the larger plane airlines would be able to offer flights from the airport to destinations such as Copenhagen, Geneva, Rome or Munich. The runway extension was completed in 1992, when the airport still had only three airlines flying three routes.

Unable to make a profit on the airport, John Mowlem began to look for a buyer in the early 1990s. Even as losses narrowed the company was unsure of when it would turn a profit, and faced substantial marketing and capital expenditures to make the airport more competitive. The airport employed 120 people at the time.

In 1995 Dermot Desmond, an Irish businessman and former nonexecutive chairman of Aer Rianta, the Irish airports authority, purchased the London City Airport for £23.5 million, comprising £14.5 million, less than the project's book value, to John Mowlem, and £9 million to the Port of London Authority for the surrounding land and freehold.

Desmond's timing was fortunate. The airport was just beginning to turn a profit. Shortly afterwards the depressed Docklands and Canary Wharf property markets began to turn around, bringing increased business activity and employment to the area. Passenger volume reached 1,200,000 in 1997, a 70 per cent increase over the previous year, and the airport's plan called for 3,000,000 passengers by 2005. The airport applied for permission to double its flights from 36,500 to 73,000 per year to meet growing demand from businesspeople for

flights to European cities. At that time the airport employed 736 people and supported another 1,100 jobs in its vicinity. In support of the application the London Docklands Development Corporation estimated that the expansion would add 1,000 direct and 2,000 indirect jobs in a still deprived section of east London.

In 1998 the government approved an extension to the Docklands Light Railway to provide a direct link to the London City Airport. The £57 million project was expected to be completed in 2004. This was one of numerous measures taken at the time with the aim of reducing traffic congestion and encouraging use of public transport. The link had not been built during the initial construction of the railway, in the early 1990s, because of lack of faith in the airport.

By 1999 the airport was serving 23 cities with flights by 13 airlines. Jet aircraft were used for 40 per cent of the flights. The working population at nearby Canary Wharf had reached 30,000 and was expected to grow to 90,000 by 2006.

In 2000 the airport announced a third phase of expansion to accommodate more advanced aircraft and additional passengers from the planned link to the Docklands Light Railway. Annual passenger traffic had reached a level of 1,400,000 at the time and was projected to grow to 3,500,000 by 2010.

Sponsor's objectives

Before the financing the project company had virtually no debt. Dermot Desmond, the sponsor, wanted to raise funds to take advantage of the project's borrowing capacity and to have cash on hand for other investment opportunities in the airport industry.

Structure of financing

The bond offering was structured as a full-business securitisation. The bonds are serviced by cash flow from the business, but they are secured by both that cash flow and all the assets of four related corporations, described below. In the event of a default the bondholders' first course of action would be to take over the business, and, probably, to try to sell it. Liquidation of the assets would be only a last resort. About 80 per cent of the cash flow comes from aviation revenues such as landing fees, refuelling charges and passenger load supplements. The remaining 20 per cent comes from commercial operations, such as duty-free shops and a business centre. Some purists would say that this financing stretches the pure definition of a securitisation because of the single collateral and revenue stream, and the single financing tranche.²

The four corporations captured in the 'securitisation ring' of pledged assets are:

- City Aviation Properties, Ltd, domiciled in Jersey (Channel Islands), which owns the freehold site of the airport;
- Market Spur, which leases the freehold site from City Aviation Properties under a 100-year lease;
- City Aviation Finance, domiciled in the Cayman Islands, which was created for the specific purpose of issuing the bonds; and
- London City Airport, which leases the airport from Market Spur under a 20-year operating lease, borrows from City Aviation Finance and is obliged to service the loan, thus backing the bonds issued by City Aviation Finance.

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Financing alternatives considered

Among the other financing alternatives considered were an equity offering, a lease, a corporate bond and a bank loan. The airport was too small for an equity offering and the owner did not want to give up control. The corporate structure was complicated enough with leases at two levels, so lease financing for the airport would have further complicated it. Neither a general corporate bond nor a bank loan, secured by the airport's assets, would have allowed financing for more than 70 per cent of the value of those assets. Securitisation provided the owner with the opportunity to borrow 60–70 per cent of the net worth of the business. Any form of external guarantee was ruled out because it could impinge on the owner's control.

Financial covenants

Dividends cannot be paid outside the 'securitisation ring' of four corporations if the debt service coverage ratio (DSCR) is less than 1.25 or free cash flow is less than 110 per cent of debt service requirements. If the DSCR exceeds 1.5, dividends can be paid, but free cash flow must still be 110 per cent of debt service requirements. If the DSCR later drops to 1.0, dividends must be stopped until the DSCR once again reaches 1.5.

Security and backup facilities

The owner did not want to seek any external guarantees, but was willing to negotiate some backup facilities to satisfy the rating agencies. London City Airport is required to set aside £5 million in an interest-earning reserve account as a safeguard. Until the borrower's DSCR exceeds 3.0, funds in this account can be used only to pay interest on the bonds in the event of financial difficulty.

The bond indebtedness is further backed by two credit facilities provided by Allied Irish Bank:

- a £7 million credit facility available to London City Airport, which can be used if necessary to pay interest on the bonds, but can also be used for corporate working capital and capital expenditures; and
- a £7 million credit facility available to City Aviation Finance, which can be used to service the bond debt if necessary.

How the financing was arranged

Morgan Stanley was the lead arranger. The deal took about one year from conception to closing.³ Morgan Stanley and co-lead Royal Bank of Scotland were able to sell the bonds within a couple of hours of the launch, and they were 1.2 times oversubscribed.⁴ They were purchased by 17 of the 20 UK institutional investors approached by the underwriters.⁵

Investors' main concern was that they did not know very much about the aviation business. They had to understand that, even though airline earnings are volatile, airports are a separate business and their revenues depend on passenger volume, which grows with GDP.⁶

Credit ratings and risk factors

The bonds were rated 'BBB' by Standard & Poor's, 'Baa2' by Moody's, and 'BBB+' by Fitch. Among the risk factors that the agencies considered and discussed with the borrower were the following.

Single-asset risk

Securitisation was still relatively new in the United Kingdom and most previous deals had been secured by numerous assets, such as chains of motorway cafés. London City Airport was just a single asset.

Here the borrower made two arguments. First, the single asset, the airport, was subject to relatively little operational risk. There were few types of damage that could not be repaired relatively quickly to get the airport running again. Second, the rating agencies should be less concerned about the airport as the single asset and more concerned about the spread of risk, because 12 international airlines use the airport and, with increasingly congested airspace and groundspace, their 25 government-approved routes and landing slots are a scarce resource with significant value.

Track record

When it opened in 1987 London City Airport had been the first entirely new airport in the United Kingdom in more than 40 years. It had only been profitable for the previous five years (1995–2000). The borrower had to stress its profitable operation since 1995 and the airport's passenger growth.

Passenger growth

The airport's compounded rate of passenger traffic growth had been 30–40 percent since the airport's runway was extended in 1992 and estimated future annual passenger growth was 14 per cent, twice the rate of growth in GDP.

Location

Many of the factors that had made the airport seem inconvenient to business travellers in the late 1980s had changed. Roads and public transport access had been improved, and were expected to be improved still further.

Competition with larger airports

Now that access was more convenient, London City Airport had established a firm niche position for business travellers going to and from other parts of the United Kingdom, and elsewhere in western Europe.

Lessons learned

A full business securitisation, in which the project bonds were serviced by cash flow from the business but also secured by both that cash flow and all the assets of four related corporations,

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allowed the owner to borrow 60–70 per cent of the net worth of the business – more than with a secured general corporate bond or bank loan, which could not have exceeded 70 per cent of the value of the airport’s assets. The airport was too small for an equity offering and a lease financing would have further complicated a corporate structure in which there were already leases at two levels.

¹ This case study is based on an interview with David Thomson, Finance Director, London City Airport, and articles in the financial press.

² ‘Securing the Market’s Best Deals’, *Asset Finance International*, January 2000, p. 13.

³ Metcalfe, Steve, ‘This Year’s Model’, *Project Finance*, March 2000, p. 33.

⁴ ‘London City Breaks Ground in First European Asset Securitization’, *Asset Finance International*, November 1999, p. 13.

⁵ ‘Securitization First for London City Airport’, *Project Finance*, November 1999, p. 10.

⁶ ‘London City Airport Opens New Asset Class Through Morgan Stanley’, *Euroweek*, 29 October 1999, p. 17.

Ancel, Uruguay

Type of project

Cellular telephone system.

Country

Uruguay.

Distinctive features

- Off-balance-sheet lease financing for state-owned telephone company.
- Sovereign credit risk.
- No political risk insurance.
- Revenue-sharing agreement to enhance credit.

Description of financing

A five-year term loan of US\$16 million was put in place for the purchase and import of cellular telephone equipment, and the financing of variable operating expenses related to the installation of the equipment. The financing covers equipment cost, value-added tax, import duties and some variable expenses related to the installation of new bases. The loan was priced at 200 basis points (bps) over the London interbank offered rate (Libor) plus the Uruguayan financial-asset tax. There was an underwriting fee of 125 bps and a commitment fee of 50 bps.

Latin American telecommunications projects

In June 2000 Robert Ian Oei, then head of Latin American telecommunications financing for ABN AMRO, noted that the number of telephone subscribers in Latin America had grown from an estimated 3.6 million in 1995 to 38 million by the end of 1999 and was projected to grow to more than 100 million by the end of 2004. 'Teledensity' (the number of telephone lines per 100 people) in the region had grown from less than 10 in 1995 to almost 14 at the end of 1999 and was projected to grow by 8–10 per cent per year over the following five years, with Argentina, Brazil and Chile leading the way. The growth in fixed lines was

impressive, but the growth in cellular telephone subscriptions even more so. Oei saw two factors spurring the growth in the number of cellular telephone subscribers:

- the chronically poor service and long waiting lists common to the state-run telecommunications companies before they were privatised; and
- the introduction of the ‘calling party pays’ billing system in most major markets, including Brazil and Mexico, under which the cellular telephone subscriber is not charged for incoming calls and therefore, it is supposed, becomes willing to talk on the telephone for longer periods.¹

Another factor, cited by Donna Cordner, Managing Director, Citigroup, was increasing access to affordable wireless technology. Advances in wireless technology allowed for cost-effective networks where fixed-line installation was cost-prohibitive.

In March 2000 Norman Lerner, CEO of Transcomm, a telecommunications consulting firm, said that internet expansion was most likely to advance the US\$16 billion telecommunications industry in Latin America and drive the 20 per cent growth forecast for the following five years. According to one estimate, the number of internet users in the whole of Latin America would grow to about 19 million in 2003, compared to 4.8 million in 1998.²

The telecommunications business today is characterised by high capital costs and high risk. Although some landline operators may have relatively low risk because of their entrenched positions, all of them must bear the capital expenditures for installing, replacing and maintaining their line systems. To offer service in a new area a cellular telephone operator must build an extensive network of relay stations and ancillary equipment and work with vendors to sell handsets to subscribers. Adding to the complication and risk of this business, cellular telephone systems use different technologies, and a given technology can become obsolete as new technologies are introduced. For any given operator adding or switching to a new technology requires a huge capital investment. In the early 1990s, as cellular telephone use began to accelerate, most systems in Latin America and elsewhere used analogue technologies. With an analogue wireless service sound is carried through the air by radio waves; with digital technologies it is transferred through a series of zeros and ones. Digital technology has greater capacity for simultaneous transmission of multiple messages.

Beginning in 1995, new entrants began to build all-digital networks and incumbent operators began to digitalise their existing analogue networks. However, before investing in a new digital network an operator still had to decide which technology to use. Operators in Brazil saw that the ‘code division multiple access’ (CDMA) and ‘time division multiple access’ (TDMA) technologies were the most widely used in the United States, but that the Global System for Mobile Telecommunications (GSM), a TDMA derivative, was more widely used in Europe. In the mid-1990s CDMA was an unproven technology, not yet ready for commercial launch, and therefore TDMA was a safer bet. CDMA later came to be considered a superior technology.

Just as these choices were being made, additional complications were introduced. Personal communications systems (PCS), also known as ‘second generation’ systems, can use CDMA, TDMA or GSM technologies and also allow for some text messaging. Operators and regulators can also no longer ignore the ‘third generation’ (3G) technologies, which will allow more advanced forms of wireless data and image transmission, even though they are still a few years in the future for Latin America. Offering 3G services will require adapting a technology such as CDMA to increased bandwidth and transmission speed.

Further complicating matters, a government such as Brazil's has to decide which frequency should be allocated to each technology. For example, in 2001 Anatel, the Brazilian regulator, had to choose between 1.8 GHz, in line with Europe, or 1.9 GHz, in line with the United States, in the allocation of a band for PCS services. It chose 1.8 GHz for PCS, and allocated Bands C, D and E to three geographical regions, reserving the 1.9 GHz band for future 3G services.

Following Chile's lead, established in 1988, most countries in Latin America privatised their telephone systems during the 1990s. In Argentina, Chile, Mexico, Peru and Venezuela the first step in the privatisation process led to public monopolies becoming private monopolies, some with 'sunset' provisions to provide for more competition in the future after the newly privatised companies had become established. To help their initial public offerings the government owners left these companies with strong balance sheets, but they faced huge capital expenditure requirements related to modernisation (upgrading older technologies) and universalisation (expansion of telephone service to larger proportions of the population, thereby increasing 'teledensity'). However, because of large customer bases, stable revenues, and historical P&Ls, these companies had access to broad funding sources, both locally and internationally, including bond financing, both investment grade and high yield; Rule 144A private placements; syndicated bank loans; and both private and public equity offerings. Some were able to arrange transactions with credit ratings above their countries' sovereign ratings, for example, financings backed by dollar receivables from US long-distance carriers. Many of these companies today are listed on the New York Stock Exchange through American depositary receipts.

At about the same time that the large incumbent telephone companies were being privatised across the region, cellular telephone services were being licensed and introduced. The use of cellular telephones grew rapidly. Sometimes they offered a solution to customers' problems with fixed-line telephone companies, such as poor connections, long waiting times (as long as 10 years in some countries) or exorbitant fees for new lines. To allow for competition governments usually granted cellular telephone licences to both incumbent telephone companies and new competitors. Many of the new competitors were partially owned by large multinational telephone companies just beginning to invest in Latin America.

The first cellular phone companies in Latin America generally outperformed their business plans because of the popularity of their services. As more and more licences were awarded and more companies were privatised, the fees paid for licences increased substantially, culminating in Bell South's US\$2.5 billion bid for a cellular telephone licence in São Paulo, Brazil. The unproven startup cellular telephone companies, often not expecting to break even for five years or more, had far higher risk profiles than the large incumbents and more limited access to funding. In contrast to the more traditional, on-balance-sheet 'corporate financing' of the incumbents, the new competitors generally followed more of a 'project financing' model. While not guaranteeing the project companies' debt, sponsors were usually required to provide 30–40 per cent of total financing in equity. Because of country risk, the involvement of export credit agencies (ECAs) was usually required to attract financing from commercial banks, which were concerned about refinancing risks and seldom willing to lend beyond three-year maturities. Vendor financing from equipment providers, such as Ericsson or Nortel, was seldom required for the large incumbents, but for the startup cellular telephone competitors it was an essential part of the package, particularly for longer maturities.

For political reasons telephone systems in a few countries, including Colombia and Uruguay, have been only partially privatised. The case study of Ancel illustrates an off-balance-sheet financing technique known as 'revenue sharing', which is used by publicly owned operators that have budget constraints but need to finance new equipment and service expansion. The Ancel case study is followed by a description of the Brazilian telephone system, how that system was privatised and how two newly privatised entities were financed.

Project summary³

Ancel is a cellular telephone system, operating in the vicinity of Montevideo in southern Uruguay, and owned by Antel, the state-owned telephone company. In 1996 Antel, which had a government mandate to expand its telephone service, found itself with insufficient direct borrowing capacity to support its growth targets. ABN AMRO Bank's Miami-based telecommunications group worked as financial adviser to Telefonaktiebolaget LM Ericsson (Ericsson), the Swedish telephone equipment manufacturer, structuring a five-year lease to support the sale of cellular telephone equipment and to provide off-balance-sheet financing to Antel.

The bank took the credit risk of a government-owned entity in a country with an investment-grade credit rating. Lease payments were in US dollars, mitigating foreign exchange risk. The principal challenge was to familiarise Uruguayan bankers, lawyers and government officials with cellular telephone technology, the nature of the project, and the need for an innovative project financing structure that involved a lease and a special-purpose lessor corporation.

The principal repayment source was revenues from Antel customers in accordance with a revenue-sharing agreement. Ericsson was paid for 20 per cent of Antel's overall capacity, irrespective of Antel's progress in marketing and placing into service the additional lines that Ericsson installed. Antel agreed to assume ownership of the leased assets and to pay their residual value when the lease matured.

The main goal of the project was to satisfy the growing need for cellular telephones in the southern region of Uruguay. The cellular telephone market in this country was still at an early stage of development. The penetration rate was 2 per cent in 1996 and was projected to be 6 per cent by the year 2000. The number of subscribers had grown from 9,500 in 1994 to 70,000 in late 1996.

Another goal of the project was to enhance Antel's leadership in the cellular market. This is the only business line in which Antel faces competition.

Finally, the project was required to upgrade the technology of the cellular telephone network, of which 90 per cent was analogue, not digital, in 1996. The equipment to be installed allowed Antel to offer a digital service to a larger number of customers, improving communication quality and decreasing congestion.

Background

The cellular telephone market in Uruguay

There are two cellular telephone systems operating in Uruguay: Movicom and Ancel. Given the size of the market ABN AMRO considered the licensing of any more operators unlikely.

Movicom, a private-sector joint venture operated by Abiatar SA, started operations in 1991. Its shareholders include BellSouth and Motorola. As of late 1996 Movicom had 25,000 customers.

Ancel, the cellular telephone division of Antel, started operations in 1994. Ancel had 40,000 customers in Montevideo and the southern corridor of Uruguay, including Colonia, San José, Canelones and Maldonado. In 1996 Ancel extended its coverage to the rest of the country.

ABN AMRO and Ericsson carried out a market survey, and found that many people on the waiting list for land lines would be willing to have cellular telephones instead. As a result of the government's pricing strategy, which was intended to promote the use of cellular telephones, the price for the consumer was about the same as for a land line. Antel's installation cost was lower for a cellular telephone. As a result ABN AMRO and Ericsson determined that the potential for cellular telephone sales was 45,000, rather than 16,000 as projected by Antel, largely because of strong demand from businesses.

Antel

Antel has a legal monopoly on telephone land lines, telex lines and telephone installation in Uruguay. Management reports to a board of five directors, appointed by the president of the republic subject to the approval of the senate.

In recent years Antel has stated commitments to increase the number of telephone users, and to expand and digitalise its network. Revenues increased by 21 per cent in 1994, 12 per cent in 1995 and 36 per cent in 1996. The lower rate of increase in 1995 was the result of a price reduction intended to increase traffic. Antel finances capital expenditures with debt when interest rates are favourable and with internally generated funds at other times. It pays dividends to the central government treasury at a level decided by its board in conjunction with the government's budget department.

Antel's goal for the year 2000 was to eliminate unsatisfied demand. As of 1996 installation of 78,000 new lines (land and cellular), equal to 10 per cent of existing lines, would be required to reach that goal. Although the company was a strong cash generator, its expansion and digitalisation goals required capital expenditures in excess of free cash flow and borrowing capacity. As a result an off-balance-sheet method of financing the expansion of the cellular telephone system was helpful.

Ericsson

Telefonaktiebolaget LM Ericsson has been active in Uruguay since 1952, when it started selling small telephone appliances known as PBX systems to customers there. The company set up a project office in 1983 to develop a relationship with Antel and in 1985 it was awarded a public switching contract for the installation of 208,000 lines. As of 1996 Ericsson's operations in Uruguay were threefold: implementation and maintenance of fixed lines (public switches); implementation and maintenance of cellular systems; and marketing. Ericsson was the largest supplier to Antel, with 59 per cent of the fixed-line segment (441,000 lines). Siemens was second, with a 30 per cent market share (217,000 lines), and Alcatel and NEC shared the remainder of the market. Ericsson Uruguay had 85 employees in 1996. Having been incorporated only since 1994, it did not have strong financials. In 1996 Ericsson was awarded a contract valued at US\$29.3 million to add 16,000 cellular lines to Ancel's existing Ericsson cellular telephone network of 40,000 lines. Ericsson retained ABN AMRO for financial advice in its sales contract negotiations with Antel.

The privatisation referendum and its aftermath

The privatisation of Antel was rejected by a majority of voters taking part in a national referendum in 1992. The result was widely viewed as an indirect vote of no confidence in President Luis Lacalle's policies of fiscal austerity and deregulation. Uruguayans were accustomed to a 'cradle to grave' welfare system. The public sector employed 25 per cent of the workforce and more than 700,000 retirees were drawing state pensions.

Recently the economy had suffered from inflation and low growth. Much of the government's budget had been allocated to money-losing state enterprises. Since taking office in 1990, Lacalle had held down wages, nearly balanced the budget, and proposed selling state companies such as Antel and Pluna, the state-owned airline. Banco Comercial, a troubled bank, was sold to a foreign consortium consisting of Credit Suisse First Boston, Chemical Bank (now JP Morgan Chase), Dresdner Bank and Banco General de Negocios of Argentina. Bids for a 51 per cent share in Antel had been submitted by eight foreign companies: Bell Atlantic, GTE and Southwestern Bell International of the United States; BCE Telecom International of Canada; France Telecom; Datecom of Germany; Stet of Italy; and Telefonica of Spain. (Telecom and Telefonica own the recently privatised telephone company of Argentina, while Southwestern Bell has interests in Mexico and GTE in Venezuela.)

Since the referendum defeat the government has explored incremental measures to bring private capital and competition into state-dominated sectors of the economy. It has offered toll-road concessions to private operators, and ended state monopolies in insurance and other businesses. The operation of Montevideo's seaport and airport has been put out to tender. Uruguay established a private pension system in 1996.

The expansion mandate

After privatisation had been turned down Antel received a mandate from the government to expand the telephone system, but it had insufficient resources to do it. Antel was, however, free to explore any off-balance-sheet financing methods not prohibited by law and it appointed ABN AMRO as a financial adviser with this goal in mind. Ericsson, meanwhile, wanted to increase its market penetration, but did not necessarily want to own the telephone equipment. The bank proposed a revenue-sharing agreement under which a special-purpose corporation would own the equipment and lease it to Antel until the equipment had been paid off on a lease basis, when the ownership of the equipment would revert to Antel.

ABN AMRO had developed the concept of revenue-sharing when working with Northern Telecom on an earlier project in Colombia. This previous experience enhanced its credibility when it came to convincing the Uruguayan government that such a financing method would work.

Structure of financing

Once the concept of revenue-sharing had been accepted by the Uruguayan government, ABN AMRO had to work with lawyers, accountants and tax officials who had never seen a similar transaction. Because such a transaction had not been done in Uruguay, some contended that it could not be done. There was no central bank ruling on the treatment of revenue for tax purposes. Establishing a security interest in the telephone equipment was complicated by uncertainty surrounding whether Antel or Ericsson owned the equipment.

ABN AMRO worked with the central bank to get the financing approved and to get rulings on the accounting for, and taxation of, the revenue. The tax authorities provided reassurance by deciding that lease payments would be accounted for as regular income, taxed at a rate of 22 per cent, and that any further tax-liability issues would be matters between Antel and the government. Antel in turn indemnified Damesur, SA, the special-purpose vehicle created to own the underlying assets, for any future tax liability related to the revenue-sharing agreement.

Ericsson agreed to enter into a five-year lease to provide financing to Antel. Under the revenue-sharing agreement Antel agreed to contribute 20 per cent of the revenue base from its entire installed Ericsson telephone system to provide Ericsson with a payback and a 10 per cent return on its investment.

The loan was structured as a US\$16 million five-year fully amortising term loan, with a four-month drawdown period and a maximum eight-month grace period. Repayment was to be in 18 equal quarterly instalments and interest was to be paid quarterly. Prepayment was allowed in multiples of US\$1 million at the time of each principal instalment.

The loan was priced at 200 bps over Libor plus the Uruguayan financial-asset tax, with a 50 bps commitment fee and a 125 bps underwriting fee. The borrower was required to arrange an interest-rate cap. Pricing for the second-phase loan in 1998 was lower because by then Uruguay's credit rating had been raised to investment-grade level; there was a greater supply of US dollars in the Uruguayan market; and a similar transaction had already been done. As Ancel has continued to sign new customers and purchase new cellular telephone equipment, this loan structure has been replicated eight times, the most recent occasion being in 2001. In addition to Ericsson Nortel has also been a vendor.

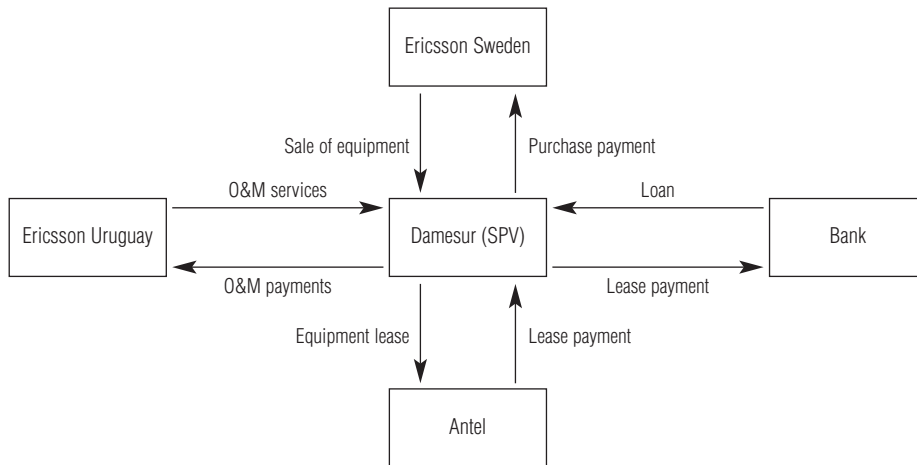
Under the structure of the revenue-sharing agreement loan payments and residual value payments are made to Damesur. As mentioned above, this special-purpose vehicle was created by Ericsson, with a number of purposes:

- to own the underlying assets (telephone equipment) to be used in the project;
- to facilitate sales recognition by Ericsson in Sweden at the time telephone equipment was exported to Uruguay;
- to provide installation and maintenance services during the five-year contract period;
- to collect loan payments and residual value payments; and
- to assist in financing Ericsson's required investment in Uruguay in relation to the project.

Managed by Ericsson Uruguay, Damesur is 45 per cent owned by LM Ericsson Telefonaktiebolaget; 40 per cent by Ericsson Financial Services, an offshore finance company owned by Ericsson and three banks; and 15 per cent by a Uruguayan lawyer who helped to document the transaction. Damesur purchases cellular telephone equipment from Ericsson Radio Systems in Stockholm. At the end of the contract period Damesur passes on legal ownership of the equipment to Antel against payment by Antel of any outstanding residual lease value. ABN AMRO looks to revenue flows and then to Damesur for repayment of the loan; it has no recourse to Ericsson. When the lease expires or the loan is repaid, Damesur no longer has any purpose and is wound down. Any leftover assets are distributed to the owners.

An excess cash-flow recapture mechanism allows the loan to be repaid ahead of schedule if cash flow exceeds projections. Ericsson (or Nortel in other cases) is indifferent as to whether or not the loan is paid off ahead of schedule, because its profit margin and financing cost are built into the price of the equipment.

Exhibit 8.1

Diagram of project structure

The revenue-sharing, or recapturing, is based on depreciation of the assets. When the depreciated book value of the assets reaches zero, the contract ends. At that point Antel is deemed to have paid off Ericsson. From then on no more revenue is shared. Antel has title to the equipment. Ericsson has a continuing obligation to service and maintain the equipment until the loan has been repaid.

When the loan was made the sale price of the equipment was known but the rate at which it would depreciate was not known because, under this financing structure, the rate of depreciation is tied to the rate of loan repayment. The primary purpose of the book-value and depreciation accounting is to show evidence of an asset's being financed in a loan transaction that was innovative and unprecedented by Uruguayan standards. If the equipment still has book value in the fifth year the government agrees to buy whatever is left and to make sure that the bank has not lost any money on the deal. This arrangement allowed Ericsson and Nortel to make the sale to Antel through a special-purpose corporation, book the revenue and profit, and then simply operate the system until the fifth year or until the loan was paid off.

Covenants prohibited Damesur, the borrower, from altering the lease or taking on additional indebtedness, and prohibited the bank from stopping the regular revenue stream of payments except for cause, which could only be Ericsson's noncompliance under the contract. Exhibit 8.1 illustrates the structure of the project and Exhibit 8.2 sets out the sources and uses of the finance for the project.

Exhibit 8.2

Sources and uses of funds

<i>Sources</i>	<i>(US\$ 000s)</i>
Bank loan	16,000
Equity	50
Project cash flow	13,250
Total	29,300
<i>Uses</i>	<i>(US\$ 000s)</i>
Contributed capital	50
Equipment purchase	10,270
Value-added tax/import duties	2,730
Installation costs	3,000
Operation, maintenance and taxes	13,250
Total	29,300

Source: Offering Memorandum.

Security

ABN AMRO had an assignment of monthly lease payments disbursed by Antel to Damesur and perfected security interest in the equipment leased to Antel. A monthly lease payment floor of US\$503,771 was guaranteed by Antel during the five-year period. In addition Ericsson provided an installation completion performance guarantee, and an operating and maintenance (O&M) performance guarantee.

Tax considerations

Uruguay has a statutory value-added tax (VAT) on goods and services, at a rate of 22 per cent. With the concurrence of the tax authorities Antel indemnified Ericsson, in effect, for any adverse tax consequences of the project financing that would result in a tax liability greater than 22 per cent of revenues. Ericsson arranged with the tax authorities to pay the VAT on Damesur's behalf. However, the duties Ericsson had already paid for the importation of telephone equipment were deductible from its VAT liability, so Ericsson had to make no additional payments for the VAT.

ABN AMRO was capable of booking the loan to Damesur from its Montevideo branch or from an offshore entity. The choice between an onshore and an offshore loan was based largely on tax considerations.

Onshore financing to a resident company is subject to a tax on the bank's assets up to a maximum of 2 per cent per annum for loans with a tenor up to 10 years, and 0.1 per cent per annum for mortgage loans in excess of 10 years. Uruguayan banks include the tax when pricing their loans, typically quoting Libor plus the spread plus the tax.

Offshore financing is not subject to the bank asset tax, but it affects the annual tax of 1.5 per cent that a company must pay on its fiscal net worth. The amount of offshore financing is deducted from liabilities, and is thus added to the company's fiscal net worth for the purposes of calculating tax. Income taxes paid by the company are deductible from the net worth tax until the minimum rate of 0.75 per cent per annum is reached, which must be paid in any case.

Interest paid to an offshore bank by a resident company is not fully deductible from the 30 per cent corporate income tax. There is a fiscal ceiling rate of about 4 per cent that may be deducted. For example, if the offshore financing rate was 10 per cent per annum, 4 per cent would be deductible and 6 per cent would not. This would translate into an extra financing cost of about 2 per cent per annum.

ABN AMRO made an onshore loan to Damesur because the taxes were lower and because the bank could lend through a Uruguayan subsidiary that had access to US dollar funding.

Contractual relationships

Revenue-sharing agreement

The revenue-sharing agreement among Antel, Ericsson and Damesur required Antel:

- to make monthly lease payments denominated in US dollars;
- to take possession of the leased equipment at the end of the lease period; and
- to pay for any remaining residual value at the end of the lease period.

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A revenue-sharing formula for minimum required monthly lease payments required Antel to pay Ericsson an amount equal to 20 per cent of Antel's revenues generated from subscribers to Antel's existing Ericsson system and 20 per cent of the revenue from additional lines as of the previous month. The first payment set a floor that remained for the duration of the lease term. Payment in US dollars provided Ericsson with a natural hedge against potential losses from future devaluation of the Uruguayan currency.

Assignment contract

In the assignment contract, a separate but related document, Ericsson assigned all rights to its telephone equipment lease revenue stream to Damesur for the duration of the lease, or until the residual value of the equipment reached zero. None of Ericsson's obligations was assigned. Ericsson remained liable throughout the term of the lease for the installation, operation and maintenance of Antel's existing Ericsson system, as well as for expansion of the system. As a condition for the financing Damesur assigned to ABN AMRO all of its rights to the lease revenue stream and any residual value payments that could have been due upon lease termination.

Other agreements

Other agreements included:

- the purchase and sale agreement between Ericsson and the Uruguayan government;
- the O&M agreement, also between Ericsson and the government;
- the lease agreement between Damesur and the government;
- the agreement among Antel, the Uruguayan tax authorities and ABN AMRO confirming Antel's indemnification of Damesur against any future tax liabilities; and
- two guarantees issued by Ericsson, an installation completion performance guarantee and an O&M performance guarantee.

ABN AMRO did not want to have any risk related to installation, operation or maintenance of the telephone system. As a condition for financing Ericsson was required to issue performance guarantees to indemnify the bank for installation, operation or maintenance issues that could cause Antel to stop paying Damesur. Antel was required to notify the bank if Ericsson failed to comply with any of its installation or O&M contracts. If such notice was received the bank would exercise its rights under the performance guarantees.

Risk analysis and credit ratings

Installation and completion risk

Ericsson had a contractual obligation with Antel to install the equipment to be leased. It was obliged to pay liquidated damages of 30 per cent of the contract amount if the installation was not completed correctly. As mentioned above, Ericsson issued a completion guarantee in which it assumed responsibility for any balance outstanding if the installation was not completed successfully.

Technology risk

The cellular telephone network employs a proven, state-of-the-art digital technology used by Ericsson throughout the world, as well as by Antel in its existing network. The risk of obsolescence was therefore considered minimal.

Operating risk

Ericsson had a contractual obligation to operate and maintain the cellular network during the five years of the lease. Ericsson also issued a performance guarantee in favour of ABN AMRO, reinforcing its commitments to Antel.

Marketing risk

There was no marketing risk because Ericsson was paid for 20 per cent of Antel's overall customer base, regardless of Antel's progress in marketing and placing into service the additional cellular lines that Ericsson installed. Antel guaranteed a fixed lease payment of US\$503,771 per month. The expansion potential of the cellular market in Uruguay and Antel's leadership in that market provided the lenders with additional comfort on the economic fundamentals of the transaction.

Despite Antel's strong position, Movicom had been a competitive threat since 1994. Antel had outperformed Movicom, but was not used to competition because it has a monopoly in all other sectors.

Interest rate risk

Because the residual value calculation was based on a fixed interest rate of 10 per cent per annum, an interest-rate cap was arranged to hedge against interest-rate exposure. Further, the 10 per cent interest rate accrued on the entire amount, which was more than twice the amount of the required financing. Consequently, interest-rate risk was negligible.

Devaluation risk

There was no devaluation risk because Antel committed itself to paying the lease payment 'floor' in US dollars. Antel's own currency risk was hedged with prices for its customers set in US dollars, with equivalent prices in Uruguayan pesos based on current exchange rates.

Antel's credit risk

Any contractual undertaking made by Antel was by law equal to a commitment of the Republic of Uruguay. Therefore the credit risk of Antel was a sovereign risk.

Country risk

The loan was made without political risk insurance, reflecting the distinctive character of Uruguay. Historically the country has been considered 'the Switzerland of South America'. It has the smallest area of any country on the continent apart from Suriname, and it is one of

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the richest in per-capita income. Because of its banking secrecy laws it attracts flight capital from Brazil and Argentina. Before a recession began in 1995 Uruguay had enjoyed nine consecutive years of growth, and the average growth rate of the economy was second only to Chile's. The gradual and consensual nature of Uruguay's economic reforms, which, as mentioned above, were sometimes subject to referendum, appeared to avoid much of the volatility seen in the economies of neighbouring countries.

When the loan was made, in 1996, Uruguay had a 'BB+' foreign currency credit rating from Standard & Poor's, the strongest in Latin America after Chile's and Colombia's. The country has never defaulted or delayed on external debt payments. Since the loan was made Standard & Poor's has upgraded the foreign currency rating to 'BBB-', still applicable as of 2002. Standard & Poor's rating is based on:

- progress made in structural reforms in the public sector, including public acceptance of reduction in social security benefits;
- the government's relatively conservative fiscal policy, resulting in stable deficits;
- declining net public external debt (43 per cent of exports) and debt service (21 per cent of exports); and
- reduced risks to the economy resulting from improved credit standings of neighbouring Argentina (foreign currency rating 'BB') and Brazil (foreign currency rating 'BB-').

The rating is constrained, however, by the country's low savings rate (estimated at 17 per cent), labour market rigidities and high intermediation spreads in the domestic financial market. Standard & Poor's also notes the impact on Uruguay of its membership of the Mercado Común del Sur (Southern Cone Common Market, or Mercosur). Mercosur's reduced tariffs have forced some restructuring of Uruguay's domestic economy, but the country could gain business by acting as a hub for activities throughout the whole of Mercosur (which also includes Argentina, Brazil and Paraguay as full members, and Bolivia and Chile as associate members).

Credit analysis

ABN AMRO booked the loan in US dollars at its Montevideo branch. The credit approval was subject to the approval of the Uruguayan central bank, and ABN AMRO was prepared to book part of the loan outside of Uruguay in the event of receiving only partial approval.

Both Antel and Ericsson were strong credits. ABN AMRO had a worldwide relationship with Ericsson. ABN AMRO had recently been involved in a Colombian project with a different equipment manufacturer (as mentioned above), but this project had not performed well because the telephone company had difficulty selling the lines. On the basis of this experience the bank did not want any credit risk related to marketing cellular telephones and collecting customer payments. Therefore, in structuring the special-purpose corporation, the equipment lease and the loan, the bank required Antel to make guaranteed payments in US dollars, regardless of how many lines it sold to end-users.

Financial projections

The base-case scenario assumed an average billing rate of US\$60 per user during the five years of the lease. This was well below the average rate of US\$80 per user during the 12

months before the project loan was arranged. Under this scenario the facility would be amortised by the 36th month, six months before the residual value of the equipment reached zero. The average debt service coverage ratio (DSCR) was 4.04 and the minimum was 2.32.

The worst-case scenario assumed that revenues remained at the floor guaranteed by Antel throughout the five years, that is US\$503,771 per month. Under this scenario the facility was fully amortised by the 57th month, one month before the residual value of the equipment reached zero. The average DSCR was 2.28 and the minimum was 1.52.

Principal problems encountered

A Uruguayan bank, Banco de la República, participated in 5 per cent of the loan. The Uruguayan lenders had to learn about the cellular telephone technology, the purpose of the project, and the nature of project financing. It was difficult for them to understand why a special-purpose corporation had to be created and why a bank would lend money to an entity that had only leased assets. They had difficulty accepting that they did not have to worry about tax issues because the government had provided an indemnity. However, they were able to relate to the project because it was not only helping the country's economic development but also helping them to get new telephone lines.

Lesson learned

The revenue-sharing agreement was a creative way to provide off-balance-sheet lease financing for a government owned telephone company that needed to expand its cellular telephone service but had reached its borrowing capacity.

¹ Oei, Robert Ian, 'Ringling the Changes', *Project Finance Trade Finance Supplement*, June 2000, pp. 22–23.

² Lerner, Norman, 'Latin America and Mexico: A Change in Focus', *Telecommunications*, March 2000, p. 51.

³ This case study is based on an interview with Angel M. Solorio, then Group Vice President, Latin America Telecom Finance and Advisory, ABN AMRO Bank, Miami.

Telecommunications projects, Brazil

Type of project

Telecommunications.

Country

Brazil.

Distinctive features

- Difficulty of refinancing in local market.
- Difficulty of servicing dollar-denominated debt.
- Resolution of financial difficulty impeded by shareholder dispute.

Description of financing

- US\$275 million (equivalent) real-denominated debentures.
- US\$650 million commercial bank loans with political risk insurance.
- US\$325 million commercial bank loans without political risk insurance.
- US\$325 million five-year amortising loans provided by Export Development Corporation of Canada and commercial banks.
- US\$300 million five- to seven-year vendor financing.
- US\$175 million subordinated financing from sponsor.

Introduction

An overview of Latin American telecommunications projects can be found at the beginning of the previous chapter. This chapter presents an overview of the recent enormous changes in the telecommunications industry in Brazil, followed by case studies of two companies involved in the industry: BCP, an example of a cellular telephone service operator; and Telemar, an example of a project to provide personal communications systems (PCS), also known as 'second generation' systems.

Background¹

Poor service and low usage

As of 1998 Brazil had the world's fifth largest population and its eighth largest GDP, and was clearly the largest telecommunications market in Latin America, accounting for 40 per cent of total activity. However, with a 'teledensity' (number of telephone lines per 100 people) of about 10, Brazil lagged behind Chile, Argentina, and many other countries in Central and South America, and was not even in the top 40 countries in the world. Even in Brasilia, the capital, and São Paulo, the largest city, teledensity rates were below 30, compared to an average of about 66 in the United States. It was not uncommon for Brazilians to wait 5 to 10 years, or pay the equivalent of thousands of US dollars, for a wireline. Just a little over 50 per cent of Brazil's long-distance telephone calls were connected on the first attempt.²

An estimated 10 million Brazilians were waiting for wireline telephone service and another 7 million for cellular telephone service. The Ministry of Communications estimated that about 70 per cent of urban residences and 45 per cent of commercial locations did not have fixed wireline telephones. It projected that the number of fixed lines would increase by about 75 per cent from 23 million in 1998 to 40 million by 2003.³

First steps towards privatisation

The Brazilian constitution was amended in 1995 to allow for the breakup of Telebras, the federal government's telecommunications monopoly. Although there was already a small amount of private investment in the industry, the government owned a majority of Telebras and controlled all aspects of the country's telecommunications industry.

Revenues for Telebras were approximately US\$12 billion in 1995, 45 per cent from long distance and international calls, 31 per cent from local calls, and 12 per cent from cellular telephones. Under federal control Telebras had become a proxy for the Brazilian stock market, accounting for some 40 per cent of total market capitalisation. In 1997 its American depositary receipts (ADRs) ranked first among all ADRs in both US dollar and share volume, and third in dollar volume among all issues traded on the New York Stock Exchange (NYSE). The government committed itself to capital expenditures of about US\$75 billion between 1995 and 2003 to expand the country's telecommunications infrastructure, mainly through Telebras, and promised legislation and regulations to liberalise the telecommunications industry and attract foreign capital.

In preparation for privatisation the Telebras system was split into 12 subsidiaries under a holding company:

- one long-distance and international operator, Embratel;
- three fixed-line telephone service companies – Telesp, Tele Norte-Nordeste-Leste and Tele Centro-Sul; and
- eight 'Band A' companies for the cellular telephone system – Tele Celular Sul, Tele Nordeste Celular, Tele Leste Celular, Tele Centro Oeste Celular, Tele Norte Celular, Telesp Celular, Telemig Celular and Tele Sudeste Celular.

Telebras agreed that these eight Band A subsidiaries would operate what had been the Telebras cellular telephone service, with or without private investment, and would compete directly with 10 'Band B' operators region by region.

Following this restructuring, the Brazilian telecommunications business was privatised in two stages: by the licensing of new, private-sector entrants to provide cellular telephone services in 1997 and by the sale of Telebras subsidiaries in 1998.

Privatisation of cellular telephone services

Brazil was the first country in Latin America to see project financing of cellular telephone startups. After Band A cellular telephone licences had been awarded to the eight incumbent companies listed above, licences for the startup Band B operators were auctioned in 1997.

Band B was privatised in eight areas in 1997 to allow for increased competition and capital investment in current technologies from the new owners. The government raised US\$9 billion through the sale of licences for this second cellular telephone network. It expected the new companies to invest about US\$45 billion over the following five years to build up their networks. At that time about 40 per cent of the Band A Brazilian networks used analogue technology.⁴ The Band B networks were expected to invest more in digital technology.

By mid-1998 the benefits of increased competition in the cellular telephone market were starting to show. The price of a cellular telephone in Brasilia dropped to US\$350, compared to US\$650 before a group led by Bell Canada had bought the capital's cellular telephone Band B system in 1997. By the end of 1998 60 per cent of all new cellular telephone lines were expected to use state-of-the art digital technology, compared to just 2 per cent in early 1997.⁵

Privatisation of Telebras subsidiaries

The 12 subsidiaries of Telebras were auctioned off in July 1998. The breakup of Telebras was the biggest single privatisation ever attempted in Latin America and the second largest telecommunications privatisation in the world after that of NTT, the domestic operator in Japan, which had raised US\$70.4 billion between February 1986 and November 1987.

Winning bids totalled US\$18.85 billion, a 64 per cent premium over the combined minimum prices of US\$11.7 billion. Corporate investors bought 21 per cent stakes in the new 'Baby Bras' and received voting control. The government planned to use the proceeds to pay interest on the national debt. Among the winning bids were:

- US\$4.94 billion (a 64 per cent premium over the minimum asking price) paid by Telefonica de España for Telesp, the wireline that serves the São Paulo area;
- US\$3.07 billion (a 226 per cent premium) paid by Portugal Telecom for Telesp Celular; and
- US\$2.26 billion (a 47 per cent premium) paid by MCI for Embratel, the nationwide long-distance and international carrier, narrowly topping Sprint.

In a manner not unlike the breakup of AT&T in the United States in 1984, holders of Telebras shares received 12 certificates, each with a new name. For investors who wished to own a stake in all 12 of the new companies, Merrill Lynch created an equity security called Telebras HOLDERS, also traded on the NYSE, with options traded on the Chicago Board Options Exchange. The largest investors in the new securities were Brazilian state-owned pension funds, which were looking for safe and stable utility-type returns, and saw potential for their investments to appreciate because of the repressed demand for phone lines.

Telefonica, the largest multinational investor

Because of the perceived growth opportunities, the privatisation of the Brazilian telecommunications system attracted most of the top multinational telecommunications operators. Following its US\$5 billion acquisition of Telesp, Telefonica became the largest international telecommunications operator in Latin America. At that time it already controlled Telefonica de Argentina, Compania Telefonica de Chile and CRT, a regional Brazilian telecommunications company in the southern state of Rio Grande do Sul that was not part of Telebras. Having long been Spain's state-owned telecommunications monopoly, Telefonica itself had been fully privatised just a year before, in 1997. The Telesp deal was a significant step towards the goal set by Telefonica's chairman, Juan Villalonga, of having 50 per cent of the company's assets overseas. Telefonica's overseas expansion was expected to compensate for the loss of its monopoly in Spain, Europe's fifth largest telecommunications market.⁶

In 1997, the first year it was in charge of CRT, Telefonica provided a glimpse of what kind of competition might be in store for the incumbents. CRT's total number of customers increased by 400,000, the number of its cellular telephone customers rose by 100 per cent and the volume of its fixed lines went up by 32 per cent. CRT earned a profit of US\$115,000 in 1997 compared to a US\$17 million loss the year before.⁷

Mirror companies

The federal government also licensed three 'mirror' companies to compete regionally against the three regional and one national long-distance carrier. Each mirror company was allowed to compete in one specific 'Baby Bra' area up to the year 2000. Unlike the former subsidiaries of Telebras, the mirror companies were allowed to use wireless as well as fixed-line technology. Two of the four mirror licences were awarded in January 1999 to the sole bidders, each of which was a consortium.

First, a consortium of VeloCom (49.4 per cent), Bell Canada International (34.4 per cent) and Qualcomm (16.2 per cent) committed US\$50 million, payable over two years, to acquire the licence and spectrum for a 20-year right to compete with Tele Norte Leste in the north-east region. The consortium established two twin companies, Vesper SA and Vesper SP. In December 1999 the companies signed a US\$1.8 billion vendor financing package. Nortel Networks, Ericsson and Harris Corporation provided a US\$1.1 billion five-year supplier credit to Vesper SA, while Lucent Technologies and Harris Corporation funded US\$780 million for Vesper SP. A substantial portion of the financing was expected to be resold in the bank market.

Second, a consortium including National Grid of the United Kingdom and Sprint of the United States paid US\$45 million to compete against MCI-Embratel. The latter said it would build a network covering 38 cities in one year and most Brazilian customers within three years.⁸

Large capital investment requirements

High demand for telecommunications services was largely a function of the primitive state of Brazil's telecommunications infrastructure. High upgrade costs, especially for the wireline networks, had deterred many international operators from submitting bids. The new owners knew they would have to make huge capital investments.

For example, in 1999 Tele Norte Leste (Telemar), in the northwest region, planned to spend US\$1.3 billion to add new customers. Telesp, covering the whole of the state of São Paulo, expected to spend US\$2.5 billion to add two million new telephone lines, representing an increase of about 30 per cent over 1998, and to expand digitalisation of its network beyond its then-current level of 78 per cent. Embratel planned US\$1.6 billion capital expenditures in 1999, in addition to investments in a joint venture to expand America OnLine's penetration in Latin America.⁹

Anatel, the new Brazilian telecommunications regulatory agency, required the new owners to meet strict universal-service requirements. In the São Paulo region Telefonica was required to increase the telephone penetration rate from 17 per cent in 1998 to 30 per cent by 2001. Embratel, now owned by MCI, was to reduce national long-distance rates by 25 per cent and overseas calling rates by 60 per cent by 2005.¹⁰

Difficult borrowing conditions

Since the major devaluation of the Brazilian real in early 1999, only Brazilian banks had been able to borrow in international markets. Despite confidence in the underlying growth of the region, access to capital was relatively difficult for wireless and wireline operators, which therefore relied on foreign investors and innovative financing techniques.

An exception was the internet sector. In Brazil, Zip.net, a start-up with 2.6 million subscribers, less than two years of revenues and annualised pre-tax losses of US\$20 million, sold 10 per cent of its shares for US\$10 million, implying an enterprise valuation of US\$100 million, and began to sell another US\$50 million of equity to US investors.¹¹ However, this was opportunistic and not reflective of the overall Brazilian market.

Conditions for financing in Brazil had always been volatile and became more so after the latest major devaluation. Cellular telephone companies had substantial buildout requirements and much of the financing was provided by vendors, such as Ericsson for Tess, Motorola for Global Telecom and NEC for Telesp Celular.

BCP

Licence award

In July 1997 BCP, a consortium led by Bell South, paid an unexpectedly high price of US\$2.5 billion for a licence to operate cellular telephone services in São Paulo, which has a population of about 18 million. BCP also won a licence to operate in the northeastern states of Alagoas, Ceara, Paraíba, Pernambuco, Piauí and Rio Grande do Norte. This was just the third winning group that the Brazilian Communications Ministry had announced out of 10 regional cellular telephone concessions that it planned to tender. Although BCP's operating performance and EBITDA have exceeded its business plan, constant refinancing with the relatively short maturities available in the Brazilian market has been difficult and devaluations of the real have shrunk real-denominated revenues in relation to US dollar-denominated debt service obligations. Disputes between two 47-per-cent shareholders have prevented a necessary agreement on debt restructuring, causing BCP to default on its debt obligations.

The licence award was based on a combination of bid amount and proposed tariff structure. The consortium's payment of US\$2.5 billion was US\$1 billion higher than the offer

from the next-highest bidder. BCP planned to invest an additional US\$500 million to build and operate its São Paulo wireless network. It expected the system to be in service within 12 months of the licence award. For perspective, at about the same time in the United States AT&T paid US\$11.3 billion for Teleport Communications Group, SBC Communications paid US\$4.4 billion for Southern New England Telephone (SNET), Qwest Communications International paid US\$4.4 billion for LCI International and WorldCom (now in bankruptcy) paid US\$36.5 billion for MCI, the rebellious long-distance carrier that had been instrumental in the breakup of AT&T.

Consortium members

BCP is a consortium led by Bell South, one of the ‘Baby Bells’ in the United States. Over the 1990s Bell South had made significant investments in Latin America. As of early 2002 the company had operations in 11 countries in Latin America: Argentina, Brazil, Chile, Colombia, Ecuador, Guatemala, Nicaragua, Panama, Peru, Uruguay and Venezuela. In December 2000 Bell South’s shareholders voted to amend its charter so as to create a Latin America group tracking share, to reflect the separate performance of the company’s operations in the region. The company intended to sell in a public offering shares representing 15–20 per cent of the value of the Latin American group, with the timing of the offering depending on capital needs and market conditions.

Other partners in the consortium are Grupo Safra, a Brazil-based banking and industrial concern with interests in textiles, lumber, real estate, agriculture and banking; OESP Group, a media conglomerate that publishes *O Estado de São Paulo*, a daily newspaper with circulation of more than 10 million; and Splice, a Brazilian telecommunications equipment provider.

BCP’s rival, Telesp Celular

At the time of BCP’s licence award Telesp Celular, the Band A provider, which was still government-owned at the time, and covered both the city of São Paulo and the surrounding state of the same name, was in the process of upgrading its service, still basically an analogue network, and intended to sign 1 million new subscribers by the time BCP entered service in mid-1998. Telesp Celular planned about US\$1.2 billion in capital expenditures in 1999 to increase its subscriber base from 2 million to 3 million, mainly in metropolitan São Paulo.

A substantial part of that increase came from marketing prepaid packages, mostly to teenagers. Prepaid service was introduced in Europe to individuals with minimal credit or to individuals such as teenagers whose usage had to be controlled. Prepaid service spread quickly in Latin America because it eliminated bad-debt problems, which had been a significant issue for all operators. It facilitated payments and provided hesitant users with a fixed bill and, therefore, an incentive to budget.

By September 1998 Telesp Celular had 920,000 lines in the São Paulo area. It was said to have experienced chronic problems in recent years adding capacity to bring on new subscribers, but its new shareholder, Portugal Telecom, had the resources to contribute badly needed investment capital.

In addition, Telesp was anticipating acquisition and development of a licence to operate a PCS service some time in 2001.¹²

Early moves by BCP

In February 1998 BCP announced that it expected to begin service in late April or early May, ahead of its one-year target, using 'time division multiple access' (TDMA) technology and Nortel equipment. By that time the company expected to have reached agreements on 'roaming' with Telesp. Roaming is placing or receiving a call outside the subscriber's home area. It planned to begin accepting applications for lines by mail and over the internet on 15 February, and to hold a drawing for the first 150,000 lines in early March. It planned to have 500,000 lines working in São Paulo by August and to begin service in the northeastern states in September.

In March 1998 BCP chose 150,000 subscribers by lottery from among 1.6 million applicants. By May the company had invested about 80 per cent of the US\$500 million earmarked for building up the network. It had installed 100 relay towers in the densely populated São Paulo area and planned to install another 100 soon. BCP said that some parts of the São Paulo metropolitan area would have 'holes' in the service at the outset, but it expected that these would disappear once the infrastructure investment had been completed and fine-tuned to usage patterns.

In September 1998 BCP announced that it was serving 535,000 customers and was adding new subscribers at the rate of 30,000 per week. Its waiting list of future customers numbered 550,000.

In March 1999 Anatel released the results of a survey of the cellular telephone market, indicating that competition was beneficial to customers. The agency noted that BCP had won 45 per cent of the São Paulo market. As of April 1999 BCP had more than 1 million subscribers and expected to have 1.2 million subscribers after less than one year in operation.

However, the company lost over US\$960 million in the first nine months of 1999. Reportedly, Tess (partly owned by Telia) and Maxitel (partly owned by Telecom) also had not yet become profitable despite the expanding market. On the other hand, in such a relatively new business startup losses had to be expected, and BCP at this point had far exceeded its business plan and its target for EBITDA, a widely used measure for telecommunications performance.

An overcrowded market

As of mid-2000 Brazil had 18 cellular telephone operators, compared to 4 in Argentina and 8 in Mexico. Eventual consolidation was considered likely because growth in the business had begun to slow down, especially after the large devaluation in 1999. Anatel still prohibited most mergers among wireless firms, but, as part of the upcoming PCS auctions, the agency was expected to allow mergers within three broad 'macro regions', and some predicted that mergers between companies in different regions would be allowed after the PCS auctions.

One potential merger would combine BCP, with its licence to cover metropolitan São Paulo, with Tess, which had a licence to provide coverage in the entire state of São Paulo. A combined company would be on an equal footing to compete with Telesp Celular. There were also merger rumours concerning Telesp Celular itself, which appeared to be a logical candidate to buy Global Telecom. Such a merger would allow Telesp to create a continuous service area linking São Paulo state with the southern states of Parana and Santa Catarina.

Refinancing in August 2000

In April 1998 BCP's sponsors had arranged US\$1.75 billion bank bridge financing for two

years with a bullet maturity while the company launched its operation and then, in 2000, approached a group of competing banks about refinancing for a longer term. At that time the sponsors were able to arrange a medium-term financing package that gave the company more flexibility to execute its business plan and less short-term refinancing risk.

ABN AMRO was the lead arranger, adviser and joint bookrunner for a new US\$1.75 billion senior facility. This was the largest telecommunications financing in Latin America to date, as well as the largest local debt placement for a startup telecommunications venture. Other lead arrangers were Bank of America and West LB, and the arrangers that committed before general syndication were FleetBoston, Citibank, Wachovia Bank, Banco Itau and BSCH. More than 20 additional banks participated in the financing.

The financing had 10 tranches, which ABN AMRO designed to meet the needs of different lenders and investors.

- Two tranches consisted of real-denominated debentures with a value equivalent to US\$275 million and rates linked to the Brazilian sovereign bond, underwritten by ABN AMRO, Bank of America and West LB. Maturity was five years with a repricing option at the end of two years. These tranches appealed to Brazilian pension fund investors that wanted a good yield and a link to the sovereign bond for partial mitigation of country risk. The debentures received a real-based rating of 'A' from Standard & Poor's.
- Three tranches totalling US\$650 million were funded by commercial banks with portions insured for political risk (convertibility and transferability) by MIGA (US\$262.5 million), OPIC (US\$216.7 million) and private insurers led by AIG (US\$171.1 million). The maturity was five years. Pricing started at 287.5 basis points (bps) over the London inter-bank offered rate (Libor) for the first year and was then defined by a grid that tied the rate to the company's leverage. For MIGA the BCP transaction was the largest ever under its Cooperative Underwriting Programme of private insurers, which includes Lloyds, Chubb and Unistat.
- One tranche was a US\$325 million two-year uncovered loan by commercial banks relying solely on the viability of BCP's business plan. Pricing, starting at 510 bps over Libor, was tied to the Brazil 2004 bond.
- Two tranches of five-year amortising loans totalling US\$325 million brought the Export Development Corporation of Canada (EDC) into the financing. In a structure similar to A/B loans provided by the Inter-American Development Bank and the International Finance Corporation, the EDC became the lender of record for US\$150 million, providing comfort to some banks that were reluctant to lend directly to a Brazilian borrower. The EDC provided political risk insurance for an additional US\$175 million.
- One tranche of US\$300 million five- to seven-year vendor financing was provided by Nortel.
- The final tranche consisted of US\$175 million subordinated financing provided by Bell South at 175 bps over Libor.

Subsequent developments

In March 2001 BCP announced plans by its shareholders to increase its capital base by US\$200 million to avoid a breach of covenants and obtain help in paying its bank debt. At the same time BCP also requested amendments to its US\$1.75 billion syndicated bank debt.

Standard & Poor's commented that the capitalisation was a strong demonstration of the support provided by BCP's shareholders and that, because the funds should be used to pay existing debt, the company's debt ratios were likely to improve. The agency believed that the requested amendments would help reduce refinancing risk and exposure to currency mismatches, and that the requested changes to some of the financial covenants would give BCP more operational flexibility. The agency said that its local Brazilian corporate rating would be reaffirmed at 'brA-' and the local debenture rating at 'brBBB+' if BCP succeeded in changing the covenants or waiving an expected breach of covenants later in 2001.

In September 2001 BCP's principal shareholders declined to exercise an option related to a proposed merger between BCP and Tess. The deal apparently collapsed because Grupo Safra asked too high a price for its stake in BCP. In October BCP and Tess announced they would start offering short-messaging services together. In the absence of a merger agreement, the two carriers needed to strike commercial deals to maintain their competitiveness against Telesp Celular. At this point, with merger activity gaining momentum, it appeared that Brazil's wireless telephone subsector would be dominated by three nationwide carriers:

- Telecom Italia Mobile Spa;
- Telecom Americas, the Brazil-focused wireless joint venture of America Movil, SBC Communications of the United States and Bell Canada International; and
- a joint venture between Portugal Telecom and Telefonica Moviles.

At some point in 2001 Telecom Americas also reportedly offered to combine with BCP through an asset swap, but these talks failed as well.

In March 2002 Standard & Poor's downgraded BCP's local corporate credit rating from 'brBBB+' to 'brCC' and its local debenture rating from 'brBBB' to 'brC'. The ratings were placed on CreditWatch with negative implications. The rating assigned to BCP's debentures was one notch lower than its corporate credit rating, reflecting the subordination of the debentures to the company's other debt. The ratings were downgraded to reflect the growing uncertainty about the financial support that BCP would receive from its controlling shareholders. Standard & Poor's had based its existing ratings on the expectation that, because of BCP's strategic importance to both Bell South and Grupo Safra, these shareholders would continue to support the company's financial needs through capital injections or intercompany loans, despite its weak cash flow in relation to debt service obligations. For example, as mentioned above, shareholders had contributed US\$200 million capital in 2001. In February 2002 Bell South and Grupo Safra had bought back almost all of the R\$500 million local debentures as a result of a put exercised by investors. The agency said that if shareholders were not able to come up with a funding solution before the upcoming date of a US\$375 million maturity, its corporate rating for BCP would be downgraded to 'brD'. However, if the shareholders did provide the necessary financial support, the agency would revise its rating depending on BCP's revised financial profile and its reassessment of the shareholders' financial strategy for BCP.

Part of BCP's problem at this point was the difficulty of financing in Brazil. The US\$1.75 billion financing had required a complicated 10-tranche structure, as described above, to appeal to different types of investors with different maturity preferences. A significant amount of BCP's funding had relatively short one-to-two-year maturities. Even though it was generating cash flow, the volatile nature of the debenture and US dollar markets made refinancing difficult without some kind of shareholder support.

Standard & Poor's observed that, although BCP was one of the most efficient cellular telephone operators in Brazil, its capital structure and credit profile had deteriorated continually over the past couple of years as a combination of several negative factors, notably:

- market growth being lower than expected, because of the economic slowdown in Brazil;
- increasing cellular telephone competition, which had constrained margins, even though BCP had not engaged in a price war with its competitor, Telesp Celular; and
- the devaluation of the Brazilian real, which was shrinking real-denominated revenues in relation to US dollar-denominated debt service obligations.

To illustrate BCP's weak financial profile to support its original rating, in the 12 months ended 30 September 2001 its funds from operations were negative and its EBITDA-to-interest coverage ratio was less than one.

As had been feared, BCP defaulted on its US\$375 million bank-loan payment obligation due on 28 March 2002, thus becoming the first Brazilian telephone company to default since the industry was privatised. Through cross-default provisions the entire US\$1.75 billion loan package was placed into default. According to a spokesperson, Grupo Safra had wanted to split the US\$375 million payment. Bell South, however, reportedly wanted to negotiate a restructuring of BCP's debt before making any further payments. At this point BCP had 1.8 million subscribers in Brazil's wealthiest market, but it continued to face heavy competition from Telesp Celular, then the nation's largest cellular telephone carrier, and was not yet profitable.

In April 2002 it was reported that the Safra family was negotiating to acquire Bell South's holdings in Israel's largest cellular telephone operator, Cellcom Ltd, in exchange for its stake in BCP. Banco Safra's CEO, Carlos Alberto Vieira, told Dow Jones Newswires that Grupo Safra's price for its stake in BCP was about US\$300 million.¹³ Bell South owned a 34.8 per cent stake in Cellcom, and Bell South and Grupo Safra each continued to hold 45 per cent interests in BCP. If the deal was concluded, the Safra family would increase its holdings in Cellcom to nearly 70 per cent, with Discount Investments Ltd of Israel holding 25 per cent and management holding the remainder. At this point market observers thought that the sale of Grupo Safra's 45 per cent stake in BCP to Bell South would, in turn, allow Bell South to sell BCP to America Movil, which by this time controlled four Brazilian cellular telephone operators through its Telecom Americas holding company.

Although there were reports at various times in April and May 2002 that Bell South and Grupo Safra had reached agreement to pay the US\$375 million bank debt obligation, the shareholders evidently had decided that the negotiations concerning their BCP shareholdings would have to be concluded first. As of late May 2002 the 34-bank syndicate was preparing to initiate legal action, which ultimately would cost the shareholders control of the company because the loans were secured by BCP shares. Also in May Anatel reportedly was considering some type of intervention to preserve the quality of the operator's services and avoid a suspension of operations in the event of a merger with another company.

As of July 2002 Bell South and Grupo Safra still had not reached an agreement. On 30 July ABN AMRO, representing the 34 bank lenders, announced that it had started to control BCP payments above US\$100,000. In August the Brazilian financial press reported that BCP was losing both customers and income because of the well-publicised disagreement between its principal shareholders. At the same time most of the other operators were posting increases in customers and income.

At the end of the third quarter of 2002 BCP reported 1.7 million users and posted a loss of R\$1.66 billion, significantly wider than the R\$319 million loss for the comparable period in 2001, because of the effect of the decline in the value of the real on US dollar-denominated debt obligations.

Mexico-based America Movil, Latin America's largest wireless communications operator, said in November 2002 that it was continuing to study possible new acquisitions, including a stake in BCP. At that time America Movil had 4.8 million users in Brazil and 28 million in Latin America as a whole, including Colombia, Ecuador, Guatemala and Mexico. A stake in BCP, covering the São Paulo market, could fill an important gap in America Movil's Brazilian network.

By December 2002 Bell South had decided to exit the Brazilian market entirely, looking for the earliest opportunities to sell its interests in BCP in São Paulo, BCP Nordeste and a telephone book company. That month Bell South and Grupo Safra reached agreement on the sale of the two cellular telephone companies.

In March, America Movil agreed to buy 95 per cent of BCP Nordeste (BSE), BCP's affiliate in the north eastern states of Brazil, from Bell South and Grupo Safra. This transaction would increase America Movil's Brazilian subscribers to 6.2 million and solidify its position as the second largest wireless operator in Brazil. In April, Bell South and Grupo Safra relinquished control of BCP to the bank lenders as part of a comprehensive debt restructuring. America Movil was still considered to be BCP's most likely buyer.

Lessons learned

First, Bell South's US\$2.5 billion licence fee was excessive. Second, given currency volatility, it is difficult for a project generating revenues in a domestic currency to depend on US dollar debt. Third, the project required financing with longer terms than available in the local Brazilian market. Finally, blocking shareholders, each with 47 per cent as in BCP's case, can preclude negotiated solutions.

Telemar

As the incumbent fixed-line operator for northeastern Brazil, Tele Norte Leste Participadoes (Telemar) covers 64 per cent of the country's geographical area and 93 million people. Its mirror rival is Vesper SA. Telemar had been favoured in the recent PCS licence auction because Anatel considered it to be one of the few operators in Brazil that could afford to build a strong presence in the emerging market for PCS subscribers.

In August 2001 TNL PCS SA, the PCS project vehicle for Telemar, signed a US\$1.43 billion loan agreement arranged by ABN AMRO and 16 additional banks, including Banco Bilbao Vizcaya Argentaria, Citibank, FleetBoston, ING Barings, JP Morgan Chase, SG and Wachovia. This was the largest telecommunications financing in Latin America in 2001.

The financing was split between a US\$700 million syndicated bank loan, and US\$725 million in vendor financing from Alcatel (US\$140 million), Nokia (US\$425 million) and Siemens (US\$140 million). The US\$725 million vendor financing was split into five tranches, as shown in Exhibit 9.1.

In addition, the Japan Bank for International Cooperation, as part of its international development mandate, provided a US\$330 million loan to Telemar, the parent, rather than the PCS project company.

The commercial bank loan was structured so that Telemar would pay 550 bps over Libor unless Brazil's sovereign credit rating improved, in which case the spread would be reduced to 330 bps.

A principal credit concern was Telemar's ability to service its US dollar-denominated debt and, at the same time, meet the targets for infrastructure expansion specified in its licence agreement with Anatel.

The Telemar project financing built upon the multisourcing expertise developed in the BCP financing in 2000, incorporating bank debt, ECA support and vendor finance, and crafting intercreditor agreements suitable to all parties. The vendors reportedly favoured a more lenient view of defaults than the banks do, since the latter are bound by the rules of the Bank for International Settlements. The vendors also realised that they might want to sell their paper to the banks at some point in the future. The syndication was accomplished when the first signs of economic distress in Argentina had appeared and the arrangers hoped for no more bad news before the deal was closed, when some equipment vendors such as Nortel and Lucent were beginning to face financial difficulties, and when global appetite for telecommunications risk was beginning to abate.¹⁴

Exhibit 9.1

The five tranches of vendor financing for Telemar's PCS project

<i>Tranche</i>	<i>Spread (bps over Libor except as shown)</i>	<i>Maturity (years)</i>
1	325	2.5
2	350	3.0
3	300	3.5
4	325	4.5
5	75 bps over sovereign	5.0

Note: There was no political risk insurance on any tranche except the third and fourth, where it was available but spread increased by 175 bps if it was declined.

Source: 'Latin American Telecoms Deal of the Year 2001', www.projectfinancemagazine.com, March 2002.

¹ This case study is based on an interview with José Mazariegos, Group Vice President of ABN AMRO, articles in the financial press and a review by Donna Cordner, Managing Director of Citi Group.

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³ Lerner, Norman C., 'Industry Restructuring Brings Unprecedented Growth', *Telecommunications*, October 1999, p. 128.

⁴ 'Telecoms: A Clear Line From Brazil', *Economist*, 1 August 1998, p. 22.

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⁶ Barnard, Bruce, 'Telefonica: Latin America's Telephone Giant', *Europe*, October 1998, p. 20.

⁷ McClure, Ben, 'Telebras Sale Rings Up Big Premiums', *Telecommunications*, September 1998, p. 15.

⁸ Lerner, Norman C., 'Latin American Telecom Changes: Learning from Mexico and Brazil', *Telecommunications*, April 1999, p. 27.

⁹ Lerner, Norman C., 'Industry Restructuring Brings Unprecedented Growth', *Telecommunications*, October 1999, p. 128.

¹⁰ McClure, op. cit.

¹¹ Lerner, Norman C., 'Latin America and Mexico: A Change in Focus', *Telecommunications*, March 2000, p. 53.

¹² Lerner, Norman C., 'Industry Restructuring Brings Unprecedented Growth', *Telecommunications*, October 1999, p. 129.

¹³ Wade, Terry, 'Brazil Safra CEO: BellSouth Talks on BCP Nearing End', *Dow Jones Newswires*, 16 April 2002.

¹⁴ 'Latin American Telecoms Deal of the Year 2001', www.projectfinancemagazine.com, March 2002.

FLAG (Fibre-optic Link Around the Globe)

Type of project

Undersea fibre-optic cable network.

Country

Multinational.

Distinctive features

- First submarine cable system ever project-financed.
- First major submarine cable system to be financed by private investors rather than international carriers.
- First submarine cable insured by Export-Import Bank of the United States (US Exim) or former Japanese Ministry of International Trade and Industry (MITI).
- Project in 25 jurisdictions.
- Insurance cover from export credit agencies (ECAs) for 17 jurisdictions.
- Lenders taking market and competitive risks.
- Availability of contingent equity from the sponsors.
- Bankruptcy in 2002 resulting from aggressive expansion, slowdown in telecommunications industry and high leverage.
- Re-emergence from bankruptcy in six months.

Description of financing

Original US\$950 million construction financing comprised:

- US\$500 million as a bank construction loan with three-year drawdown during construction and three-year repayment, commitment fee of 2.1875 per cent, interest of 150 bps over London interbank offered rate (Libor) and political risk cover provided by US Exim; and
- US\$450 million as supplier credit provided by Marubeni Corporation, with political risk cover provided by Japanese MITI.

Permanent financing to replace original construction financing in February 1998 comprised:

- US\$430 million as 8.25 per cent 10-year notes;
- US\$320 million as a seven-year term loan; and
- US\$50 million as revolving credit.

Project summary¹

The Fibre-optic Link Around the Globe (FLAG) is a multinational submarine fibre-optic cable network that provides transmission services for telecommunications carriers, application service providers (ASPs) and internet service providers (ISPs). As of late 2002 the FLAG network had three components:

- FLAG Europe–Asia, a cable from the United Kingdom to Japan that was completed in 1997;
- FLAG Atlantic-1, a dual cable between the United Kingdom and the United States that was completed in 2001; and
- FLAG North Asia Loop, a dual cable between Japan and Hong Kong that was completed in 2002.

A fourth component, FLAG Pacific-1, was planned but was dropped when financial commitments were cancelled because of unfavourable market conditions and the resulting deterioration in the project company's creditworthiness.

FLAG Europe–Asia

Background

In 1990 the Fiberoptics [sic] Association for International Research (FAIR), a subsidiary of Gulf Associates, Inc., began to explore development of a fibre-optic cable system for telecommunications traffic to and from countries in the Middle East. Following a survey of about 300 telecommunications executives in 25 countries, it concluded that there would be demand for a fibre-optic cable system not only in the Gulf region but along a route stretching from the United Kingdom to Japan.

In July 1995 FLAG Ltd finalised construction and finance agreements to build the world's longest fibre-optic submarine cable, which would link telecommunications carriers in Europe, the Middle East and Asia with a record 17,000 miles (27,000 kilometres) of fibre. The FLAG Europe–Asia cable connects three continents on a route linking business centres and high-growth regions between the United Kingdom and Japan. The route is roughly equivalent in length and routing to Marco Polo's land and sea trek from Europe to the Asia–Pacific region.

The FLAG Europe–Asia cable system took 29 months to build, using five cable ships, at a capitalised cost of US\$1.5 billion. The system went into service in November 1997, just two months after the original target date. The system uses 326 optical amplifiers to maintain the

integrity of optical signals along its route. The 120,000-circuit cable accommodates 600,000 simultaneous conversations. The cable was expected to improve the quality of communications in the areas that it serves, many of which previously had depended largely on satellite transmissions. Fibre-optic transmission offers increased security, speed, accuracy and reliability, as well as increased bandwidth capability for advanced applications.

Several cable ships worked simultaneously to lay cable at different points along the route. At the same time telecommunications carriers in 12 countries oversaw the construction of landing stations and facilities to connect their national networks to the system. The landing points for the system are in the United Kingdom, Spain, Italy, Egypt, the United Arab Emirates, India, Thailand, Malaysia, China (at Shanghai and Hong Kong), South Korea and Japan.

More than 50 telecommunications carriers (PTTs) signed agreements to purchase capacity on the FLAG Europe–Asia cable. They included the 12 landing parties, which also had responsibility for landing the cable in their countries.

Sponsors' interests

The original managing sponsor of FLAG was NYNEX, one of the seven 'Baby Bells' created when AT&T was broken up in 1984. NYNEX provided a full range of communications services in the northeastern United States and selected markets around the world. At the time of the project financing NYNEX was a subsidiary of Bell Atlantic, which later merged with GTE to form Verizon. FLAG represented an international growth opportunity for NYNEX, as part of its diversification away from an exclusive focus on domestic telephone service. The project also was intended to fortify working relationships with all the PTTs along the route. These relationships were considered to be helpful to the extent that NYNEX looked for partners in the future as well as useful information channels for other international investment opportunities. In a world of strategic alliances a given PTT could at various times be a partner, a customer or a competitor.

Other initial sponsors and limited shareholders of the privately financed project were:

- the Dallah Al Baraka Group of Jeddah, Saudi Arabia, a large multinational investment company that became a pure financial investor in FLAG;
- Marubeni Corporation, one of Japan's leading general trading companies, which was both a lender to FLAG and a facilitator of purchases from Japanese suppliers;
- Gulf Associates, Inc., a New York-based corporation that focuses on trade and project development, as a pure financial investor;
- Telecom Holding Co., Ltd, a wholly owned subsidiary of TelecomAsia, the largest company in the Thai stock market (by market capitalisation) at the time of the initial project financing;
- The Asian Infrastructure Fund (AIF) of Hong Kong, a US\$1 billion fund backed by Soros and Peregrine that invests in entities engaged in developing and operating transport, power and telecommunications projects in Asia, and also became a pure financial investor; and
- GE Capital Services, a diversified financial services company wholly owned by General Electric of the United States and headquartered in Stamford, Connecticut, another pure financial investor.

The sponsors' objectives included off-balance-sheet treatment of project debt; risk-sharing; and speed in getting the deal completed. Sponsors such as NYNEX wanted their ownership levels to be low enough that they could qualify for off-balance-sheet financing, allowing for recognition on their balance sheets of their share of the subsidiary's equity but none of the subsidiary's debt. To share the risks the four original sponsors, NYNEX and the first three in the list above, brought in the three entities named last in the list. It was important to get financing arranged and capacity purchase agreements signed quickly, because of the possibility that a competitor would build a competing undersea cable.

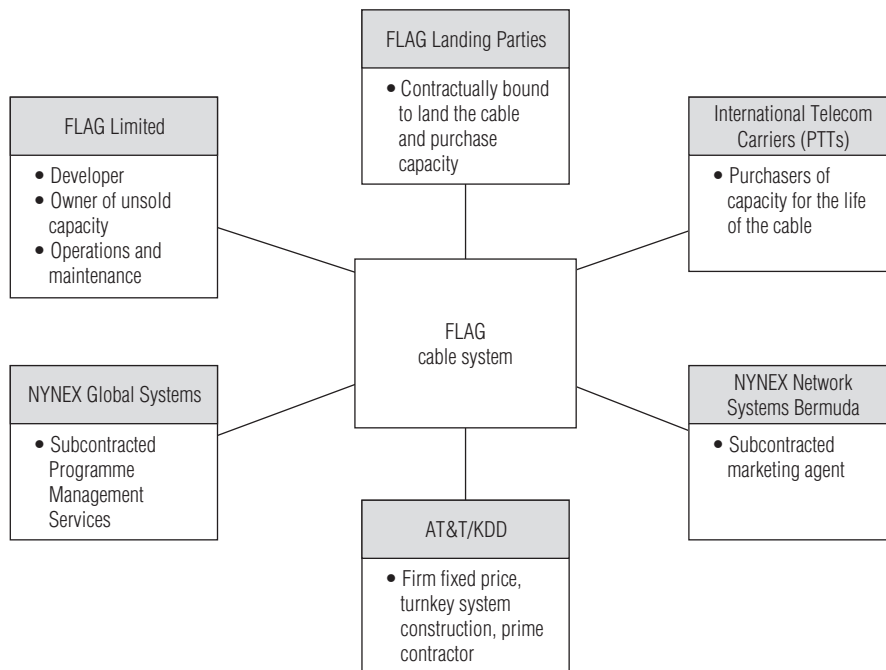
Parties to the project

Exhibit 10.1 shows how all the parties to the project worked together. FLAG was the developer and the owner of unsold capacity, and was responsible for operations and maintenance. The landing parties were bound contractually to land the cable and purchase capacity. The international PTTs purchased capacity for the life of the cable. They did not pay for that capacity until it was built, and they could purchase additional capacity in the future.

NYNEX Network Systems (Bermuda) Ltd is subcontracted as the marketing agent and NYNEX Global Systems was subcontracted for programme management services. AT&T and Kokusai Denshin Denwa (KDD) Cable Systems of Japan were the prime contractors for building the cable system, working with FLAG under fixed-price turnkey contracts.

Exhibit 10.1

Parties to the project



Project agreements

A. Jay Baldwin, FLAG's first Vice President and Chief Financial Officer, had recently worked on the merger between Bell Atlantic and NYNEX. For this US\$50 billion merger there was one 60-page agreement with about 80 pages of schedules. For FLAG, in contrast, there were 10 project documents, all interrelated, and all reflecting a great deal of negotiation among the sponsors and lenders.

Capacity sales agreements

When the project was complete PTTs would pay for capacity that they would own for the 25-year estimated life of the system. When the loan agreement was signed 40 of the 200 international carriers in the world had signed up for capacity, providing US\$400 million to FLAG. An additional 10 later committed themselves to purchasing capacity. If they had signed up US\$1 billion by the end of the construction period/provisional acceptance, they would have been able to prepay the entire original project loan.

Project risks

Many of the reasons why the original FLAG Europe–Asia financing presented a particular challenge are summarised in Exhibit 10.2, which compares traditional project financing requirements with characteristics of the FLAG project.

The sponsors sought to lay off as many project risks as possible onto the parties that appeared most appropriate to bear these risks. AT&T and KDD, the suppliers and contractors, assumed the completion and technological risks. The ECAs assumed much of the political risk.

Exhibit 10.2

Why the FLAG project was a challenge

<i>Project finance requirements</i>	<i>FLAG characteristics</i>
<ul style="list-style-type: none"> • no lender equity risk • pre-construction off-take contracts • firm, assignable purchase contract with creditworthy entities • contractor experienced with project finance • lenders, guarantors, and insurers familiar with industry • experienced operations management • project has collateral value • limited country and sovereign risk • licences and permits in hand • realistic contingency plans • delay risk considered 	<ul style="list-style-type: none"> • not all sponsors well known • pre-construction sales were insufficient • many PTT customers had poor credit and limited ability to guarantee sovereign immunity • first competitive bidding project finance experience for AT&T Submarine Systems, Inc. and KDD Submarine Cable Systems • industry's first project financing • first cable project for FLAG and NYNEX Network Systems • single purpose, non-retrievable assets • 25 political jurisdictions • construction started without the majority of required permits • limited alternatives to land crossings • delays are very expensive and jeopardise advance sales contracts

One important risk that sponsors retained was the political risk related to obtaining permits in the 25 jurisdictions through which the cable passed. Egypt was considered particularly important because of the length of the overland crossing through its territory. Country permits were required wherever the cable crossed land or territorial waters and, in some cases, wherever it passed through an exclusive economic zone, which in some cases extended 200 miles beyond a country's shoreline.

Unlike many other types of projects FLAG had no permits when it started. The PTTs in each country were responsible for securing permits on FLAG's behalf. They were FLAG's landing parties and potential buyers of capacity. The PTTs in general were not willing to apply for permits until FLAG had signed its supplier contracts and arranged its financing.

One jurisdiction charged US\$300,000 for a permit. With some others it was standard practice to consider no reply to a fax as passive approval.

Related to both political and operational risk was reconfiguration risk. If permits were not issued or the cable was broken and under repair within any given jurisdiction or combination of jurisdictions, FLAG needed contingency plans to send message traffic along alternate routes.

The contractors also assumed environmental risk. The project crosses several pipelines. If the cable-laying ship caused an oil spill, the contractors would have been responsible for it. Marine surveys did not show any radioactive dump sites near the cable route, but accidentally laying cable across such a site remained a risk.

The sponsors ran the risk that FLAG would not sell enough capacity to repay the lenders. This could be called market risk or competitive risk. There was also a possibility that France Telecom and Singapore Telecom would build a similar cable along the same route.

In looking down the list of classic project finance risks, Baldwin emphasised that the construction of the FLAG cable was at the core of AT&T's expertise, while the operation of FLAG was at the core of NYNEX's expertise. He thought that this should be the basis of the lender's risk analysis. Otherwise it would be too easy to dwell on other project risks that could not be avoided. The political environments were not all friendly. There were indeed expropriation and sovereign risks. Concerning the enforcement of contracts and legal remedies, Baldwin said, 'Let's hope we never have to find out'.

Financial structure

Because of the ECAs' requirements the project was required to have a minimum of 20 per cent equity. The financial structure of the project was as follows.

- The sponsors committed themselves to US\$500 million equity, and an additional US\$500 million contingent equity to cover cost overruns, delays and other carefully defined 'pinhole' risks.
- GE Capital purchased US\$75 million in preferred equity and AT&T Capital purchased US\$25 million in preferred equity.
- Project loans of US\$950 million consisted of two tranches: a syndicated bank loan with political risk guarantees for US\$500 million from US Exim; and a supplier credit provided by Marubeni with political risk guarantees from Japanese MITI (now the Ministry of Economy, Trade and Industry, or METI).

The sponsors made equity commitments when the loan agreements were signed but they wanted to remit the actual funds as late as possible, to maximise their return on equity measured on a present-value basis. To satisfy the lenders NYNEX, Marubeni and GE Capital provided guarantees, and the other equity investors provided letters of credit. This arrangement worked out well for Marubeni: the fees it received up front were almost as much as the equity it advanced later on.

Financial support from sponsors

Beyond the equity they actually paid in, the sponsors committed substantial contingent equity that they did not expect to be drawn.

In determining the amount of contingent support it would provide to FLAG, NYNEX had to make a trade-off. The higher the committed equity and the stronger the contingent equity support, the stronger FLAG's credit rating would be. The problem was that analysts would consider such strong support to be a contingent debt obligation when analysing NYNEX. The rating agencies had been convinced that the probability of lenders or suppliers drawing on NYNEX's committed equity or contingent support was sufficiently remote that these support agreements should not be considered debt for the purpose of NYNEX's credit rating.

How the original financing was arranged

In the past most submarine cables had been equity-financed by groups of PTTs. Although there were pockets of project-finance expertise within AT&T, neither the lenders nor anyone else involved with FLAG had ever seen a project financing anything like this one. It was not like a mobile (cellular) telephone or cable television project, where penetration rates and market growth rates could be compared among projects. The lenders relied partly on studies by the Cambridge Strategic Management Group and Kessler Marketing to assess the economic viability of the project.

FLAG selected Credit Suisse First Boston as financial adviser after interviewing a large number of commercial and investment banking firms. Some commercial banks submitted proposals to become both advisers and lenders. Baldwin did not think that would have worked very well because, he believed, the banks wanted first to be lenders. An advisory role would have been a secondary priority and a conflict of interest.

Willingness to assume the project's market and competitive risk helped one of the banks to win its mandate. Baldwin recalled that one of the other banks, which participated in the financing because of its relationship with AT&T, was, ironically, reluctant to look primarily at AT&T's previous experience in its assessment of the project's technical and construction risk.

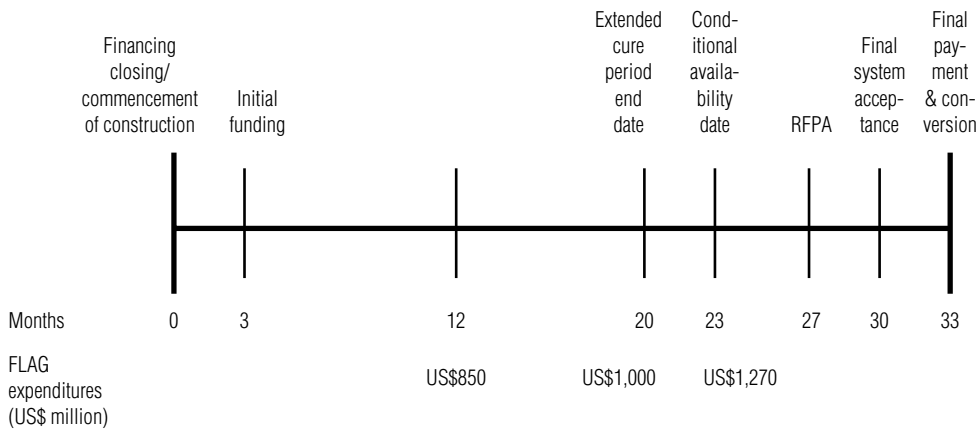
Original debt financing

The US\$950 million loan was a three-year construction financing with a three-year repayment term and no prepayment penalty. It was divided into two tranches.

- Tranche A was a US\$500 million loan underwritten by Barclays and Canadian Imperial Bank of Commerce (CIBC), supporting the purchase of AT&T equipment and services, and guaranteed by US Exim.

Exhibit 10.3

Financing timeline



- Tranche B is a US\$450 million loan for the purchase of equipment from KDD, provided by Marubeni and guaranteed by Japanese MITI.

The commitment fee on the loan was 2.1875 per cent and the interest was 150 bps over Libor. Pricing was difficult because there were few comparable deals. Baldwin thinks that the pricing turned out to be expensive given the level of enthusiasm that banks showed during the syndication process.

The expected project financing timeline is shown in Exhibit 10.3.

If FLAG had signed sufficient capacity sales agreements by the time construction was finished, it would have been able to prepay the entire loan at that time.

The capacity sales agreements committed FLAG’s customers to pay for their capacity upon notification that the project was ‘ready for provisional acceptance’ (RFPA). FLAG would not make a final US\$200 million payment to AT&T until all items on the project’s ‘punch list’ had been completed. If capacity sales were not sufficient to pay off the bank debt at the time of RFPA, FLAG would have to borrow US\$200 million under the loan agreement to make the last payment to AT&T. However, if capacity sales were sufficient to pay the lenders at the time of RFPA and FLAG also put US\$200 million in escrow for the final payment to AT&T, then the full amount of the bank facility would not have to be drawn down.

Collateral

The most important collateral for the lenders was the capacity sales agreement and the supply contract. The actual cable and other installed equipment had little collateral value unless it was part of a working system.

The most important backup support consisted of two agreements, the equity contribution agreement and the contingent sponsor support agreement. These agreements obliged the sponsors to put additional money into the project if certain ‘pinhole’ risks materialised. Baldwin did not think that the financing would have been successful if the sponsors had not made such contingent commitments.

Financing alternatives considered

FLAG considered both supplier and capital market financing. Baldwin believed that the project should have had more upfront supplier financing than it did, but the people within FLAG responsible for negotiating supply contracts were not the same as those arranging the project financing. In some cases Baldwin tried to persuade his purchasing colleagues that the lowest cost to the shareholders might not be the lowest price, but he was unsuccessful. Given its financial structure FLAG would have qualified for either a low-investment-grade or a high-yield bond offering. However, rates for this type of bond seemed high in early 1994. Further, such an offering would have placed restrictions on the project and the tenure would have had to be five to seven years. FLAG wanted the flexibility to repay its debt in as few as three years from the initial drawdown.

Political risk insurance

FLAG sought insurance cover from ECAs for 17 of the 25 jurisdictions that the project crosses. This was unprecedented for both US Exim and Japanese MITI. Their experience with multicountry projects did not go far beyond pipelines in two countries. Among US Exim's concerns were reconfiguration risk, *force majeure* delays, and the creditworthiness of Dallah Al Baraka, Telecom Holdings and the AIF.

Beginning of commercial service

FLAG Ltd completed the last undersea portion of the 17,000-mile (28,000-kilometre) fibre-optic cable system connecting Japan and the United Kingdom in June 1997. At that time testing of various cable sections was under way, and light and data had been transmitted successfully from the United Kingdom to Mumbai (Bombay) in India.

The system was completed and began commercial service in November 1997, with 66 international carriers as customers and \$500 million in capacity presales. In a press release the company noted that the wholesale market for international traffic was expected to reach nearly US\$3 billion per year over the following 10 years. Driving its growth was a 14 per cent average annual jump in international switched traffic. The growth rate was even higher for private-line traffic, which included internet volumes that had been doubling each year for the past 10 years. The company said that the internet was already being accessed daily by an estimated 50 million people and was adding 10,000 new users every day.

Permanent financing

As of 30 September 1997 US\$615 million of the original US\$950 million construction financing was drawn down. In February 1998 FLAG Ltd replaced that facility with US\$800 million of permanent financing. The new financing had the following components:

- US\$430 million in 8.25 per cent 10-year senior notes;
- US\$320 million as a 7-year term loan; and
- US\$50 million in revolving credit.

As one of the largest international telecommunications high-yield offerings ever made, it was oversubscribed more than three times. Salomon Smith Barney was the lead manager in the

high-yield offering, running the book, while Barclays Capital was co-lead and Morgan Stanley Dean Witter was co-manager. Barclays Capital arranged the bank financing.

Duff & Phelps (now Fitch) assigned a 'BB+' rating to the senior notes, based on strong demand for capacity along the route, high barriers to entry for construction of competitive alternatives, expectations for positive EBITDA during the first full year of operation in 1998 and the strength of FLAG's sponsors. The agency noted that FLAG's EBITDA was subject to a greater degree of risk than the EBITDA of other telecommunications carriers, because it was largely dependent on one-time sales of capacity. However, it believed that risk was mitigated by the strong demand for capacity in the region.

The rating incorporated expectations for competition along FLAG's route. The SMW-2 'club' cable, owned by a consortium of international telecommunications carriers, had one eighth of the capacity of the FLAG cable and was nearing full use. The SMW-3 cable, scheduled for completion in 1999, would compete directly with FLAG. However, Duff & Phelps noted that many of the carriers active in SMW-2 and SMW-3 had also purchased capacity on FLAG, partly for back-up purposes.

The agency mentioned that FLAG was subject to competition from satellite operators. However, its state-of-the-art undersea fibre-optic cable provided it with the competitive advantages of higher quality, larger capacity and greater reliability than satellite communications

Moody's and Standard & Poor's cited similar factors in their rating analyses. Moody's assigned a 'Ba3' rating to the senior notes and a 'Ba2' rating to the credit facility. The difference reflected the structural advantage of the credit facility, which was secured by all assets other than the physical assets and by a pledge of the stock. The senior notes were unsecured but otherwise *pari passu* to the credit facility. Standard & Poor's assigned a 'B+' rating to the senior notes and a 'BB-' corporate rating to the company.

FLAG Atlantic-1

Background

In January 1999 FLAG and Global TeleSystems Group (GTS) announced that they had formed FLAG Atlantic Ltd, a 50/50 joint venture to build and operate FLAG Atlantic-1, a new trans-Atlantic cable system. GTS was a US-based telecommunications operator focusing on the European market. The system would provide a natural onward extension of the existing FLAG cable network, connecting it to major European cities along GTS's Hermes Europe Railtel (HER) network. FLAG Atlantic-1 would be the world's first transoceanic dual cable system designed to carry voice, high-speed data and video traffic at speeds of up to 1.28 terabits per second, equivalent to 15 million simultaneous telephone conversations. As a protective measure in case of damage, the two trans-Atlantic cables would be configured as a ring and joined at either end.

The estimated construction time was 21 months and the estimated cost was US\$1 billion. Alcatel was the principal equipment supplier. Financing for FLAG Atlantic-1 was intended to be primarily through nonrecourse bank debt, supplemented by a combination of equity contributions from GTS and FLAG, and sales of capacity to customers.

In response Moody's confirmed its 'Ba3' rating on the 8.25 per cent US\$430 million senior notes issued by the holding company, FLAG Telecom Holdings Ltd (FLAG Telecom), and its 'Ba2' rating on FLAG Ltd's US\$320 million secured credit facility. However, the agency changed its outlook from stable to negative because FLAG's finan-

cial performance had not met its expectations. Standard & Poor's responded to the joint-venture announcement by placing its 'BB-' corporate credit rating and its 'B-' senior unsecured debt rating for FLAG Ltd on CreditWatch because it initially had limited information on the financial structure of the transaction and was not sure how it would affect FLAG Ltd's credit profile.

Financing

Also in February 1999 Barclays Capital made an underwritten commitment to finance FLAG Atlantic-1 through:

- a US\$550 million construction and term loan facility; and
- a US\$25 million working capital revolving credit facility.

The debt would be nonrecourse to the two joint-venture partners, each of which would contribute US\$100 million in equity. Financial closure, originally targeted for April 1999, did not occur until October. Dresdner Kleinwort Benson and Westdeutsche Landesbank were co-arrangers. The construction loan and the revolver, both with seven-year tenors, were priced at 300 basis points (bps) over Libor.

At that time FLAG and GTS announced presales of US\$850 million to carriers including PSINet and Teleglobe, representing 50 per cent of the new cable system's existing capacity, and a doubling of capacity compared to the original specifications, raising the total investment to US\$1.2 billion. Now FLAG Atlantic-1 would be capable of carrying, every second, 200 hours of digital video cable, 2 trillion bits of internet protocol (IP) or data traffic, or 30 million simultaneous clear voice channels.

In March 1999 Standard & Poor's affirmed its 'B+' senior unsecured debt rating and its 'BB-' corporate credit rating for FLAG Ltd. Having put these ratings on CreditWatch in January, the agency removed them at this time because, in its judgement, proposed financing for the new trans-Atlantic cable project would not affect the credit quality of FLAG Ltd. The project would be financed by a new entity, FLAG Atlantic Ltd. While FLAG Ltd and FLAG Atlantic Ltd would have common owners, FLAG Ltd itself would not have any interest in FLAG Atlantic Ltd or any obligation for its debt.

Undersea cable network competitors

By this time FLAG was beginning to face increased competition. Global Crossing began transmission in May 1999 between the United States and the United Kingdom at 40 gigabits, and planned to have a trans-Pacific crossing in operation by the end of the year. The Project Oxygen network promised speeds of 1.28 terabits on a 168,000-kilometre worldwide network with 99 landing points. The estimated construction cost was US\$10 billion. Both of these competitors would offer ring networks with built-in backup systems, unlike the FLAG Europe-Asia cable, which had to rely on another cable, or satellite, if an outage occurred. FLAG and its competitors were banking on insatiable demand for bandwidth. Robert Annunziata, who had recently left AT&T to become CEO of Global Crossing said: 'Bandwidth demand on the Atlantic route is predicted to grow at about 80 per cent per year, driven primarily by the explosion of internet use in Europe'.

FLAG Pacific-1

Background

Later in March 2000 FLAG Telecom announced plans to construct FLAG Pacific-1, a cable system to connect Tokyo, Vancouver, Seattle, San Francisco and Los Angeles for the international carrier community, ISPs and ASPs. With the addition of FLAG Pacific-1 to FLAG Atlantic-1 and the FLAG Europe–Asia cable, FLAG Telecom’s network would extend 39,000 miles (64,500 kilometres). FLAG Pacific-1 would offer fully protected voice, high-speed data, internet broadcast and other communications traffic at speeds up to 5.12 terabits per second. As with FLAG Atlantic-1, it would have a resilient-loop design so that if there was a problem with one cable, traffic could be switched to the other one. Regeneration points would be located on the Aleutian peninsula in Alaska for the northern cable and in Hawaii for the southern cable.

With an estimated construction cost of US\$2.1 billion, FLAG Pacific-1 was expected to begin operation by early 2002 and provide full-loop service by mid-2002. FLAG Telecom planned to finance the new cable system with proceeds from its recent IPO and senior note offering, capacity sales, and additional nonrecourse bank debt. The company awarded the prime supply contract to build the undersea portions of the new dual-cable system to Alcatel Submarine Networks, the leading provider in the field.

Financing commitment

In May 2000 Barclays Capital and Westdeutsche Landesbank made an underwriting commitment for an 8.5-year US\$1.1 billion construction and term loan to finance FLAG Pacific-1. They were working toward financial closure in the third quarter of 2000. The debt was intended to be nonrecourse to FLAG Telecom.

Also in May 2000 FLAG Telecom options began to trade on the American Stock Exchange and the Chicago Board of Options Exchange, and FLAG Telecom began a registered offer to exchange up to US\$300 million of 11.625 per cent senior notes due in 2010 and €300 million of 11.625 per cent senior notes due in 2010, both registered with the US SEC, for the original unregistered notes. The new ‘Exchange Notes’ would be freely tradable by all holders and not subject to the transfer restrictions of the original notes.

In December 2000 FLAG Telecom bought GTS’s 50 per cent equity interest in FLAG Atlantic Ltd and the FLAG Atlantic-1 cable for US\$175 million, and thus became the full owner. GTS retained ownership of a fibre pair on the system. For GTS the sale was part of a restructuring programme following poor financial performance, in which it would sell off some of its business units and concentrate on its core broadband services business.

FLAG withdraws

In April 2001 FLAG Telecom reached agreement with TyCom to jointly build the trans-Pacific network. TyCom, with revenues of US\$2.5 billion in 2000, was a significant provider of broadband communications capacity, systems and services, and a supplier of transoceanic fibre-optic systems. Shortly thereafter, Tyco International, TyCom’s parent, received approval under US antitrust law to buy 15 million common shares of FLAG Telecom, about 11 per cent of the company. Tyco, with revenues of US\$29 billion in 2000, was a diversified manufacturing and service company.

In August 2001 FLAG Telecom withdrew from its role as co-developer of the trans-Pacific cable ring because it was unable to obtain financing on satisfactory terms. TyCom, which had already begun constructing the system, announced that it would proceed alone with deployment of the system as originally planned and that it still expected to begin commercial operation in the second quarter of 2002.

FLAG North Asia Loop (FNAL)

Background

In January 2001 FLAG Telecom agreed with US-based Level 3 Communications to build the FLAG North Asia Loop (FNAL), a submarine fibre-optic cable linking Hong Kong, South Korea and Japan. When completed FNAL would be connected to Level 3's Tiger cable, linking Hong Kong, Taiwan and Japan, which was scheduled to come into operation in the second quarter of 2001. The entire system was expected to be in service by early 2002. Level 3 and FLAG Telecom would own and market their respective cables independently, and there would be no revenue-sharing between the two companies, but FLAG Telecom would be responsible for managing the entire system. By joining forces to complete and operate the cable ring the two companies would reduce their required capital expenditures and deliver fully redundant capacity sooner than if each company had embarked on such a system independently. The cost for constructing the entire system was estimated to be US\$900 million. The companies did not disclose how the cost was broken down between the two loops. Level 3 and FLAG Telecom planned to extend the cable loop to the United States via the Japan-US Cable, owned by a consortium of telecommunications companies, and FLAG Pacific-1.

Financing

In August 2001 FLAG Telecom announced that FLAG Asia Ltd had secured a US\$300 million 6.5-year syndicated credit facility to finance the FLAG North Asia Loop. The interest rate on drawn amounts was a spread over Libor ranging from 255 to 325 bps. Under the terms of the facility FLAG Telecom would lend up to US\$100 million to FLAG Asia Ltd for the project, but that amount could be reduced if additional bank lenders were brought into the syndicate. Westdeutsche Landesbank was the lead arranger, and the administration and security agent, while Royal Bank of Scotland was the documentation agent.

In October 2001 FLAG Atlantic-1 began full service following the commissioning of its southern cable. The project was completed within its US\$1.1 billion budget.

In January 2002 Moody's reduced its rating on the US\$300 million and €300 million 11.625 per cent senior notes due in March 2010 from 'B2' to 'Ca', one notch above a default rating, and reduced its rating on the US\$430 million 8.25 per cent senior notes due in January 2008 from 'Ba3' to 'Caa3'. The agency recognised FLAG Telecom's success in raising stand-alone financing for development of its cable systems, including the recent US\$300 million for the FLAG North Asia Loop, the support from Verizon's minority ownership interest and operating agreements with FLAG Telecom, and the generally high credit quality of its carrier receivables. The downgrades reflected Moody's concern that FLAG Telecom's fundamental business model would be affected by protracted softness in global telecommunications spending and that FLAG Telecom's liquidity would be come under pressure in the near term. FLAG Telecom's second-quarter results had been bolstered by presale contracts for FLAG Atlantic-

1 and the FLAG North Asia Loop, but revenues had dropped off in the third quarter and other recurring revenue sources had declined, reflecting soft carrier spending and competitive pricing pressure. Moody's observed that at the end of September 2001 FLAG had cash on hand, including restricted cash, of US\$668 million, approximately US\$410 million available under operating-subsidiary credit facilities and approximately US\$150 million anticipated receipts from Level 3/Reach, all of which was available to support US\$800–850 million anticipated capital expenditures and about US\$135 million in interest expense up to the end of 2002. Consequently, the agency concluded, FLAG would have severe liquidity problems by the end of 2002 if it was not able to revitalise its recurring EBITDA.

FLAG Telecom

Formation of holding company

In February 1999 FLAG Telecom was formed as a holding company for the FLAG group of companies. FLAG Telecom thus became the 100 per cent owner of FLAG Ltd and the 50 per cent owner of FLAG Atlantic Ltd along with GTS.

Initial public offering

In January 2000 FLAG Telecom filed a registration statement with the US Securities and Exchange Commission (SEC) for a proposed initial public offering (IPO) consisting of 21.2 million primary shares and 5.3 million secondary shares. The latter were to be sold by two original shareholders, GE Capital and AT&T Capital Corp., both of which would retain proceeds from the sale. The offering price was expected to be US\$20–22 per share. The company applied to list its shares on Nasdaq, under the symbol 'FTHL', and on the London Stock Exchange, under 'FTL'. FLAG Telecom intended to use the proceeds of the IPO to fund:

- its equity in FLAG Atlantic Ltd, its 50 per cent owned subsidiary;
- some of the existing debt of FLAG Ltd, its wholly owned subsidiary;
- additional network expansion and product development; and
- working capital and other general corporate needs.

According to a press release, at the time of the IPO registration the company had approximately 90 customers, including 17 of the top 20 international carriers based on traffic volume. Later in January Bell Atlantic announced that it had awarded preferred-supplier status to FLAG Telecom and had agreed to purchase 50 per cent of its cable-systems capacity over the next four years. The IPO, in February, was priced at US\$24 per share and netted the company US\$572 million.

Performance in fiscal 1999

Shortly afterwards the company announced its results for the fiscal year 1999. Revenues, including capacity sales, and standby maintenance and restoration revenues, were US\$162.4 million, compared to US\$208.2 million in 1998. Whereas standby maintenance and restoration revenues had increased, capacity sales revenues had declined, primarily because of a new accounting standard under which certain capacity sales could no longer be recognised as cur-

rent revenue because they did not satisfy the requirements of sales-type lease accounting. Instead, revenues from these sales would be deferred and amortised over the term of the contracts. FLAG Telecom's net loss for fiscal 1999 was US\$14.6 million and its adjusted EBIT-DA was US\$128.1 million, compared to a net loss of US\$11.6 million and adjusted EBITDA of US\$68.7 million for fiscal 1998.

Senior note offering

In March 2000 FLAG Telecom sold mirror tranches of US\$300 million and €300 million high-yield senior notes with 10-year maturities to net the company approximately US\$600 million in proceeds to fund:

- additional expansion of its network, including possible new cable systems;
- additional product development; and
- working capital.

With a coupon of 11.625 per cent, the notes were noncallable for five years. Under Rule 144A of the US Securities Act 1933, the company planned to sell the securities to Qualified Institutional Buyers and other investors outside the United States, and therefore did not have to register them.

Standard & Poor's assigned a 'B' rating to the proposed senior note offering, raised its rating on FLAG Ltd's US\$430 million senior notes from 'B+' to 'BB-' and assigned a 'BB-' corporate credit rating to FLAG Telecom. The agency said that the ratings reflected FLAG Ltd's improved operating performance during 1999, strong presales on the FLAG Atlantic-1 cable and enhanced financial flexibility resulting from the company's recent IPO. These factors were offset, however, by FLAG Telecom's leveraged capital structure, the rapid network expansion incorporated in its evolving business model, and pricing pressures on its existing and planned cable systems. The upgrade on the US\$430 million senior notes reflected a permanent reduction of bank credit availability from US\$370 million to US\$160 million, which reduced the amount of secured debt ahead of the noteholders. The rating on the proposed US\$600 million bond offering was two notches below the company's corporate credit rating because the holding company's notes were structurally subordinated to operating-subsidiary liabilities, and because the agency expected to see additional financing put in place to finance a trans-Pacific cable. Standard & Poor's noted that credit support for the holding company's notes would come from excess cash from FLAG Ltd, future dividends from FLAG Atlantic and future cash flows from the Pacific cable after operating-company debt was serviced.

Moody's assigned a 'B2' rating to FLAG Telecom's senior notes, reflecting:

- the company's significant competitive advantages as an independent wholesaler of transport capacity;
- the robust nature of the system being developed, which it expected would provide FLAG Telecom with a sound cost basis to absorb price declines;
- the large and rapidly growing market for international telecommunications; and
- the strategic value of the truly global telecommunications network that FLAG Telecom was creating.

At the same time Moody's reconfirmed its 'Ba3' rating on FLAG Ltd's 8.25 per cent notes due in 2008 and its 'Ba2' rating on FLAG Ltd's US\$160 million secured bank credit facility. Here again, the ratings were higher for debt at the operating-company level than at the holding-company level because the operating company had more direct access to cash flow to service the debt. The agency changed its outlook for FLAG Ltd from negative to stable, reflecting its good financial performance in 1999 and its continued reduction in bank debt through cash from operations and a portion of the proceeds from FLAG Telecom's IPO.

Duff & Phelps assigned a 'B+' rating to FLAG Telecom's senior notes. In addition to strong expected demand in the 'carrier for global carriers' market stemming from rapid growth in voice and internet traffic, the agency cited an increase in the number of international carriers that could become FLAG customers because of worldwide industry deregulation; high barriers to entry in the submarine cable business; and the company's experienced management team. Duff & Phelps noted that there had been strong demand for the Europe-Asia cable over the past two years and that US\$750 million capacity presales for the FLAG Atlantic-1 cable had funded a significant portion of its anticipated construction cost of US\$1.2 billion. Three carriers – GTS, PSINet and Teleglobe – each had acquired one of the cable network's six fibre pairs. Although the debt of FLAG Atlantic Ltd was nonrecourse to its parent, FLAG Telecom, and its results were not consolidated into the parent's results, Duff & Phelps considered the implicit support of the operating subsidiary in its rating decision. The agency also noted that FLAG Telecom was in the advanced stages of planning a trans-Pacific cable (discussed below) that would be financed in a manner similar to that for the FLAG Atlantic-1 cable. As a result of the US\$600 million note issuance in March 2000 and the proposed financing for a transpacific cable, consolidated debt was likely to reach seven times equity in the timeframe 2000–02. During that period Duff & Phelps expected adjusted EBITDA to be in the range 1.0–1.5. (Adjusted EBITDA reflected an adjustment for deferred revenue arising from recent accounting rule changes that no longer allowed certain capacity sales to be recognised as current revenue if they did not meet the criteria for sales-type lease accounting.)

Results for fiscal 2001 and review of business

In February 2002 FLAG Telecom announced that for fiscal 2001 revenues had risen by 90 per cent over fiscal 2000, to US\$188 million, but losses had risen by 150 per cent, to US\$224 million. The company said that it had access to US\$424 million in cash, US\$200 million under existing credit agreements and US\$321 million of restricted cash – enough in total to fund operations through to 2002. It estimated, however, that required capital expenditures in 2002 would be US\$475–500 million and that US\$75–115 million would be required for debt payments. The company was also contesting a demand to repay US\$23.8 million that PSINet had paid to it just before filing for bankruptcy.

In a review of its business, in the light of the battered telecommunications market, FLAG concurred with Moody's recent assessment that it had about one year to turn things around before it would face a liquidity problem. The company stated that:

If there is no improvement in our operating environment, we anticipate that at some point in 2003 we will not have sufficient liquidity to continue our operations unless we are able to raise additional funds, find a strategic partner or restructure our indebtedness.

Looking at FLAG Telecom and its competitors, a credit analyst remarked that a great deal of good undersea network capacity had been laid down, but more capital expenditures were still required. Raising money for the required additional expenditures would be difficult because the market had moved away from the telecommunications industry.

Also in February 2002 Standard & Poor's reduced FLAG Telecom's rating from 'B+' to 'CCC+'. The price of FLAG Telecom's €300 million 11.625 per cent bonds due in March 2010 fell to 21 per cent of face value, indicating that the market viewed the company as a candidate for debt restructuring.

Bankruptcy and reorganisation

In March 2002 FLAG Telecom hired Credit Suisse First Boston and The Blackstone Group for advice on financial and strategic alternatives. In an effort to conserve cash the company decided not to make the interest payments on its US\$300 million and €300 million 11.625 per cent senior notes due on 30 March. It had a 30-day grace period before defaulting, in which case the full amount of the debt would become payable. In a note to the company's Form 10-K, including full annual financial statements for 2001, filed with the US SEC on 1 April, the auditor, Arthur Andersen & Co., said that the company's failure to make the interest payments raised 'substantial doubt' about its ability to continue as a going concern.

In the 10-K report FLAG Telecom's management disclosed that Westdeutsche Landesbank had cancelled its commitment and terminated its lending facility for the FLAG North Asia Loop (FNAL), which was scheduled for completion in the second half of 2002. If the company was unable to arrange alternative financing, it would not be able to complete FNAL and would be forced to write off part of its US\$500 million investment in that system.

On 10 April 2002 FLAG's board of directors authorised the company's management and advisers to negotiate a comprehensive restructuring proposal with certain creditors, including representatives of the FLAG Atlantic Bank Group, holders of FLAG Telecom's various senior notes and significant trade creditors. Under the proposal FLAG would exchange:

- the FLAG Atlantic bank debt of approximately US\$257 million for about US\$70 million in cash and new FLAG common equity;
- US\$430 million of FLAG Ltd 8.25 per cent senior notes due in 2008 for approximately US\$170 million of new FLAG senior notes; and
- US\$300 million and €300 million of FLAG 11.625 per cent senior notes due in 2010 for about US\$150 million in cash, about US\$40 million of new FLAG senior notes and some new FLAG common equity.

Under the proposal all trade creditors and equipment suppliers would be paid in full in the ordinary course of business or through vendor financing. As is common in restructurings of this type, existing common equity holders would be diluted substantially. FLAG Telecom's management said that it intended to manage its business in a focused manner, conserving capital and reducing costs wherever possible. The company would continue to provide core back-bone capacity to traditional carriers, ISPs and other content providers.

In response to the missed interest payment the FLAG Atlantic bank syndicate accelerated FLAG Atlantic's bank debt, leaving FLAG Telecom and four subsidiaries no choice but to

file with the US Bankruptcy Court in New York for voluntary Chapter 11 bankruptcy on 12 April 2002. FLAG thus followed in the path of its competitor, Global Crossing, and other carriers, including Teligent, 360Networks, Viatel, Winstar Communications and PSINet. In its filing FLAG Telecom listed assets of about US\$3.3 billion and debt of US\$2.6 billion as of 31 March. In another filing FLAG Ltd cited US\$1 billion in assets and US\$798 million in debt. Shortly after it filed FLAG Telecom received a notice from Nasdaq that its securities were subject to delisting for reasons including the bankruptcy filing and failure to maintain Nasdaq's minimum bid price.

In May 2002 FLAG Telecom sought the bankruptcy court's authority for a cost reduction programme, under which it would reduce its workforce by about 50 per cent. Employee costs accounted for about US\$58 million per year in FLAG's budget and the anticipated annual cost reduction was about US\$23 million. The company's annual budget had made a provision for 425 employees but not all positions had been filled. At the same time FLAG Telecom asked the court to approve severance payments and a key-employee retention programme. In addition, at various times during the bankruptcy proceedings the company asked for and received the court's authorisation to provide funds to some of its subsidiaries to keep its global network operating.

Also in May the bankruptcy court gave FLAG Telecom permission to work with Reach and Alcatel to complete the FLAG North Asia Loop (FNAL), noting that the completion of the system would provide FLAG Telecom with a source of revenue as it continued its restructuring. The first segment, between Hong Kong and Tokyo, constructed by Reach, had been completed in 2001. Reach, a joint venture between Pacific Century Cyber Works and Telstra Corporation, had recently purchased Level 3's Pacific cable interests. The second segment, between Seoul and Tokyo, had just been completed in May. The remaining segment, from Seoul to Hong Kong, was at an advanced stage and was expected to enter service during the second quarter of 2002.

In June 2002 FLAG Telecom filed a complaint in the bankruptcy court to force Royal Bank of Scotland to turn over US\$10.9 million that it was holding in a collateral account covering FLAG's obligations under a currency-swap agreement signed when the €300 million bonds were issued in 2000. An early termination of the swap was triggered by FLAG's default on the bonds. The US\$10.9 million that FLAG was seeking represented US\$17 million that Royal Bank of Scotland was holding in the collateral account, less an early termination penalty of US\$6.1 million. Royal Bank of Scotland said that it was entitled to set off the funds owed to FLAG Telecom against amounts that it was owed by FLAG Atlantic under its bank debt facility. FLAG Telecom said that the funds were property of its estate and that it was entitled to use them in its reorganisation plan.

As in many corporate bankruptcies, FLAG Telecom became the target of class-action lawsuits filed by law firms specialising in this type of suit on behalf of disgruntled investors. One complaint alleged that FLAG Telecom had led investors to believe that there was huge demand for FLAG Atlantic Ltd's cable system when, in fact, it had been marketing the system with limited success. It also alleged that FLAG had engaged with competitors in a series of reciprocal transactions for the purchase and sale of dark fibre-optic cable, in a 'dark fibre swap', thereby artificially inflating its operating results.

In July 2002 FLAG filed a reorganisation plan, and announced its intention to emerge from Chapter 11 and related proceedings just a couple of months later, in September, with its global network intact. The company believed that it had achieved agreement in principle

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among its principal creditors to support the main economic provisions of the plan. Highlights of the plan were as follows.

- Holders of FLAG Telecom Holdings' 11.625 per cent senior notes would receive US\$245 million in cash, a US\$45 million promissory note (callable at US\$30 million for 18 months) and 5 per cent of the common stock of what was called 'Reorganized FLAG Holdings'.
- Holders of FLAG Ltd's 8.25 per cent notes would receive approximately 63 per cent of the common stock of Reorganized FLAG Holdings.
- Bank lenders under a credit facility previously extended to FLAG Atlantic Ltd would receive approximately 26 per cent of the common stock of Reorganized FLAG Holdings.
- Certain significant trade creditors, such as Alcatel, Reach and Ciena, would have their agreements with FLAG amended and assumed, and would receive other consideration, including notes and common stock of Reorganized FLAG Holdings and cash, as detailed in the plan.
- Trade creditors of FLAG Telecom's entities, other than FLAG Atlantic Holdings and its debtor subsidiaries, would receive whatever treatment they had negotiated with FLAG, reinstatement of their claims or payment in full.
- Trade creditors (other than Alcatel) of FLAG Atlantic Holdings and those of its subsidiaries that were debtors in the proceedings would receive only their *pro rata* rights to preference actions.

As usual, not all stakeholders were in agreement. A group of equity holders called the FTHL Investors Group opposed the reorganisation plan, saying that the filing did not provide enough information for interested shareholders to make informed judgements; that the value of the assets in the emerging company was understated; that FLAG Telecom was a solvent company; and that equity holders should receive distributions under the proposed plan. In a bankruptcy proceeding it is common for equity holders to press for a higher valuation that potentially allows them to receive some portion of the company's future cash flow, and for debtholders to press for a lower valuation that provides all the available future cash flow to them and none to the stockholders.

The US Bankruptcy Court for the Southern District of New York approved FLAG Telecom's Chapter 11 Plan of Reorganization on 26 September 2002, providing for the company's worldwide business to emerge from the proceedings intact and resulting in creditors owning the equity of the reorganised company. The company announced its emergence from Chapter 11 proceedings on 10 October, just six months after filing. FLAG Telecom stated its goal of establishing itself as a leading independent global transport and network services provider. To meet that end it intended to continue to enhance the connectivity between its own network and other networks, in order to enable new customers to readily move traffic onto the FLAG Telecom global network, to deepen and broaden relationships with its current customers, and to expand the range of its products and services.

Principal problems and lessons learned

A. Jay Baldwin believed that the principal problem with the original financing was that there were so many 'firsts'. For NYNEX, the other equity partners, the bankers, the lawyers and

the ECAs alike, this transaction was unlike any that they had ever done before. Other important problems included:

- delays in arranging supply contracts because of efforts to get the best price;
- uncertainty concerning the firmness of the market for submarine cable capacity; and
- difficulty in getting PTTs to sign capacity sales agreements before construction is completed.

Speaking in 1996, Baldwin said that if FLAG did not meet its business plan the reason would be that the project was not financed and built as quickly as it should have been. Purchasing people wanted to get the lowest possible prices, and were willing to prolong the competitive bidding and negotiating process. Lenders and lawyers said that this was one of the most complicated deals they had ever done. The loan documentation seemed needlessly complicated. Meanwhile the competitive threat of a second cable became more real the longer the FLAG project was delayed.

The principal lesson to be learned from FLAG Telecom's bankruptcy and re-emergence in 2002 is that aggressive network expansion financed with high leverage may have been a viable strategy while internet use, telecommunications traffic and related capital spending were growing rapidly, but FLAG did not have sufficient cash flow to service its debt when the market collapsed.

¹ The initial version of this case study, prepared in 1996, was partly based on an interview with A. Jay Baldwin, the original Vice President and Chief Financial Officer of FLAG Ltd. Coverage of events since 1996 is based on articles in the financial press.

Integrated accommodation services for GCHQ, United Kingdom

Type of project

New accommodation for British government's signals intelligence centre.

Country

United Kingdom.

Distinctive features

- Largest facility built so far under the British government's Private Finance Initiative (PFI).
- World's largest electronic listening facilities outside the United States.
- High security requirements.
- Largest PFI bond financing to date.
- High financial leverage.
- Bonds unconditionally guaranteed by financial guarantee insurance policy.

Description of financing

The £800 million total project cost is being financed as follows:

- £406,850,000 6.48 per cent guaranteed bonds due in 2029, with interest paid semi-annually and principal repaid according to semiannual amortisation schedule beginning on 30 September 2005; average life of 19.7 years; guaranteed by Financial Security Assurance Ltd; and with coupon equivalent to spread of 180 basis points (bps) over UK gilts;
- £22,610,000 in secured mezzanine bonds due in 2028;
- £22,547,778 as sponsors' subordinated loan;
- £55,000 in sponsors' share capital;
- £33,000,000 in estimated proceeds from sale of surplus plots of land during construction period; and
- revenues earned during construction period.

Project summary¹

Government Communications Headquarters (GCHQ), based in Cheltenham, Gloucestershire, is the British government's signals intelligence centre. GCHQ has a statutory responsibility to provide UK government departments and military commands with signals intelligence, and plays an essential role in supporting the UK government's security, defence, foreign and economic policies.

GCHQ currently operates in 50 buildings on two sites. Some of the buildings were designed and constructed as temporary accommodation in the 1940s. Their age and the dispersed nature of the facilities have resulted in high maintenance requirements and suboptimum working conditions. The project will allow GCHQ to operate on one site in a specially designed circular, four-storey building complex, occupying an area of 102,000 square metres (about the size of the former Wembley Stadium), which will be a core long-term and essential asset for GCHQ. The old, compartmentalised facilities fostered 'tribalism', organisational 'silos', and introverted, analytical attitudes traditionally associated with GCHQ staff. While such structures were common during the cold-war era, when GCHQ had a more monolithic target, today's world of counter-terrorism and current management styles called for a new approach. The new building, nicknamed the doughnut because of its shape, brings GCHQ's staff of more than 4,000 linguists, mathematicians, accountants, lawyers, analysts and technicians into one huge building with open-plan office spaces that are adaptable to constantly shifting, flexible, multifunctional teams.²

In June 1997 the project Client, the Secretary of State for Foreign and Commonwealth Affairs, invited expressions of interest for:

- the design, construction, financing, service and maintenance of the new accommodation for GCHQ;
- service and maintenance of the existing GCHQ facilities while construction was under way; and
- remediation of certain surplus and retained plots of land.

A consortium consisting of Carillion plc, Group 4 Securitas NV (as it then was) and British Telecommunications plc (BT) was chosen in competitive bidding. The consortium formed Integrated Accommodation Services, a special-purpose project company, to finance, design, build and maintain the accommodation, as well as other special-purpose companies (described below), and entered into the Project Agreement with the Client.

The new GCHQ is the largest facility built so far under the British government's Private Finance Initiative (PFI) and represents the largest PFI bond financing to date. Under the Project Agreement, Building Contract and other agreements the concessionaire has agreed to demolish existing facilities, and design, construct, finance, service and maintain the new GCHQ facilities for a period of 30 years. Construction risk is increased by the size of the project and embedded security features, but the complexity of construction is less than for a PFI hospital. As with other PFI projects the performance measurement and payment structures are very complex.

Bonds for this highly leveraged project are unconditionally guaranteed by a financial guarantee insurance policy from a provider rated 'AAA'. Standard & Poor's gave the project bonds an 'A' rating, and Moody's gave them a 'Baa1' underlying rating. Standard & Poor's

rating is the highest achieved by a PFI project at this stage, evidencing the agency's strong support for the financing and risk allocation structures.

Carillion Construction Limited, a subsidiary of Carillion plc, is building the new GCHQ under a three-year construction contract worth about £330 million. It will then be responsible for maintenance over the life of the 30-year concession, under a contract worth about £40 million.³ At the time of financial closing, Euan McEwan, Executive Director of Carillion's PFI business, said:⁴

By 2003 GCHQ will have a superb facility which will provide excellent working conditions and provide the best value-for-money solution for replacing the existing outdated buildings.

Background

PFI

In the early 1990s the British government was faced with both an increasing need to build, improve and repair the motorway system and other parts of the infrastructure, and decreasing public appetite for taxes to support such expenditures. It was also beginning to look for ways to help the British construction industry, which had suffered from a decline in business resulting from reduced government spending and reduced private construction following the boom in the 1980s. Against this background PFI, introduced in 1992, became an important component of the Conservative government's platform. After initially being opposed by the Labour Party, it later also gained the support of that party, which has been in government since 1997.

The central tenets of the PFI are:

- to purchase services, not assets;
- to transfer risk from the public to the private sector;
- to promote private sector market discipline;
- to secure value for money in government procurement; and
- to create long-term contracts that can be financed in the banking or capital markets.

Since the alternative to a PFI deal is government borrowing at lower cost, a private contractor has to innovate and provide better solutions that compensate for the financing cost differential.

Sponsors

Carillion is the largest British construction company specialising in PFI projects. It was established in 1999, when Tarmac plc spun off its construction business so as to concentrate on its aggregates business, which was generating more cash. As of 2001 Carillion had 14 long-term PFI contracts on its books, including a construction contract for the M40 motorway. The company's completed projects included the first PFI hospital and the first PFI prison. The company expected that long-term PFI construction and servicing contracts, in the United Kingdom and elsewhere, would be generating at least half of its earnings by 2004. Carillion's chairman, Sir Neville Simms, said that he considered PFI projects in the United Kingdom to be a growth market, particularly in health, transport and prisons, the areas that the company was targeting. The company also was preparing for several overseas PFI projects, including

toll roads in the Irish Republic, Canada, and the Middle East. Aside from its PFI business, the company was also engaged in traditional construction contracts.⁵

Group 4 Securitas NV is one of the largest private security organisations in the world, operating in more than 40 countries with annual turnover of more than €1 billion and more than 80,000 employees. The GCHQ project represents the fifth in which Carillion and Group 4 have partnered. Group 4 has diversified its range of services in the past 15 years. Services that Group 4 currently provides include contracted security services to government and commercial sites; logistics and inspection services (including reading nearly all gas meters in the United Kingdom); operation and facilities management of correctional facilities, secure training centres and immigration centres under PFI and government outsourcing contracts; integrated support services including help desk, telephone reception and courier services for multisite commercial customers; specialist cleaning and maintenance services for industrial and commercial customers; secure pet personnel escort and asset movement services; specialised information systems development; administrative and contract management services; and training and development services. A presale report from Standard & Poor's noted that Group 4 had considerable experience liaising with the police, military and other security authorities, as well as running a number of prisons and immigration detention centres. That experience included working with the British Home Office and Ministry of Defence on live facilities, while minimising disruption to those organisations' operations. The Facilities Provision Contractor for the GCHQ project is a wholly owned subsidiary of Group 4 Management Services Holdings Limited.

In June 2000 Group 4 merged with Falck A/S, a Danish security and safety services company, to create Group 4 Falck A/S. The combined entity is the second-largest security service provider in the world, with revenues of more than £1.2 billion and activities in more than 50 countries.

BT operates on a global basis, offering telecommunications services to clients across the world. In early 2000 the company employed 136,800 individuals. BT has extensive experience with major network implementation projects in both the private and public sectors.

Corporate structure

Accommodation Services (Holdings) Limited was incorporated as a private limited company in England and Wales in 1999. It is a special-purpose company established for the purpose of acting as the holding company of Integrated Accommodation Services plc. Its ownership is as follows: Carillion, 40 per cent; Group 4, 40 per cent; and BT, 20 per cent.

Integrated Accommodation Services plc (IAS) also was incorporated in 1999 as a private limited company in England and Wales. It was established as a special-purpose company with the principal purposes of issuing the project bonds; designing, constructing, financing, servicing and maintaining new facilities to accommodate GCHQ; and, in the interim, maintaining the existing GCHQ facilities. Under the Project Agreement the shareholders in IAS may sell their shares only if construction has been completed, if there are no actual or potential acceleration events, and if IAS will maintain its credit rating after the shares are sold to a different owner.

Financial structure

The project has relatively high financial leverage with senior debt of £406,850,000, representing about 80 per cent of external funding, and mezzanine notes (£22,610,000), the shareholder loan (£22,547,778), and nominal equity (£55,000) accounting for the remaining 20 per cent. Carillion's and Group 4's financial contribution commitments are backed by bank letters of credit.

Debt repayment

Funds for the repayment of project debt will come from two sources:

- the Unitary Payment, the monthly payment from the client set out in the Project Agreement, after allowing for costs; and
- a pre-agreed amount of approximately £33 million from the sale of surplus land after existing GCHQ facilities have been vacated and IAS has reconditioned the land.

It is expected that most of the land will change hands in 2005.

How the financing was arranged

Bank of America Securities (BofA) advised the Sponsors and Issuer through all stages of the project to structure the optimal financing arrangements. BofA's work included:

- designing the key risk barometer, the payment mechanism;
- selecting qualified senior and mezzanine financing providers;
- developing risk-allocation techniques to support the Sponsors' and funders' approach to the transaction;
- helping to structure presentations to, and negotiate with, the rating agencies;
- sorting out issues related to the land sale; and
- recommending a change in lawyers.

BofA recommended bond financing after comparing it with a bank-based solution. Financial Security Insurance (UK) Limited (FSI), a wholly owned indirect subsidiary of Financial Security Assurance Inc. (FSA), was selected as insurer to 'wrap' the senior bond issue. Deutsche Bank was selected as Lead Manager and Abbey National was selected to underwrite a mezzanine bond. BofA also coordinated the rating process with Standard & Poor's and Moody's, administered the transaction closing, and provided the construction period swap, which provided flexibility for milestone achievements.

Deutsche Bank managed the £407 million senior bond issue. After conducting road-shows in June 2000 the bank filled the book in 24 hours with 30 institutional investors, which were predominantly insurance companies and pension funds along with investment management groups and retail accounts. At the time of the project financing Deutsche Bank was working on 20 PFI projects and had closed US\$1.5 billion in financings for PFI projects. Abbey National subscribed to the £22.6 million secured mezzanine bonds and IAS shareholders purchased the £22.6 million deeply subordinated notes.

The financial guarantee

Financial guarantee insurance consists of a guarantee of scheduled principal and interest payments of an issuer's securities, thus enhancing the credit rating of the securities, in consideration for payment of a premium to the insurer.

FSA is a New York-based 'monoline' insurance company; that is, it provides only one type of insurance. FSA and its subsidiaries, including FSI, are engaged exclusively in the business of writing financial guarantees and related lines of insurance, principally with respect to securities sold in public offerings and private placements. FSA insures principally asset-backed, collateralised and municipal securities. At the time of the project financing FSA's insurance financial strength was rated 'Aaa' by Moody's, its insurer financial strength was rated 'AAA' by Standard & Poor's, and its ability to pay claims was rated 'AAA' by Fitch IBCA, Inc. (now Fitch).

The IAS project bond was FSI's eighth PFI bond. Douglas Segers, a director at FSI in London, said at the time of the financing that the saving for IAS by using financial guarantee insurance was considerable, and that it would have been impossible to place a deal of this size with investors without such a wrap.⁶

Shareholder support deed

Covenants made by each of the Sponsors under the Shareholder Support Deed to the Finance Parties, the Mezzanine Bond Trustee, the Shareholder, and the Issuer include the following:

- to notify the Security Trustee and Controlling Creditor of any events that affect its creditworthiness or the validity of its representations and warranties;
- to ensure that all claims against it by FSI, the Bond Trustee, the Mezzanine Bond Trustee and the Security Trustee rank at least *pari passu* with those of other unsecured creditors; and
- to ensure that neither the Shareholder nor the Issuer issues any further shares, or exercises or alters any rights that would cause a breach of conditions in the Finance Documents.

Each of the parties to the Shareholder Support Deed acknowledges that it has no recourse to the Sponsors under the Finance Documents or Project Contracts and its remedy in the event of a Breach is limited to rights it can exercise when a Trigger Event or Acceleration Event occurs.

Issuer subordinated loan agreement

The Issuer Subordinated Loan Agreement governs loans from the Shareholder to the Issuer.

Mezzanine bonds

The Mezzanine Bonds, in an aggregate principal amount of £22,610,000, were issued to Abbey National Treasury Services. These bonds are secured by the same fixed and floating charges as the senior bonds, but in all circumstances rank subordinate to the senior bonds in priority of payment to creditors.

Principal contracts

Project Agreement

Under the Project Agreement IAS agreed to design, construct, finance, service and maintain the new facilities for a period of 30 years. IAS also agreed to provide interim services while the new facility was being constructed.

Building Contract

Under the Building Contract IAS entered into a subcontract with Carillion Construction Limited, the Building Contractor, to carry out design, construction, fitting out and commissioning of the new GCHQ facilities; the demolition of the existing facilities; completion of a new car park; and certain remediation work required for land that would become surplus after the project was completed. Under the Building Contract Guarantee the obligations of the Building Contractor are guaranteed by its parent, Carillion plc. Under the Building Contract Performance Bond St Paul International Insurance Company Limited granted IAS a performance guarantee bond.

Building Contract Information Technology (IT) Sub-Contract

The Building Contractor entered into the Building Contract IT Sub-Contract with BT for the provision and installation of cabling and technical infrastructure.

Facilities Provision Contract

IAS entered into the Facilities Provision contract with the Facilities Provision Contractor to provide 'Interim Services' at the existing facilities, such as catering, cleaning and maintenance, before construction of the new facilities is complete; and 'Steady State Services' at the new facilities after they are constructed, such as provision of an integrated customer service centre, physical security, site and accommodation management, waste, catering, cleaning, and maintenance of technical infrastructure. Some of those services will be subcontracted to third-party service providers. Steady State Services not related to site and accommodation management, technical infrastructure or the integrated customer service centre are called 'Tested Services' and are subject to a benchmarking/testing procedure on the 15th, 20th and 25th anniversaries. Under this arrangement the Facilities Provision Contractor may be replaced with a new provider based on criteria such as value for money.

Capital Replacement Contract

IAS entered into the Capital Replacement Contract with Carillion Construction Limited, the Capital Replacement Contractor, for the replacement and repair of certain specified assets related to the project. The obligations of the Capital Replacement Contractor are guaranteed by Carillion plc under the Capital Replacement Contract Guarantee.

Surplus land sales

Under the Surplus Plot Sale Agreements with the Client IAS acquired certain plots of land made surplus by demolition of the existing facilities and development of the new facilities.

Under the Surplus Plot Sub-Sale Agreements IAS sold these plots on to Alfred McAlpine Homes Limited. IAS will use the proceeds of these sales to reduce project debt. The timetable for achieving these phased disposals was deliberately made flexible to allow for any delays, whether caused by the Foreign and Commonwealth Office (FCO, which is referred to as the 'Authority', by the Contractor or by *force majeure*.

Payment structure

The principal way in which IAS is paid by the Client is through the monthly 'Unitary Payment' referred to above. This payment is subject to a scheduled step-up, indexation and a regime for deductions.

- There will be a step-up of the Unitary Payment once the facilities have been completed.
- A portion of the Unitary Payment is indexed annually to the British Retail Prices Index (RPI).
- For Interim Services provided before completion of the new facilities the Unitary Payment is subject to potential deductions based on the project company's failure to provide required staffing levels and other input-based measures, and on the number of customer complaints upheld in relation to Tested Services.
- Following completion of the new facilities and after the step-up the Unitary Payment is subject to deduction for unavailability of the new facilities as defined and measured under the Project Agreement, and failure to perform the Steady State Services or the 'Limited Term Services' (certain defined services provided by IAS for just the first 10 years after the facilities are completed) in accordance with the objective measures set out in the service agreements.

In addition to the Unitary Payment fees are paid to IAS for certain management services under the category of Interim Services, and for reimbursement of certain purchased goods and services.

Account structure

Specially designated bank accounts that IAS is required to maintain include the following:

- Operating Account;
- Escrow Account;
- Senior Debt Service Payment Account;
- Senior Debt Service Reserve Account;
- Senior Supplemental Reserve Account;
- Senior Defeasance Account;
- Mezzanine Debt Service Payment Account;
- Mezzanine Debt Service Reserve Account;
- Mezzanine Defeasance Account;
- Maintenance Reserve Account;
- Tax Reserve Account; and
- Insurance Proceeds Account.

Under the Collateral Deed IAS may make withdrawals from these accounts only in accordance with the financing documents. It must ensure that the balances of the Tax Reserve Account, the Senior Debt Service Reserve Account and the Maintenance Reserve Account are at or above required minimum levels.

Intercreditor arrangements

The parties to the collateral deed are bound by the Intercreditor Arrangements and the Sponsors are obliged under the Shareholder Support Deed to adhere to those arrangements. The purpose of the Intercreditor Arrangements is to regulate claims of the finance parties under the Bonds, the Bond Trust Deed, the Mezzanine Bonds, the Mezzanine Bond Trust Deed, the Security Trust Deed, the Issuer Debenture, the Shareholder Debenture, the Swap Agreement, the Swap Deposit Agreement, the Insurance and Indemnity Agreement, the Shareholder Support Deed, the Issuer Subordinated Loan Agreement, and the HoldCo Loan Notes, loan notes issued by the Shareholder to the Sponsors under terms defined in the Shareholder Support Deed.

Among the important functions of the Intercreditor Agreements is ensuring that the junior and mezzanine liabilities are subordinated to the senior debt. Subject to certain defined 'Reserved Matters' and 'Entrenched Rights' a Finance Party may exercise its rights under the Finance Documents only with the consent of the Controlling Creditor. For example, Reserved Matters for the Bond Trustee include the right to determine whether FSI is in default of its agreements under the Bond Policy; to amend, make claims under, or enforce provisions of the Bond Policy; to make claims under indemnities in favour of the Bond Trustee; and to make efforts to collect payments owed to the Bondholders.

Priority of payments

Prior to the date of any enforcement actions or any event that makes the bonds immediately due and payable, the order of priority of payments, known as the 'cash flow waterfall', is as follows:

- fees and expenses due to the Security Trustee, the Bond Trustee and the Mezzanine Bond Trustee;
- fees and expenses due to FSI;
- interest on overdue amounts under the bonds;
- operating expenses and capital replacement maintenance expenses in accordance with the operating budget;
- tax payments;
- transfers of scheduled interest and principal payments to the Senior Debt Service Payment Account on the eighth business day before they are due;
- amounts due to FSI, under the Insurance and Indemnity Agreement, to reimburse payments made under the Bond Policy;
- fees and expenses due to the Mezzanine Bond Trustee, provided that no Senior Trigger Event exists;
- transfers to the Senior Debt Service Reserve Account on each payment date;
- transfers to the Maintenance Reserve Account on each payment date;
- transfers to the Tax Reserve Account on each payment date;

- transfers to the Change in Law Reserve Account;
- transfers to the Senior Supplemental Reserve Account;
- payment of overdue principal and interest on the Mezzanine Bonds;
- transfers to the Mezzanine Debt Service Payment Account, provided that no Senior Trigger Event exists;
- transfers to the Mezzanine Debt Service Reserve Account, provided that no Senior Trigger Event exists;
- payments to the Mezzanine Supplemental Reserve Account, provided that no Senior Trigger Event exists;
- transfers to the Senior Supplemental Reserve Account on each payment date when a Senior Shareholder Trigger Event exists; and
- transfers to the Issuer Distribution Suspense Account on each payment date when no Trigger Event exists.

Security

The bonds, IAS's liability to FSI, and certain other liabilities of IAS are secured by first fixed and floating charges over the assets of IAS and its parent holding company, Accommodation Services (Holdings) Limited. The benefit of the security is held by the Security Trustee, and the rights of the bondholders and other secured creditors with respect to the security are regulated by the terms of the Security Trust Deed and the Collateral Deed.

Liquidity measures

IAS was required to fund a senior debt service reserve, covering six months of future debt service at the financial closing and subsequently to fund a six-month mezzanine debt service reserve.

The project company will establish an £8 million 'change in law' reserve at the beginning of the project's operational phase, which represents the maximum amount of capital costs that IAS could be responsible for bearing under the Project Agreement.

IAS also is required to maintain a life-cycle maintenance reserve averaging £5 million throughout the concession period. To protect senior bondholders IAS is restricted from paying dividends, and from making payments on the mezzanine notes and shareholder loan, if:

- the average debt service coverage ratio (DSCR) on a given payment date and two years looking forward is less than 1.15 times;
- the bond loan coverage ratio is below 1.2 times on a given payment date and two years looking forward; or
- the debt service reserve and maintenance reserve accounts are not fully funded.

Collateral Deed

The Collateral Deed contains IAS's representations, warranties and covenants in favour of the Bond Trustee, the Security Trustee and FSI. It requires IAS to maintain minimum reserve account balances and specified ratios, such as a DSCR and a bond life cover ratio. The Collateral Deed also governs the intercreditor arrangements among the Bond Trustee, FSI,

the Mezzanine Bond Trustee, the Security Trustee, the parent holding company and the project sponsors.

Hedging arrangements

The proceeds of the bond issue were placed on deposit with several banks until they were required for drawing to meet project costs and expenses. Under the Swap Agreement with BofA, the Swap Counterparty, the floating rate earned on the deposits was swapped into a fixed rate.

Covenants

General covenants of the Issuer and Shareholder include the following:

- to obtain and maintain all necessary authorisations and approvals;
- to comply with all applicable laws;
- to procure all necessary registrations;
- to ensure that accounting systems are implemented, and that bank statements and books of account are properly maintained;
- to remain UK-resident for tax purposes;
- to make all necessary arrangements to receive payments under the Project Agreement without deductions or withholding;
- to notify the Controlling Creditor, FSI, if a change in law makes it liable for deductions or withholding with respect to payments under relevant project documents;
- to ensure the continuing validity and priority status of the Security Documents;
- to notify the lenders of any petition for winding up the Issuer or Shareholder;
- to notify the lenders of any potential Trigger Event or Acceleration Event (as defined below);
- to furnish to the lenders any data that the Controlling Creditor reasonably requests;
- to permit the Controlling Creditor and the Mezzanine Bond Trustee to inspect the Issuer's and Shareholder's books;
- to ensure that claims of the lenders rank at least *pari passu* with claims of other unsecured creditors;
- in the case of the Shareholder, immediately following an Acceleration Event, to pay into the Equity Proceeds Account the unpaid amount available under the Subordinated Loan Agreement;
- to comply with terms of the Waterfall;
- to make available annual audited financial statements each year;
- not to agree to any transfer of sponsors' ownership interests without consent by the Controlling Creditor;
- not to assume any indebtedness except as permitted by the Collateral Deed;
- not to change the fiscal year, carry on any business other than the project, amend articles of association, merge or demerge without the consent of the Controlling Creditor, the Security Trustee, the Bond Trustee and the Mezzanine Bond Trustee;
- not to make any amendment to the financing documents without the consent of the Security Trustee; and
- not to settle any claim for liquidated damages without the consent of the Controlling Creditor.

Other covenants by IAS, the Issuer, include:

- to deliver to the lenders annual financial statements of each contractor;
- to provide the lenders with unaudited financial statements for the project;
- to allow lenders access to the project company's books;
- to provide financial forecasts, operating budgets and monthly management accounts to the Controlling Creditor and the lenders;
- to maintain ownership of intellectual property rights;
- to maintain required insurance;
- to maintain a construction supervisor for the project;
- to comply with applicable environmental laws;
- to make reasonable endeavours to ensure that all the sponsors and contract parties comply with the project agreements and documents;
- to maintain required balances in the Senior Debt Service Reserve Account and the Maintenance Reserve Account;
- to ensure that appropriate people with requisite qualifications are managing the project; and
- to ensure that contractors such as the Capital Replacement Contractor or the Facilities Provision Contractor are replaced if their contracts are terminated.

Trigger Events

Upon certain 'Trigger Events' the Collateral Deed gives the Controlling Creditor and/or the Mezzanine Bond Trustee certain additional rights against IAS, the Issuer, such as to prevent issuance of dividends from the Issuer to the Shareholder or from the Shareholder to the Sponsors, or to repay sums due under the Issuer Subordinated Loan Agreement.

Mezzanine Shareholder Trigger Events include:

- performance thresholds for various services defined in the Project Agreement;
- a DSCR below 1.07; and
- a bond life coverage ratio of less than 1.12 (the sum of the present value of future cash flow, the balance in the Senior Debt Service Reserve Account, the balance in the Tax Reserve Account and the Mezzanine Reserve Account divided by the principal amount of bonds outstanding).

Senior Shareholder Trigger Events include:

- failure by the Building Contractor to complete construction by six months after the originally scheduled date;
- a material breach of any of the project contracts by a contractor;
- failure by the Issuer or the Shareholder to provide required financial information; and
- occurrence of an 'Acceleration Event' (as defined in the following section).

Acceleration Events

Acceleration Events, as defined in the Collateral Deed, include:

- failure by the Issuer or Shareholder to make payments under the loan agreements within specified grace periods;

- representations and statements that prove to be incorrect;
- failure by sponsors or contractors to comply with their contractual obligations;
- the required security ceasing to be in full force;
- the DSCR falling below 1.05 or the bond life coverage ratio falling below 1.1 on any payment date;
- the Client being in breach of the Project Agreement for more than 45 days;
- failure by the Building Contractor to complete construction by nine months after the original scheduled date;
- the required insurance ceasing to be in force; and
- failure by the Shareholder or any Sponsor to comply with capital contributions defined in the Shareholder Support Deed.

Risk factors

The risks discussed in this section are those described in the prospectus for the bonds, and in the presale reports by two rating agencies, Standard & Poor's and Moody's.

Cost overrun and construction delay

This is, of course, the primary risk in any construction project. The risk profile of this contract is increased by its sheer size and its embedded security features, including extra measures to prevent unauthorised entry, and redundancy of electrical, communication and computer systems. As a result of these security features the construction cost of this project, per square metre, is twice the cost of a normal hospital and three times the cost of most office buildings.

Nonetheless, in the opinion of Mouchel Consulting Limited, Technical Adviser to the bondholders, no new design and construction techniques were being used, the level of construction complexity was less than for a typical PFI hospital, the Client's security specifications did not add significant construction or technology risks, and the project was well within Carillion's capabilities.

IAS passed its cost overrun and construction delay risk on to the Building Contractor through a fixed-price, date-certain, turnkey construction contract. In its presale rating report Standard & Poor's expressed the opinion that Carillion had sufficient experience and expertise to carry out the project. However, the agency noted that this was the largest single project that Carillion had undertaken without sharing the risks through a joint venture, and that it represented 10 per cent of Carillion Construction Limited's annual turnover and about 5 per cent of the total group's turnover. Because of the size of the contract and Carillion's low operating margins, any financial difficulty that the company experienced in fulfilling the contract could affect the overall financial condition of the company. The size and importance of the project led Carillion to create a separate business unit to ensure performance transparency and senior management oversight.

The Building Contractor's obligations are supported by a parent-company guarantee from Carillion plc and a performance bond issued by St Paul Insurance Company Limited covering a maximum liability of £80 million. If construction of the facilities is delayed and the Client has not assumed responsibility for the delay, the step-up in the Unitary Payment will be delayed and, under the terms of the Building Contract, the Building Contractor will be obliged to pay liquidated and other damages. The level of Carillion's liability for liquidat-

ed damages is structured to enable IAS to cover its debt service obligations for 18 months up to a maximum liability of £40,698,000.

Security risk

IAS, its subcontractors, their respective employees, and the advisers and managers of the project financing are subject to, and are required to implement, the Client's policies and procedures to prevent any breach of security. The Project Agreement and the subcontracts are subject to termination if they fail to do so. The implementation of GCHQ's policies and procedures could deny the contractors access to some spaces, cause the contractors delays in carrying out the project or prevent them from disclosing some information requested by the bondholders.

Performance risk

The Unitary Payment is subject to deductions for numerous reasons, as mentioned above: these include both availability deductions and service deductions. The method for calculating the deductions is extremely complex, with availability deductions in certain cases triggering service deductions and vice versa. Standard & Poor's noted that GCHQ's requirement for high resilience against systems failure or unavailability of building spaces had led to a high level of systems redundancy and emergency backup provision. As a result both the ratings agency and the Technical Adviser believed that there was a low risk that IAS would fail the availability tests.

As with other PFI projects, the performance monitoring scheme is complex and includes more than 300 indicators. Standard & Poor's pointed out that the sheer volume of indicators limited the impact of poor performance in any one area. Although there are additional penalties for repeated failures, for most services there is a penalty accrual threshold of 3–5 per cent before payments are reduced.

Capital replacement cost risk

To continue to satisfy its obligations under the Project Agreement IAS is required to undertake major maintenance and plant replacement work throughout the course of the 30-year concession. The timing and cost of such work were estimated on the basis of good industry practice, but a variety of factors, such as inflation or asset lifespans that turned out shorter than expected, could cause capital replacement costs to be higher than anticipated. A large proportion of the capital replacement responsibilities was to be subcontracted, with Group 4 assuming responsibility for planned preventative and reactive maintenance, BT assuming responsibility for maintenance of information and certain other specialist systems, and Carillion assuming responsibility for the balance of capital replacement items. IAS was to retain responsibility for structural items, which have a natural life in excess of the concession period, normally 50–60 years. The project company will keep a major repairs cash reserve averaging about £5 million throughout the life of the concession.

Environmental risks

While GCHQ is responsible for vacating the existing facilities IAS is responsible for demolishing them and remediating the land to agreed specifications. The project company bears the

risk of general site and soil conditions, as well as contamination of the building site. It is also responsible for dealing with asbestos during demolition of the old facilities. However, IAS's liability for existing contamination is capped at £900,000, with GCHQ paying for any contamination-related costs above that amount.

Change-of-law risk

IAS bears the risk of cost implications arising from changes in law up to a cap of £8 million, for which it has set up a Change in Law Reserve Account.

Political risk

In its presale report Moody's expressed the opinion that political risk could not be fully discounted for PFI projects with very long concession periods. However, the agency considered the degree of political risk for PFI projects in the United Kingdom to be relatively low because of the highly rated offtakers, protections in concession agreements against public-sector customers breaching their obligations, the country's mature legal framework and the overall political consensus on the use of the PFI technique. Moody's also noted that the Client and the project company have a strong commonality of interests in successful implementation of the project.

GCHQ will remain wholly responsible for its core operations and for procuring its own specialist systems or transferring those systems from old to new facilities. The main service area that was to be taken over by IAS but had previously been performed by GCHQ's staff was site security. Although this is a crucial function and appeared to carry significant performance risks, there were mitigating factors. Although IAS and its subcontractors are bound by security and confidentiality requirements, GCHQ retains the responsibility for providing security clearances for all the contractors' staff. Further, the Project Agreement gives IAS the responsibility for 'inputs', such as the number of staff on duty or the availability of properly functioning equipment, but not for 'outputs', such as the absence of security breaches.

Force majeure events, relief events and uninsurable risks

To the extent that either party is unable to perform its obligations as a result of a *force majeure* event, it is relieved of liability, but it must make reasonable endeavours to perform its obligations. *Force majeure* events are defined as war, armed conflict and nuclear, chemical or biological contamination. If a *force majeure* event occurs before the facilities are completed, the Unitary Payment is suspended, the Client grants IAS an extension of the scheduled completion date and the Client also pays IAS for:

- Interim Services that it is still able to perform;
- certain of its overhead costs;
- the unindexed element of the Unitary payment; and
- IAS's debt service obligations.

After construction of the new facilities has been completed the Client is obliged to pay fair remuneration for the services that IAS is able to provide, some of its overhead costs and its

debt service obligations. If a *force majeure* event continues and is likely to prevent either IAS or the Client from performing its contractual obligations, either party has the right to terminate the Project Agreement.

In addition to *force majeure* events the Project Agreement defines the following Relief Events: fire, explosions, exceptionally adverse weather, industrial disturbances, terrorism, civil commotion, and inability to obtain natural gas, electricity or water. If IAS is prevented from performing its obligations by such an event during either construction or operation it will not be considered in default of the Project Agreement and can receive a schedule extension. However, IAS is not entitled to compensation for losses caused by Relief Events during the construction phase and GCHQ can deduct for unavailability of services or building spaces caused by Relief Events during the operating phase.

Cost fluctuation risk

Although part of the Unitary Payment is indexed to the British RPI as a measure of inflation, in fact the RPI may not match the actual effects of inflation on project costs.

Surplus land sale risk

IAS is subject to two risks related to sales of the surplus land:

- the risk that the buyer, Alfred McAlpine Homes Limited, will not pay on the transfer date; and
- the risk that the land will not be available to be turned over to the buyer for reasons such as a delay in completion of the new facilities causing a delay in the clearing out and demolition of the old facilities.

Once an independent certifier has signed off the surplus land as ready for use, McAlpine has a legal right to buy it for an agreed minimum price. McAlpine's obligations are supported by a performance guarantee bond from New Hampshire Insurance Company, which is rated 'AAA' by Standard & Poor's.

Risk related to handing back of facilities

If the projected capital expenditures required to replace or renew specified assets in the two years following expiry of the 30-year concession period exceed a defined threshold, IAS is required to pay the Client the excess up to a limit of 20 per cent of the Unitary Payment for the final year of the concession period.

Local environmental issue

At the time the British government approved plans for the project and signed the contracts with IAS, a local environmental issue became apparent. Local residents protested against the use of a meadow near the project as a temporary car park, on the grounds that this use had not been mentioned in plans previously lodged with Cheltenham District Council, the local authority. The meadow, they claimed, was not only an area of unimproved grassland with a

lot of wild flowers, but part of an ancient Saxon manor with earthworks, and there were also hedgerows dating from the 18th century. A spokesperson for GCHQ said that the agency needed the additional parking space, that it had offered to accommodate local residents with measures such as screening the car park with trees and that, in any case, this was only a temporary use.⁷

Allegations of conflict of interest

Another local conflict concerned the role of Carillion Professional Services as building controller. In a letter to the Secretary of State for the Environment, Transport and the Regions, Andrew Little, Chairman of the West of England District Surveyors Association, questioned whether Carillion Professional Services and Carillion Construction were sufficiently independent, given their common ownership. The letter noted that the Building Control Contract was not subject to competition. Carillion's Executive Director, John Sharples, said that the company recognised the local concern, but pointed out that there were precedents for Carillion Professional Services serving in this role alongside other companies in the group.⁸

Credit ratings as of 2000

In May 2000 Moody's and Standard & Poor's issued presale ratings, along with detailed analytical reports (as mentioned above), on the £398 million senior secured bonds to be issued by IAS, contingent upon receipt of final executed financing documentation.

Ratings by Standard & Poor's

Standard & Poor's gave the bonds an insured rating of 'AAA' with a stable outlook and an underlying rating of 'A'. This was the highest rating achieved by a PFI project at this stage, evidencing the agency's strong support for the financing and risk allocation structure.

Standard & Poor's noted that the insured preliminary rating reflected the unconditional and irrevocable guarantee by FSI that scheduled interest and principal on the bonds would be paid. FSI itself was rated 'AAA' on the basis of its skilled management team, its disciplined and conservative underwriting and risk-management practices, and its very strong capital base. The underlying preliminary 'A' rating assigned by Standard & Poor's reflected the following key credit characteristics:

- an essential asset for a unique and essential government user;
- above-average shareholder and subcontractor qualifications compared to most PFI projects;
- aside from construction and maintenance risk, a Project Agreement that passes a relatively low level of operational and contractual risk to IAS, and provides for GCHQ to retain key operational and IT risks;
- compensation agreements that allow for a strong likelihood that debtholders will be repaid in the event that IAS defaults;
- high levels of redundancy and emergency backup built into building and support systems, reducing the likelihood of penalties to IAS for lack of availability to the Client; and
- relatively low-risk service obligations with realistic cost estimates from experienced subcontractors (BT and Group 4).

Standard & Poor's also cited four constraining factors.

- This single-asset project is exposed to capital replacement and repair risk over 27 years. This risk is mitigated by a major repairs reserve, and by IAS passing a portion of the project's timing, cost and inflation risks to subcontractors.
- The construction project is relatively large and leads to exposure to Carillion plc, which is unrated. This risk is mitigated by Carillion's experience, a construction budget and schedule considered adequate by Mouchel Consulting Limited, comprehensive liquidated damage provisions, and a surety bond for £80 million (US\$125 million) representing 23 per cent of the construction cost.
- The complex payment and performance structure contains a number of untested and subjective elements, even though it is less onerous than many PFI projects.
- The aggressive financial structure incorporates high leverage, with a ratio of senior to junior debt of 9:1, and a low base-case DSCR (minimum 1.20 and average 1.24).

In Standard & Poor's opinion the outlook was stable. There was potential for a higher rating after construction had been completed and IAS had established an operating track record.

Ratings by Moody's

Moody's assigned the £398 million senior secured bonds to be issued by IAS an insured rating of 'Aaa' and an underlying rating of 'Baa1'. Moody's noted that its 'Aaa' insured rating for the bonds, along with its 'Aaa' rating for the financial strength of FSA's British subsidiary, FSI, reflected the strong support provided by FSA itself, which had a rating of 'Aaa' based on the limited risk characteristics of its core business, its solid underwriting, surveillance and loss-mitigation efforts, and its good credit-enhancement experience. Moody's noted that its rating for the IAS bonds was at the upper range of its ratings for senior debt issued to finance PFI projects, and concurred with Standard & Poor's that the project's successful transition to its operational phase was likely to lead to an improvement in its underlying rating.

Moody's cited the following strengths to support its underlying 'Baa1' rating:

- GCHQ is a unique strategic asset, with the UK government, rated 'Aaa', as the direct concession counterparty.
- There would be predictable and robust cash flows, backed by contractually agreed revenues that substantially remove economic risk. The probability of deductions for unavailability or service underperformance is reduced by the high level of redundancies incorporated into the design of the new building, and a relatively lenient regime for evaluating service performance.
- There was to be a substantial transfer of risk to experienced subcontractors that are leaders in their respective fields in the United Kingdom.
- The financial structure mitigates the risk of inflation and life-cycle maintenance cost overruns.
- There would be comparatively favourable compensation arrangements for the project company, IAS, in the event that the contract is terminated. This offers protection to senior bondholders even if the concession is terminated because of default by IAS.

Moody's also mentioned the following weaknesses:

- There was a moderate degree of construction risk, mitigated by a turnkey building contract. Even though construction is based on low-technology, tried and tested designs, the sheer size of the project is sufficient to challenge management, planning, logistics, and the mobilisation of subcontractors and construction materials.
- The low debt protection measures are typical of PFI transactions, although the DSCR is reasonably resilient to downside sensitivities.
- Subcontractor replacement risk was not an immediate concern, but it cannot be ignored over such a long concession period. IAS would be exposed to the risks transferred to the subcontractors if any of them defaulted or if the defined liability caps were insufficient to absorb losses.
- The long term of the concession would cause increased exposure to event risk.

Lessons learned

Among the ways in which this financing stood out from other PFI project financings were:

- the complexity of construction;
- the security requirements;
- the unprecedented size for a PFI financing;
- the challenge of finding a single institution to provide the mezzanine financing; and
- the significant number of changes made to contract specifications while the project financing was underway.

In the opinion of Duncan Caird, then Managing Director at BofA, who spent more than two years as an adviser on the transaction, financing a project of this nature requires:

- good lawyers who can handle large amounts of complex information;
- financing advisers familiar with all possible capital sources;
- sponsors willing to deal with difficult and challenging commercial decisions, and to negotiate under conditions (for example, with government agencies) that are not always to their advantage; and
- officials in the public sector who are willing to assume leadership roles and make tough decisions.

Caird believes that everyone needs to understand the concept of negotiation. Every time that the financing of the Integrated Accommodations project appeared to be in real trouble, Caird recalls that it was as the result of some people not listening to what others across the negotiating table had to say.

Michael Redican, Managing Director of Deutsche Bank, comments that Integrated Accommodation Services represented the largest PFI bond to date by a factor of two and was larger than the previous five PFI deals combined. Despite the complexity of the project because of security considerations, investors became comfortable with the deal because of the strategic importance of the asset, Carillion's reputation as a designer and builder, and the project's systems redundancy, which reduced the likelihood that the project company would incur

stiff penalties because key areas were out of service. As a result, the deal sold very well despite its size – 180 bps over gilt when swap spreads were 146, or equivalent to swap Libor plus 36 bps. This was about 20 bps inside comparable deals at the time. Redican notes that investors and lenders generally focus first on performance risk in PFI projects, but that such risk is usually manageable because the project company is performing fairly routine tasks such as catering and maintenance. However, a factor that has increased the risk of recent PFI projects is high leverage, which reduces a project's financing cost and thereby allows the contractor to deliver higher value to the government. When PFI projects become more aggressive in terms of increased leverage and thinner coverage ratios, their underlying credit ratings are reduced. Recently, as the government has received higher value and, at the same time, passed more risk to the private sector, the underlying ratings for some deals have been just on the borderline of investment grade – in contrast to Integrated Accommodation Services with its Moody's 'Baa1'/Standard & Poor's 'A' underlying ratings. Redican believes that if the government pushes the risk transfer too hard, resulting in lower underlying project credit ratings, investors will demand a higher premium on PFI paper even when it is wrapped by a monoline. What investors in PFI paper really want is not just the triple-A wrap, but also a strong underlying triple-B rating. Redican also observes that Bank of America's success in placing the £22.6 million mezzanine paper with one investor, Abbey National, was an impressive accomplishment. However, he thinks Abbey National got quite a good deal, because it is earning a sub-investment-grade return for a risk that today is considered to be investment grade.

¹ This case study is based on the prospectus for the project bonds, articles in the financial press and interviews with Duncan Caird, then Vice President, Bank of America, and Michael Redican, Managing Director, Deutsche Bank.

² Haband, Mark, 'GCHQ Comes in from the Cold', *Financial Times*, 26 February 2003, p. 13.

³ Regulatory News Service, 22 June 2000.

⁴ 'Carillion to Spy a Deal', *Cheltenham Evening Mail*, 23 June 2000, p. 33.

⁵ Regulatory News Service, 22 June 2000.

⁶ 'UK Spying Centre Taps Bond Market with Largest PFI Deal', *Euroweek*, 16 June 2000, p. 22.

⁷ Buncombe, Andrew, 'Locals Take On Big Brother Over Car Park Plans', *Independent*, 7 March 2000, p. 10.

⁸ Glackin, Michael, 'Carillion Faces Legal Action on £800 Million Spy Centre', *Building*, 21 July 2000.

El Abra, Collahuasi and Los Pelambres, Chile

Type of project

Copper mine.

Country

Chile.

Distinctive features

- High leverage because of strong sponsors and project credit.
- Low-cost producer able to finance when copper prices were falling.
- No political risk insurance.
- Initial financing was the largest mine project financing ever completed.
- Refinancing was one of the largest syndicated bank loans in Chile.

Description of financing

The initial project financing in 1995 consisted of US\$299 million in subordinated debt financing from Cyprus Amax and US\$750 million in senior debt, the latter comprising:

- US\$350 million in offtake financing from Mitsubishi and Marubeni Corporation;
- US\$150 million from Kreditanstalt für Wiederaufbau (KfW), the German export credit agency; and
- US\$250 million as a syndicated bank loan priced at 125 basis points (bps) over the London interbank offered rate (Libor) prior to completion, 175 bps from completion to the year 2003 and 187.5 bps from then on.

The refinancing in 1997 comprised US\$150 million as a loan from the KfW and US\$850 million as a syndicated bank loan in two tranches:

- tranche A, for US\$650 million, as direct Chilean exposure for the lenders; and

- tranche B, amounting to US\$200 million, guaranteed by Cyprus Amax until the completion test, with a term of nine-and-a-half-years, and spreads of 62.5 bps over Libor prior to completion, 62.5 bps for three years following completion, 75 bps for years four to seven and 100 bps from year eight to maturity.

Project summary¹

El Abra, in northern Chile, is one of the largest solvent-extraction electrowinning (SX/EW) copper mines in the world and also one of the world's lowest-cost copper mines. The SX/EW process (discussed below) is a less expensive way of producing copper than producing a dry concentrate and smelting it.

El Abra was originally 51 per cent owned by Cyprus Amax Minerals Company of the United States and 49 per cent by Corporación Nacional de Cobre de Chile (Codelco), a state-owned Chilean company. Cyprus Amax, headquartered in Englewood, Colorado, was a leading American copper and coal producer, and the world's largest producer of molybdenum and lithium, and also held a significant position in gold. Cyprus Amax's corporate strategy was to build and acquire low-cost operations of world-class proportions in commodities that represented significant growth potential. The company was acquired by Phelps Dodge Corporation in October 1999. Codelco, headquartered in Santiago, Chile, is the world's largest copper producer, accounting for about 12 per cent of world production.

The partnership between Cyprus Amax and Codelco began in 1994, when Cyprus Amax was the successful bidder for El Abra over several other prominent mining companies. The company bid US\$330 million for its interest in the El Abra project and committed itself to investing an additional US\$1 billion in developing the mine. Codelco, which wanted to expand the development of its copper ore bodies, believed that a foreign joint-venture partner could help raise capital and develop a property such as El Abra more quickly than Codelco could on its own. El Abra is one of six joint ventures between Codelco and foreign mining companies.

Ownership and contractual relationships

El Abra is a separate company with its own management. It is organised under Chilean law as a single-purpose contractual mining company. Although the El Abra refinancing in 1997 has some characteristics of a pure corporate credit, it is considered a project financing because most of the funds were provided without a guarantee from the sponsors.

Bechtel was the engineering, procurement and construction (EPC) contractor. The participation in the project of such a well-known and reputable contractor provided comfort to the lenders. Nonetheless, in line with common practice in mine financing, the banks had recourse to the sponsors until the project met the technical completion test, but not afterwards.

The project is connected to Chile's northern electric grid (the SING system) and pays market prices for electricity. The power contract was signed with a division of Codelco that was later spun off and partially privatised, and is currently operated by Tractebel.

Structure of financing

Initial financing

With nearly US\$1.05 billion of total senior and subordinated debt (as set out under the heading 'Description of financing' above), El Abra was one of the largest mine project financings ever completed. The US\$250 million uncovered commercial bank tranche attracted 33 banks, some of which were participating in an emerging-market mine financing for the first time. Since then other large mining projects in Chile and Peru also have used project financing.

There was no political risk insurance. Although this was not the first Chilean mining project financed by banks without political risk cover, the large amount set a milestone and showed that there was real depth in the bank lending market for this type of project.

Refinancing

In late 1997 principal and accrued interest for Cyprus Amax's subordinated, intercompany loan to the project totalled US\$370 million. By this time more banks had developed an appetite for mining credits and the bank loan market was generally more liquid than at the time of the original financing in 1995. Favourable market conditions provided Cyprus Amax with an opportunity to monetise its loan to the project and thereby deleverage its own balance sheet. Spreads narrowed considerably between the first and second financing because the project was two years further along and was considered likely to be completed early and within budget, even though the technical completion test had not yet been performed.

The total amount of the second El Abra financing was US\$1 billion (as detailed above). The syndicated bank loan was one of the largest bank financings in Chile. The refinancing reportedly reduced the project's annual interest expenses by about US\$15 million. The second financing provided the project with a capital structure of 100 per cent debt. This was possible because of the strength of the sponsors and the project credit.

Alternative financing considered

A bond offering was considered for the second financing but rejected because a bank loan offered lower interest rates and more flexibility. Unlike public, fixed-income debt, bank debt is prepayable, allowing the company to pay down and deleverage in the event of high copper prices. Such a large amount would have required a public offering rather than a private placement, and a credit rating would have been required before the project was completed. It would have been much easier to approach the rating agencies six months or so after project completion if bond financing was required later in the project.

Syndication process

The loan was syndicated to a broad group of US, Canadian, European and Japanese banks that had project finance and mining expertise, and were comfortable with credits from Latin America. The key issue was that the refinancing of the syndicated loan, compared with the initial syndicated loan in 1995, was much larger and the spreads were much thinner.

Loan documentation

As the lenders drew up the loan documentation they tried to balance their need for security with the project company's need for flexibility. The banks required security in line with a loan to a one-project, one-mine company. On the other hand, the project was expected to be up and running soon after the financing, and to have credit fundamentals comparable to those of the most profitable mining companies in the world, some of them single-mine companies.

Risk and credit analysis

Principal project risks

The principal project risks were twofold:

- whether the project could be developed on time and within budget; and
- whether the project could realise its potential as a low-cost producer of copper.

The project was finished within budget and began production in August 1996, six months ahead of schedule, which is unusual for a project of this size. It met technical completion test requirements in November. In the fourth quarter of 1997 the mine produced copper at a cash cost of US\$0.40 per pound, and thus became one of the lowest-cost producers among major copper mines. It applied to list its ABRA Grade A cathode on the London Metals Exchange in February 1998.

Cyprus Amax noted that the inherent risks of its mining operations included:

- unanticipated grade and other geological problems;
- weather, water, surface and underground conditions;
- metallurgical and other processing problems, problems with the performance of mechanical equipment and/or unavailability of materials or equipment;
- accidents, labour problems and *force majeure* factors;
- unanticipated transport costs and delays;
- prices and production levels of byproducts; and
- political instability.

Any of these factors could affect the development of properties, production rates and costs. With development projects of this nature there is generally no operating history upon which to base estimates of future operating costs and capital requirements. The economic feasibility of any individual project is based on factors such as:

- interpretation of geological data obtained from drilling holes and other sampling techniques;
- feasibility studies that derive estimates of cash operating costs based on anticipated tonnage and the grade of ore to be mined and processed;
- the configuration of the ore body;
- estimated recovery rates of metal from ore;
- costs of comparable facilities and equipment;
- anticipated climatic conditions; and
- estimates of labour productivity.

Such development projects are also subject to the successful completion of final feasibility studies, the issuance of necessary permits and the receipt of adequate financing.

Production process

El Abra is an open-pit mine with oxidised ore close to the surface. Ore in deeper mines is not generally oxidised and requires further processing. An open-pit mine is easier and less risky to operate than an underground mine. The El Abra ore body has been drilled extensively for examination, making the mining community comfortable with estimates of the reserve base.

With the SX/EW process copper is leached out of the ore with sulphuric acid, producing a finished copper cathode product that can be sold at a London Metals Exchange (LME) price on the open market. Acid is shipped to the mine by train from the port of Antofagasta and copper cathode is shipped back. Oxide reserves will be mined with the SX/EW process for the estimated 17-year life of the mine. The remainder of the ore is sulphide ore, from which copper is generally produced by the higher-cost conventional flotation method.

Country risk

During the 1980s, under the military dictatorship of Augusto Pinochet, Chile set out on a path of economic change geared towards deregulation and an increased role of the private sector. It successfully implemented a free-market economic model that has since been emulated, to varying degrees, throughout the developing world. Foreign exchange regulations were relaxed and state-owned companies were privatised. The sale of companies generated considerable revenues for the state, allowing tax cuts to be implemented. When companies were transferred to private hands their performance improved. Today Chile has well-established incentives and rules for foreign ownership, a growing stock exchange, and the best country credit rating in Latin America.

In October 2001 Standard & Poor's affirmed its 'A-' long-term foreign-currency and its 'AA' local-currency sovereign credit rating for the Republic of Chile, with a stable outlook. The agency said that its ratings were supported by the country's longstanding commitment to market-oriented economic policies, its solid fiscal management record, its moderately high degree of fiscal flexibility, its effective monetary management and its sound financial system. However, the ratings were constrained by the country's comparatively narrow and concentrated export base, its external indebtedness, and its relatively low levels of industrialisation, economic diversity and per-capita income compared to countries with similar credit ratings.

Credit issues

Among El Abra's strong credit fundamentals are:

- its low cost of production;
- the long projected life of the mine;
- the export sales contracts;
- a product quoted in US dollars on world markets; and
- the experience and reputations of the sponsors.

The principal credit issue concerned copper prices (see Exhibit 12.1). At the time of the refi-

nancing, in the summer of 1997, copper prices had already started to drop. Bank lenders had to feel comfortable that there was sufficient debt-service coverage even if prices declined further.

Developments since 1997

The most important developments since the project was refinanced in 1997 have been:

- technical and ore-grade problems that prevented the mine from reaching its annual name-plate production capacity of 225,000 tonnes until 2002; and
- continued low prices for copper that nonetheless allow for a modest profit margin given the mine's low production costs.

The annual output of the project since operations began is shown in Exhibit 12.2.

In July 1998 Cyprus Amax reported that the mine was operating at just 85–90 per cent of its planned production level because of problems with consistency of the ore. Since then the mine has had consistent problems with hard ore, unexpectedly low grades and clay content in the ore that has been higher than expected. Other one-off problems have included ore delivery delays, because the conveyor system was not working properly; ore delineation difficulties; and a mix-up between sulphide and oxide ores at the leach pads.

After Phelps Dodge acquired Cyprus Amax, in 1999, it made several changes in the mine's operations, including redesigning the ore body model, carrying out extensive extra drilling and catching up on what it alleged was a lack of stripping over the previous two years.

In 2000 Phelps Dodge conducted tests to see if recoveries were sufficient to justify a 'run of mine' project that would boost the mine's output by processing low-grade ores directly from the pit, bypassing the crushing process. The company announced in early 2001 that it would go ahead with the project, investing US\$77 million and expecting to boost the mine's annual output by 35,000 tonnes. Normally such a project would not have been started before the end of the project's estimated useful life of 17 years. As a result of the run-of-mine project the mine's production reached its design capacity for the first time in early 2002.

Lessons learned

First, anyone considering lending to a pro-

Exhibit 12.1

Average prices for high-grade copper on the London Metal Exchange, 1997–2002

<i>Year</i>	<i>US\$ per pound</i>
1997	1.032
1998	0.750
1999	0.713
2000	0.822
2001	0.720
2002	0.706

Source: London Metals Exchange.

Exhibit 12.2

Annual production of copper from El Abra, 1997–2002

<i>Year</i>	<i>tonnes</i>
1997	196,200
1998	199,300
1999	220,000
2000	197,200
2001	217,600
2002	225,200

Source: Phelps Dodge Corporation.

Exhibit 12.3

Financing spreads for three mining projects in Chile

<i>Date</i>	<i>Project</i>	<i>Term (years)</i>	<i>Pre-completion (bps)</i>	<i>Post-completion (bps)</i>
June 1995	El Abra	10.0	125.0	175.0–187.5
August 1996	Collahuasi	10.0	87.5	137.5–162.5
October 1997	El Abra	9.5	62.5	62.5–100.0
November 1997	Los Pelambres	12.0	75.0	87.5–125.0
		14.0	75.0	87.5–137.5

Source: Project & Trade Finance, Project Finance News, Chase Manhattan Bank.

ject that depends on commodity prices needs to know where prices are in relation to long-term cycles. The El Abra syndication would have been more difficult as copper prices continued to decline in 1998 and 1999. The LME closing price rose as high as US\$1.23 in June 1997, then fell as low as US\$0.63 in February 1999, then rose again to US\$0.84 by the end of 1999.

Second, for a loan this large the lead underwriting bank must know the credit appetites of potential syndicate members. Even with the strongest credit a bank may be up to its country or commodity limit.

Finally, sponsors must not only be sound but must also be active participants in structuring and executing the financing.

Comparison with two other mining projects in Chile

It is useful to compare El Abra with two other recent Chilean copper mining projects, Collahuasi and Los Pelambres, both described below. Exhibit 12.3 shows the financing spreads for all three projects, indicating how spreads for large Chilean mining projects narrowed between 1995 and 1997.

Collahuasi

Collahuasi is one of the world's largest known undeveloped copper reserves. It is located high in the Andes, close to Chile's border with Bolivia. The work force is brought in from Santiago and other major population centres. Housing, educational, and recreational facilities were developed and improved in the nearby community of Iquique. Because of the site's high-altitude location, the work schedule entails cycles of 14 consecutive days with 12-hour shifts followed by 14 days off.

The mine's estimated life is 25 years. It was originally expected to produce, on average, 330,000 tonnes of copper concentrates and 50,000 tonnes of cathode through an SX-EW plant during its first 10 years of operation. Because copper concentrate must be smelted and is not a commodity, the lenders needed to ensure a market for the product. About half the custom smelting market is in Japan. The Mitsui group agreed to take 250,000 tonnes of copper concentrate annually, about half of the mine's output, as well as investing equity in the project and providing customer financing. In addition Norddeutsche Affinerie in Germany agreed to

take 110,000 tonnes, and two Canadian companies, Falconbridge and Noranda Metallurgy, have 95,000 tonnes and 65,000 tonnes respectively.

Falconbridge and Minorco (also of Canada) each have a 44 per cent interest in the project. Mitsui & Co., Ltd, Nippon Mining & Metals Co., and Mitsui Mining and Smelting Co. share the remaining 12 per cent.

Falconbridge spent about US\$50 million developing the property between 1992 and 1996. Feasibility studies were completed in 1995 and production began in early 1999. The total project cost was US\$1.75 billion, including working capital, and escalation and financing costs.

Of the total project cost of US\$1.75 billion, Minorco and Falconbridge provided a total of US\$740 million in equity and subordinated loans. One of the biggest issues early in the project was whether there would be sufficient capacity for more than US\$1 billion of debt for Chile, particularly with no political risk insurance. At the time this was the largest mining project financing ever completed. ABN AMRO, UBS, Dresdner, Canadian Imperial Bank of Commerce and Citibank, which had been appointed arrangers in December 1995, syndicated a US\$700 million loan with an 18-month construction period and a 10-year takeout. This was the largest amount that ever had been raised from commercial banks for uncovered Chilean risk. The loan, which closed in August 1996, is priced at 87.5 bps over Libor during construction, 137.5 bps on completion and 162.5 bps for the last four years. There were 33 banks in the syndicate, some of which were participating in an emerging-market mine financing for the first time.

The project financing also included a US\$170 million facility provided by the KfW, a US\$150 million facility provided by Export Development Corporation of Canada and a US\$200 million customer finance facility provided by Mitsui. All of these facilities have 14-year terms.

The involvement of the Mitsui consortium provided the biggest challenge to the bank group in structuring the loan. The consortium was both an equity owner and a lender, and therefore had a potential conflict of interest if an amendment or waiver to the loan agreement was required. The consortium was not allowed to vote on certain senior-debt issues in its capacity as a lender.

From the beginning, Collahuasi's production has exceeded original estimates. Actual and expected production for 2000–02 have been as shown in Exhibit 12.4.

In September 2000 the mining company's board of directors approved preliminary plans for two projects that it expected to carry out simultaneously:

- an expansion of the mine's production capacity, costing about US\$400 million; and
- a shifting of the main mining area from the Ujina deposit to the Rosario deposit, about 8 kilometres (km) away, costing about US\$200 million.

The expansion project would include increasing milling capacity from 240,000 to 396,000 tonnes per year, increasing concentrator output from 70,000 to 110,000 tonnes per year and building various new facilities, including a new slurry pipeline. One of the reasons why an increase in throughput capacity would be required was that grades were lower at Rosario than at Ujina. The board estimated that if the project did not undergo

Exhibit 12.4

Annual production from Collahuasi, 2000–02

<i>Year</i>	<i>Concentrates (tonnes)</i>	<i>Cathodes (tonnes)</i>	<i>Total (tonnes)</i>
2000	370,000	60,000	430,000
2001	378,000	58,000	436,000
2002 (estimated)	363,000	60,000	423,000

MINES

expansion along these lines production would decline to 240,000 tonnes per year from 2004 to 2013, and then to 205,000 tonnes until 2028. The company estimated that its profits would be US\$150 million after taxes for the full year 2000, compared with US\$107 million in 1999.

In 2001 Collahuasi employed a total staff of 1,000, in addition to some 700 contract employees. It accounted for about 10 per cent of Chile's copper production. At that time the company decided to go ahead with its plan to switch the bulk of mining operations from Ujina to Rosario, but to delay the expansion until weak copper prices rose again. Cash costs for 2001 were US\$0.37 per pound.

Los Pelambres

Los Pelambres is located 200 km north of Santiago, Chile. It has estimated reserves of 4 billion tonnes of copper. It was originally expected to produce 250,000 tonnes of copper concentrates per year, and these concentrates were estimated to contain an average of 4,400 tonnes of molybdenum, 32,000 ounces of gold and 1.28 million ounces of silver per year over the first 10 years of operation. The company is considering an expansion programme that would boost production to 350,000 tonnes of pure copper per year.

Cash costs were estimated to be about US\$0.41 per pound for the first 10 years because of a relatively low stripping ratio of 0.5:1. (The stripping ratio is a measure of the amount of earth that must be removed for each ton of ore that is mined. At Los Pelambres one half tonne of earth has to be removed for each tonne of ore mined. Some mines have stripping ratios as high as 3:1.) A local consortium, BCCIF, was hired under contract to remove the initial layers of earth covering. The mine has an estimated life span of 30 years. The company plans to sell 85–90 per cent of production to medium-term and long-term clients, maintaining 10–15 per cent for spot market sales.

Los Pelambres is owned as follows:

- Antofagasta Holdings plc, London, a subsidiary of the Luksic Group, 60 per cent;
- Nippon Mining and Metals Co 15 per cent;
- Marubeni Corporation 8.75 per cent;
- Mitsubishi Materials Corp 10 per cent;
- Mitsubishi Corporation 5 per cent; and
- Mitsui & Co 1.25 per cent.

Based on a feasibility study by Bechtel, and financial costs estimated by NM Rothschild & Sons Limited, financial advisers to the project and partners, development costs were estimated to be US\$1.3 billion. Financing of US\$1.36 billion consists of US\$535 million commercial bank debt and two direct loans – one from the Export–Import Bank of Japan for US\$315 million and the other from KfW for US\$100 million. The remainder consists of equity. Bank debt is split between a US\$400 million, 12-year uncovered bank tranche and a US\$135 million, 14-year tranche covered by the Export–Import Bank of Japan. Fees were 35–45 bps for co-arrangers and 35 bps for arrangers. Margins on the loan are 75 bps over Libor during the pre-completion phase, 87.5 bps from completion to 2001, and 100 bps to 2005 for both the 12-year and 14-year tranches. For the 12-year tranche the margin is 125 bps from 2005 to maturity. For the 14-year tranche the margin is 125 bps from 2005 to 2008 and 137.5 bps until maturity.

The greatest challenge facing Los Pelambres has been presented by the harsh winter

weather. The mine is located near the rugged Andean border with Argentina, nestled in a deep mountain valley 3.1–3.2 km above sea level, and the processing plant and offices are at 1.6 km. Production costs can rise by 25 per cent in winter. Five to six metres of snow piled on the mine site in the winter of 1997. The steep slopes surrounding the mine are particularly vulnerable to avalanches.

Several environmental issues also had to be resolved before the project was approved by the Chilean government. Local fisherman and environmentalists were concerned about the impact of the new port to be built at Bahia de Conchali. A substantial part of the economy near the mine depends on agriculture on land irrigated by the Choapoa River. Environmentalists were concerned about the destination of waste products and the construction of a pipeline for the transport of concentrates.

Since operations began, in 1999, production has been above estimated mine capacity and cash costs have been within estimates. Copper concentrate production was 298,900 tonnes, at an average cash cost of US\$0.356 per pound, in 2000; 361,500 tonnes, at an average cash cost of US\$0.353 per pound, in 2001; and 324,600 tonnes at an average cash cost of US\$0.349 per pound in 2002. The open pit mine also produced 7,800 tonnes of payable molybdenum, up from 6,900 tonnes in 2001.

In May 2002 Chile's environmental authority, Corema, approved a US\$30 million second-phase expansion project that will speed up production to 114,000 tonnes of ore per day and reduce the mine's life from 22 to 20 years. An environmental impact assessment was undertaken, rather than a full-blown environmental impact study, because the expansion requires only a change of equipment in an existing plant. The expansion will proceed in two phases. In the first phase, begun in April 2002 and completed in September 2002, new crushing and classification equipment, hydro-cyclones and pumps are being installed. In the second phase, scheduled for completion in 2003, a pebble crusher and cribbing systems will be installed.

At the same time the company was considering expansion to increase production capacity to 175,000 tonnes per day with a required capital investment of US\$330 million. The project was still in the conceptual engineering phase and would require a full-scale environmental impact study. The company expected to decide whether or not to go ahead in 2003.

In June 2002 Antofagasta Holdings announced a plan to increase its environmental investment at Los Pelambres following two recent incidents caused by unusually heavy rains. In one incident, an indirect result of a power supply failure, clean water was pumped into a tailings pond, causing the pond to overflow into the nearby Cuncumen River. The company claimed that the damage was minimal, temporary and reversible, and that irrigation standards were compromised by molybdenum levels but not by copper or iron. In the second incident a slurry pipeline was hit by a landslide, causing it to leak 600 tonnes of copper concentrates into the Choapoa River. Antofagasta Minerals announced its intention to help with the repairs and the environmental authority for Region IV, the region of Chile in which the mine stands, announced its intention to fine the company for the incidents once an investigation had been completed. In late June members of Chile's lower house visited Los Pelambres to allay local community concerns about the mine's safety and stated that it met international environmental standards. However, they also suggested that the mine come up with an insurance policy to compensate the local community in the event of an accident.

¹ This case study is based on articles in the financial press, an interview with Nicholas Chirekos, Managing Director, JP Morgan Chase, and comments by Christian Moran of Phelps Dodge in Chile.

Andacollo Gold Mine, Chile

Type of project

Gold mine.

Country

Chile.

Distinctive features

- First project financing in Chile without political risk insurance.
- Limited-recourse on-balance-sheet financing.
- Strong reliance on engineering, procurement, construction and management (ECPM) contractor.
- Falling gold prices and ore grades lower than expected, leading to losses and early closure of mine.

Description of financing

Financing comprised a US\$50 million limited-recourse bank term loan at 237.5 bps over the London interbank offered rate (Libor) with a minimum term of five years, a 14-month drawdown period following closing and a 3.5-year repayment period following completion of construction.

Project summary¹

The Andacollo Gold Mine project financing, in 1994, was the first in Chile without political risk insurance. Andacollo was the first major project and the principal asset of the Dayton Mining Company of Vancouver, British Columbia. The facility was built by Bechtel Corporation of San Francisco, one of the world's largest international engineering firms. The equity and loan financing for the project was on Dayton's balance sheet, but because the project accounted for a large part of the company's balance sheet the financing was considered to be, in effect, a project financing. By working with Bechtel, one of the most experienced contractors in the world, and structuring the loan as a project financing, Dayton was able to finance a project that its balance sheet alone could not have supported.

The major themes in the story of Andacollo Gold since the project financing include ore grades that were lower than expected, resulting in production costs becoming higher than expected; declining gold prices; continual losses reflected on Dayton's income statements; defaults under the bank loan agreement and subsequent waivers; renegotiation of interest-rate and repayment terms with the banks; eventual repayment of the bank loan with the help of a convertible debenture offering; and continued efforts to evolve from a one-project company, which led to investment in new projects and to a recent merger.

Background

Location advantages

The Andacollo mine is situated near the town of Andacollo, some 300 miles north of the Chilean capital, Santiago, and 35 miles by paved highway southeast of the port cities of La Serena and Coquimbo. The project covers 2,150 acres and varies in elevation from 3,300 feet (about 1,006 metres) to 4,200 feet (about 1,281 metres) above sea level. The low elevation, moderate topography, easy access and climate at Andacollo were helpful for the heap-leaching gold recovery process on a year-round basis.

The easy access to Andacollo was one of the project's attractions. La Serena and Coquimbo have a combined population of 250,000 people, a regular jet service to Santiago, and excellent port facilities. Several other mining operations, including American Barrick's El Indio properties, lie in the same region.

Andacollo's proximity to La Serena and Coquimbo provided Dayton with a recruiting advantage. The area has primary schools, high schools, technical institutions and universities, as well as modern hospitals. A major power line crosses the property and the company acquired a water source 15 miles north of the property that could supply the needs of the mine. Because other mining activities were located nearby, experienced mining labour was available.

Involvement of Dayton and Bechtel

Dayton was founded in 1985. It acquired the Andacollo project from the Chevron Exploration Corporation of Chile in 1989. Chevron had spent US\$11 million on acquisition, exploration and development during the four previous years. Dayton planned to develop the site in two phases.

In 1990 Dayton hired Bechtel to do a feasibility study. The study was completed in early 1991 and updated in May 1993. In preparing its capital cost estimates Bechtel compiled a list of the mechanical and electrical equipment required for the design and construction of project facilities. It also prepared layout plans for a primary crushing plant, a secondary crushing plant, a stockpile and reclaiming process, a tertiary crushing plant, a process plant, a leach pad, and a crusher area repair shop, as well as an administrative building, a laboratory, a warehouse and refining facilities. Bechtel developed process flow diagrams for the crushing operations, the heap-leach and solution storage, gold stripping, and gold refining aspects of the project, as well as an overall site plan. At the same time Dayton estimated the need for working capital, the costs of renovating the project's water supply pipelines, and preoperating development and preproduction stripping costs.

In August 1993 Bechtel prepared a capital cost estimate for providing engineering, procurement and construction services on a fixed-price, lump-sum, turnkey contract basis. Bechtel and Dayton further refined details of the contract, and signed it in early July 1994.

Bechtel began construction later that month under a fixed-price contract that included schedule, performance and completion guarantees. Under the contract Bechtel agreed to provide engineering, procurement, construction and preoperational testing for gold processing facilities, including crushers, conveyors, agglomeration facilities, the leach pad, the ponds and pumping system, carbon columns, the refinery, utilities, and ancillary buildings. Bechtel's scope of responsibility included approximately 90 per cent of the estimated capital costs of the project, excluding working capital. In addition to performing work for a fixed price, Bechtel provided guarantees for crusher and solution throughput, and solution recovery, as well as a fixed schedule for construction and plant performance.

To realise the benefit of Bechtel's schedule guarantee under the turnkey contract Dayton was obliged to complete a schedule guarantee performance test within 30 days of Bechtel's notification that the project was ready to accept feed. To benefit from the process performance guarantee in the contract Dayton had to complete a process performance test within 90 days of mechanical completion of the project. Dayton's other obligations under the contract included:

- providing adequate space and sites for the facilities;
- furnishing Bechtel with all permits, licences, leases, titles, concessions, bonds, deposits, easements and rights of way necessary for completion of the project; and
- providing ore to the crushing plant and leach pad, and leach solution to the leach pad/absorption plant.

Dayton estimated total capital costs, including additional contingencies and escalation throughout the anticipated 14 months of construction, as shown in Exhibit 13.1.

Dayton began an additional comprehensive exploration programme on the Andacollo property in December 1993, spending more than US\$2 million over the following year. The programme included drilling, geophysical and geochemical surveys, and a detailed geological mapping programme. The data obtained improved the company's understanding of the geological setting, assisted in the interpretation of geological models for identified ore bodies and helped the company to plan future drilling programmes. At that time Dayton was able to increase its estimate of Andacollo's reserves by 300,000 ounces. The company planned to spend an additional US\$740,000 in 1995 on exploratory drilling, and geological and geophysical work. A regional exploration study identified additional target areas in the Andacollo region.

Financing commitments

Dayton received project financing commitments in April 1994 for a US\$50 million project loan from Banque Paribas and Barclays Bank. In the same month the company raised an additional US\$25 million through an equity and equity-warrant issue, underwritten by Nesbitt Burns, ScotiaMcLeod and First Marathon.

Exhibit 13.1

Capital costs, Andacollo Gold Mine

	<i>(US\$ million)</i>
Lump-sum turnkey price	46.1
Owner's costs, including contingencies	7.2
Working capital	4.0
Total	57.3

Source: Dayton Mining Company.

In the first phase Dayton planned to process 30 million tonnes of mineable reserves containing an estimated 1.1 million ounces of gold. Using a conventional heap-leaching process the company expected to process ore at a rate of 14,000 tonnes per day over a mine life of approximately eight years. This was expected to result in annual production of 128,000 ounces of gold per year at an average cost of US\$180 per ounce. In the second phase of the Andacollo project Dayton planned to develop additional deposits.

Commodity price risk

To protect the project's future cash flows Dayton was required by Barclays and Paribas to hedge the price of gold for the term of the loan. It bought gold puts for 200,000 ounces of gold at US\$380 per ounce, covering production between January 1997 and July 1998. To reduce its premium expense it gave up some of its upside price potential, selling calls on 109,000 ounces at US\$380 per ounce. The hedging programme was designed to provide upside opportunity in the event of increased gold prices, while providing the necessary downside protection for Dayton to meet its obligations.

The Barclays Metals Group and Paribas Capital markets each provided half of the hedge, with Barclays acting as technical agent and Paribas serving as administrative agent. Don Newport of Barclays noted that having an inhouse metals trading operation helped the bank to control the risk of a transaction such as Andacollo, and created additional earnings as well.

How the financing was arranged

In 1991 banks based in North America and Europe were not interested in committing funds, but several Chilean banks were willing to do so. Over the next two years US banks began to recover from loan-loss problems and became more interested in extending credit. US and European banks alike began to look at Chilean country credit risk more favourably.

In July 1993 Dayton signed a letter agreement retaining Bechtel Financing Services, Inc. (BFSI), to provide financial and structuring advice, and related services, and to arrange financing for the project. Together BFSI and Dayton prepared a project information memorandum, which was used as the basis of approaching certain commercial banks that might be interested in participating in the project.

In March 1994, as mentioned, Paribas and Barclays agreed to underwrite in equal proportion a limited recourse credit facility of US\$50 million. The loan was subsequently syndicated to Credit Suisse, Deutsche-Südamerikanische and Bayerische Vereinsbank, which took US\$10 million each.

The term of the credit facility was a maximum of five years, with a drawdown period of 14 months following closing of the credit facility. Drawdowns were in minimum amounts of US\$500,000 against evidence of approved construction costs. Upon completion of construction the principal amount outstanding under the facility would be converted to a term loan with a repayment period of three years and six months, at which point the unused portion of the credit facility would be cancelled. Assuming that the full US\$50 million was drawn down, the term loan would be repayable in 14 quarterly instalments of approximately US\$3.6 million, starting either six months after performance testing was complete or 24 months after the credit facility was closed, whichever was earlier. In addition to scheduled principal payments Dayton agreed to prepay a portion of the credit facility on each payment

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date, based on a percentage of excess cash flow in the preceding six-month period as defined in the loan agreement.

All amounts under the credit facility were secured by first mortgages, assignments and security interests, covering all of Dayton's property, tangible and intangible, and rights in Chile. Dayton Mining Corporation, the parent, guaranteed all the obligations of Compania Minera Dayton, its Chilean subsidiary, and pledged all of its shares in the subsidiary to the banks. Conditions precedent included:

- a satisfactory due diligence review of Dayton Mining, Compania Minera Dayton and the Andacollo project;
- signing of the contract between Dayton and Bechtel;
- an economic model of the project satisfactory to the banks;
- a satisfactory environmental review of the project; and
- evidence of all necessary regulatory and third-party approvals.

Dayton also was required to raise additional equity financing of US\$14 million before the initial drawdown under the loan facility. It completed an equity financing in May 1994.

Finally, before the initial advance was made Dayton was required to fund an offshore contingency account of US\$5 million to meet possible cost overruns on the project and to establish a gold price hedging programme. Conditions precedent for subsequent drawdowns included the absence of material adverse change for Dayton Mining, Dayton Chile and the Andacollo project.

A commitment fee of 0.5 per cent per annum was charged on the unused portion of the facility. The interest on the loan, net of Chilean withholding taxes, was 275 bps over Libor during construction and 237.5 bps over Libor afterwards.

Risk analysis

The primary risk issue for the commercial banks was that Dayton, as a relatively new and small mining company, did not have unlimited financial resources to guarantee the obligations of the project. Dayton had done a recent equity offering, but the Andacollo mine was still its principal asset. For this reason the lending banks relied even more than usual on Bechtel's experience and reputation as an EPCM contractor, and its ability to complete the project and bring performance up to required standards within the contract schedule.

Bechtel, as both financial and technical adviser, played an important role in helping Dayton to prepare a financing plan and in finding banks that might be interested. It was in Bechtel's interest, as the potential EPCM contractor, to help arrange the financing and to use its own strength to improve the appeal of the project to potential lenders. It was through Bechtel that Barclays became interested in the deal. Barclays previously had structured a loan to a copper project in the United States in which it would have relied heavily on the contractor. The Dayton deal presented similar credit issues.

Current trends in mining project finance

Don Newport of Barclays believed that a project such as the Andacollo Gold Mine provided a bank with an opportunity to help a smaller sponsor to structure a project financing

and complete a deal. The fees for such a deal were, of course, proportionally higher than for larger projects sponsored by household names, but banks such as Barclays and Paribas were providing an important service to a company such as Dayton in its relatively early growth stages.

Newport contrasted the Andacollo Gold project with much larger projects sponsored by major mining companies that were being fought out by major lenders. In that competitive environment he saw an inevitable downward spiralling of remuneration, and a weakening of covenants and terms. As he observed:

Banks are sitting there at the major mining companies' beck and call to write out cheques when called upon, and otherwise remain at arm's length.

He believed that a bank such as Barclays had to be willing to walk away from some deals in which the pricing was too thin or lenders were cutting corners from the standpoint of risk protection. In other cases the bank might have agreed to do a thinly priced deal to maintain a relationship, while telling the customer that there needed to be some sort of *quid pro quo*.

Newport also pointed out that mining is a global business and that projects are often joint ventures among sponsors with different interests. One sponsor might have an interest in the offtake to feed a copper smelter. Another might be interested in operating the mine. Still another might want to increase the use of some infrastructure with spare capacity such as a railroad. These are all parties that a bank knows, that it will see again and that may become customers. As Newport put it, 'No man is an island in this sort of business'.

Barclays may work with a project sponsor as an adviser, a lender or an investment banker. Some advisory work leads to a financing role. In other cases the client prefers the adviser not to be 'contaminated' by the prospect of future financing business for its own institution. Newport said at the time that his group could be objective in recommending a bank loan, the capital markets or both for a project, because Barclays had both capabilities.

At that stage Newport thought that the 144A institutional investor market was more receptive to a utility-type credit, with well-defined offtake and fuel supply contracts, than to a mining project. With mining deals at that time there were sometimes country risk issues as well as other inherent uncertainties. To an increasing degree the bank was seeing mining projects in less creditworthy countries, partly because many of the better deposits in higher-credit countries either already had been exploited or were in environmentally protected areas. A more fundamental risk issue was that in the development phase of a mining project sponsors and bankers were 'pouring money down a hole in the ground hoping that in a few years time they were going to get something out that was of value'. Despite geological surveys and reserve analysis, Newport cited the truism in mining that, 'It's not until you have mined it that you know what it is that you have mined'. However, once a mine is developed and has been operating for a year or so, and investors can see that material such as gold is coming out of the ground, and being refined and sold, a project that has been financed with bank debt may be saleable to institutional investors.

Newport stressed the importance of the commodity. There is a worldwide liquid market for gold, just as there is for copper, silver, platinum and palladium. With metals traded on the London Metal Exchange (LME) and other principal exchanges, there are forward markets with varying maximum maturities for hedging price risk. Gold can be hedged for up to 10 years, subject, of course, to diminishing returns. Copper can be economically hedged for

three years or so. Some other metals can be hedged for 18 months. Options as well as forwards are available.

Most of the mining operations that Barclays financed had an important credit strength in common: they produced products that were sold offshore for hard currency. Often the dollars were retained offshore until the debt was repaid, or remitted by the buyers into a debt service reserve account or a project escrow account. Barclays had recently refinanced facilities provided by the International Finance Corporation (IFC) to Ashanti Gold Fields in Ghana without political risk insurance. The basis of the credit was that the gold had to be shipped offshore to be refined, and, given the importance of gold earnings to the country, it was unthinkable that the Ghanaian government would do anything to upset the arrangement. When Barclays syndicated a US\$125 million loan it was substantially oversubscribed, eventually closing at US\$185 million.

Two strengths that the Andacollo Gold project had, in contrast to many other mining projects, were its relatively convenient location and the well-established infrastructure. In contrast, copper mined in Siberia, for example, may have to be shipped 1,500 kilometres by rail to a port; and the sea at that port may freeze over in the winter. When a product is moved across a number of international borders a country along the way may decide arbitrarily to levy a tariff at any time. Here again a gold mine offers an advantage, since a full week's product can be flown overseas for refining in a light plane.

Barclays Mining Finance Group includes people from a variety of backgrounds. There are mining engineers, geologists and other people who have been on the commercial side of the mining business, working alongside economists, lawyers and (not to be overlooked) long-time career bankers. Rather than assigning people to specialised technical roles the group works in an integrated way. Everyone gets involved in all aspects of projects and the group tries to arrive at a well-rounded view of whether or not a given project will be commercially successful. Having such inhouse expertise helps the group to take an early view as to whether the bank should pursue a project. Newport saw a large number of deals in the market and knew the danger of spending a lot of time on projects that were either unlikely to materialise or unlikely to meet the bank's credit standards.

The group recognises, of course, when it is necessary to bring in a technical consultant. Newport pointed out that an independent technical review is only as good as the terms of reference and the briefings that the engineer has been given. The right people have to be directed to look at the right things. The bank must tell them from its own point of view where it sees potential risks. Newport believed that the ability to direct technical consultants to evaluate a project comes with familiarity and experience. He noted that different firms have different strengths. For example, he said, a bank would be wasting its time working with a firm with an outstanding reputation for geological assessment when the key risk for the project was whether some new piece of process technology would work.

Newport also observed that there was quite a lot of competition on the contracting side of the business, and lenders had to keep a close eye on which risks each sponsor was taking and who was being appointed to do each part of the project. The Andacollo Gold project was an example where the lenders were looking to the contractor to an unusual degree. This is where independent technical consultants can be helpful, not just in their engineering analysis, but in helping to analyse, 'when the whole thing is bolted together, and the wheels start going around, who is going to be responsible for making it work'.

Exhibit 13.2

Annual average gold prices, 1970–2001

	<i>(US\$ per ounce)</i>		<i>(US\$ per ounce)</i>	
1970	35.94	1986	367.66	
1971	40.80	1987	446.46	
1972	58.16	1988	436.94	
1973	97.32	1989	381.44	
1974	159.26	1990	383.51	
1975	161.02	1991	362.11	
1976	124.84	1992	343.82	
1977	147.71	1993	359.77	
1978	193.22	1994	384.00	
1979	306.68	1995	384.17	
1980	612.56	1996	387.77	
1981	460.03	1997	331.02	
1982	375.67	1998	294.24	
1983	424.35	1999	278.88	
1984	360.48	2000	279.11	
1985	317.26	2001	271.04	

Source: Kitco, Inc.

Events since 1996

In order to set out the context for the story of the Andacollo Gold Mine relevant data are shown in Exhibits 13.2 to 13.4.

The Andacollo Gold Mine began commercial operation on 1 January 1996. It was expected to produce about 100,000 ounces of gold in 1996 and 140,000 ounces in 1997, at an average cost of US\$180 an ounce.

As a result of its exploration programme in the first half of 1996 Dayton increased its estimate of total gold resources at Andacollo from 2.25 million ounces to 2.60 million ounces. At the end of 1996 the company further raised its estimate for output to 130,000 ounces of gold, from 2.9 million tonnes of ore with 70 grains of gold per tonne. The resource estimate was conducted by Mine Reserve Associates of Denver.

Accordingly, production for 1996, 87,650 ounces of gold at a cash cost of US\$205 per ounce, was considerably below the company's projections, reportedly because of blasting complications, a leaching cycle that was longer than expected and a strike.

In February 1997 Dayton closed a US\$60

Exhibit 13.3

Annual production and cash operating costs, Andacollo Gold Mine, 1996–99 (full years) and 2000 (first 11 months)

	<i>Production</i> <i>(ounces of gold)</i>	<i>Cash</i> <i>operating cost</i> <i>(US\$ per ounce)</i>
1996	87,650	205
1997	91,347	251
1998	92,548	241
1999	134,955	204
2000 (first 11 months)	84,028	290

Source: Business Wire and Canada Stockwatch.²

Exhibit 13.4

Summary of income statements issued by Dayton Mining, 1996–98 (full years), 1999 (first nine months) and 2000 (full year)

	1996 (C\$)	1997 (C\$)	1998 (C\$)	1999 (US\$)	2000 (US\$)
Revenues	45,996	49,553	45,848	26,320	35,589
Cost of sales	35,649	42,240	44,875	26,020	40,862
Selling, general, administrative and other expenses	13,756	9,956	14,017	2,353	3,393
Net operating loss	3,409	2,643	13,044	2,053	8,666
Writedowns		25,000	51,805		22,722
Loss after writedowns		27,643	64,849		31,388

Note: Figures for 1999 cover only nine months because the company implemented 'fresh start accounting' as of 31 March that year.

million five-year, 7 per cent convertible debenture financing led by Nesbitt Burns, Inc. and also underwritten by ScotiaMcLeod and CIBC Wood Gundy Securities, Inc. The debentures were convertible into Dayton common stock at US\$6.36 per share, equivalent to C\$8.60 per share.

Andacollo's production of 91,347 ounces in 1997, at US\$251 per ounce, was also lower than budgeted because of downtime for expansion of the crushing circuit, problems with solution pumps and delays in mining one of the project's three deposits, the higher-grade Socorro deposit. The company explained that the increase in cash operating costs was mainly the result of mining lower-grade ore zones and coping with higher stripping ratios. A fourth deposit, the higher-grade Churrumata deposit, was scheduled to come into production in the second half of 1998.

Having also written down its marketable securities by US\$1 million, Dayton posted a US\$2.6 million operating loss and a US\$27.6 million net loss after writedowns in 1997, compared to a US\$3.4 million loss in 1996. At that point the company's hedging position for 1998 and 1999 was 21,000 ounces of puts at US\$380 per ounce and 136,000 ounces at US\$340 per ounce.

In March 1998 Dayton said it expected Andacollo to produce 170,000 ounces of gold in 1999, with ore mined primarily from the higher-grade Socorro and Churrumata deposits. The company also announced that it had reviewed the carrying value of its mining assets and written them down by US\$24 million, based on a gold price of US\$340 per ounce.

In May 1998 New York-based Manchester Securities, owner of 9.7 per cent of Dayton's shares, launched a proxy battle to unseat the company's directors and replace them with its own candidates for the board, comprised primarily of current and former mining executives. Manchester said that it was dissatisfied with the company's low share price and its performance under the CEO, Roland Horst. Dayton's stock was trading at less than US\$2.00, compared to US\$9.00 in 1997. Other analysts noted that the company faced shareholder unrest because it had done a poor job of communicating its corporate strategy and that it needed to find new assets because Andacollo was a depleting asset that had not met performance targets.

In early June 1998, in a letter seeking shareholders' support for the board, Horst said that the company had recently sought at least a dozen merger, acquisition or investment opportunities, but the proxy battle was jeopardising expansion plans.³ Shortly after this Institutional

Shareholder Services, a well-known US adviser to institutional investors, recommended voting against Manchester's alternative list of directors because Manchester had not offered any idea of where it would take the underperforming gold producer. Despite that recommendation the dissident group succeeded in replacing the board at the company's annual meeting on 18 June. Bill Myckatyn, a mining consultant and former President of Princeton Mining, became the new CEO.⁴ Don MacDonald, the company's incumbent CFO, remained in place.

The proxy fight unnerved the project lenders. Further, because of a recent decline in gold prices, Dayton was no longer in compliance with certain economic tests under the terms of the loan. As a result the bank syndicate led by Barclays and Paribas asked the company to set aside C\$36 million (US\$25 million) of its C\$52 million in cash reserves to cover the entire amount of the project debt until they could reassess the company's situation, including whatever board was in place after the annual meeting.⁵

In early July the bankers agreed with Dayton to cash-collateralise just C\$28.6 million (US\$20 million) until 19 October 1998 or the date the terms of the bank loan were renegotiated, whichever came sooner. The interest rate on the loan was reduced from 237.5 bps to 125 bps over Libor. Myckatyn, the new CEO, said that Andacollo had been crushing less than the budgeted 20,000 tonnes per day because of excessive downtime resulting from scrap metal occurrences coming from the underground workings. He said that Dayton was implementing a number of operational and maintenance improvements that would enable it to reach design production capacity very soon. According to Myckatyn, ongoing laboratory tests showed recoveries higher than those being used for the company's mine planning and those being achieved from the heap. Therefore Dayton was arranging for additional technical support in gold recovery from the heap. Myckatyn believed that there was potential for increased heap recovery, although it was too early to quantify the likely improvement. The company was continuing to review the effects of the ore tonnage and grades encountered at Socorro and Churrumata, which were lower than expected, and a comprehensive quality control process was under way in relation to the company's assaying techniques, grade control practices, and mine procedures. As part of that effort the company had increased the level of supervision in its blasthole sampling. Myckatyn also noted that, as an integral part of its growth strategy, Dayton had reinstated discussions with various parties on potential business combinations.

As of 23 October 1998 the lenders had not granted an extension to the waiver of the defaults that had been extended to 19 October and were continuing to negotiate with the company. Myckatyn said that, although there was no assurance that agreement would be reached, there was US\$17.9 million outstanding on the loan, of which US\$12.9 million was cash-collateralised. Because only US\$5 million was not cash-collateralised and the lenders were secured by the Andacollo mine, the company's management was hopeful that a satisfactory agreement could be reached.

With effect from 1 January 1999 Dayton changed its reporting currency from Canadian dollars to US dollars. On 11 January 1999 Dayton announced that it had agreed with the banks to use US\$10.9 million of the collateralised cash to pay the loan balance down to US\$7 million, leaving cash collateral of US\$2 million. At that point Dayton would have total cash of US\$9.5 million, or US\$7.5 million net of the cash collateral. Quarterly loan repayments due in January and April 1999 would be reduced from US\$3.6 million to US\$1 million, and interest payments would continue at the reduced rate of 125 bps over Libor. The banks agreed to waive all defaults until 19 April 1999. Dayton anticipated that it would be in full compliance with all the terms of the loan agreement by that date.

On 29 April 1999 Dayton announced its operating and financial results for the fourth quarter and full year of 1998, and for the first quarter of 1999. Using a gold price of US\$300 an ounce, the company once again reviewed the carrying value of its mining assets and wrote them down by US\$51 million. It also wrote marketable securities down by US\$805,000 and posted a loss of US\$64.8 million for 1998. The company reported that mineable reserves were 862,000 ounces of gold, contained in 30,983,000 tonnes of ore. The reserves were calculated at 0.865 grams per tonne and a price of US\$325 per ounce. This was a significant reduction from the company's estimate in 1997 of 1.3 million ounces of gold at US\$350 an ounce, because of lower gold prices, additional drilling information, the mining of 176,500 ounces in 1998, revised pit slopes, ore losses on the Socorro deposit and a reinterpretation of the Churrumata pit. Helped by its hedging programme, Dayton was able to realise US\$336 per ounce in 1998, but that was a significant drop from the US\$402 realised in 1997. More encouraging were the record levels of monthly and quarterly production during the fourth quarter of 1998, which was the basis of Dayton's projection of 138,000 ounces at a cash cost of US\$190 per ounce for 1999. The company noted that ore would continue to be mined from the Socorro and Churrumata deposits during 1999, with two additional deposits, Natalia and Chiaperos, scheduled to come into production during the year.

Because of the low gold price environment Dayton's directors recommended, and its shareholders and debenture holders approved, the exchange of all US\$69 million in debentures into common shares on 31 March 1999. This transaction was treated for Canadian accounting purposes as a financial reorganisation resulting in the comprehensive revaluation of all the company's assets and liabilities. The liability related to the debentures was eliminated, and all the other assets and liabilities were revalued to their estimated fair values. In conjunction with the revaluation, known in Canada as 'fresh start' accounting, Dayton was no longer required to disclose results prior to 31 March 1999. The company was, however, required to record all gold hedging contracts maturing between April and December 1999, at market value as of 31 March 1999. Dayton realised a profit of US\$1,449,000 on gold hedging contracts during the first quarter of 1999, but because of fresh start accounting, only US\$218,000 could be included in the company's income for the quarter.

In June 1999 Dayton's CFO, Don MacDonald, said that, because its major asset, Andacollo, had just six years of life remaining, the company was considering three options for its future: taking over another company; being acquired; or buying a new gold asset. He said that the company's higher production forecast for 1999 was justified by higher ore grades, better assaying results, and improved techniques to cope with the higher grades and higher crusher throughput.

Dayton announced in July 1999 that it remained on track to produce 138,000 ounces for the year at a cash cost of US\$185 an ounce. On 30 September the company had US\$7 million in cash and US\$3.3 million due to the banks on the project loan. Bill Myckatyn, still CEO, said that the management of the Andacollo Gold Mine had worked diligently throughout the year to increase production, reduce operating costs and improve overall production. The conversion of the convertible debentures into equity would, in his view, help to ensure the viability of the company in a depressed gold market. The company expected to be debt-free by January 2000, after making the final payment to the banks on its project debt. Myckatyn said that, with good operating performance and cash-flow generation, a clean balance sheet, and a strong operating and management team focused on growth, Dayton was well positioned to add to shareholder value through mergers and acquisitions.

During a recent rally in the gold price Dayton had acquired an additional hedge position of spot-deferred contracts equivalent to approximately three months of gold production, or 5 per cent of reserves. As of 12 October 1999 Dayton's hedge position consisted of 21,000 ounces of puts at US\$340 per ounce and 35,000 ounces of spot deferred contracts at an average price of US\$276 per ounce.

In January 2000 Dayton made the final payment to the banks of US\$1.67 million on its project debt and announced record production of 134,955 ounces of gold at its lowest-ever cash cost of US\$204 per ounce for the full year of 1999. This was not quite as good as had recently been forecast, but it was a substantial improvement over previous years. In February the company estimated that Andacollo's remaining reserves were 502,000 ounces of gold contained in 17.8 million tonnes of ore at 0.88 grams per tonne using a gold price of US\$325 per ounce. Myckatyn said that the estimated useful life of the mine was still five years and that the company still intended to merge with another company in order to continue in business once the reserves were exhausted.

In March 2000 Dayton closed a US\$9 million equity financing, consisting of 81,181,181 special warrants at US\$0.11 per warrant. The company intended to use the proceeds for working capital and to invest in a 49 per cent interest in the Denton Rawhide gold and silver mine in Nevada.

After its best year in 1999, Andacollo's performance was disappointing in the first half of 2000. Gold production of 52,204 ounces was 27 percent below production of 71,446 ounces in the first half of 1999 and cash costs had risen to US\$253 per ounce. Ore tonnage in the Churrumata and Natalia pits was lower than in the reserve model, resulting in higher stripping ratios and reduced tonnage fed to the crusher. Also, the leaching rate was significantly slower than expected from the original test work. An internal line was installed to speed up solution flow, but failed to increase the recovery rate to planned levels.

In September 2000 Dayton announced that Andacollo's mining, crushing and stacking operations would be suspended immediately because of continued low gold prices and lower-than-expected production. However, the mining and crushing equipment would be stored carefully to allow for a rapid resumption of operations when economic conditions improved, and leaching from existing heaps would continue. The company expected to produce 39,000 ounces of gold from the leaching process over the following 15 months.

On 30 November 2000 Compania Minera Dayton, Dayton Mining's Chilean subsidiary, had trade payables and lease obligations of about US\$12.6 million. Dayton Mining, as an unsecured creditor, was owed about US\$1.33 million. A balance of US\$5.7 million was payable over the following three years to Caterpillar Financing, the owner and lessor of the mining equipment. That obligation was secured by the equipment and by a guarantee from Dayton Mining. The outstanding amount was about equal to the market value of the equipment. Dayton had the option to continue making lease payments while a buyer was found for the equipment.

Dayton announced on 4 December 2000 that it would permanently shut down the Andacollo Gold Mine and start the process of liquidating any assets not related to the ongoing final leaching of stacked material. In conjunction with that decision Compania Minera Dayton applied to the relevant Chilean courts for implementation of a creditors' plan to deal with all of the company's outstanding liabilities. Under Chilean law a company submits a plan to the court outlining its proposal for dealing with outstanding creditors and other liabilities. The court then appoints a receiver to issue a report on whether the plan is supportable and invites participation from the creditors. If the plan is supported by the court and two-

thirds of the creditors, representing more than 75 per cent of the company's outstanding obligations, the plan is approved and creditors are paid under its terms. If the plan is not approved the court usually places the company in bankruptcy. When Compania Minera Dayton applied for court protection Bill Myckatyn said that the company's payables had fallen behind during the third quarter of 2000 because of low gold prices and mine production. While the company had reached preliminary agreement on alternative repayment terms with several of its suppliers, it was now unable to meet those terms.

During the first 11 months of 2000, before the mine was closed, Andacollo produced 84,028 ounces of gold at a cash cost of US\$290 per ounce. A US\$22.7 million write-off, representing the entire book value of Dayton's investment in the mine, contributed to the US\$31.4 million loss posted by Dayton for 2000. By this time Dayton had invested in two other projects, the Denton Rawhide project in Nevada and the El Dorado gold mining project in El Salvador. Exploration expenditures for these two projects had also contributed to the company's negative cash flow for 2000.

Between October 2000 and May 2001 the Andacollo mine produced 35,600 ounces of gold, more than had been estimated for that period when the mine was closed. In June 2001 Compania Minera Dayton reached agreement with its creditors to repay all outstanding obligations over four years. It thus acquired protection from bankruptcy proceedings during that period. During 2001 Dayton Mining drew up a draft feasibility study for its El Dorado gold property for the El Salvador government's review, with the aim of converting its exploration licence into a mining licence.

On 9 January 2002 Dayton reached agreement to merge with another Canadian minerals company, Pacific Rim Mining. The El Dorado project was to be the primary immediate focus for the merged company. On 25 February Dayton announced a US\$3.4 million loss for 2001, caused mainly by care, exploration and maintenance costs related to its Denton Rawhide and El Dorado mines.

Lessons learned

Mining projects are subject to the risk of falling commodity prices and the risk that, despite the results of expert feasibility studies, ore grades and production costs will not meet expectations. The Andacollo mine was built when the price of gold was between US\$350 and US\$400 an ounce, but since 1998 the price has remained below US\$300 an ounce (as shown in Exhibit 13.2). At the same time geological irregularities and unexpectedly low ore grades caused production prices to exceed expectations. Bill Myckatyn understandably described the mine as 'the pit from Hell'.⁶

¹ This case study is based on interviews with Don Newport, who at the time was Head of Mining Finance Group at BZW (then the investment arm of Barclays Bank), and Thomas K. Emmons, then Group Vice President of Banque Paribas (now with PricewaterhouseCoopers), as well as articles in the financial press.

² The full sources for this Exhibit are: 'Dayton Mining Corp. Announces Operating and Financial Results for Fiscal Year Ending December 31, 2000', *Business Wire*, 12 April 2001; 'Dayton Mining Announces 1999 Operating and Financial Results', *Business Wire*, 23 February 2000; 'Dayton Mining 1998 Financial Results and Operating Results', *Business Wire*, 29 April 1999; and 'Dayton Mining Corp. – Year-End Financial Results', *Canada Stockwatch*, 26 March 1998.

³ Kennedy, Peter, 'Dayton Shareholders Hamper Expansion', *Financial Post*, 5 June 1998, p. 9.

⁴ Bagnell, Paul, 'Dayton Investors Urged to Support Management', *Financial Post*, 12 June 1998, p. 6.

⁵ Kennedy, Peter, 'Dayton Investors Unnerve Bankers', *Financial Post*, 2 June 1998, p. 5.

⁶ Hasselback, Drew, 'Dayton Mining Pulls Plug on "Pit from Hell"', *Financial Post*, 5 December 2000, p. C06.

Gold mines, Tanzania

Type of project

Gold mines.

Country

Tanzania.

Distinctive features

- First three commercial mine financings and first three project financings in Tanzania.
- Interaction of project finance, corporate finance and derivative-based commodity price hedging.
- Unusually large long-term, unguaranteed financing for private-sector African projects.
- Political risk insurance covering both loan and gold price hedging programme.

Description of financing

The Golden Pride project received a US\$48 million five-year loan, with four-year amortisation after production begins, accompanied by a hedging facility.

The Bulyanhulu project received a nine-year term loan, originally US\$130 million, later increased to US\$200 million, with insurance coverage from Multilateral Investment Guarantee Agency (MIGA) and the Export Development Corporation (EDC) of Canada covering 95 per cent of political risk. The sponsor, Barrick Gold Corporation, provided both gold price support and future capital expenditure commitment to complete the project.

The Geita project received a US\$135 million five-year loan accompanied by a hedging facility.

Project summary¹

The Golden Pride, Bulyanhulu and Geita projects will soon raise Tanzania's gold production to more than 1 million ounces a year from zero just a few years ago. The Golden Pride project turned out to offer a timely opportunity for Barclays Capital to become involved in all three projects, using its experience with each project as a foundation for a larger commitment to the next one.

These projects represent the first three commercial mine financings and also the first three project financings in Tanzania. The maximum size of a deal in a country such as Tanzania is driven by how comfortable the bank and insurance markets are with the political risks. Political risk insurance was an essential ingredient in the financing of all three projects and the availability of coverage from strong high-credit issuers was a constraining factor in the size of the projects that could be financed.

The fiscal terms for the Golden Pride project provided the foundation for a new mining law in Tanzania. Like many other less developed countries, Tanzania was trying to move beyond agriculture and develop basic industries. The Tanzanian government knew that Ghana, for example, had become one of the most successful economies in Africa, earning hard currency through exports of raw materials and developing export-oriented projects by attracting foreign investment. Because a mine is often one of the first such projects, mining law often serves as the foundation for the regulatory framework for foreign investment in general. Barclays' 'learning curve' across the three projects did not affect loan pricing, but it did affect efficiency and speed of execution.

Background

Tanzania has enjoyed political stability and a good reputation among private businesses in recent years, even though it is surrounded by unstable countries such as Burundi, Rwanda and the Democratic Republic of Congo. Some attribute the country's attractive political climate at least partly to its legal system, which is based on English law. Among the government's recent measures to encourage international investors are the divestiture of the National Bank of Commerce, the launch of the Dar es Salaam Stock Exchange, the presentation of more than 1,000 potential development projects and the enactment of mining legislation favourable to foreign investors.

Tanzania's two principal mineral resources are gold and diamonds. In 1990 mining contributed just 1.2 per cent of the country's GDP and employed 1 per cent of its wage-earners, but the government expects three times these levels by 2005. Gold-mining began in Tanzania 90 years ago, reached a peak during the Second World War and then declined in the 1960s, because of low gold prices and political instability. In 1990 about 500,000 individual panners, known as 'grasshoppers', were producing about 1.5 million tonnes of gold each year and selling it through unofficial channels. Now, as major companies begin to develop big mines, the grasshoppers are expected to be phased out.²

Under the new mining law, enacted in 1997, a company may write off 100 per cent of capital expenditures immediately against its profits. If the company's profits are insufficient to allow tax to be written off in this way, the balance of the capital expenditure can be carried forward, also taking into account a 15 per cent appreciation factor for capital investments to be written off against the following years' profits. The new law also facilitates applications for prospecting and mining licences, and provides for other fiscal benefits, such as tax holidays and full repatriation of profits. A mining company pays a 3 per cent royalty on turnover from inception and taxes on earnings at a 30 per cent rate once it has recovered the capital invested in the mine.

Partly as a result of this legislation Tanzania has become an increasingly prominent gold-mining country. Some have criticised the government for giving away too much, but according to President Benjamin Mkapa, speaking at the opening ceremonies for the Geita mine in

August 2000, with the Golden Pride and Geita mines up and running, two more gold mines expected to come on stream during the following year, and other mining activities under way, the only way for the country to use its abundant mineral wealth is to team up with private investors who have the requisite capital, technical knowhow, and other skills necessary to extract and process the minerals.³

Between 1997 and 2000 Barclays Capital participated in the financing of three gold mines in Tanzania: Golden Pride, Bulyanhulu and Geita. Viewed together and sequentially, the projects illustrate Barclays' experience of starting in Tanzania with a relatively modest project, gaining experience of doing business in the country and then proceeding to larger, more complex projects.

Golden Pride

Discovery by Samax Gold

The Golden Pride project is the first large-scale gold mine commissioned in Tanzania since independence was achieved in the early 1960s. Located at Lusu, in Nzega District in the Tabora region, 200 kilometres (km) south of Lake Victoria and 750 km northwest of the country's largest city (and former capital), Dar es Salaam, the project encompasses mineral rights and prospecting licences covering an area of about 3,500 square km. The gold deposit there was discovered in 1991 by Samax Gold, a London-based company incorporated in Canada, with gold mining and exploration interests in Congo, Ghana and Senegal as well as Tanzania. Samax was privately held until it achieved listing on the Toronto Stock Exchange in December 1996.

Agreements with Resolute Resources and the Tanzanian government

In July 1996 an Australian company, Resolute Resources Ltd, agreed to buy a 50 per cent interest in the project from Samax for US\$17 million and to contribute an additional US\$9 million to project development costs. Under a new, unincorporated joint venture Samax assumed responsibility for exploration and Resolute became the mine's operator. At that time Resolute estimated that proven and probable reserves at Golden Pride amounted to 1.4 million ounces of gold. The company issued a statement that the project was expected to produce 170,000 ounces of gold per year from a conventional carbon-in-leach gold-processing facility, treating 2 million tonnes of gold-bearing ore each year, at a cash cost of US\$210 per ounce over 10 years.

In February 1997 the Tanzanian government granted a mining licence for the Golden Pride project and in June the parties signed an agreement on fiscal terms. This became the foundation for the new mining law described above. After a 14-month development phase, production was scheduled to start in early 1998.

Initial financing

A capital requirement of US\$50 million was estimated for a mineral processing plant; mine equipment; electricity, water and road services; mine design and construction; and construction of senior staff housing in the town of Nzega. The project was financed in such a way that Resolute, which had far greater financial resources than Samax, could fund part of the equi-

ty contribution that otherwise would have been expected from Samax. Resolute, as the project manager, agreed to fund the first US\$18 million of development expenditures and to take responsibility for securing nonrecourse project financing for the balance. Samax agreed to assume responsibility for US\$16 million of project debt and to service the debt from its 50 per cent share of operating cash flow. Lycopodium Pty Ltd of Australia was awarded the prime contract for design and construction of the plant.

In October 1997 Resolute and Samax reached agreement with Barclays Capital to arrange financing for project development. Barclays' due diligence was based on a feasibility study, audited by external independent consultants, that detailed the production rate and development plan. The study assumed an interim pit with a maximum depth of 150 metres. However, recently announced exploration results had permitted a complete reinterpretation of the deposits and confirmed the presence of higher-grade shoots extending below the interim pit limits.

Financing for the project included a five-year US\$48 million loan underwritten by Barclays Capital. The loan is repayable over four years after production begins. It was structured so that Resolute and Samax each separately borrowed US\$24 million. Each serviced its share of the loan from its 50 per cent share of the project's cash flows. To cross-collateralise the loan each sponsor pledged its share of the project to service the other's share of the loan. In conjunction with the financing a hedging facility includes forward spot sales of gold and the sale of options to provide a floor for minimum gold prices. Equity includes US\$16 million provided by Samax and US\$18 million paid by Resolute to Samax for its stake in the project. Another US\$8 million spent by the sponsors for drilling and miscellaneous expenditures could also be classified as equity.⁴

In the course of the project financing process in 1997 the sponsors and lenders were pleased with the Tanzanian government's willingness to provide guarantees concerning the regulatory framework and to certify the sponsors' ownership of the project, which was unusual for an African country at that time. As a result the project could be financed on a nonrecourse basis. The governments of both Tanzania and Ghana also agreed in principle to allow mining companies to open offshore accounts for deposit of export proceeds, a common protective measure for project lenders. African governments in general had previously been unwilling to make such concessions.

Changes of ownership and refinancing

In September 1998 Ashanti Goldfields Ltd of Ghana made a cash offer to purchase Samax, principally to realise synergies through the development, on a combined basis, of Samax's licensed activities at Geita Kukuluma, which adjoined Ashanti's Geita gold mining project (discussed below). The offer, representing a 52 per cent premium over Samax's share price, valued the company at C\$213 million (US\$137 million); its book value was US\$24 million. About 80 per cent of that value was attributed to Samax's licences at Kukuluma and about 20 per cent to its interest in Golden Pride. As an alternative to cash Samax's shareholders were offered a debt security mandatorily exchangeable into common shares in Ashanti. Ashanti operated three gold mines in Ghana and a fourth in Zimbabwe. Because Samax's most important asset was its 50 per cent interest in Golden Pride, the Ashanti offer for Samax in effect placed a new, higher value on Golden Pride, and caused the price of Resolute's shares to rise by 12 per cent.

In April 1999 Resolute asked Ashanti to refund the equity in the project that Resolute had invested on Samax's behalf. To resolve the issue Resolute agreed to buy out Ashanti's 50 per cent interest and thus assume 100 per cent ownership of Golden Pride. Ashanti had bought Samax for its licences at Kukuluma and was not interested in Golden Pride. Under the agreement Resolute would pay Ashanti US\$20 million in cash, US\$14 million when conditions of sale were met and the remainder at the end of the year. It would also assume US\$19 million of debt associated with the mine. Resolute also agreed to make contingent payments of up to US\$13 million over the following three years. For each quarter in which gold prices averaged US\$295 an ounce or more, it would pay Ashanti US\$1.1 million. For a quarter when the average gold price was less than US\$295, however, it would make no contingent payment.

The acquisition was closed in early January 2000. Resolute financed it with a cash-backed US\$14 million debt facility and a deferred payment of US\$6 million, funded partly by cash and partly by the issuance of A\$6.5 million (US\$4.3 million) unsecured convertible notes for a term of five years maturing on 4 January 2005. The notes could be converted at any time to fully paid ordinary shares at a conversion price of 46 Australian cents (30 US cents). The notes also carried 12.3 million detachable options convertible to one fully paid share each, exercisable at 46 Australian cents, and expiring on 4 January 2005. Interest, payable quarterly in arrears, accrued on the notes at 8.5 per cent per year. The company was permitted to repay any or all of the notes at any time before maturity, and noteholders could require early repayment of any outstanding notes on 31 May 2000, 4 January 2001 or 4 January 2003.

In June 2000 Resolute completed a US\$35 million refinancing of the Golden Pride project, helping to relieve a tight cash situation. Before this refinancing Resolute had a US\$30 million working capital investment plus an additional US\$14 million cash deposit locked in the Golden Pride project, as required by the terms of the financing for its buyout of Ashanti's interest. Freeing up the US\$14 million deposit helped the company to retire most of its debt except for that related to Golden Pride.

Operating performance

Resolute's ability to refinance the Golden Pride project was helped considerably by operating performance that had exceeded expectations right from the beginning. In November 1998 Resolute had announced that the Golden Pride mine was commissioned and that the first bar of gold had been poured ahead of schedule. At that time it had forecast annual production of 180,000 ounces at a budgeted cost of US\$165 per ounce, compared to an original estimated cost of US\$210 an ounce. In fact, during the two years following its commissioning in February 1999 the mine produced 437,000 ounces of gold at an average production cost of US\$157 per ounce

In April 2001 Resolute announced plans to begin fresh exploration in the vicinity of the mine. The favourable performance of Golden Pride was particularly helpful for Resolute, because the company recently had written off a failed nickel venture.

Golden Pride's ore body has turned out to be just as good as expected and the project has had good operating results. As a successful first mine project financing in Tanzania it has served as a template for future deals.

Bulyanhulu

A minor gold rush

This greenfield project, located in the goldfields south of Lake Victoria in northwestern Tanzania, is the largest gold mine in East Africa. Gold was first found at the Bulyanhulu site by herdsman in 1976. A minor gold rush ensued over the following 20 years, during which an estimated 10,000 local artisan miners extracted as much as 1 million ounces of gold.

Development by Sutton Resources

A 'junior' exploration company, Sutton Resources, began underground development work in October 1996. After starting in a partnership with the government that did not work very well, Sutton bought out the government's interest. In order to comply with the guidelines set out in the government's 'Environmental Management Framework' Sutton conducted comprehensive environmental, socioeconomic and archaeological studies in the area. It also upgraded 75 km of roadway, part of the road that runs for 125 km between the mine and the nearest railway depot.⁵

As of early 1999 Sutton Resources had just a single gold-mine asset, but the economics of that single asset were extraordinary by world standards: Bulyanhulu was an 'elephant' deposit, with total reserves estimated at 8.8 million ounces. The gold grade was estimated to be 12.5 grams per tonne, nearly twice the grade of the average underground mine in North America. Sutton planned to start production in 2000 at an annual rate of 300,000 ounces and a cost of US\$163 per ounce, which was in the lowest quartile among costs of gold producers around the world.

Early financing moves and takeover by Barrick

Barclays Bank, Standard Bank and Société Générale were first mandated by Sutton Resources to finance the Bulyanhulu project in 1998. They were confident in the project because technical consultants had verified an exceptionally strong and continuous body of high-grade ore. The banks had to postpone the financing because of depressed gold prices and political violence in Tanzania, but they started again to structure a financing in 1999. Each was prepared to underwrite US\$40 million and to syndicate to other banks.

Then, in March 1999, just as the banks were finalising the structure of a US\$130 million project financing, the Barrick Gold Corporation, headquartered in Canada, made an offer to purchase Sutton Resources for C\$525 million (US\$350 million). Barrick, one of the world's leading gold producers, had expertise in developing and operating mines, and a strong balance sheet. A friendly takeover resulted, as Sutton's board unanimously approved the transaction and agreed to cooperate with Barrick to implement the transaction.

If Sutton had continued to develop the mine independently it might have become the first company since Barrick to build itself internally from a junior exploration company into a low-cost mid-tier producer. However, given the current state of the gold market, the risks were substantial. The price of gold averaged US\$294 an ounce in 1998, its lowest level in 20 years. Largely as a result of the uncertain price environment, the gold industry was consolidating. Major players such as Barrick were looking for prime assets and willing to pay substantial premiums, as they did for Bulyanhulu.

Milo Carver, a Managing Director of Barclays Capital, also noted that a small company generally has less resources for initial exploration than a large one. The profitability models for a mining project are driven by factors such as how far trucks have to haul the ore and how hard the rock is at various depths. Therefore, when a company designs a mining operation it goes through an optimisation process in determining how deep the mine will be, whether or not to go underground, what shape the pit will be and where to locate the processing plant. A major company drills in a ‘Swiss cheese’ manner, in order to understand as much as possible about the ore body before making these decisions. A smaller company, on the other hand, has less to invest. It tends to drill just enough to determine whether a project is feasible, to decide where to build the plant on the basis of limited information, and to use cash flow from operations for further exploration and mine construction. Invariably, as the mine expands the plant turns out not to be located where it would have been under a more substantial exploration programme.

The very fact that three world-class banks had been willing to offer project financing after all the necessary due diligence was undoubtedly an important factor in Barrick’s decision to make its bid for Sutton. The loan was increased from US\$130 million to US\$200 million because Barrick, then the largest gold company in the world, saw potential to expand the mine, and was able to offer more substantial technical, financial, and other resources to carry out expansion than Sutton had been. This was the largest bank deal that had been done in Tanzania, and it constituted a real test of how far the bank and political risk insurance markets could be pushed. Carver remarked that it could not have been done without Barrick’s credit quality and gold price support, as well as political risk insurance.

In recent years Barrick had not done any project financing, preferring to keep the financing of projects on its own strong balance sheet. Carver pointed out that project financing is expensive because of the requirements for structuring and reporting to the banks. Large corporations tend to do it only for specific reasons, such as mitigating a specific risk or financing a joint venture where the two sponsors are of unequal financial strength. However, Barrick was prepared to make an exception and project-finance Bulyanhulu for two related reasons. First, Barrick had relatively little operating experience in Africa. Second, the company saw the biggest single risk as political risk, even though Tanzania at the time was considered to be one of the best African countries in which to do business. Rather than financing the mine with a pure nonrecourse project loan, Barrick was willing to lend corporate support in the form of a gold-price guarantee and a project-completion guarantee, thus improving the terms of the financing. Barrick was in a particularly strong position to offer gold-price support because of its substantial and well-known corporate hedging programme, backed by its strong balance sheet.

How the financing was arranged

Having gained experience in Tanzanian mine financing with the Golden Pride project and the first Bulyanhulu financing under Sutton’s aegis, Barclays was in a position to be a little more aggressive as it designed a project financing package for Barrick. The bank offered a nine-year term loan, unheard of for an African country at the time, and recommended a combined package of insurance coverage from MIGA and the Canadian EDC that covered 95 per cent of Barrick’s political risk. Barclays was able to offer unusually favourable terms because of the combination of a high-quality asset and additional support from a strong sponsor. J.

Gerard Holden, also a Managing Director of Barclays Capital, estimated that if the financing had been a pure corporate financing the term would have been in the range of three to five years rather than nine years.

The Tanzanian government not only had a good reputation, but also had every reason to cooperate with the project sponsors. Gold exports would be a good source of hard-currency export earnings, and Barrick would help the local community by providing about 1,000 jobs, building roads and drawing power from the local grid, thereby helping to justify upgrades to local power generation facilities. Tanzania in turn could use these infrastructure improvements to attract other projects to the area, further enhancing its growth.

Having started in Tanzania with the Bulyanhulu project, Barrick has recently bought another company, Pangia, which has operations nearby. Barrick is expected to pursue a similar approach with Pascua Lama, a new project on the border of Chile and Argentina.

In May 2000 a bank syndicate provided a US\$200 million financing for Kahama Mining Company, a new company jointly owned by Ashanti and AngloGold, which owned the Bulyanhulu project. The financing was arranged by Barclays Capital as administrative and facility agent, CIBC (Canadian Imperial Bank of Commerce) as technical bank, Citibank as trustee and collateral agent, Deutsche Bank as bookrunner, Dresdner Kleinwort Benson doing documentation, and Société Générale as insurance agent. Other banks were invited to join at either of two levels: co-arrangers taking US\$15 million each and earning a fee of 90 basis points (bps), or senior lead managers taking US\$10 million each for a fee of 75 bps. Pricing for the loan was 75 bps over the London interbank offered rate (Libor) for the two-year project completion period. Then, upon project completion the margin was stepped up to 150 bps until 2004, to 175 bps for 2005 and 2006, and 225 bps from 2007 to maturity. The syndication was targeted primarily at Barrick's relationship banks and other banks with expertise in lending to mine projects. The appetite among banks for this project was strong because of the political risk insurance package, a relatively conservative debt-to-equity ratio of 54:46, Barrick's reputation in the business, and its price support and completion guarantees.

Geita

Financing with political risk insurance

Geita is situated on a greenstone geological formation, near Hogi, Mwanza, immediately south of Lake Victoria, which is turning out to be one of the most productive gold-producing regions in the world. Commissioned in August 2000, the mine was developed at a cost of about US\$165 million. With an estimated life of 12 years and about 500 employees it has a forecast annual output 500,000 ounces at a cost of about US\$180 an ounce. Local infrastructure improvements will include construction of a new village, a clinic, a school, a road between Geita and Hogi, which is 62 km away, and a water pipeline 25 km long. The project has reportedly provided 1,700 local jobs during the construction period and provided business to 120 local firms.

In early 2001 Barclays led a five-year US\$135 million project financing for the Geita gold mine. As with Golden Pride, the project company is an unincorporated joint venture. It is required by the lenders to hedge the future price of its gold output through an offshore bank, using straightforward 'plain vanilla' hedging instruments. Political risk insurance, provided by AIG and Zürich, covers both the loan and the hedging programme. Carver of Barclays Capital noted that both the insurers committed the maximum amount of coverage they could

provide for a single project at the time. For both the banks and the insurers this was the biggest deal that could have been done in Tanzania at the time.

To illustrate why the banks wanted political risk insurance to cover the hedging programme, consider a project company that sells futures to hedge against declining gold prices. If the gold price falls the project company earns a profit on the futures contract, but if the price rises the company incurs a loss and must pay its counterparty. If the Geita project company failed and was not able to pay its counterparty the lenders could become liable. Political risk insurance would cover the company's failure and its futures contract obligation if the failure was caused by one of the policy's defined political risk events, such as expropriation, political intervention or the imposition of an import tariff that caused the project to become unprofitable.

Change in ownership

Until recently the Geita project was 100 per cent owned by Ashanti Goldfields, a Ghanaian company owned by, among others, the Ghanaian government (20 per cent) and Lonmin (32 per cent), a British gold, platinum and coal mining company that was formerly part of the Lonrho conglomerate. In late 1998 Barclays participated in a 21-bank revolving credit put in place partly to refinance another US\$185 million corporate facility arranged by Barclays Mining Finance in 1995, partly for general corporate purposes and partly to finance the Geita mine. Then, in early 2000, Ashanti developed liquidity problems as a result of hedging losses (discussed further below). A group of banks led by Barclays arranged bridge financing that allowed Ashanti to complete the project.

A condition of the financing was that Ashanti would auction off a 50 per cent interest in the mine in order to reduce its debt and put its finances on a firmer footing. AngloGold, a South African mining company, was the winning bidder. It paid a premium price of US\$205 million for its 50 per cent interest, beating seven other prominent players: Barrick, Placer Dome, Meridian Gold, Homestake Mining, Newmont Mining, Normandy and Gold Fields of South Africa. Another key condition of the bank group's bridge financing was that a new project financing be arranged for the project on a standalone basis, hence the US\$135 million loan. Even though AngloGold owned only 50 per cent of the project, it agreed to guarantee all of the debt through the construction stage, recognising that it was a stronger credit with greater financial resources than Ashanti, which retained the other 50 per cent. As of the spring of 2002 the project was operating well and nearing completion. The company was looking for ways to optimise it before undergoing the completion test.

Ashanti's hedging problems

The problems leading to Ashanti's sale of 50 per cent of the Geita project to AngloGold offer a case study in how project finance, and commodity-price risk management intersect. Barrick's well-known and centralised programme for hedging gold prices allowed it to provide price support for the Bulyanhulu project financing. In contrast, Ashanti ran into difficulty in its efforts to hedge the production of the Geita gold mine against falling prices, even though it was using hedging strategies that, to the outsider, did not look much different from Barrick's. The principal difference was that Barrick was a much larger company with a sufficiently strong balance sheet and cash reserve to wait out and withstand unexpected price

fluctuations. At the time of the price spike Barrick reportedly had about US\$600 million cash on hand, compared to Ashanti's US\$100 million.⁶

Ashanti had entered Tanzania in 1996 through acquisition of Cluff Resources, a company based in the United Kingdom that then owned Geita and other nearby mining properties. In November 1998 Ashanti bought Samax Gold, a Canadian company, for US\$137 million, thereby gaining 50 per cent of the Golden Pride project and additional interests in the Kukuluma area near Lake Victoria. By October 2000 Ashanti had become a major player in the Lake Victoria goldfield region, with 440 square km of concessions in the Geita area and another 40 licences covering 1,350 square km nearby.

As of September 1999 Ashanti had hedged a substantial portion of its gold reserves, estimated by some to be as much as 10 per cent of its annual production and 40 per cent of its reserves, against falling prices, about two thirds with long-term, spot forward sales and the remaining third with put options. It funded part of the cost of its put options through the sale of call options. When falling gold prices were causing some other companies to close their mines Ashanti had earned a reputation for skilful financial engineering that allowed it to increase its earnings, reduce its funding costs, purchase Samax Gold, and continue exploration and development in Ethiopia, Mozambique and Senegal, as well as Tanzania. Ashanti was able to lock in future prices substantially in excess of current prices because of the 'contango', the interest-rate-based premium on the price of gold futures. Ashanti reportedly hedged amounts ranging from close to 100 per cent of production in the first year to about 10 per cent in the 15th year.⁷ With a sophisticated derivatives-based hedging programme the company was able to separately manage its gold-price, its US-dollar-interest-rate, its gold-interest-rate and its volatility exposures.

On 26 September 1999 a group of the world's leading central banks unexpectedly announced a five-year moratorium on new loans and sales of gold from their reserves. As a result the price of gold rose by about US\$70 an ounce over the following four days and the value of Ashanti's hedge book declined to an estimated negative US\$570 million. The declining value of Ashanti's hedging instruments was of course offset by the increasing value of its gold reserves, but the company was subject to margin calls, to be settled immediately in cash, while its gold reserves were in the ground. There were rumours in the market that Ashanti was using 'exotic' derivatives to leverage its bet on falling gold prices, which the company's CFO denied. One of Ashanti's major problems, he claimed, was the unusually tight margin requirements that its counterparties required on futures contracts because of perceived Ghanaian and Tanzanian country risk at a time when the company's liquidity was low. Carver of Barclays Capital commented that practically no company could have been expected to maintain cash balances to cover such an unexpected turn in the market. Another observation was that Ashanti, like many other companies, did not do sufficiently rigorous stress tests, for example, to three standard deviations of probability rather than two, to cover the admittedly unusual price spike. Also, as would be expected, some questioned how much hedging the company should have been doing in the first place if investors bought its shares as a play on the price of gold, and some pointed to the need for a more transparent hedging strategy.⁸

When the extent of Ashanti's problems became apparent the company secured a moratorium on margin calls with its 17 banks to allow time for negotiation of a longer-term solution. On 1 November 1999 Ashanti reached an agreement under which 17 banks would waive their rights to future margin calls for at least three years and accept reduced rights after that in exchange for warrants that could be exercised at US\$4.75 per share, giving them potential

ownership of 15 per cent of the company. Ironically, by the time this agreement was signed gold prices had fallen again, Ashanti was no longer subject to margin calls and the value of its hedge book had risen from a negative US\$570 million to a negative US\$220 million, which fell within its previously established margin limit of US\$230 million.

Gold mine credit risks

Milo Carver explained that the three most important risks with any mining project are construction risk, completion risk and commodity price risk.

With construction risk there are three key issues.

- What is the likelihood of time and cost overrun?
- What is the sponsor's experience with building a project in Africa (or whichever other region is in question) on time and within budget?
- What is the level of damages covered by the contractor?

With completion risk there are two key issues.

- Will the project operate the way the lenders thought it would?
- Is there as much ore in the ground as was estimated?

As for commodity price risk, lenders generally expect it to be mitigated with a hedging programme.

All three of these risks were evident in the three projects discussed above. The financings for all three had pre-completion support from their sponsors and were structured to become nonrecourse after their project completion tests and the beginning of normal operations. Therefore, until the projects were completed the lenders were concerned with sponsor credit risk. In all three cases completion risk was mitigated through the use of proven technology and robust, well-defined completion tests. All of the ore bodies turned out to be exceptionally strong. In these respects the risks of the three projects were similar to those found in many mining projects throughout the world.

Social and environmental risks are also very important in projects of this nature. Carver believes that more banks have taken hits related to these risks than to technical risks. Sponsors need to be sensitive to the needs of indigenous peoples and sustainable development initiatives are becoming increasingly common.

Legal risks are also sources of concern. For example, are security interests enforceable? What are the realities of a foreign bank going in and actually taking control of a project? These questions are difficult to answer until the limits have been tested in an actual distress situation.

After the project has been completed operating risk clearly becomes important. How much experience do the sponsors have? Have they run similar operations? Does the mining contractor know what it is doing?

The factor that ultimately governed what could and could not be done was political risk. In particular, the political environment of Tanzania was a key concern of the banks that participated in these loans. In Carver's view the worst possible situation for a bank with respect to political risk is not having access to sensible decision-makers in the country concerned. In

the case of Tanzania, however, Barclays benefited from having its own branches in the country and therefore having contact with government officials at all levels. Having to deal with political risk issues remotely would have been far more difficult.

Given the importance of political risk, political risk insurance was an essential ingredient in the financing of all three projects. For the Golden Pride and Geita projects political risk insurance covered both the loans and the hedging programmes. (Insurance coverage for the Bulyanhulu hedging programme was not necessary because Barrick provided it.) The availability of coverage from strong, high-credit insurers was a factor constraining the size of projects that could be financed. There was a learning curve for the insurance industry as well as for the banks, starting with a relatively small project and then covering a larger one, even though different underwriters were involved in the three projects.

Lessons learned

The Golden Pride, Bulyanhulu and Geita projects will soon raise Tanzania's gold production to more than 1 million ounces a year, from zero just a few years ago. The Golden Pride project turned out to be a timely opportunity for Barclays to become involved in all three, using its experience with one project as a foundation for a larger commitment to the next one. Among the lessons learned over the course of the three project financings are the following.

Political and regulatory environment

The political and regulatory environment must be conducive to foreign capital investment. Ideally, there would be case law on mining, but in many countries there is no case law at all, let alone any on mining. At the very least sponsors and lenders need a reputable law firm to tell them what the current laws and taxes are. Tanzania's background as a federation of two British colonies (Tanganyika and Zanzibar) was of course helpful. In addition, its tax code was straightforward and transparent, compared to tax codes in some other countries where the project would have been under water from day one if it had paid every tax in the code. The Tanzanian government was very easy for the sponsors and lenders to approach. Government ministers were available to discuss important issues, and the government was more willing than most to state its undertakings and intentions in writing.

Local support

Support from local government authorities and local communities is also crucial. In Carver's opinion, if a project sponsor does not garner local government support and engage the local community it will go nowhere. A mine is disruptive, so something has to be provided in return. All three projects provided both direct local employment, with only higher technical and managerial positions being filled by expatriates, and indirect local employment, because of the ancillary services required. The Golden Pride sponsors built schools and roads, and provided water to nearby villages from the project's water-processing facility. Because a gold project produces cyanide it must be able to show the community that it has a robust environmental protection programme, and this was a particularly sensitive issue for a project located near an exceptional body of water such as Lake Victoria.

Political risk insurance

Political risk insurance was essential for the financing of all three projects. The only way in which the projects could have been financed without it would have been through a comprehensive guarantee from the sponsors. In the case of the Bulyanhulu project Barrick was willing to provide gold price support and an undertaking to make further capital expenditures to complete the project, but it had little operating experience in Africa, and had difficulty quantifying and pricing its political risk. The availability of insurance to lay off that risk was critical.

The maximum size of a deal in a country such as Tanzania is driven by how comfortable the bank and insurance markets are with the political risks. The US\$200 million Bulyanhulu loan would have been difficult to do if it had not been preceded by the Golden Pride mine financing in Tanzania. The size of the Bulyanhulu financing also was made possible by Barrick's sizeable equity commitment, capital investment undertaking and gold price support.

Project completion tests

Project completion tests must be rigorous. As mentioned above, all three project financings were structured so as to become nonrecourse after construction was complete. Lenders need to be assured that sponsors are not relieved of their precompletion support undertakings before a project has passed meaningful completion tests. They require well-documented tests covering categories such as operating performance, environmental management, cost control and budgeting.

Gold price hedging

Gold price hedging has been a one-way bet during a long period of falling gold prices. Through hedging, gold projects have consistently been able to sell at above-market prices. However, Carver raises the question of what would happen if the gold market were to reverse and enter into a long-term price upswing: would gold producers maintain their appetite for hedging?

Loan pricing

Post-completion loan pricing is driven partly by project life in relation to loan maturity. If a bank extends a seven-year loan to a project with a 10-year life, it relies on everything going according to plan, with little margin for error. It has more protection when the project life is 15 or 20 years.

The learning curve

The learning curve across the three projects did not affect loan pricing, but it did affect efficiency and speed of execution. Even with the benefit of having local branches already in place, Barclays had to invest substantial time and effort to finance the first mine project in a country such as Tanzania. In so doing it developed a significant knowledge base that allowed subsequent deals to be done more quickly. Once the bank market had been 'educated' by the

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structure of the Golden Pride loan, it was easier for the bank to syndicate the larger Bulyanhulu and Geita loans.

¹ These case studies are based on articles in the financial press, and interviews with Milo Carver and J. Gerard Holden, Managing Directors of Barclays Capital.

² Kilimwiko, Lawrence, 'Tanzania: Gold Mining Boosted with Discovery of \$600,000 Nugget', *Inter Press Service*, 28 January 1999.

³ Ryan, Brendan, 'Tanzanian Earth Turns to Gold', *Financial Mail*, 10 August 2000, p. 56.

⁴ 'Mining Deal of the Year, A Matter of Pride', *Project & Trade Finance*, 10 February 1999, p. 28.

⁵ Ross, Priscilla, 'Barrick Buys Into Top East African Mine', *African Business*, April 1999, p. 32.

⁶ 'Face Value: The Great Black Hope', *Economist*, 13 November 1999, p. 74.

⁷ 'The Art of Hedging Gold', *Global Finance*, March 1999, p. 6.

⁸ Brewis, Janine, 'Did Ashanti Break the Golden Rule?', *Corporate Finance*, December 1999, p. 21.

Petrozuata, Venezuela

Type of project

Crude oil production and upgrading.

Country

Venezuela.

Distinctive features

- Largest project financing and project bond offering in Latin America to date.
- Project credit ratings above sovereign credit ratings.
- Highest credit rating for a project in Latin America at the time of financing.
- Size of bond and bank tranches determined by market.
- No political risk insurance.
- Longest maturity to date for bank loan related to Latin America.
- Portion of sponsors' equity financed with early production cash flow.
- Cost overrun funded by sponsors.

Description of financing

A total of US\$1.4 billion was raised through a combination of bonds and commercial bank financing.

Project summary¹

Petrozuata is a Venezuela-domiciled joint venture between two large strong-credit oil companies: Conoco, the Houston-based integrated petroleum company, through its subsidiary Conoco Orinoco; and Petroleos de Venezuela SA (PDVSA), the Venezuelan state oil company, through its subsidiary Maraven. It is the first of four strategic associations between PDVSA and foreign partners formed to develop, transport, upgrade and market extra-heavy crude oil from the Zuata area in the Orinoco Belt of Venezuela. The projects are sometimes called 'very heavy oil projects' (VEHOPs). The others are as follows:

- Cerro Negro (42 per cent Exxon Mobil, 42 per cent PDVSA, 16 per cent Veba Oel AG);

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- Sincor (47 per cent TotalFinaElf, 38 per cent PDVSA, 15 per cent Statoil); and
- Hamaca (40 per cent Phillips Petroleum, 30 per cent Texaco, 30 per cent PDVSA).

For Petrozuata, project completion is guaranteed by the sponsors. Risks related to oil reserves, project completion and project operation are relatively low. Country risk has risen continually because of concerns about the administration of President Hugo Chávez, but is somewhat mitigated by the strategic importance of oil exports.

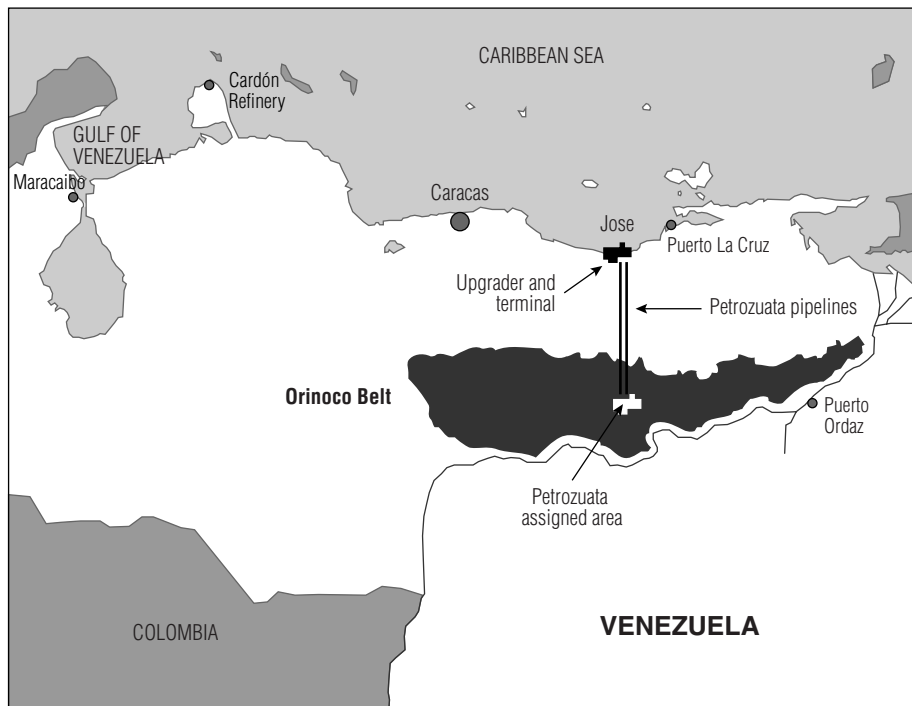
Because of the strength of the sponsors, the project's strategic importance and the flow of US dollar-denominated export revenues into a segregated offshore account, which is used to service project debt, Petrozuata's credit rating pierces Venezuela's sovereign ceiling. A total of US\$1.4 billion was raised through bonds with maturities of 12, 18 and 25 years, and bank term loans with maturities of 12 and 14 years. The amounts of the bond and bank loan portions were determined by market conditions. The project's ability to service its debt depends partly on the price of its 'synthetic' crude oil exports, which fluctuate with world oil prices.

Petrozuata was assigned an area of 300 square kilometres (km) for the production of extra-heavy crude oil by the Venezuelan Ministry of Energy and Mines. The assigned area is estimated to carry approximately 21.5 billion barrels of original oil in place.

The project's first well was drilled in September 1997. Over the 35-year life of the project the company planned to drill about 530 horizontal wells to recover 1.5–2.0 billion bar-

Exhibit 15.1

Map of project area



Source: Prospectus for Project Bonds.

rels of extra-heavy crude oil. In the past cyclical steam stimulation of nearly vertical wells has been the preferred technology for developing extra-heavy oil deposits in the region. Petrozuata chose horizontal wells without steam stimulation because recent technology advances have allowed longer lateral wells to be drilled and there are fewer maintenance problems with this method.

The project has three principal components: oil field development, a pipeline system and downstream facilities. These facilities comprise an upgrader and loading terminal at José, near Puerto La Cruz on the Caribbean coast of Venezuela (see Exhibit 15.1). The company expected to produce approximately 120,000 barrels a day of extra-heavy crude from multiple wells in the assigned area, mix the crude with a diluent consisting primarily of naphtha and transport it about 200 km by pipeline to the upgrader at José. Two parallel pipelines would be built, one to transport the diluted crude to José and the other to return the diluent to the oil field for reuse. The pipelines would be shared with Sincor.

In the upgrader at José Conoco's licensed coking technology is used to refine 120,000 barrels of extra-heavy crude oil with an average API gravity of 9° to 102,000 barrels of 'syncrude' (upgraded crude) with gravity of 20° and three byproducts: fuel coke, liquefied petroleum gas (LPG) and sulphur. Most of the syncrude is expected to be processed at Conoco's refinery at Lake Charles, Louisiana, which produces 226,000 barrels a day, but some will also be processed at Maraven's Cardón refinery in Venezuela.

More than 95 per cent of Petrozuata's projected revenue is generated in US dollars outside Venezuela and paid into segregated offshore accounts. Funds from the offshore accounts have been disbursed as needed for project construction, operating funds and debt service.

Background

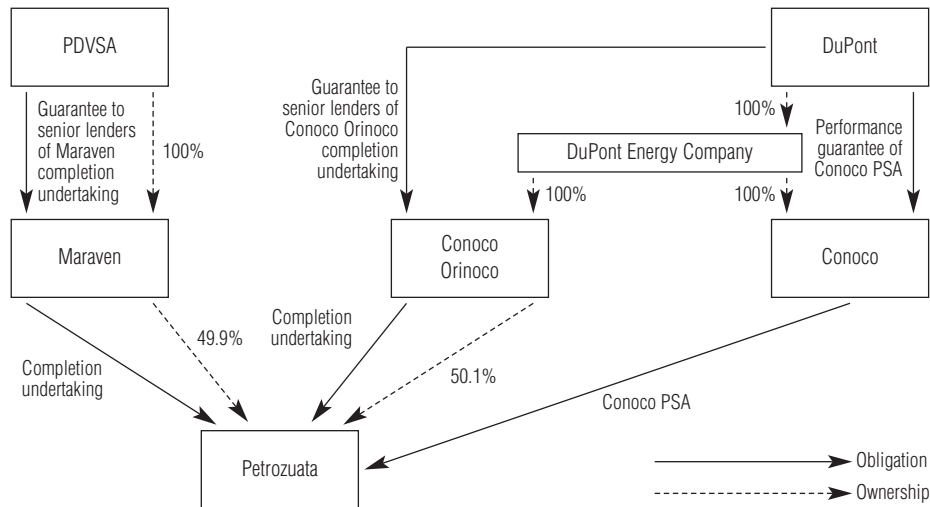
PDVSA, Conoco, Petrozuata and subsidiaries

PDVSA is the second largest integrated oil company in the world. One fifth of the company's assets is outside Venezuela. Among its subsidiaries is Citgo, the largest marketer of petrol (gasoline) in the United States. Petrozuata's success is of strategic importance to PDVSA and Venezuela. The Orinoco belt has remained largely untapped because of the oil's heavy, high-sulphur characteristics, and the lack of infrastructure, markets and investment capital. The project is part of *La Apertura* ('the opening'), PDVSA's long-term development plan to expand the country's capacity to produce and export oil with the help of foreign private-sector partners.

At the time of the project financing Conoco Orinoco, formed in 1995 to conduct petroleum-related development activities in Venezuela, was a subsidiary of Conoco. Since 1981, Conoco had been a wholly owned subsidiary of DuPont Energy Company, while maintaining its own identity as a major integrated oil company. In 1999 it was spun off by DuPont and in 2002 it merged to become ConocoPhillips. ConocoPhillips is one of PDVSA's largest independent customers and has particular expertise in processing Venezuelan heavy crude oil. It has identified Venezuela as a strategically important area for investment. The project is an opportunity for ConocoPhillips to expand its daily hydrocarbon production by about 9 per cent, to increase its hydrocarbon reserves by about 35 per cent and to broaden the use of its proprietary coking technology.

The legal relationship between the project participants is illustrated in Exhibit 15.2. PDVSA owns 100 per cent of Maraven and guaranteed its completion undertaking to the

Exhibit 15.2

Principal project participants

senior lenders. Maraven, in turn, guaranteed 49.9 per cent of Petrozuata's completion undertaking. Conoco Orinoco, which remained a subsidiary of Conoco following the separation from DuPont, currently has only one asset, its investment in Petrozuata. Conoco Orinoco owns 51.1 per cent of Petrozuata and, with Maraven, is jointly responsible for Petrozuata's completion undertaking. Finally, the pipeline is owned by a wholly owned subsidiary of Petrozuata called Pipeco.

Exhibit 15.3

Project schedule

May 1996	Commencement of detailed engineering
March 1997	Start of oil-field construction
June 1997	Award of engineering, procurement and construction (EPC) contract for upgrader
August 1998	Commencement of early oil production
July 2000	Mechanical completion of project construction
April 2001	Scheduled commencement of completion test
December 2001	First completion date
September 2002	Final completion date

Source: Prospectus for Project Bonds.

Project schedule

Completion had to be achieved by the first completion date in December 2001 unless there was an allowable *force majeure* extension, in which case the final completion date had to be no later than September 2002. See Exhibit 15.3 for the schedule of the project as a whole.

Project financing

The company estimated that the total cost of the project would be US\$2.425 billion (see Exhibit 15.4). About 40 per cent of the cost would be financed by the shareholders and the remaining 60 per cent would be financed with senior debt. Part of the equity contribution would consist of proceeds from the sale of crude oil after the oilfield was developed but before the upgrader was completed.

Alternative financial sources considered

The bond financing originally was planned to be US\$650 million, but it was later raised to US\$1 billion after indications of investor interest. The commercial loan portion of the financing was scaled back proportionally.

The financing team

Credit Suisse First Boston (CSFB) was an adviser to Petrozuata; lead manager of the bond offering; and agent bank and joint arranger of the term loan with ING Barings, NationsBank (now Bank of America) and Union Bank of Switzerland (UBS). Citibank served as co-manager of the bond offering and financial adviser to Petrozuata.

Structure of financing

Working with the bank advisers Petrozuata's partners agreed on a 60:40 ratio of debt to equity and thus developed a plan for US\$1.45 billion of debt financing. Because the transaction was large for a country of Venezuela's credit standing, the project sponsors thought that participation by the International Finance Corporation (IFC) and one or more export

credit agencies would be needed for funding and credit support. The sponsors secured investment-grade ratings from Moody's and from Standard & Poor's, and, with the help of those ratings, got underwriting commitments of US\$700 million from the bank group, later supplemented by US\$200 million from the Export Development Corporation of Canada. In the summer of 1997 market conditions looked so favourable that CSFB advised Petrozuata to forgo facilities committed by the multilateral agencies and go immediately to the bond market. On the basis of CSFB's preliminary indications during premarketing to institutional investors the sponsors decided to increase the bond offering from US\$500 million to US\$1 billion and scale back the bank financing from US\$900 million to US\$450 million.

Bond offering

The bond offering was structured in three tranches to suit different investors' preferences. New-issue spreads were the tightest to date for project-finance bonds. The US\$300 million of 12-year bonds were sold at 120 basis points (bps) over US treasuries, the US\$625 million of 20-year bonds at 145 bps over US treasuries and the US\$75 million of 25-year bonds at a spread of 160 bps.

Exhibit 15.4

Sources and uses of funds

<i>Sources</i>	<i>(US\$ million)</i>
<i>Senior debt facilities</i>	
7.63% series A bonds due 2009	300
8.22% series B bonds due 2017	625
8.37% series C bonds due 2022	75
Commercial bank facility	450
Total senior debt facilities	1,450
<i>Shareholder funds</i>	
Paid-in capital	79
Subordinated shareholder loans	366
Cash flow	530
Total shareholder funds	975
Total sources	2,425
<i>Uses</i>	
<i>(US\$ million)</i>	
Extra-heavy crude oil production facilities	449
Pipeline system	216
Upgrader and loading facilities	1,067
Extra work contingency	38
Subtotal	1,770
Capitalised costs before operating and development	147
Financing costs	370
Senior debt reserve account balance	81
Cash balance	57
Total uses	2,425

Source: Prospectus for Project Bonds.

Because of the combination of quality, yield and duration the bond offering was several times oversubscribed. Bonds were requested by 145 institutions, but made available to only 113. Some investors asked for exactly what they wanted. Others, expecting to be ratcheted down, asked for more. The staff at CSFB's syndicate desk had to allocate bonds in line with their knowledge of regular customers' buying patterns. The 25-year tranche was purchased by insurance companies that know the market well and are accustomed to following such investments over long periods. Buying bonds in the 25-year tranche helped these investors to get bonds in the 18-year tranche as well. The 12-year bonds were purchased by investors that were looking for a good yield but were less certain of their holding periods and were concerned with liquidity. As evidence of the liquidity of the shorter-maturity bonds, Jonathan D. Bram, Managing Director of CSFB, noted that more than US\$1 billion of these bonds were traded in the first year after they were issued.

To facilitate the bond offering and ensure the applicability of a low withholding tax levied on interest payments, Petrozuata borrowed the US\$1 billion capital market proceeds through banks acting as qualifying financial institutions. The banks in turn made a loan to Petrozuata Finance, Inc. (PZ Finance), which in turn issued the bonds. PZ Finance is incorporated with nominal equity capital under the laws of the Cayman Islands for the sole purpose of incurring senior debt, including the bonds. Petrozuata does not control PZ Finance but unconditionally guarantees all of its obligations.

Commercial bank financing

Before the bond offering Petrozuata received commitments to severally underwrite up to US\$700 million of senior debt from a group of four banks: CSFB, UBS, NationsBank and ING Barings. The commitments were subject to several conditions:

- satisfactory results of due diligence;
- execution of satisfactory documentation;
- investment-grade credit rating for the bonds from two internationally recognised rating agencies;
- nonoccurrence of materially adverse changes in the political and economic conditions of Venezuela;
- conditions in the market for syndicating Latin American project finance loans; and
- the financial condition of the sponsors, the guarantors, the company and the project.

The bonds received most of the publicity, but Bram believes that the bank lenders deserve equal credit for the success of the financing. Although the amount of the bank financing was scaled back from US\$900 million to US\$450 million by the size of the bond offering, it was notable in two ways. First, the 14-year final maturity of the US\$200-million tranche was the longest to date for a bank loan related to Latin America. Second, there was no political risk insurance.

Contractual relationships

Engineering, procurement and construction contract

In July 1997 Petrozuata awarded a lump-sum EPC contract worth approximately US\$500 mil-

lion to build the extra-heavy crude-oil processing facilities at José to the Contrina consortium, which consists of:

- Brown & Root Energy Services of Houston, Texas, a subsidiary of Halliburton Company;
- Parsons Process Group, also of Houston;
- Technip of Paris;
- Proyecta of Caracas; and
- DIT–Harris, also of Caracas.

At about the same time it signed a contract with Convenco, a consortium comprised of Kock, Weeks Marine and DSD–CGI, for the construction of a marine terminal at José.

Association Agreement

The Association Agreement between Maraven and Conoco Orinoco, dated 10 November 1995, defined the conditions for establishing, operating and owning a joint stock company in Venezuela for the purpose of constructing, financing and managing the project. The capital stock of the company consists of Class A privileged shares (49.9 per cent of total) owned by Maraven and Class B shares (50.1 per cent of total) owned by Conoco Orinoco. On the 35th anniversary of the first Commercial Lifting Date, the date on which the first tanker completes its loading of extra-heavy crude oil, Class B shares must be transferred at no cost to Maraven.

Failure by a shareholder to make capital contributions or shareholder loans is defined as an Association Agreement default. Until the default is remedied the defaulting shareholder cannot acquire or transfer shares in the company or be represented on the board of directors. Any amounts normally available for distribution to the defaulting shareholder, including dividends and subordinated loan repayments, will first be applied to remedy the default, including interest and penalties. A Class B shareholder that remains in default for 14 months will be required to surrender its shares to nondefaulting shareholders to satisfy obligations and penalties incurred, and will remain liable for any additional amounts due.

Transfer Restrictions Agreement

Before the first Commercial Lifting Date or project completion, whichever is later, no shareholder may sell, assign or otherwise transfer its shares. After that point a shareholder may transfer shares to an affiliate. A shareholder may sell shares to a nonaffiliate, subject to other shareholders' rights of first refusal, in which Class A shareholders hold a privileged position. Class B shares may be sold to a nonaffiliate subject to the approval of Class A shareholders.

Completion agreement

To facilitate the financing and provide flexibility in the construction plan, Conoco Orinoco and Maraven agreed severally to complete the project by a certain date, to fund any cost overruns required to complete the project, and to pay down project debt to levels that would maintain modelled debt service coverage ratios (DSCRs) in the event that the project did not meet design capacity targets.

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The joint-venture company was the general contractor for the project. Unlike in some project financings, lump-sum contracts for the various subcomponents were not required as a condition for the project financing, but were awarded later at Petrozuata's discretion. Miguel Espinosa, then Assistant Treasurer of Conoco, believed that the flexibility allowed by this arrangement saved about 15 per cent in construction costs.

The criterion for project completion under the agreement was a 90-day operations test, during which oilfield production, the pipeline system and the upgrader facilities were to be required:

- to meet prescribed production levels;
- to meet specifications on product quality consistent with the Conoco Purchase and Sale Agreement (PSA);
- to demonstrate 92 per cent availability; and
- to meet Venezuela's environmental requirements.

The pipeline system would be tested to demonstrate its full capacity. The delayed coker, the naphtha hydrotreater and the sulphur units would be tested to demonstrate their licensed design capacities.

Performance guarantees

Initially, DuPont and PDVSA severally guaranteed the obligations of the two shareholders under the completion agreement. When Conoco was spun off it assumed DuPont's guarantee.

Conoco Purchase and Sale Agreement

To reduce the risk of marketing the syncrude Conoco made a 35-year commitment to purchase 100 per cent of the project's design output at a market-based formula price. However, Petrozuata has the right to sell to third parties if, as the partners expect, a wider market develops for syncrude.

Common Security Agreement

To accommodate both commercial bank and bond financing, and to define the relative rights of all the senior lenders in the event of default under the senior loan agreements, Petrozuata, PZ Finance and the shareholders entered into a Common Security Agreement with the Indenture Trustee, the Common Security Agreement Trustee, the Offshore Financial Institutions, and the Administration Agent on behalf of the bank lenders. The agreement includes drawdown procedures under the senior debt agreements, representations and warranties, affirmative and negative covenants, common events of default applicable to all senior debt (including bonds and bank debt), remedies in the event of default, and the account structure. Under the agreement all senior loans, including the bonds and the bank financing, will rank *pari passu* and will share *pro rata*, based on amounts outstanding, in the common security package (described below). The law of the State of New York governs the agreements covering security interests, except where the security interest arises under Venezuelan law, principally in the case of mortgages on real property and other property considered real property.

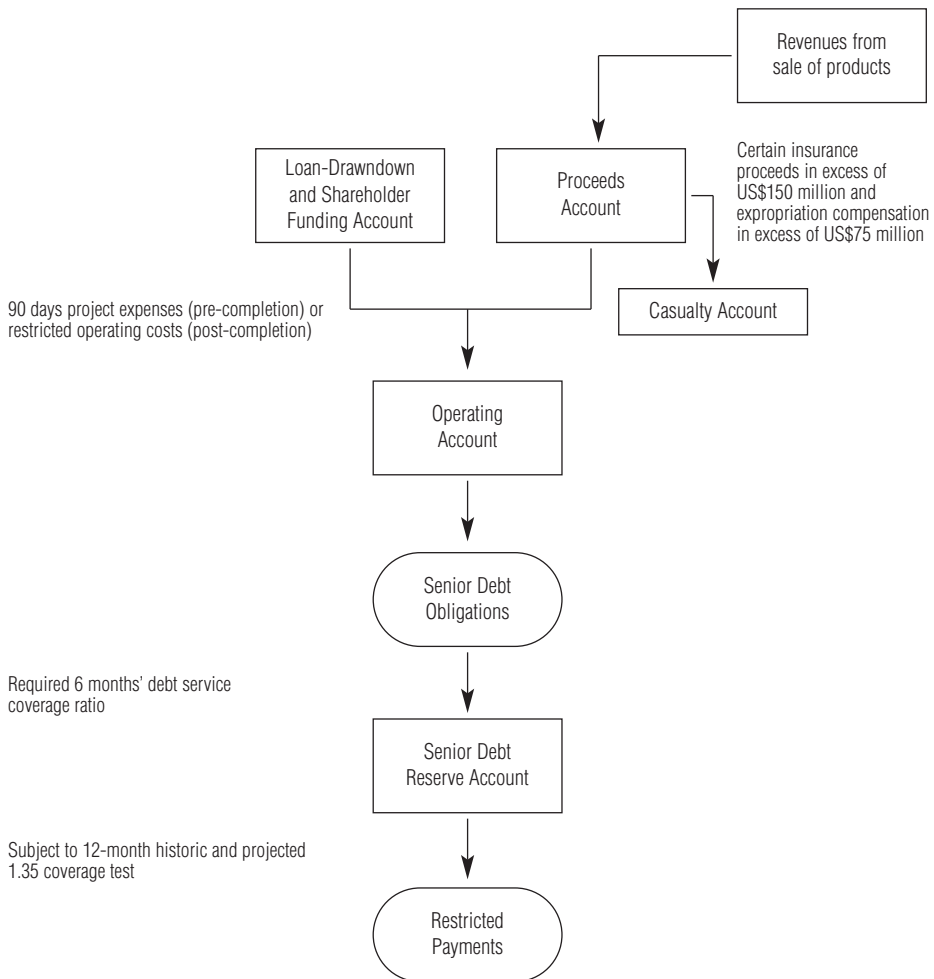
Under the Common Security Agreement Petrozuata is required to establish and maintain the following segregated accounts outside Venezuela, all in the name of the Common Security Agreement Trustee:

- Offshore Proceeds Account;
- Senior Debt Reserve Account;
- Offshore Loan-Drawdown and Shareholder Funding Account;
- Offshore Operating Account; and
- Offshore Casualty Account.

Exhibit 15.5 illustrates the order of priority according to which funds are applied by the company.

Exhibit 15.5

Priority application of funds



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Restricted payments

The company is permitted to withdraw funds from the segregated accounts for purposes such as paying shareholder dividends or subordinated debt payments semiannually within 30 days of each principal-and-interest payment date, provided that:

- there is no event of default under the Common Security Agreement;
- there are sufficient funds in the account for 30 days of forecast project expenses (before completion) or 30 days of forecast 'Restricted Operating Costs' (after completion);
- the Senior Debt Reserve Account is fully funded; and
- the 12-month historical and 12-month projected DSCR is not less than 1.35:1.

'Restricted Operating Costs' are normal project expenses, excluding amounts payable for hedging instruments related to senior debt obligations, and capital expenditures beyond those necessary to maintain the project's operating capacity and prevent an increase over the budgeted level of operating expenses.

Senior Debt Reserve Account

The company is required to maintain funds in a Senior Debt Reserve Account equal to the principal, interest, and fees due on the next payment date. Funds may not be withdrawn from this account unless there are no funds available other than in the casualty account (described below).

Casualty Account

An offshore account was established for the deposit of proceeds from property and casualty insurance, except for any portion relating to the interruption of business or loss of profits, and a segregated local currency account will be established for insurance proceeds that, under Venezuelan law, cannot be paid into an offshore account.

Covenants

Affirmative covenants in the Common Security Agreement include:

- maintenance of existence;
- maintenance of accounting and information systems;
- compliance with laws;
- maintenance of approvals;
- arm's-length transactions with affiliates;
- construction, completion and operation of the project;
- compliance with project agreements;
- direction of certain payments to specific, segregated offshore accounts; and
- use of proceeds.

Negative covenants include:

- limitations on amendments to the company's charter;
- limitations on disposition of assets;

- a prohibition of material modifications;
- limitations of project contracts;
- limitations on liens, indebtedness and guarantees; and
- limitations on disposing of excess property.

Other covenants relate to terms and conditions of sales contracts with unaffiliated parties, and to the use of loan proceeds.

Events of default

Events of default in the Common Security Agreement include:

- payment defaults;
- breach of representations and warranties;
- breach of covenants;
- bankruptcy of Petrozuata or PZ Finance;
- default under the completion or transfer restrictions agreement;
- default by Conoco under the Conoco PSA;
- abandonment;
- invalidity of security agreements;
- attachment of collateral;
- an unsatisfied final judgement against Petrozuata or PZ Finance in excess of US\$10 million;
- unenforceability of the Common Security Agreement, transfer restrictions agreement, any of the project agreements or the security documents;
- failure to achieve completion by the final completion date;
- expropriation; and
- bankruptcy of (originally) DuPont or (subsequently) any other guarantor of Conoco's obligations under the Conoco PSA.

There is also a provision for cross-acceleration among the debt facilities.

Collateral

The bonds and other senior debt are secured by:

- a pledge of offshore accounts and the expropriation compensation account;
- a collateral assignment of certain project agreements;
- a pledge of Conoco Orinoco's subordinated debt and all but one of its Class B shares;
- a pledge of dividends on all the Pipeco shares and Conoco Orinoco Class B shares;
- a pledge of all but one of the Pipeco shares;
- a mortgage on the upgrader and other physical assets in José;
- an assignment of the proceeds of any compensation in the event of expropriation;
- an assignment of insurance policies;
- a placement in a Venezuelan trust of local currency accounts and oil after extraction but prior to sale; and

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- an assignment of rights under the sales agreement, including the Conoco PSA, the Pipeline Agreement, the Solids Handling Agreement, the Excess Capacity Agreement and the Coking Technology Licensing Agreements.

Insurance

The Common Security Agreement requires the company to maintain a construction all-risk policy during project construction, and then property, business interruption and third-party liability insurance when the project is operating. The Common Security Agreement Trustee is named on the policies, along with an additional insured and loss payee.

Transactions among project participants

Certain related-party transactions and arrangements are illustrated in Exhibit 15.6. The Association Agreement requires that shareholders contribute relevant technological knowhow to Petrozuata under licensing agreements or otherwise. Under the Technical Assistance Agreement, secondment agreements and the Coking Technology Licensing Agreement, the shareholders committed themselves to training Petrozuata's personnel at Petrozuata's expense.

A *usufructo*, such as that conveyed by Pipeco to Maraven and Petrozuata, is a real right under Venezuelan law that allows the holder an unlimited right to use an asset; bars any other party, including the owner, from disturbing the *usufructo*-holder's use; and allows the *usufructo*-holder certain rights to institute legal actions against a party that wrongfully interrupts the use of the asset by the *usufructo*-holder.

Supply contracts

One of Petrozuata's primary operating objectives is to ensure that the project proceeds as scheduled, while also taking advantage of possible synergies, both within Petrozuata, and between Petrozuata and nearby projects. It has endeavoured to ensure that supplies and services are available to meet project needs at market prices consistent with the project budget. All the supply contracts are governed by Venezuelan law.

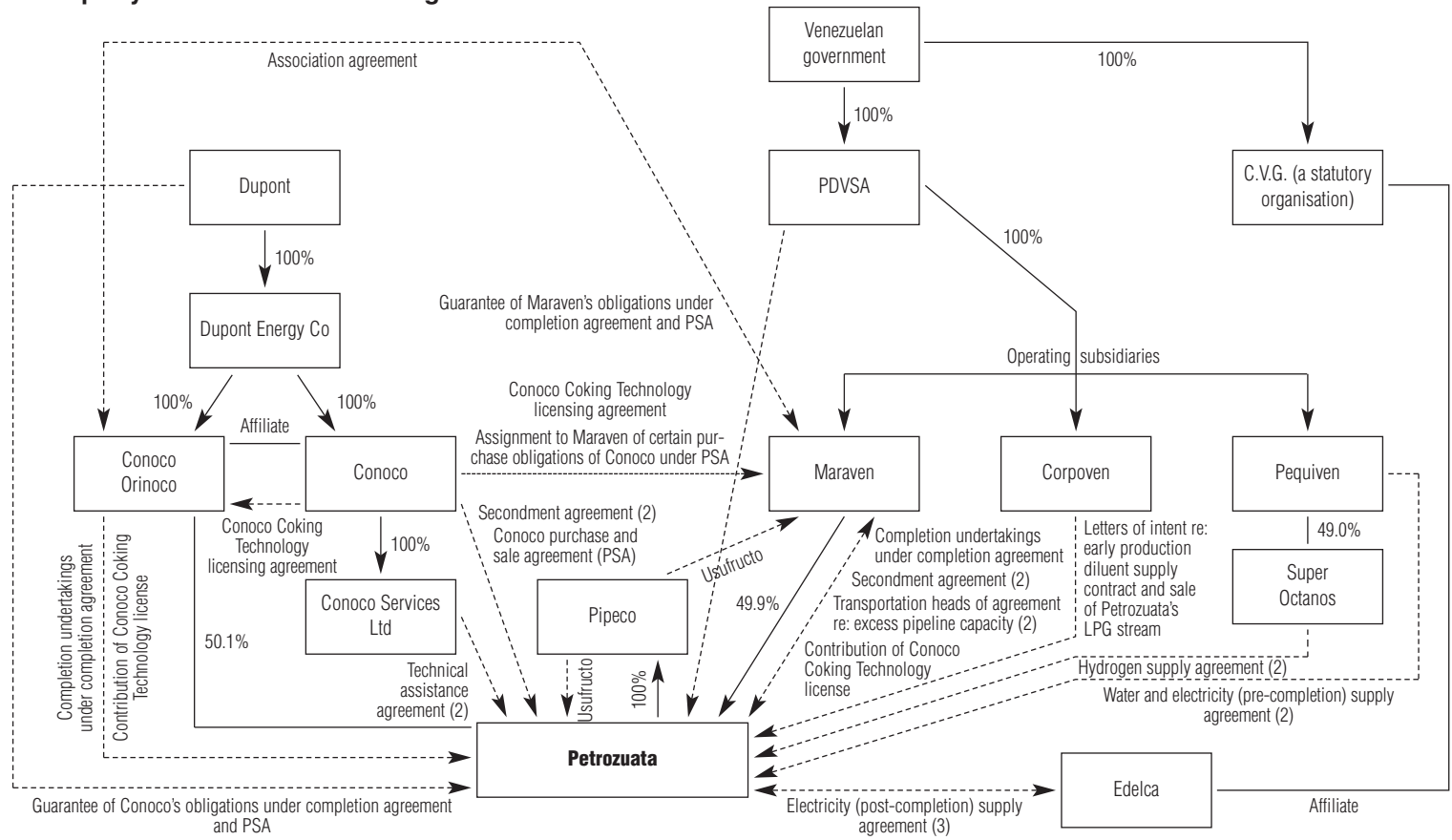
An electricity supply contract with CA de Electrificación y Fomento Eléctrico (CADAFE) is automatically renewable each year during the construction period and provides for pricing at market rates. Under a 25-year renewable umbrella agreement, signed in 1996 with various affiliates of PDVSA including Maraven, CVG Electrificación y Fomento Eléctrico (EDELCA) undertook to supply up to 1,549 MW of electricity at a fixed price of US\$0.107 per kWh for the first 12 years and then at market rates. Certain rights and obligations under this agreement are assigned to Petrozuata.

Under a hydrogen supply contract with Superoctanos, Petrozuata will purchase hydrogen-rich gas for use in the naphtha hydrotreating facilities. The contract has a 20-year term, renewable for 5-year periods. The purchase price is calculated using a formula that takes into account the fuel value of the hydrogen gas and a share of the capital cost savings realised by the project.

An industrial water supply contract with Petroquímica de Venezuela provides for both treated and untreated water. The contract price is US\$0.52 per cubic metre until total water supplied exceeds 1,360 litres per second, and then US\$0.40 per cubic metre.

Exhibit 15.6

Related party transactions and arrangements



A natural gas supply contract with Cevegas, CA, provides Petrozuata with natural gas for its fuel requirements at a contract price of US\$0.515 per million Btus (in 1996 US dollars), for the life of the contract, until 2006, when the price may be adjusted to reflect new technical considerations and/or market price fluctuations.

Environmental considerations

The project was designed to comply with Venezuela's environmental laws and regulations, and, although not required, with the World Bank's environmental standards as well. The Association Agreement requires Maraven to reimburse Petrozuata for expenses resulting from claims relating to any environmental damage before 10 November 1995, the date on which the Association Agreement became effective.

Petrozuata undertook an environmental feasibility study in 1992 followed by an environmental assessment during 1993 and 1994. Several discrepancies were found, but these were estimated to be unlikely to have a serious effect on the project. There were nine abandoned pits associated with previous oil-drilling work in the production acreage, but any remediation required because of the presence of oil was the responsibility of PDVSA. In the past parties other than Petrozuata had dumped construction waste materials and oil in part of the upgrader lot, causing limited soil contamination, but here too any required clean up was PDVSA's responsibility. No significant contamination was found either along the pipeline system corridor or in the loading facilities area.

An environmental impact assessment was completed in January 1996 by Consorcio Caura-Georhidra, a prominent Venezuelan environmental consulting firm. In March 1996, after several modifications to the project design, the Venezuelan Ministry of the Environment and Renewable Natural Resources issued an environmental impact statement. Since then Petrozuata has received all environmental permits and authorisations.

Sensitivity analysis

As mentioned above, an independent technical review was conducted by Stone & Webster. The firm estimated project construction costs, contracts and agreements, criteria for the completion test, compliance with Venezuela's environmental regulations, and revenue and expense projections. It found them all to be reasonable. It cited the base-case projection summarised in Exhibit 15.7, in which revenues were adequate to pay operation and maintenance expenses, as well as taxes and royalties to the Venezuelan authorities. Cash flow was sufficient to provide for debt service, and to result in a minimum DSCR of 2.08, an average DSCR of 10.61 and a life-of-loan DSCR of 2.47.

Exhibit 15.7

Base-case projection (US\$ million)

	2001	2005	2010	2015
Total revenues	569	629	713	770
Operating expenses	117	129	251	280
Operating cash flow	452	500	462	490
Other cash items	(6)	5	4	3
Cash flow before taxes	446	504	462	490
Taxes	46	87	58	70
Capital expenditures	16	20	36	31
Cash available for				
debt service	384	398	372	392
Debt service	122	107	64	28
DSCR	2.39	2.12	2.47	3.14
Minimum DSCR				
(project life)	2.08			
Average DSCR				
(project life)	10.62			

Source: Prospectus for Project Bonds.

On the basis of a sensitivity analysis the minimum DSCR is decreased under the following five scenarios.

- Reduced product prices result in a minimum DSCR of 1.63 – the price of Maya crude is reduced from US\$12.23 in the base-case projection to US\$9.25 per barrel in 1996 US dollars, and LPG, coke and sulphur prices are 50 per cent of base-case projections.
- Reduced oil production results in a minimum DSCR of 1.98 – assumed production from each well is lower than expected, requiring a 100 per cent increase in capital expenditures for drilling, completion and related oil-well servicing costs.
- Substandard upgrader performance results in a minimum DSCR of 1.84 – the upgrader onstream factor is reduced to 82 per cent, compared with the 92 per cent assumed in the base case.
- Increased operating costs result in a minimum DSCR of 1.98 – operating costs are assumed to be 25 per cent higher than in the base case.
- Currency overvaluation results in a minimum DSCR of 1.56 – the bolivar is assumed to become 20 per cent overvalued in 2001, to revert to purchasing power parity in 2002 and then to become overvalued by 20 per cent from 2005 through to the end of the project's life.

Risk analysis

Project risks include:

- Petrozuata's lack of operating history;
- technical and construction risk related to project completion;
- reliance on financial projections and underlying assumptions; and
- risks relating to oil reserves, technical issues, labour, marketing, oil prices, currency, laws and taxes, insurance, and the sovereign (the Bolivarian Republic of Venezuela).

Limitations on debtholder remedies and security interests are also considerations.

Lack of operating history

The company was incorporated in March 1996 and construction had not yet been completed at the time of the project financing. The company therefore did not have an operating history. As with any complex facility, the project is subject to many risks, including breakdown or failure of equipment or processes, failure to meet expected levels of output or efficiency, and problems in the application of drilling, production, pipeline and coking technologies.

Project completion risk

Construction could have been affected by any of the factors common to large greenfield industrial projects, including shortages or delays in delivery of equipment or materials, labour disputes, local or political opposition, adverse weather conditions, natural disasters, litigation and unforeseen engineering, design, environmental or geological problems.

Reliance on projections and underlying assumptions

In assessing the economic viability of the project the sponsors made critical assumptions concerning factors such as crude oil prices, the level of extra-heavy crude oil production, operating expenses, repair and maintenance costs, the market for syncrude and byproducts, tax rates, inflation, and capital costs. Actual circumstances may differ from these assumptions and affect the company's ability to service its debt, as discussed above in the section 'Sensitivity analysis'.

Oil reserve risk

Petrozuata's project development plan called for a minimum production of 120,000 barrels per day of extra-heavy crude oil following the starting up of the upgrader. The company's ability to meet this level of production throughout the expected 35-year project life depends on the sufficiency of reserves in the assigned drilling area. The offering circular for the bonds contains a report by an energy consulting firm, DeGolyer and MacNaughton of Dallas, Texas, estimating reserves in Petrozuata's project area. The firm estimated that proven reserves would support production rates increasing from 30,000 to 120,000 barrels per day during the first year and continuing at 120,000 barrels per day for an additional 35 years. It noted, however, that these estimates were subject to inherent uncertainties, and could change as further information and production history become available.

Technical risk

Stone & Webster Overseas Consultants, Inc., was retained by the senior lenders to conduct an independent technical review of the project. In its report, contained in the offering circular, the firm found the basic design of the upstream facilities to be in accordance with good industry practice for the region and product, incorporating proven technology such as horizontal wells, artificial lift, diluent injection and multiphase pumping. Stone & Webster considered the construction schedule to be aggressive but achievable, and estimated that the in-field facilities to support the upgrader would be completed six to nine months ahead of time. The report noted that the upgrader would use commercially proven technologies, that the licensors selected for various units of the upgrader are experienced and capable, and that the design of the upgrader reflected considerable knowhow. It described coking as the most economically viable, commercially proven technology for upgrading the extra-heavy crude oil found in the region, and it described Conoco as a major licensor and arguably the leader in modern, state-of-the-art delayed coking technology. Finally, the report expressed the opinion that Petrozuata, as managing contractor and supervisor of three reputable international EPC subcontractors, should have the capability to meet the mechanical completion milestone, 31 July 2000, and the full completion target, 31 July 2001.

Labour risk

During construction Petrozuata employed 5,000 people directly and 2,000 by contract at various sites. Of the 5,500 construction personnel, 15 per cent were at the management and professional level, and 85 per cent were members of the two Venezuelan workers' federations. Although labour conditions were agreed to in principle by both the workers' federations,

industrial disputes had affected the Venezuelan oil industry in recent years. This risk was reduced after the project started operating, when the company's staff was reduced to about 500 people. All are exempt (not paid for overtime) and many are seconded from the sponsors.

Marketing risk

The sponsors expected that a market for syncrude would develop within three to five years of project completion, equal to about four times the project's production. Several other oil companies have refineries on the US Gulf Coast capable of refining sour heavy crude oils such as the company's syncrude. If such a market does not develop, however, the project will be completely dependent on the Conoco PSA for sale of 104,000 barrels per day of the project's syncrude production at a formula price.

Conoco's and Maraven's obligations under the Conoco PSA will be suspended during scheduled downtime at Conoco's Lake Charles refinery and Maraven's Cardón refinery, and for the duration of *force majeure* events.

Petrozuata has no contracts with unaffiliated third parties for the sale of syncrude. It does not have its own marketing staff, and therefore relies on Conoco and Maraven for selling early-production, extra-heavy crude oil and syncrude to third parties. Conoco and Maraven each has dedicated a member of its marketing staff to the sale of Petrozuata's products.

Price risk

The prices received by the company for the syncrude under the Conoco PSA are based on published market prices of Maya crude oil, which may be volatile and may not move in parallel with other crude oil prices. If a third-party market develops the project sponsors expect to sell syncrude for more than the price paid by Conoco to Petrozuata under the Conoco PSA. In its market analysis Chem Systems estimated that the market price for blended syncrude would be US\$1.30 per barrel above the price for Maya crude.

The Maya price used to evaluate the project was US\$12.23 per barrel. The price required for a break-even, one-to-one DSCR is US\$8.63 per barrel. Between 1982 and the time of the project financing in 1997, the price of Maya crude dipped below US\$8.63 for only a single month, reaching a low of US\$7.67, and the lowest 12-month running average price was US\$10.64. Shortly afterwards world oil prices dropped considerably because of factors such as reduced demand from Asia, El Niño and the failure of the Organisation of Petroleum Exporting Countries (Opec) to restrict output. The price of Maya crude oil was US\$8.50 in June 1998 and was predicted to fall even further in the short term. Prices were expected to move back towards market averages and, although it was difficult at that time to estimate when that would occur, it eventually did.

Currency risk

If inflation is higher in Venezuela than in the United States, but the Venezuelan bolivar depreciates proportionally, purchasing power parity will be maintained and the project will not be affected. However, if Venezuelan inflation is higher than US inflation and the bolivar is not allowed to depreciate accordingly, the overvalued bolivar will cause costs incurred in Venezuela to rise in US dollar terms. The risk of higher construction costs is

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borne by the sponsors, while the risk of higher operating costs is borne by the project company and the lenders.

Legal and tax risk

The company is required to pay a percentage of crude oil revenues as royalties to the Venezuelan government. The general rate is 16.67 per cent, but the Ministry of Energy and Mines agreed to reduce the rate to 1 per cent for nine years. However, the ministry could unilaterally change the royalty at any time and substantially reduce Petrozuata's net income. The Venezuelan government has the ability to change other laws and regulations that affect the project.

Limitations on senior debtholder remedies

Under the Common Security Agreement acceleration of senior debt, including the bonds, following an event of default requires the consent of a certain percentage of the senior lenders.

Limitations on security interests

There may be legal obstacles and practical difficulties that limit the ability of the senior lenders to perfect and enforce their security interests in the company's assets under Venezuelan law. To enforce a security agreement a pledgee or mortgagee must initiate proceedings in a Venezuelan court that lead to a judicially sponsored auction of the pledged or mortgaged property. After a default has occurred the pledgor or mortgagor may consent to the transfer of property in lieu of such an auction, but there is no assurance that such consent would be granted. Also, because activity in the hydrocarbon sector is considered to be a matter of 'public utility and social interest', the attorney general must be notified when security interests are enforced and may object to a transfer of assets that is believed to interrupt the service performed with those assets.

Venezuela country risk

Among the important factors to be considered in evaluating Venezuelan country risk as it relates to Petrozuata are the amount of oil reserves, the importance of the oil industry to the Venezuelan economy, and whether or not the government has an incentive to interfere with PDVSA's development programme and trade relationships.

Venezuela is the seventh largest oil-producing country in the world, with proven reserves of crude oil and natural gas equal to more than 70 years of production at current levels. However, over the years substantial export revenues from oil and natural gas have been matched by political pressures for social spending. Petrozuata is part of a programme to expand oil exports while also correcting imbalances in the Venezuelan economy.

Since the overthrow of a military dictatorship in 1958 Venezuela has consistently had democratically elected governments. The president is elected for a term of six years. National legislative power is vested in a unicameral National Assembly and judicial power is vested in the Supreme Court and various lower tribunals.

In recent years oil has represented 40 to 60 per cent of government revenue. The government of Venezuela has traditionally played a central role in the development of Venezuela's hydrocarbon reserves and has exercised significant influence over other aspects

of the Venezuelan economy. However, in recent years it has recognised the need to develop non-hydrocarbon sectors of the economy and sell off enterprises that can be run more efficiently in private hands.

In the past the bolivar has been subject to foreign exchange controls, most recently between 1994 and 1996. Since controls were removed in 1996 the policy of the central bank has been to maintain the exchange rate within certain limits. The currency has not been allowed to depreciate at the rate of domestic inflation, and the overvalued bolivar has made Venezuelan goods and services increasingly expensive in US dollar terms. High interest rates resulting from the strength of the bolivar caused a recession 1999, despite rising oil prices.

During the period of exchange controls PDVSA was specifically exempted from the requirement to repatriate or channel export revenues through the central bank. It has been allowed to maintain offshore accounts, capped at US\$600 million, and has had priority status in obtaining foreign currency reserves from the central bank.

The major question today regarding Venezuela and PDVSA relates to the administration of Hugo Chávez, who was elected in December 1998 and took office in February 1999. Chávez is not specifically opposed to business interests. He has even indicated receptiveness to the privatisation of some state-owned industries, although certainly not hydrocarbons, and has encouraged private participation in oil, gas, petrochemicals, electricity and telecommunications. However, some are sceptical because he has concentrated power in the hands of the presidency, the military and the new legislature, which is dominated by his supporters. There is concern about the government's excessive reliance on PDVSA, which in 1997 paid two thirds of its revenues to the government in taxes and paid 70 per cent of its profits to the government in dividends.² However, projects such as Petrozuata that result in petroleum exports have not been affected, except for the effect of the strong bolivar on domestic costs in US dollar terms.

Credit analysis

Credit ratings on Venezuela as of 1997

At the time of the project financing Venezuela had a foreign currency credit rating of 'Ba2' from Moody's and 'B+' from Standard & Poor's. Constraints cited by Standard & Poor's included the heavy reliance of the public finances and the economy on volatile oil prices; high fixed public expenditures; the low credibility of the central bank; and the overvaluation of the bolivar. Strengths included moderate external debt, reasonable international reserves and favourable medium-term prospects for the energy industry.

Duff & Phelps, which assigned a 'BB' rating to Venezuela's foreign currency obligations, explained in its analysis that the root of Venezuela's economic problems was its fiscal deficit, which had been financed by the creation of new money over the years. The resulting inflationary pressures and overvalued currency in turn had aggravated the fiscal deficit. The agency noted that Chávez's government, empowered by law to rule by decree for one year, could have leveraged its recent electoral success to implement fiscal reforms, but had focused mainly on political reform.

Credit ratings on Petrozuata as of 1997

At the time of issuance, in 1997, the Petrozuata bonds were rated 'BBB+' by Duff & Phelps, 'Baa1' by Moody's, and 'BBB-' by Standard & Poor's – the highest current credit ratings for

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any project in Latin America, despite the lack of political risk insurance. As indicated by the subsection above, the project's ratings from all three agencies exceeded those for the country at the time.

An analysis issued by Moody's in June 1997 indicated that its 'Baa1' rating was based on:

- Petrozuata's potential for robust economic returns;
- its projected cash-flow coverage of debt service;
- its vast committed oil reserves;
- its low production risk;
- the strong completion undertakings provided by the shareholders and guarantors; and
- the 35-year offtake contract with Conoco, which mitigated marketing risk on the upgraded syncrude.

The rating reflected the agency's view that the government of Venezuela was unlikely to interfere in Petrozuata's operations, or to interrupt its debt service in the event of a domestic financial crisis or a general government default. This view was based on the project's strategic importance to PDVSA and Venezuela; the independence that governments had historically accorded to PDVSA; and the practical and legal impediments to the product or payments being diverted.

The agency also noted that the shareholders' completion obligations were severally guaranteed by PDVSA, with a 'Ba2' rating, and DuPont, with an 'Aa3' rating. It also pointed out that, if Conoco's ownership changed, DuPont had flexibility to transfer its guarantee to Conoco or a third party, as long as the new guarantor had a credit rating of at least 'A2' or Petrozuata's then-current rating was confirmed. Referring to what it described as reasonable pricing and operating scenarios, Moody's noted that the project was expected to generate debt-service coverage in excess of 2 times and a loan-life coverage of 2.5 times.

Limited effect of Conoco spin-off

As mentioned above, DuPont spun off Conoco in 1999. Because Conoco had remained a relatively autonomous and integrated oil company during the 19 years it was owned by DuPont, and had emerged from the spin-off with a high credit rating, the spin-off had virtually no effect on the Petrozuata project.

Indeed, despite the cost overruns and the political uncertainty, Conoco considered expanding the project because it continued to see significant potential in the Orinoco basin. Conoco merged with Phillips Petroleum in mid-2002 and the merged company resolved to maintain its interest in both Petrozuata and Phillips Petroleum's Hamaca VEHOPI.

Other events and credit ratings since the project financing

Major events since the project financing in 1997 have included the following.

- Project construction beat interim scheduling milestones and was completed ahead of time in December 2001.
- Crude oil production exceeded the target of 120,000 barrels per day.

- Project costs consistently ran over budget, primarily because the overvalued bolivar increased costs in US dollar terms, but also because of labour and oil-drilling costs being higher than expected.
- The credit rating of the project bonds continued to pierce the Venezuelan sovereign ceiling but was reduced steadily because of concerns about Venezuela's creditworthiness and the government's policies on the oil industry.
- Oil prices were volatile but remained well above the level required for debt service coverage.

In August 1998 Duff & Phelps downgraded its rating on Venezuela from 'BB' to 'BB-' because of the government's mixed record that year in adjusting public finances and aggregate demand to reflect persistently low oil prices. Maya crude prices at the time were about US\$9.00 per barrel. In November the agency downgraded Petrozuata from 'BBB+' to 'BBB' because of the low oil-price environment, which it believed would continue at least until the end of 1999, and the emerging political consensus in Venezuela, which seemed likely to lead to more government interference in the oil sector. However, Duff & Phelps expressed a view that oil prices were at cyclical lows and would increase in the medium term because of strong long-term demand fundamentals. The agency reported that Petrozuata was the only one of the four VEHOPs that had reached the production stage, having drawn its first oil in August. However, Petrozuata had announced revenues from early production that were lower than expected, as well as cost overruns of US\$324 million, because of unfavourable exchange rates between the bolivar and the US dollar, and labour costs that were higher than expected. As a result the amount of additional equity required from the sponsors was estimated to be US\$430 million.

In December 1998, following the election of Hugo Chávez to the presidency and a further decline in Maya crude prices to about US\$8.00 per barrel, Duff & Phelps further downgraded Venezuela from 'BB-' to 'B+'. The agency noted that the VEHOP projects' ratings had exceeded the sovereign rating because of legal and structural features that helped mitigate sovereign risk issues, but it warned that further deterioration in the sovereign rating could affect the projects' ratings.

In June 1999 Duff & Phelps commented that recent labour unrest and a temporary halt in construction of the VEHOPs would not have an immediate effect on its ratings for the projects. The labour unrest was caused by an increase in unemployment, which in turn was the result of the weakening of the economy and production cutbacks by Opec, to which Venezuela belongs.

In September 1999 Standard & Poor's placed its 'BB+' rating on the Petrozuata bonds on CreditWatch with negative implications because of two concerns. First, the agency believed that recent decisions by Venezuela's Constituent Assembly, which had been elected in July to compile a new constitution, could result in unfavourable changes in the laws and regulations governing the country's oil and gas industry, notably:

- renegotiation or abrogation of key VEHOP contract provisions, such as the availability of international arbitration and exemption from Opec-related production restrictions that might be applied to other projects in Venezuela; and
- unfavourable adjustments to the industry's tax and royalty regime.

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Second, the agency was concerned about the government's increasing political interference in the management of the industry.

Among the other risks Standard & Poor's cited were:

- erosion of *pro forma* financial strength as a result of cost overruns caused by the overvalued bolivar and unexpectedly high labour costs;
- increasing cost overruns, then estimated at US\$550 million, that would require additional equity contributions from the sponsors;
- unexpectedly low productivity, which would further increase production-related expenses;
- the government's ability to force Petrozuata or its crude oil purchasers to redirect sales proceeds into accounts other than those defined in the project documents; and
- uncertainty as to senior lenders' ability to enforce fixed-asset collateral security in Venezuela.

The agency noted the following points as mitigating these risks:

- the project's high profile within PDVSA, and the continued strategic importance of the project to the other VEHOPs and Venezuela's economy;
- improving project economics as a result of rising oil prices;
- the reduction of abandonment risk now that the project was 78 per cent complete;
- estimated hydrocarbon reserves of 35 years, well beyond debt maturity;
- the role of a New York trustee in collecting all revenues, and allocating funds for expenses, debt service and equity distributions; and
- low product diversion risk because syncrude could be used only in selected refineries.

In December 1999, however, Standard & Poor's reduced its rating on PZ Finance bonds from 'BB+' to 'BB', following a downgrade of Venezuela's long-term currency rating to 'B', reflecting concerns over the effects that the country's new Constitution, endorsed by referendum that month, might have on structural reform and fiscal discipline, as well as the possible effect of the government's fiscal regime on the VEHOPs.

In January 2000 Duff & Phelps downgraded PZ Finance to 'BBB-' because of sovereign risk concerns and weakening long-term credit fundamentals. By this time restrained supplies worldwide had reversed the downward trend in oil prices, bringing the price of Maya crude up to US\$17 per barrel, which, in the agency's opinion, was higher than long-term market fundamentals could support. Petrozuata's cost overruns had increased the estimated cost of the project to US\$3.41 billion, compared to an original estimate of US\$2.67 billion, because of the overvaluation of the bolivar, and also because the project company had experienced greater 'well decline' rates than initially expected as a result of thinner, less continuous sands and unexpectedly high crude viscosity. Therefore the company was accelerating its drilling programme and now expected to drill 754 wells over the life of the project, up from 716 originally planned. All of the cost increases were borne by the sponsors. In revised financial projections for the project the Maya crude oil price required for debt service break-even was increased from US\$8.63 to US\$10.47 per barrel, while the original minimum and average DSCRs of 2.08 and 10.62 were revised to 1.56 and 10.09 respectively.

In February 2000 Moody's reconfirmed its 'Baa2' rating for PZ Finance. The agency had placed the ratings of all four of the VEHOPs on review the previous September because the

Venezuelan government was increasing its control over PDVSA, could possibly change the legal framework for oil and gas investment in the country, and might limit PDVSA's ability to meet its financial commitments to the VEHOPs. Moody's noted that the Venezuelan political system was undergoing seismic changes at the same time as the country was facing enormous economic and fiscal pressures, which had been intensified by recent floods. PDVSA funded most of Venezuela's foreign exchange, and would remain the government's vehicle for funding social programmes and subsidising economic shortfalls.

In September 2000 Conoco and PDVSA began to discuss a possible expansion of their Petrozuata joint venture, perhaps even doubling its size. By this time production had reached its target level of 120,000 barrels per day. Rob McKee, Conoco's Vice President for Exploration and Production, reported that Petrozuata had already contributed US\$90 million to Conoco's earnings that year.³

In January 2001 construction was completed and syncrude production began. The technical success of the project, notwithstanding the cost overruns, and the highest oil prices in a decade, in the range of US\$25–30 per barrel, encouraged Conoco and PDVSA to begin a formal feasibility study on doubling the size of the project.

In February 2002 Standard & Poor's placed Venezuela's 'B' long-term foreign currency rating, and consequently PZ Finance's 'BB' rating as well, on CreditWatch with negative implications. Political polarisation had led to capital flight and high real interest rates, while hard-currency receipts were suffering the effects of declining oil prices and export volumes. The government had replaced the head of PDVSA four times and the agency saw increased risk of adverse government involvement in the VEHOPs.

In March 2002 Petrozuata announced that it had delivered to the lenders six required completion certificates in the areas of reserves, operations, physical facilities, insurance, legal issues and finance and had met all the performance requirements stipulated by the project financing. Accordingly Conoco and PDVSA were released from the US\$1.4 billion in debt guarantees that they had provided and equally shared at the time of the financing, and Petrozuata assumed full responsibility for debt service.

Also in March Fitch Ratings commented that, on the basis of sensitivity analyses reflecting current operating assumptions, Petrozuata could cover its operating expenses and debt service payments as long as the price of Mexican Mayan crude was at least US\$9.75 per barrel. The price had averaged US\$17 in 2001 and was then US\$20. Petrozuata was producing 124,000 barrels of heavy crude per day, exceeding its original target of 120,000 barrels. Fitch noted that the final US\$3.4 billion project cost was funded by US\$1.45 billion of senior secured debt, US\$1.0 billion of sponsor equity contributions and close to US\$1 billion of internally generated funds. The agency continued to rate the PZ Finance bonds 'BBB-'.

In April 2002 it was announced that President Chávez had been overthrown in a coup, but he reappeared a day later claiming never to have given up office. That month Moody's downgraded PDVSA's foreign currency debt rating from 'Baa3' to 'Ba1', downgraded PDVSA Finance's long-term debt rating from 'Baa1' to 'Baa2', and placed negative outlooks on its rating for all the VEHOPs. It continued to rate Petrozuata 'Baa2'. PDVSA's employees were engaging in work slowdowns and other actions to protest against Chávez's recent appointments and dismissals of numerous directors and managers of the company. The agency, responding to the continuing standoff between Chávez and the employees, saw no short-term solution to the conflict, and was concerned about disruptions in PDVSA's oil production, refining and export flows. Moody's noted that PDVSA was a sponsor of, and had

numerous supply relationships and operational links with, the VEHOPs. For example, the hydrogen supply for the cokers depended on PDVSA's gas supply, and PDVSA supplied electricity and water to the José complex.

During the autumn of 2002 social divisions hardened and tensions rose steadily between Chávez, broadly supported by low-income groups, and his pro-business opponents, who saw him as trying to take extraordinary powers and create a Cuban-style government. In early December a nationwide general strike against Chávez's regime began to paralyse most of the country's industry and commerce, including PDVSA and the all-important oil industry.

On 18 December, with the strike in its third week, Moody's downgraded PDVSA's local-currency issuer rating from 'Baa1' to 'Ba1', its foreign currency debt ratings from 'Ba3' to 'Ba1', the senior notes of PDV America from 'Ba3' to 'Ba2' and the long-term debt ratings of the four VEHOPs (Petrozuata, Cerro Negro, Sincor and Hamaca) from 'Ba1' to 'Ba2', noting that all the ratings were under review for further downgrade. The agency noted that, because most of PDVSA's employees were apparently supporting the strike, virtually all of its crude oil, natural gas and refinery operations had shut down. It was not clear when the strike would be settled, given the opposition's demand that Chávez resign.

During the first half of December 2002 Petrozuata took advantage of problems caused by the strike to catch up on maintenance, but was considered likely to shut down within the month. Cerro Negro and Sincor were still operating, but at both sites production of extra-heavy crude oil was below 50 per cent. The long-term viability and creditworthiness of the four VEHOPs remained intact, but the effects of the political situation would not be clear for some time.

On 10 January 2003, citing the polarisation of political and social interests in Venezuela, the extended duration of the general strike, and the cessation of most of PDVSA's production and exports, Moody's further downgraded PDVSA's local-currency rating, its foreign-currency rating and PDV America's senior-note rating, all to 'B3', while holding its ratings for the four VEHOPs at 'Ba2' pending review for downgrade.

The same day, after downgrading its foreign-currency rating for Venezuela from 'B' to 'CCC+', Fitch downgraded its senior secured debt ratings for the VEHOPs from 'BB+' to 'B'. The agency noted that debt-holders for each of the projects relied solely on that project's ability to meet scheduled debt-service obligations, with no guarantees from other parties. The downgradings reflected the inability of the projects to maintain their normal operations, which rely on critical raw-material inputs such as natural gas from PDVSA. As a result the projects had been unable to export and generate oil revenues for one month. If the situation did not change each project's liquidity position to cover fixed operating expenses would soon deteriorate, although the projects had funds in their debt service reserve accounts to cover debt service obligations over the following several months. Fitch also commented that, even though Venezuela's external debt service capacity compared favourably to that of similarly rated sovereigns, it could soon come under pressure because the strike and the loss of oil exports were reducing its revenues by US\$30 million per day.

The strike ended on 3 February 2003. During the last week of February, after PDVSA resumed delivery of natural gas and hydrogen to the project, Petrozuata gradually restored operations at its crude upgrader facility to 100 per cent of capacity. By mid-March, Petrozuata had restored syncrude shipments and production to their pre-strike levels. However, in an article for the Spring 2003 issue of the *Journal of Structured and Project Finance*, Alejandro Bertuol, Senior Director; Caren Y. Chang, Associate Director; John W. Kunkle, Senior

Director; and Gregory J. Kabance, Senior Director of Fitch Ratings noted that the recent political instability in Venezuela had highlighted the VEHOPS' exposure to PDVSA's operating performance, particularly in the supply of critical raw material inputs required in the projects' syncrude production and operation processes. A more extended production shutdown period, combined with the inability to generate export revenues, eventually would have jeopardised the VEHOPS' liquidity positions and debt-service capacity. The political crisis, including sovereign interference in PDVSA's operations and a significant cut in PDVSA's highly trained staff, undermined Venezuela's image as a reliable crude oil supplier, although Fitch believed that PDVSA would continue to be an important player in the global energy market. Nonetheless, the government's inclination to interfere with PDVSA's finances was likely to increase as the sovereign credit ratings deteriorated within the speculative-grade spectrum.

Lessons learned

An export project with strong fundamentals is required for a credit rating that pierces the sovereign ceiling. Further, common terms between commercial lenders and bondholders, as defined in the Common Security Agreement in the case of this project, can provide flexibility to adjust the respective amounts of bank and bond financing, depending on market conditions.

¹ This case study is based on the prospectus for the project bonds; 'Petrolera Zuata, Petrozuata C.A.', a Harvard Business School case study (9-299-012, 1998) prepared by Research Associate Matthew Mateo Millett under the supervision of Prof Benjamin C. Esty; interviews with Jonathan D. Bram and Wallace C. Henderson, Managing Directors of Credit Suisse First Boston Corporation, and Caren Chang of Fitch Ratings; rating agency analyses and press releases; and articles in the financial press.

² Vogel, Thomas T., Jr, 'Venezuela Proposed New Constitution Criticized by Businessmen, Economists', *Wall Street Journal*, 6 December 1999.

³ 'Conoco Eyes Petrozuata Expansion', *Venezuela Oil and Energy*, 10 September 2000.

Chad–Cameroon pipeline

Type of project

Development of oilfield and construction of oil pipeline.

Country

Chad and Cameroon.

Distinctive features

- Largest construction project in sub-Saharan Africa outside South Africa.
- Environmental concerns.
- Lengthy due diligence and public consultation process.
- Poverty and corruption in both countries.
- Significant economic opportunity for Chad.
- First syndicated loan for Chad.
- First-of-its-kind contractual agreement to direct oil well and pipeline revenues to support economic and social development in Chad.
- World Bank financing at commercial rates to enable Chad and Cameroon to invest equity in the project through their national pipeline companies.
- Multilateral agency participation required by both sponsors and other lenders.

Description of financing

The total project cost is US\$3.7 billion: US\$1.7 billion for oilfield development, and US\$2 billion for pipeline and marine facilities. The oilfield development was financed by the sponsors, and the pipeline and marine facilities were project-financed. The project financing comprised:

- US\$500 million in equity from sponsors;
- US\$100 million in equity from the governments of Chad and Cameroon;
- US\$100 million as an ‘A’ loan from the International Finance Corporation (IFC);
- US\$100 million as a ‘B’ loan from the IFC, with funds provided by commercial banks;
- US\$200 million as a commercial bank loan with 100 per cent cover from the Export Import Bank of the United States;

- US\$200 million as a commercial bank loan with 95 per cent cover from Compagnie Française d'Assurance pour le Commerce Extérieur (Coface); and
- a US\$400 million bond.

In addition:

- The World Bank made a US\$53.4 million loan to Cameroon and a US\$39.5 million loan to Chad to finance the governments' equity share in the project.
- The European Investment Bank (EIB) made conditional loans from its risk capital resources raised in the capital markets of €35.7 million (US\$32.8 million) to Cameroon, €20.2 million (US\$18.6 million) to Chad and €88 million (US\$80.9 million) to certain members of the consortium to fund their participations in Tchad Oil Transport Company (TOTCO) and Cameroon Oil Transport Company (COTCO), the two pipeline companies (described below).¹ All of the senior debt for the pipeline project was provided to TOTCO and COTCO.
- Separately from but in relation to the project financing, the International Development Association, part of the World Bank Group, made a US\$23.7 million loan to Chad and a US\$5.8 million loan to Cameroon. These loans were intended to strengthen both countries' capabilities for environmental management and oversight of the oil industry.

Project summary²

The project has two components:

- the upstream or field system, which entails drilling about 300 oil wells to develop the Kome, Miandoum and Bolobo oil fields in the Doba Basin, southwest of the city of Doba in southern Chad, over a 30-year concession period; and
- the pipeline system, which entails construction of a 30-inch pipeline, with three pumping stations along the route and a monitoring system to detect leaks, running 1,070 kilometres (km) from the oilfields to a floating storage vessel moored 12 km offshore from Kribi on the Atlantic coast of Cameroon. Most of the pipeline will run 1 metre under the soil in Cameroon.

Oil reserves are expected to last for 25 to 30 years. At the height of production the project is expected to produce 255,000 barrels per day of heavy viscous oil that will have to be lifted by electric pumps because of the absence of significant natural gas deposits.

Project construction began in 2000 and is scheduled to be completed in 2004. The project will employ up to 7,000 people during construction, and between 500 and 800 during operation. Most of the skilled workers employed are foreigners, but when the project reaches the operating stage about 80 per cent of the workforce will be citizens of Chad or Cameroon, with extensive training.³

The oilfield development was financed by the sponsors, while the pipeline and marine facilities were project-financed through sponsors' equity, A/B loans from the IFC, additional

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commercial bank financing with cover from export credit agencies (ECAs), and a bond. Multilateral agency participation was required for both the sponsors and the lenders to participate in the project.

The project is expected to generate between US\$9 billion and US\$18 billion for the consortium, depending on oil prices. Over the 25-year course of the project the government of Chad is expected to earn about US\$2 billion, equal to half its national budget, while the government of Cameroon is expected to earn about US\$500 million, about 3 per cent of its national budget.⁴ Affected communities are to receive about US\$600,000.⁵

Background

Sponsors

The project sponsors and their respective ownership are as follows: Exxon Mobil (40 per cent), Petronas (35 per cent) and Chevron (25 per cent). Exxon Mobil is the project manager. Each of the three consortium partners is responsible for receiving, transporting, and selling its respective share of the oil.

Shell and Elf Aquitaine were originally sponsors, through subsidiaries, but they sold their shares in 1999 after helping to find replacement sponsors. Elf Aquitaine's reason for selling was believed to be a shifting of priorities after it was acquired in 1999 by the Franco-Belgian oil company Total Fina. In addition, because oil prices had recently fallen as low as US\$10 per barrel, the projected returns for this and many other projects were not clearing their sponsors' hurdles.

Chevron had been a member of the Doba Basin consortium in the early 1990s, but it had sold its 17 per cent interest to Elf, reportedly because of concern over continuing civil wars in Chad.⁶

Project structure

The field system is owned and operated by Exxon Mobil, Petronas, and Chevron. Exxon is the project manager.

The pipeline system is owned and operated by two joint venture companies, Tchad Oil Transport Company (TOTCO) and Cameroon Oil Transport Company (COTCO). The three-member oil consortium holds majority stakes in both pipeline companies, the government of Chad holds minority stakes in both, and the government of Cameroon holds a minority stake only in COTCO.

Origins of the project

Oil was first discovered in the Miandoum Field in the Doba Basin of Chad in 1974 by a consortium comprising Exxon, Chevron, Shell and Conoco. Conoco withdrew from the group in 1981 and, as mentioned above, Chevron sold its interest to Elf Aquitaine in 1993. Development was delayed for more than 20 years because of civil conflict, opposition by environmental groups, and wavering interest on the part of Shell and Elf. Discussions on a possible pipeline to ship the oil through Cameroon for export began in 1992, leading to a feasibility study. In 1993 the sponsors began public consultations in Chad and Cameroon, as well as preliminary discussions with financial sources such as the

World Bank Group. They were reluctant to take the country risk without the participation of multilateral agencies.

In January 1995 representatives of the Republic of Cameroon, the Republic of Chad, Esso Exploration and Production (an Exxon affiliate), Société Shell Tchadienne de Recherches et d'Exploration (a Shell affiliate), and Elf Hydrocarbures Tchad (an Elf affiliate) signed a framework agreement. The agreement addressed the key commercial, financial, legal and operational terms under which a pipeline company would be formed to construct and operate the Cameroon portion of the crude oil export system. Both Cameroon, through its National Hydrocarbons Corporation, and the Government of Chad were expected to have equity interests in the pipeline. The pipeline was part of a project concept that envisaged drilling about 300 wells in the Doba Basin to produce several hundred million barrels of oil. The oil would be sent to a central processing facility and then shipped through the pipeline.

While negotiations were under way the governments of Libya, Nigeria and Sudan lobbied Chad in attempts to have the pipeline run through their respective territories. There was also competition among three port cities in Cameroon for the terminal site: Douala, the commercial capital; Victoria, a natural port in the southwest; and Kribi, located in President Paul Biya's home province of Southern Cameroon. The selection of Kribi caused controversy because it required substantially more port development than Victoria would have.

Later in 1995 the World Bank Group began to work with the sponsors on an extensive analysis and public consultation process, intended to determine whether it should play a role in the project financing. During this process the World Bank Group, the sponsors and the host governments sought the advice of 45 scientists and environmental engineers, hosted 145 meetings with 250 international nongovernmental organisations (NGOs) and held nearly 900 village meetings.⁷

The World Bank Group and the sponsors published the first draft of an Environmental Impact Assessment for public comment in June 1998 and a final version in June 1999. The study, 3,000 pages long and bound in 19 volumes, contained contingency plans for almost every conceivable aspect of the project, including waste management, environmental management, oil spills, regional development, indigenous peoples, community health, compensation and resettlement, cultural properties, and decommissioning.

At this stage, after 18 months of analysis, the World Bank Group and the sponsors agreed to a change in the proposed right of way for the pipeline. It would now be buried, rather than above ground, and would follow the existing infrastructure for most of its route. Although a maximum of 150 families would be displaced in the oilfield region, nobody along the pipeline route would have to be resettled. Construction could interrupt farmers' access to their land for a brief period, but they would be compensated for lost income and lost fruit trees. The final route would comply with the World Bank Group's safeguard policies on environmental assessments, natural habitats, indigenous peoples, cultural property, resettlement and forests. Two new national parks, each about 5,000 square km in area, would be created and managed for better conservation of biodiversity in the areas affected.

To address the issue of sustainability the World Bank Group established capacity building programs in Chad and Cameroon, designed to develop the fiscal, legal, regulatory and managerial infrastructure needed to develop the oil industry and to minimise the adverse impact of the project. To ensure that the government of Chad directed its oil revenues in the manner agreed the World Bank Group proposed a novel 'Revenue Management Plan'.

The Revenue Management Plan

The World Bank Group had learned from previous experience that a large influx of oil revenues could lead to economic distortion, corruption and waste in a less developed country. To prevent history from repeating itself, and to ensure that the oil revenues were directed towards key development and poverty-reduction programmes, the World Bank Group and the government of Chad agreed on a method for distributing the estimated US\$1.8 billion cash flow that Chad would receive in the form of income taxes, royalties and dividends.⁸ The plan became the basis of a law, enacted by Chad's legislature in December 1998, under which:

- 10 per cent of the royalties and revenues would be held in trust to finance poverty reduction programmes for future generations;
- 76.5 per cent would be devoted to education, health, social services, rural development, infrastructure, environmental management and water resource management; and
- 13.5 per cent would be earmarked for regional development in the oil-producing area over and above that region's share of national spending.

There would be annual published audits of the oil accounts and regular public expenditure reviews, not only by the World Bank Group but also by a 'watchdog' commission of five official and four independent members in Chad.

Environmental and social concerns

The World Bank Group viewed the project as an unparalleled opportunity to improve economic prospects of Chad, one of the poorest countries in the world, at a time when it could not afford to provide the minimal level of services to ensure a decent life for its people. If the project in its current form was not approved the sponsors would pursue opportunities elsewhere and there was no telling when they might return to Chad.

Soon after plans for the pipeline became known, however, various environmental and other NGOs in Chad, in Cameroon and around the world began to lobby against the project because of alleged environmental, social, and political problems, including the following.

- The project would benefit the corrupt regimes in the two countries more than their impoverished peoples.
- The governments did not have the ability to manage the oil revenues.
- The pipeline corridor would cut through two national parks and through thick tropical forest in Southern Cameroon, creating population, logging and other pressures.
- The habitat of the Bagyeli people (also known as Pygmies) would be compromised
- Animal species at risk included black rhinoceroses, elephants, chimpanzees and gorillas.
- The potential for leaks and spills threatened farmland in Chad, rivers in Cameroon and coastal fishing resources; guarantees for clean-up in the event of such spills were inadequate; and a US\$1 million amount set aside for such emergencies was far from adequate.
- The proposed compensation for peasants who would lose their land (US\$10 for a mango tree, US\$36 for a banana tree and 4–5 US cents for each square metre of sorghum or millet field lost) was inadequate.
- Local communities and NGOs had not been sufficiently included in the planning process. Many prominent environmental NGOs participated in the campaign, including Friends

of the Earth, Greenpeace, the German Greens, the Environmental Defense Fund and the Sierra Club. In 1998 some 86 environment, development, human rights and religious NGOs gathered petitions online, and sent a joint open letter to ask the World Bank Group's President, James Wolfensohn, to suspend the Bank's participation in the project until respect for human rights and compliance with the World Bank Group's environmental policies could be guaranteed.⁹ In 1999 27 US Senators and Congressmen asked Wolfensohn to ensure that the project did not proceed until civil and human rights concerns in both countries had been addressed, and there was evidence of the political will to implement environmental protection measures. At about the same time Idriss Déby, President of Chad, flew to the United States to appeal for support for the project. In the spring of 2000 demonstrators in the streets of Washington, DC, during IMF and World Bank meetings cited the project and its alleged threat to the Bagyeli people as a symbol of the dangers of globalisation. That year a group of environmental NGOs sent a letter to the EIB asking it to pull out of its financing for the Chad–Cameroon project, and the European Parliament passed a resolution demanding that the EIB not approve its proposed loans until Chad lived up to its agreement to improve its environmental and human rights legislation.

There were reactions against the protests in both Chad and Cameroon. Although Chad guarantees freedom of expression, a member of its legislature was imprisoned after speaking out against the project.¹⁰

Despite the protests, in June 2000 the World Bank Group received approval from its board of directors to go ahead with the proposed financing. The agency was convinced that this unique opportunity to boost Chad's economy, and to benefit Cameroon's as well, outweighed the social and environmental risks. In announcing the approval it emphasised the safeguards that had been put in place to ensure that neither Chad nor Cameroon misused its oil revenues, and that environmental and human rights concerns were addressed.

In February 2001 the World Bank appointed an international advisory group with responsibility for identifying problems in the use of public revenues, the adequacy of civil society participation, and the environmental and social impact of the project. The six-member committee, chaired by a former prime minister of Senegal, would be charged with visiting Chad and Cameroon twice a year, and making periodic reports to the World Bank's President and Board of Directors.

Members of international environmental NGOs questioned how well the group could monitor what was really going on by visiting the two countries only twice a year. In 2001, several months after the World Bank had approved its financing, President Déby of Chad fuelled further controversy over the project by approving the spending of US\$4 million, from a US\$25 million bonus paid by the project sponsors, on arms purchases.

Risk analysis

Construction risk

Any construction project of this size runs the risk of cost overrun and schedule delay. However, no new technology is involved and the terrain over which the pipeline is being constructed, while varied, poses fewer challenges than for other pipelines, in countries such as Colombia, that have crossed mountain ranges.

Country risk

One of the principal risks of the project relates to the economies and politics in Chad and Cameroon.

In 2000 Chad, which gained independence from France in 1960, had a population of 7.5 million, per-capita GDP of US\$215 and per-capita exports of about US\$27. About 80 per cent of its people live on less than US\$1.00 per day. It has a high infant mortality rate, limited access to social services and poor levels of nutrition. Chad is three times the size of California, but has only a few hundred kilometres of paved roads. Ninety per cent of the country is desert or semiarid. Most of the economy is based on subsistence farming. Cotton is the only significant export. Chad's narrow economic base and lack of skilled people have limited the opportunities for growth in most sectors. Economic growth has been hampered by intermittent civil war since 1980, when rebels from the Muslim north seized power from government forces in the south. President Déby, a French-trained army officer, came to power through a coup in 1990. He has a reputation as a warlord, and organisations such as Amnesty International and the US State Department have criticised his regime for extrajudicial killings, as well as arbitrary arrests and detentions.

With a population of 14.9 million, per-capita GDP of US\$589 and annual per-capita exports of about US\$137 in 1999, Cameroon is ahead of Chad, but is still among the 49 countries classified as 'low income' by the World Bank Group. Cameroon's economy has been based on exports of agricultural commodities and oil. In recent years the need for imports has been reduced by the development of new economic activities, including agriculture-based manufacturing of, for instance, fruit juices, dairy products, beer and soap). Cameroon was ranked by the Berlin-based NGO Transparency International as the world's most corrupt country in 1998 and 1999, and among the eight most corrupt countries in the following two years. The organisation defines corruption as the abuse of public office for private gain, as seen by businesspeople, business risk analysts and the general public. President Biya of Cameroon has been criticised because of his regime's poor human rights record.

Environmental risk

The project has environmental risk, which the sponsors and lenders consider to be manageable, but equally important, it has had *perceived* environmental risk. As discussed above, one of the principal challenges for the sponsors and the World Bank Group was to convince environmental NGOs throughout the world that the project would not result in unacceptable environmental damage, or excessive risks to the natural life and indigenous people of the region.

How the financing was arranged

The commercial bank, IFC and ECA portion of the financing closed in June 2001. ABN AMRO and Credit Agricole Indosuez, the lead arrangers, offered *pro rata* participations, ranging from US\$35 million to US\$50 million, in the three syndicated commercial bank tranches to the arrangers and co-arrangers, which earned fees of 100 basis points. Arrangers were Bayerische Hypo and Vereinsbank, BNP Paribas, Dexia Credit Local, Fortis Bank, ING Bank, IntesaBCI SpA, KBC Bank, Natexis Banque Populaire, Standard Chartered Bank, and Westdeutsche Landesbank. Co-arrangers were Bank of Scotland, Citibank, Credit Lyonnais, Dai-Ichi Kangyo Bank, Erste Bank and Société Générale.¹¹

Recent developments

Developmental drilling and laying of the pipeline began in late 2001. By the spring of 2002 there were 5,000 people employed in the project. It was expected that construction of the pipeline would be completed, and that production from the Doba Basin would begin, by early 2004.

The IMF estimated that Chad's economy grew at 8.9 per cent in 2001, in comparison with 0.6 per cent in 2000, mainly because of acceleration in the oilfield pipeline project, but also because of structural reforms. The IMF predicted that the country's economy would continue to grow in 2002, but it stressed the importance of implementing reforms and policies to better manage oil revenues, integrate the oil industry into the overall economy, develop non-oil activities and liberalise the cotton industry.

Lessons learned

Because of the political and economic risk in Chad and Cameroon the major oil company sponsors would not have gone ahead with the project without multilateral agency participation. By the same token, an organisation of the World Bank's stature was required to make a convincing statement that environmental and social concerns of NGOs and other special interest groups would be addressed in a responsible manner. Project sponsors that want to involve the World Bank Group in future projects may have to accept some degree of revenue and environmental monitoring. Time will tell whether the international advisory group can be helpful to the World Bank in ensuring environmental compliance and proper disposition of revenues.

The World Bank acknowledged that oil revenues had failed to benefit the people in other less developed countries, such as Nigeria, but decided that an unparalleled opportunity for the economy of Chad outweighed the social and environmental risks. With this project the World Bank Group hoped to set new standards for ethical financing in a difficult environment.

¹ Williams, Annie, and Mark Castillo-Bernaus, 'Chad Cameroon Pipeline Sets New Standards for African Project Finance', *International Financial Law Review*, September 2001, p. 10.

² This case study is based on The Chad–Cameroon Petroleum Development and Pipeline Project, Harvard Business School Case Study N9-202-010, 29 October 2001, prepared by Research Associate Carrie Ferman under the supervision of Professor Benjamin C. Esty, as well as a follow-up interview with Professor Esty and articles in the financial press.

³ Onishi, N., 'The Perils of Plenty: A Special Report', *New York Times*, 16 May 2001, p. 1.

⁴ Murphy, John, 'Where Oil Flows, Future Holds Promise, Threat', *Baltimore Sun*, 3 September 2000, p. 1.

⁵ Mutume, Gumisai, 'Development: World Bank Blasted for Chad–Cameroon Pipeline', *Inter Press Service*, 6 June 2000.

⁶ 'Chad–Cameroon Pipeline on Track', *Hart's Africa Oil and Gas*, 19 April 2000.

⁷ Ferman and Esty, *op. cit.*, p. 7.

⁸ *Ibid.*

⁹ De Giorgio, Emmanuelle Moors 'Pipeline to Disaster?', *African Business*, March 2000, p. 26.

¹⁰ Murphy, *op. cit.*, p. 1.

¹¹ 'Chad–Cameroon Debt Signed', *Project Finance*, July 2001, p. 10.

Centragas, Colombia

Type of project

Natural gas pipeline.

Country

Colombia.

Distinctive features

- Build-operate-maintain-and-transfer (BOMT) project.
- Financing prior to construction.
- First project financing in Latin America with investment-grade credit rating.
- 16-year maturity longest to date for Colombian financing.
- One of the longest-dated emerging-market bond issues in the 1990s.

Description of financing

The financing totalled US\$217 million, of which US\$172 million was raised through 10.65 per cent senior secured notes due in 2010.

Project summary¹

The Centragas natural gas pipeline project is a BOMT project that was financed in the capital markets prior to construction with senior secured notes having a 16-year maturity. It was the first project financing in Latin America to receive an investment-grade credit rating; the notes had the longest maturity to date for a project financing in the region; and the issue was one of the longest-dated bond issues from any emerging market in the 1990s.

Centragas was a project company owned by Enron Corporation that contracted to build a natural gas pipeline for Ecopetrol, the state-owned energy company. (Ecopetrol was responsible for developing all of Colombia's oil and natural gas resources until 1997, when another entity, Empresa Colombiana de Gas, or Ecogas, was created, as discussed below.) The project's precedent-setting investment-grade credit rating was based on its low construction and operating risk; the high priority of the project in Colombia's economic and energy planning; and the implied backing and creditworthiness of Ecopetrol and the Colombian government.

However, the project's credit rating has been downgraded, along with Colombia's sovereign rating, because of the country's recent political and economic difficulties.

Background

The Colombian government's energy policy

The Centragas pipeline represented the first phase of the Colombian government's national gas plan, adopted in 1993. The principal objective of the plan is to increase the use of lower-cost fuels throughout the country by constructing transport systems that will transport natural gas from reserve locations to Colombia's population centres. The plan is expected to reduce peak demand on the country's strained electricity system, and to divert oil from internal consumption to export. The use of natural gas is more friendly to the environment than burning coal or fuel oil. The Colombian government estimated that the economic value of the plan would amount to more than US\$4 billion over the period 1993–2008.

Ecopetrol

Ecopetrol now has full responsibility for developing and promoting the Colombian oil industry, promoting Colombia's self-sufficiency in the production of oil, developing and promoting transport and storage facilities for oil, promoting an efficient mix of consumption of various energy sources, and contributing to the industrial development of Colombia through the development of the oil industry. However, as of 1994, when the Centragas project started, it was entrusted with similar responsibilities in respect of the natural gas industry as well, and was therefore involved in the project from the beginning.

A new state-owned corporation, Ecogas, was created by law in August 1997 to take over, among other gas-related functions, Ecopetrol's assets and rights related to natural gas transport activities, and contracts related to those activities. Despite this, the two corporations made a separate interadministrative agreement under which Ecopetrol continues to be the financial obligor with respect to tariff payments due to Centragas.

Ecopetrol and Ecogas both have authority to contract with the private sector to fulfil their objectives. Ecopetrol has long been a significant source of income and hard currency for Colombia. In 1993 it earned US\$303 million on revenues of US\$2.6 billion.

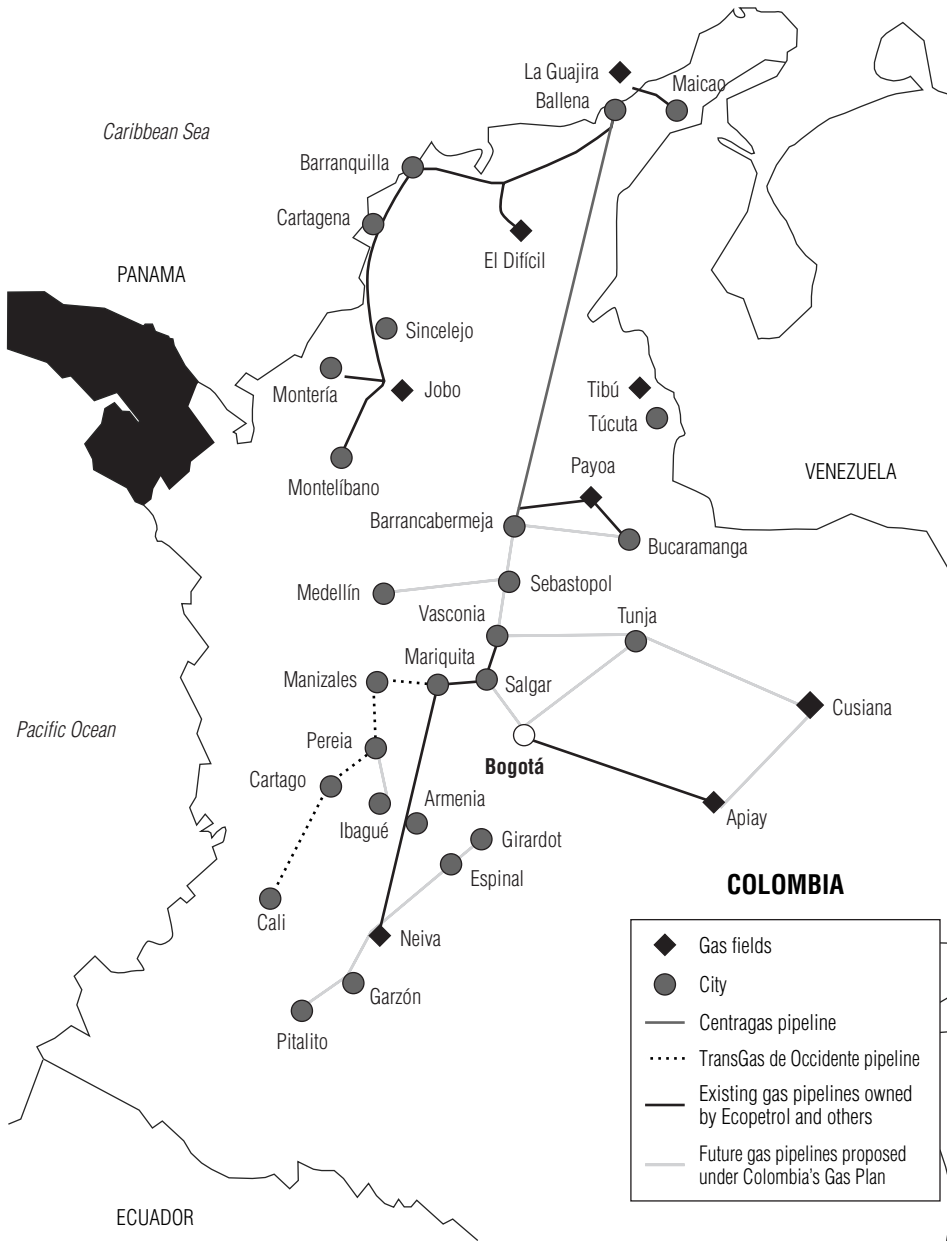
Ecopetrol originally considered building the pipeline without outside help. Then Enron, taking advantage of a substantially lower cost of capital, offered a price well below Ecopetrol's estimated internal cost. Ecopetrol decided that it made sense to give the private sector the profit-earning opportunities because the all-in costs were so much lower.

Involvement of Enron and other companies

In 1994 Centragas was a newly formed Colombian company wholly owned by Enron Corporation, which was then considered the leading buyer and seller of natural gas in the United States, and had become a prominent name in international energy projects. In May that year Centragas entered into a transport services contract (TSC) with Ecopetrol to build, own, operate and maintain a gas pipeline 575 kilometres (km) long, and to transfer the pipeline to Ecopetrol after a 15-year operating period. As shown on the map in Exhibit 17.1, the pipeline runs from Ballena on Colombia's north coast, near the La Guajira gas fields, to

Exhibit 17.1

Map of Columbia showing Centragas and TransGas pipelines



Source: Prospectus for Project Bonds.

Barrancabermeja, an industrial city close to other major cities in central Colombia, where most of the country’s population is concentrated. The Centragas pipeline formed part of the Colombian government’s plan to exploit its natural gas reserves and reduce reliance on oil production for domestic power consumption.

The pipeline was constructed by Techint International Corporation under a fixed-price construction contract for US\$77 million. This amount included all construction costs except for procurement of pipes, and procurement and installation of the system control and data acquisition (SCADA) system. Techint had substantial experience constructing other pipelines in Colombia.

Promigas SA, Colombia's largest natural gas pipeline company, entered into a contract for operation and maintenance of the pipeline for 15 years. Promigas was 39 per cent owned by Ecopetrol.

In addition to the actual mainline pipe, project construction included two metering stations, the SCADA system, lateral lines to 21 branch cities and a dehydration plant at Ballena. Enron subsidiaries, rather than Techint, were responsible for procurement of the pipe, at an estimated cost of US\$45 million, and installation of the SCADA system, at an estimated cost of US\$3 million. Centragas wanted the pipe made in the United States and thought that Enron had greater purchasing power and could set the SCADA system more economically than Techint could.

Financing

The cost of the project was US\$217 million. Of this total US\$45 million was provided as the equity contribution of Enron Corporation and its affiliates, and the remaining US\$172 million was financed by an issue of senior secured notes lead-managed by Lehman Brothers in December 1994. Principal is payable in equal quarterly instalments, beginning in June 1998, such that the average life of the notes is approximately 10 years. In addition to its equity contribution Enron committed itself to a US\$38 million reimbursement obligation for the Centragas performance bond and a US\$4.8 million performance bond for its subsidiary, Enron International Development Services (EIDS), the pipeline supplier.

The notes are secured by:

- a pledge of the pipeline and related property;
- an assignment of the TSC and other agreements; and
- a security interest in Centragas's cash and investments held in accounts with the trustee.

Proceeds from issuance of the notes are placed in an escrow account with the trustee under the bond indenture and made available for drawdowns required for defined project costs. When Centragas began to receive tariff payments under the TSC it was required to maintain funds in a debt-service reserve account equal to principal and interest required to be paid on the next two payment dates. In addition, after providing for operation and maintenance (O&M) expenses it was required to fund a debt payment account each month with one-third of the principal and interest due on the next payment date.

The notes are subject to extraordinary mandatory redemption if the TSC is terminated, if a total or constructive loss of the pipeline occurs or if a compulsory transfer by governmental authority occurs. The notes are redeemable at par if Ecopetrol terminates the TSC where:

- cumulative draws under the emergency fund exceed 20 per cent of the total investment defined in the TSC (estimated to be US\$39 million);
- Centragas terminates the TSC because various conditions that fall under Ecopetrol's responsibility have not been met;

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- there is a total or constructive loss of the pipeline; or
- there is a compulsory transfer.

If the TSC is terminated for any other reason, the redemption price includes a premium equal to the greater of the net present value of the remaining principal and interest payments discounted at the US Treasury rate for a comparable maturity plus 75 basis points. Centragas has the option to redeem the notes at any time after the fifth anniversary of original issuance at a price equal to the principal outstanding plus accrued and unpaid interest.

Covenants in the indenture include limitations on the incurrence of additional debt, distributions and payments to affiliates, amendments to project agreements, affiliate transactions, liens, mergers, and sales of Centragas's assets.

The notes, the indenture and the security documents are governed by the laws of the State of New York. However, any security document that relates to real or personal property in Colombia ultimately is governed by Colombian law. The United States and Colombia do not have a treaty providing for reciprocal recognition and enforcement of civil or commercial judgements. Therefore a judgement against Centragas for payment rendered in the United States would have to be proved to be in accordance with Colombian law, and may or may not be enforceable in Colombian courts.

Ownership and contractual relationships

Transport services contract

Payments by Ecopetrol under the TSC are Centragas's primary source of revenue. The TSC provides the basis for pipeline specifications, construction and the tariff structure to be implemented. It is a BOMT contract that obliges Centragas to build, operate, and maintain the pipeline, and then transfer it to Ecopetrol for a nominal sum. Under the TSC Centragas is responsible only for transport, while Ecopetrol is responsible for gas reserves, production risk and marketing risk. Centragas is paid even if Ecopetrol transports no gas through the pipeline. Ecopetrol also is obliged to provide rights of way for the pipeline and assign them to Centragas.

Ecopetrol pays Centragas a monthly capacity payment, called the 'Permanent Availability Tariff' (PAT), regardless of the amount of gas transported through the pipeline. According to Standard & Poor's the PAT was estimated to be US\$3.8 million plus adjustments when the bid was submitted in August 1994, but the estimate was revised to US\$4.4 million when the notes were priced in December 1994, because of changes in interest rates. The amount may be affected by changes in Colombian law, taxes or environmental regulations. The PAT may be reduced by up to 20 per cent if Centragas fails to restore operation of the pipeline three days after an 'excusable event'. Excusable events include acts of terrorism, sabotage, expropriation and failure by the Colombian army to provide adequate security during the construction phase.

Ecopetrol also pays Centragas a monthly transport tariff, which is designed to cover the monthly O&M costs of the pipeline. It is designed to completely cover payments to third parties for operating expenses. As noted by Standard & Poor's, the transport tariff is more performance-oriented than the PAT. It can be reduced partially if the pipeline is not operating three days after an excusable event and reduced to zero if the pipeline is not operating by the ninth day.

The TSC obliges Centragas to maintain builder's risk insurance during the construction phase, permanent property insurance during the operational phase, civil liability insurance and employee insurance. The TSC obliges Ecopetrol to pay costs, including interest during the construction period, resulting from excusable events for which insurance coverage was not available on commercially reasonable terms. Centragas draws on an emergency fund and Ecopetrol is obliged to replenish it. However, if Centragas draws a cumulative amount equal to more than 20 per cent of the total investment, Ecopetrol has the right to terminate the TSC. Ecopetrol can also terminate the TSC if, after an excusable event, Centragas fails to restore the pipeline to normal operation within twice the amount of time determined to be reasonable by an outside engineering firm.

Construction provisions

Construction, estimated to take 490 days, began as soon as the financing was closed. If the project was not complete within 490 days, subject to excusable events, Centragas would have to pay liquidated damages of US\$139,000 per day through to the 610th day of construction. From day 610 to day 730 Centragas would have to pay liquidated damages of US\$166,000 per day. Liquidated damages could reach a maximum of 20 per cent of the total investment, estimated to be US\$39 million. Centragas posted a performance bond to support this contingent obligation. If the project was not completed by the 730th day, Ecopetrol would be required to purchase the pipeline from Centragas for US\$196 million multiplied by the percentage of completion. The amount would be reduced by any unpaid liquidated damages. Centragas in turn would be entitled to receive US\$28 million in liquidated damages from Techint if the contractor was responsible for not completing construction by the deadline.

The construction contract with Techint also includes a performance bonus for early completion. Centragas, in turn, will receive similar bonus payments from Ecopetrol if the pipeline is finished ahead of schedule.

Operation and maintenance agreement

Under the O&M agreement Promigas is responsible for operating the pipeline for the entire term of the project according to terms outlined in the TSC on a cost-plus basis, subject to defined budget caps. The O&M agreement contains both liquidated-damage penalties, and incentives to encourage Promigas to run the pipeline efficiently and cost-effectively. The most important incentive is an option for Promigas to purchase 25 per cent of Centragas.

Risk analysis

An analysis of the project risks and how they are mitigated helps to explain why the Centragas notes were originally given investment-grade credit ratings and received a favourable reception from US institutional investors.

Construction risk

Centragas was a construction-period financing, showing how far the capital markets had come towards taking construction risk. However, Ecopetrol effectively guaranteed comple-

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tion by agreeing to buy back the project for an amount that reflected percentage completion. Jacob J. Worenklein, then of Lehman Brothers, said when interviewed:

The way we managed the cash flow in the disbursement process was to make sure we never got ahead of ourselves. If Ecopetrol ever had to buy back the pipeline, there would be enough money to pay back the debt.

If the TSC had been terminated during construction by fault of either Ecopetrol or Centragas, Ecopetrol would have been obliged to purchase the pipeline. If Ecopetrol had been at fault, the purchase price would have been higher. Either way the purchase price, liquidated damages and proceeds from Enron's performance guarantee were expected to provide enough funds to reimburse the bondholders.

According to Stone & Webster, the independent engineer, costs allocated for construction of the pipeline appeared to be sufficient and consistent with the costs of similar pipeline projects elsewhere in South America. Experienced contractors worked under fixed-price, date-certain contracts, with responsibility to pay up to US\$28 million in liquidated damages. The budget allowed contingencies of US\$13.4 million and a substantial package of business interruption insurance was arranged.

Operating risk

The project's operating risk was considered manageable because of the capabilities of the contractors, the tariff structure and the relatively simple technology. Promigas was the leading gas pipeline operator in Colombia, and Enron was to provide management oversight and technical support. The tariff payments under the TSC are structured like a lease obligation, in that 80 per cent of the tariff is paid regardless of performance. Centragas is responsible only for the system transporting the gas, not for gas throughput or the adequacy or quality of gas reserves.

Political risk

According to Standard & Poor's there was local political and community support for the project, helped by US\$4 million that Centragas spent on community awareness and improvements.

Force majeure risk

Security during the construction period was to be provided by the Colombian army. All *force majeure* risks are covered by Ecopetrol and paid through the 'evergreen' emergency fund.

Commodity risk

Natural gas reserves in the Guajira fields are estimated to be 3.3 trillion cubic feet in size. Ecopetrol will be the sole shipper and is committed to supplying quality gas at an adequate pressure. This commitment is important because compression facilities will not be installed in the pipeline. The field pressure of 1,200 pounds per square inch is considered adequate to pressurise the pipeline for operation.

Currency risk

Tariffs are payable in Colombian pesos but denominated in US dollars. The peso is freely convertible and Ecopetrol is committed to indemnify Centragas for all costs or losses incurred in converting payments from pesos to dollars.

Debt-service coverage

Centragas's financial projections, summarised in Exhibit 17.2, provided for debt-service coverage ratios (DSCRs) after taxes to be a minimum of 1.26 and an average of 1.53 over the life of the loan.

In its independent technical review Stone & Webster did a sensitivity analysis to show how DSCRs would be affected by various adverse conditions.

If Centragas was able to deliver only 80 per cent of the gas shipped by Ecopetrol to scheduled redelivery points, DSCRs would be reduced only slightly, to a 15-year average of 1.44 and a minimum of 1.19, because Centragas would continue to receive the permanent availability tariff and probably would be able to claim performance penalties against Promigas, the

Exhibit 17.2

Financial projections prepared by Centragas, 1994

	1996 (US\$)	2000 (US\$)	2005 (US\$)	2010 (US\$)
<i>Revenues</i>				
Permanent availability tariff	52,326	42,620	32,979	25,518
Transport tariff	4,865	5,583	6,631	7,875
Total revenues	57,191	48,203	39,609	33,393
<i>Expenses</i>				
Operation and maintenance	4,865	5,583	6,631	7,875
Insurance and value-added tax	1,515	1,738	2,064	2,452
Performance bond	170	170	170	170
Local taxes	120	95	64	43
Miscellaneous	23	23	23	23
Total expenses	6,692	7,608	8,951	10,562
Earnings before depreciation tax and debt service	50,500	40,595	30,658	22,832
Interest expense	18,318	15,265	8,081	898
Earnings before depreciation tax and principal repayment	32,182	25,330	22,576	21,934
Income taxes	0	4,244	1,872	125
Earnings before depreciation and principal repayment	32,182	21,086	13,490	13,490
Principal payments	0	13,490	13,490	13,490
Net cash flow	32,182	7,596	7,214	12,711
Total DSCRs				
Before tax	2.76	1.41	1.42	1.89
After tax	2.76	1.26	1.33	1.88

operator. A 20 per cent gas-delivery shortfall was an unlikely scenario because most problems disrupting the operation of the pipeline could be corrected in a relatively short time.

A gas loss of 5 per cent and an increase in the O&M budget by 20 per cent were determined to have only a minor effect on DSCRs. Even the combination of a gas delivery shortfall of 20 per cent, a gas loss of 5 per cent, and an O&M budget increase of 20 per cent was found to reduce DSCRs only to an average of 1.41 and a minimum of 1.19.

The worst-case scenario involved operator nonperformance, either because the operator did not act prudently or because of an excusable event such as damage by outside forces. Stone & Webster assumed a failure to provide transport services that was the fault of the operator for a period of one year. This was a highly unlikely event given current tools and techniques for repairing pipelines, and the availability of spare parts. Most pipeline repairs are finished within two to 10 days. An outage of one year would probably be the result of labour strife or a dispute between Centragas and Promigas. The operator is obliged to indemnify Centragas for the resulting reduction in tariff payments. In the analysis Stone & Webster assumed that Promigas would be unwilling to meet these obligations, noting, however, that this was unlikely. In this event Centragas could offset amounts due to Promigas. It also was assumed that Ecopetrol would not exercise its option to purchase the pipeline after repeated performance failures and that Centragas would replace the operator. In this scenario the lowest after-tax DSCR was 1.04 in years 2002–05.

Ratings from Standard & Poor's

Rating for Centragas in 1994

The note offering received a rating of 'BBB-' from Standard & Poor's, thus becoming the first project financing in Latin America to receive an investment-grade rating. The rating allowed Lehman Brothers to market the bonds to US insurance companies and pension funds, which, for actuarial reasons, are natural buyers of long-maturity paper. Access to a wide investor market enabled Lehman Brothers to structure the financing with a 16-year final maturity and a 10-year average life. Centragas's bonds have the longest maturity of any bonds currently outstanding by the Republic of Colombia or its state enterprises, and represent the longest-dated bond issue placed in the 1990s for any borrower in an emerging market, with the exception of well-known corporations such as Pemex.

Standard & Poor's pointed out in its original project analyses that Enron was able to borrow excess funds from Centragas during both the construction and operating phases, and that the project was therefore exposed to Enron's credit rating. If Enron's credit rating fell below 'BBB-', it was required to secure a letter of credit to support the Centragas rating. The agency pointed out that Enron could have difficulty arranging a letter of credit to support an investment-grade rating at a time when its own credit rating was deteriorating rapidly.

Ratings for Colombia and Ecopetrol in 1994

In 1994 Standard & Poor's based its initial 'BBB-' foreign currency debt rating for Colombia on its long record of prudent financial management, its moderate economic growth and the resilience of its democratic political institutions. Equity capital inflows and exports had led to recent GDP growth of 5 per cent per year. Despite increases in security-related spending, Colombia had posted a public-sector surplus. The country's net external debt burden had been

manageable at about 90 per cent of exports, and public-sector debt had dropped from 100 to 40 per cent of exports in the previous five years. However, the inflation rate, at 20 per cent, and continued violence and corruption caused by powerful drug cartels and guerrilla groups still presented challenges.

Ecopetrol's 'BBB-' senior unsecured debt rating from Standard & Poor's was based on its importance to the Colombian economy, its key public policy role, and its close operational and financial ties to the government. With assets of US\$4.3 billion it was the largest corporation in the country. The agency considered its capitalisation and financial performance satisfactory. Recent discoveries of large reserves in the Cusiana and Cupiagua fields, while presenting short-term managerial challenges, were expected to fortify Ecopetrol's role in the Colombian economy over the long term. Although the company had complete authority and responsibility for exploration and development of the country's hydrocarbon resources, and was the sole supplier of fuel to the domestic market, its debt obligations were not guaranteed by the Republic of Colombia.

Rating for Centragas affirmed in 2001

In December 2001 Standard & Poor's noted in an analysis that the Centragas pipeline had been operating according to specifications with no major interruptions during the past six years. DSCRs had exceeded base-case projections. The average amount of gas transported in 2000 had been almost 140 million cubic feet per day, significantly higher than the average from the beginning of operations up to May 1999, which had been 73 million cubic feet per day. The agency noted that Ecogas had recently added new compression capacity and, as a result, pipeline usage was approximately 100 per cent.

Centragas's US parent, Enron, filed for bankruptcy in December 2001. Enron had a large number of overseas assets in Latin America, Europe and Asia. This factor alone ensured that the bankruptcy proceedings would be very complex. However, shortly after Enron filed for bankruptcy Standard & Poor's affirmed its 'BB' foreign currency rating on Centragas's US\$172 million senior secured notes, albeit with negative implications.

The reason given for the negative implications was a feature in the project indenture that allowed Enron to borrow funds from Centragas during the operating phase of the project. At the time Centragas had loans of US\$43.6 million outstanding to Enron. The agency noted that, while funds for these loans could have come from the debt-service reserve account, the operating account or the distribution account, all funds for the current loans had come from the distribution account. Enron did not owe funds to any of the other accounts. After assessing these loans and the prospects of their being collected the agency concluded that Centragas's exposure to Enron did not affect its credit rating. This conclusion was based on four factors.

- The loans in question had been made from the distribution account. Balances in that account are excess funds destined for equity holders as dividends or loans. The funds were not earmarked for reinvestment in the project.
- Even though the indenture gives Centragas the right to lend, both the indenture and the Cash Management Agreement require that the borrower have an investment-grade credit rating. When Enron lost its investment-grade status, Centragas was no longer required to lend it additional funds.

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- Centragas was structured as a single-purpose entity with bankruptcy-remote provisions that provided protection from Enron's bankruptcy proceedings.
- Enron had only a minimal effect on the project's operation and maintenance, which were the responsibility of project personnel and a Colombian subcontractor.

Standard & Poor's rating incorporated two important risks, among others.

- Repayment of debt was based solely on the fixed monthly tariffs, and other cash inflows and outflows, as defined in the project contracts. The financial obligor was Ecopetrol, which, like Centragas, had a BB credit rating with a negative outlook.
- Centragas did not have recourse to the Republic of Colombia, Ecogas or Enron.

In the agency's opinion these risks were offset by a number of strengths.

- The project was strategically important to Colombia.
- The pipeline had been operating successfully since commercial construction was completed in February 1996 and transported most of the natural gas to the Barrancabermeja station.
- The projected DSCR of 1.65 was strong for the project's rating category.
- Current pipeline usage was well above the initially defined capacity but was at about the pipeline's maximum rate.
- At the time of the scheduled termination of the TSC, in 2011, Ecogas (replacing Ecopetrol) would have the option to purchase the pipeline for a nominal sum and therefore had an interest in making sure that the project did not run into financial difficulty in the meantime.
- The project's contracts closely matched expenses against revenues and required Ecopetrol to assume a large portion of the uncontrollable risks, such as currency-exchange-rate and *force majeure* risks.
- Projections showed that even under adverse circumstances cash flow adequately covered debt service.
- The project's initial high leverage had been reduced, with debt declining from 80 per cent of capitalisation to 54 percent.

Lessons learned

See Chapter 18 for lessons learned from the Centragas and TransGas case studies.

¹ This case study is based on articles in the financial press, as well as an interview with, and a speech by, Jacob J. Worenklein, then Managing Director and Head of Global Project Finance at Lehman Brothers, and now Managing Director and Head of Global Project and Sectorial Finance at Société Générale.

TransGas, Colombia

Type of project

Natural gas pipeline.

Country

Colombia.

Distinctive features

- Build-operate-maintain-and-transfer (BOMT) project.
- Bond offering prior to construction.

Description of financing

The financing comprised US\$240 million in senior secured notes due in 2010.

Project summary¹

The TransGas project is similar to the Centragas project (discussed in Chapter 17 of this volume). Both originated in the Colombian government's planning for the natural gas industry in the early 1990s. The aim of the TransGas project was to provide a gas distribution grid in central and southwestern Colombia. The TransGas notes, which were offered 11 months after the Centragas notes, show how the capital market's willingness to bear project risk had increased in less than one year. There were two important differences, however. First, Centragas was financed when construction was near completion, but TransGas was financed before construction. Second, while Centragas is subject to a 20 per cent tariff reduction for a decline in its performance rate, TransGas is subject to an unlimited rate reduction.

Background

Centragas formed the first phase of the Colombian government's plan to link the gasfields of the Atlantic coast with consumers in the large population centres on the other side of the Andes. TransGas forms the second phase.

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TransGas was incorporated with the purpose of building, owning, operating, maintaining and transferring a project with three main parts:

- a main natural gas pipeline running for about 345 kilometres (km) between the city of Mariquita in the central region of Colombia and the city of Cali in the southwest, and designed to deliver about 234 million cubic feet per day of natural gas;
- 47 lateral pipelines, totalling about 430 km in length, to link the pipeline to 49 delivery points in 47 municipalities; and
- metering stations to measure the amounts of gas delivered to industrial customers and distribution systems.

The map in Chapter 17 (Exhibit 17.1) shows the locations of both the Centragas and the TransGas pipelines.

In June 1997 the Colombian government approved the establishment of Empresa Colombiana de Gas (Ecogas) to assure that gas production and transport functions would be segregated and administered by separate entities. As a result all gas producers and consumers have equal access to transport capacity on the national gas grid. Both Ecogas and Ecopetrol are under the control of the Ministry of Mines and Energy. Ecogas is responsible for operating and managing the gas pipeline network, developing the pipeline infrastructure, coordinating gas transport, and safeguarding the security of the system.²

Ownership and contractual relationships

Ownership and main activities

The ownership of TransGas is as follows:

- TCPL Marcali (a subsidiary of TransCanada Pipelines) 34 per cent;
- BP Colombia 20 per cent;
- GasOriente 14 per cent;
- Global Environment Emerging Markets Fund 10 per cent;
- Fluor Colombia 5 per cent;
- Spie Jersey (a subsidiary of Schneider SA) 3.75 per cent;
- Ismocol 1.25 per cent; and
- other Colombian investors 2 per cent.

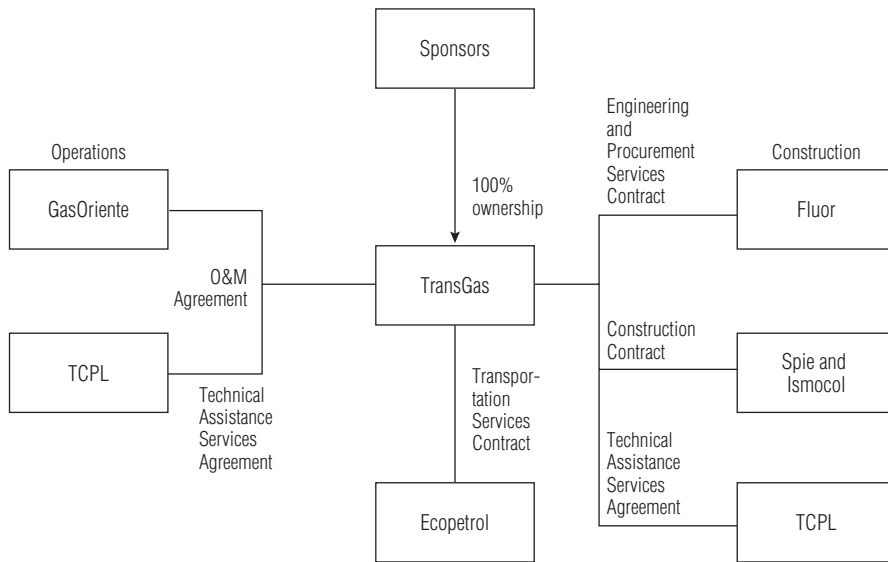
TransGas operates the pipeline with technical assistance from TCPL Marcali. GasOriente is a subcontractor for operations and maintenance support. Fluor Colombia and its affiliate Fluor Latin America provided procurement and engineering services. Spie-Capag and Ismocol were the construction contractors. Spie-Capag had substantial experience in constructing pipelines in Colombia and 40 other countries. Ismocol had worked with Spie Capag on pipelines in Colombia's Cusiana oil field. Ownership and contractual relationships for the project are illustrated in Exhibit 18.1.

The transport services contract

As with Centragas, payments from Ecopetrol will be TransGas's primary source of revenues for payment of the notes. The transport services contract (TSC) provides that Ecopetrol will

Exhibit 18.1

Ownership and contractual relationships



pay a tariff that is calculated for a given month by multiplying a base monthly amount by the performance rate for that month. Again as with Centragas, the full amount of the tariff is payable without regard to the volume of gas that Ecopetrol delivers to the pipeline or Ecopetrol’s ability to produce and market its gas reserves. However, in contrast to Centragas, where the tariff reduction is limited to 20 per cent, the tariff reduction for TransGas is not limited at all. In this case the base tariff is subject to reduction for declines in the performance rate, including declines caused by *force majeure* events. To the extent that a *force majeure* event affects the performance rate TransGas is entitled to an extension of the TSC as compensation. During a defined ‘special risk event’, such as a terrorist or guerrilla attack, TransGas is entitled to receive the full amount of the tariff. However, if TransGas fails to restore service within the permitted repair period, the performance rate for the purpose of tariff calculation is reduced by 20 per cent each day after the permitted repair period, so that in five days the tariff is reduced to zero until service is restored. Ecopetrol may terminate the TSC with 20 days notice if TransGas fails to restore the pipeline within 60 days after a special risk event, or a permitted repair period that is extended by mutual consent.

Ecopetrol could have terminated the TSC before the completion of the pipeline because of unsatisfactory performance by TransGas, but would have been required to purchase the pipeline for the construction cost multiplied by the percentage completion as determined by an arbitration engineer, initially Stone & Webster. The difference between the value of the performance bond and any liquid damages would have been subtracted from that amount.

Financing

The total cost of the pipeline, including development, construction, capitalised interest, contingencies, and testing and startup, was estimated to be US\$307 million. This included direct pro-

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ject costs, a cash reserve for contingencies and construction-phase interest. It was funded by a US\$67 million equity contribution from the sponsors and a US\$240 million senior secured note issue. The notes, issued in December 1995, mature in 2010. Their average life is 10.4 years.

The bond indenture required TransGas to maintain a debt service reserve account equal to 12 months' debt service obligations for the construction phase and the first year of the throughput phase. After that the required amount declined to six months' debt service plus a contingency subaccount of US\$5 million.

Risk analysis

A summary of contractual risk absorption is displayed in Exhibit 18.2.

Construction risk

With Centragas construction was near enough to completion at the time the notes were issued that proceeds from the buyout provision of the TSC plus project equity were sufficient to

Exhibit 18.2

Summary of contractual risk absorption

• Denotes the party that absorbs risk

	<i>Sponsor</i> <i>Enron</i>	<i>Contractor</i> <i>Tenco</i>	<i>Purchaser</i> <i>Ecopetrol</i>	<i>Operator</i> <i>Promigas</i>	<i>Insurers</i>	<i>Note-</i> <i>holders</i>
<i>Construction</i>						1
Force majeure risk	•		•		•	1
Delay	2	•	•		•	1
Cost overrun	•	•	•			
Performance	•	•				
<i>Operations</i>						
Political violence or guerrilla attacks	3		•			
Force majeure risk					•	4
Currency convertibility or devaluation			•			
Change in laws, tax, environmental			•			
Change in laws, labour	•					5
Ecopetrol payment risk	•					•
Operating performance	•			•		• 6
Gas reserves production risk			•			
Volume throughput risk			•			
Gas marketing risk			•			

Notes

1. Noteholders are shielded by substantial contingency and overrun equity.
2. Responsible for delay associated with owner-related items.
3. Tariff reductions under certain circumstances.
4. Noteholders are somewhat shielded by the substantial size of the project's liquidity reserves.
5. Noteholders are shielded by indemnity from the sponsors.
6. Noteholders are somewhat shielded from operating risk by termination provisions that provide for a buy-out.

repay the note. With TransGas construction had not yet begun when the notes were issued. The TSC was the noteholder’s primary protection against construction risk. Turnkey contracts from Spie and Fluor provided for US\$60 million in liquidated damages for delay or unsatisfactory performance. A US\$35 million performance bond in favour of Ecopetrol was backed by the sponsors and their corporate parents. The US\$307 million estimated project cost included an initial liquidity deposit that served as a cash contingency reserve. The sponsors have pledged US\$26 million in contingent equity to cover possible cost overruns. If construction had not been satisfactorily completed within eight months of the initial deadline, Ecopetrol was committed to buy the pipeline for the estimated construction cost multiplied by the percentage of completion less unpaid liquidated damages.

Operating risk

The operating risk of the project is mitigated by several factors. TCPL and GasOriente are experienced operators. As with Centragas, the tariffs are payable regardless of throughput, the only customer is Ecopetrol, which is a ‘BBB-’ credit, and TransGas is not responsible for the adequacy or quality of gas reserves, or for marketing.

Exhibit 18.3

Summary of key differences between TransGas and Centragas

	<i>Centragas</i>	<i>TransGas</i>
<i>Transportation Service Contract</i>		
Construction risk	Construction near enough completion that TSC buy-out provision plus project equity was sufficient to repay notes	Construction had not begun
Performance risk	Tariff reduction limited to 20%	Tariff reduction not limited
<i>Force majeure</i> risk	Tariff paid during <i>force majeure</i> which includes guerrilla and terrorist acts	Contract extended for <i>force majeure</i> . Base tariff paid in the event of terrorist or guerrilla acts
Change-in-law risk	Tariff adjusted for any change in Colombian law	Tariff adjusted only for changes in Colombian environmental and tax laws
<i>Financing</i>		
After-tax debt service coverage	Average 1.53x Minimum 1.26x	Average 1.49x Minimum 1.36x
Debt service reserve account	Six months to be built up from project cash flows	Fully funded for 12 months during construction and first operating year; funded thereafter for six months plus US\$5 million from cash flow
Cash distribution test	1.20x	1.25x
<i>Sovereign rating of Colombia at time of issue</i>		
S&P	BBB-	BBB-
Moody’s	Ba1	Baa3
Duff & Phelps	BBB	BBB

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Force majeure risk

Political *force majeure* risks, in addition to guerrilla or terrorist attack risks, are covered by Ecopetrol. More general *force majeure* risks are mitigated by business interruption insurance and the size of the liquidity reserves.

Currency risk

The base tariff has a US dollar component and a Colombian peso component but will be paid entirely in pesos. However, TransGas has the right to convert the US dollar-denominated portion of the base tariff into dollars, with Ecopetrol compensating TransGas for any exchange losses. Exhibit 18.3 summarises the differences between the TransGas and Centragas projects.

Other issues

Insurance

As with Centragas, the TSC for TransGas required the company to maintain builder's risk insurance during the construction phase and permanent property insurance, covering replacement costs, during the operating phase. Unlike Centragas, however, TransGas was required to carry business interruption insurance as well.

Land rights

One of the obstacles to completing the pipeline and the smaller lateral pipelines on time was negotiating rights of way in the Cauca Valley, north of Cali, where many wealthy Colombians own land. Some of the land in question was reportedly held through third parties by drug traffickers, who adamantly opposed any intrusion onto their land. In many cases Ecopetrol had to declare eminent domain in order to give TransGas access to the land, but that was a time-consuming process.³

Construction challenges

The engineering, procurement and construction contractors faced numerous challenges related to environmental engineering and permit requirements, the difficulty of the terrain in mountainous areas, and the logistics and procurement efforts required to provide pipes and other materials. The contractors had to employ appropriate construction methods to protect several fragile ecosystems along the route and to bury the pipeline more than 2 metres deep in agricultural areas, so that it would not be damaged by mechanised agricultural equipment. The pipeline crosses 10 rivers and about 100 streams, the largest being the Cauca River, while its elevation ranges from about 460 metres above sea level to more than 3,660 metres above sea level as it crosses the Cerro Bravo range of the Andes. In some mountainous areas the contractors had to bring in pipes by helicopter or cable. At six locations suspended bridges were constructed for aerial pipeline crossings of up to 215 metres because ravines were too deep for conventional pipe-laying operations. Equipment skids were designed to prepackage meters, valves and other equipment, and minimise the installation effort on site.

Despite these challenges the main line, the lateral lines and the metering stations were completed on schedule in December 1996. Gas delivery through the pipeline began in August

1997. Employing more than 4,000 Colombian workers and 30 French engineers, the project took about 10 million man-hours.⁴

The destructive potential of leftwing guerrillas also has been a concern for all foreign investors, particularly oil companies, at various periods since the mid-1960s. However, gas operators considered themselves somewhat less vulnerable because their product was consumed locally rather than exported.

Credit ratings

Moody's assigned a 'Baa3' rating to TransGas's US\$240 million note issuance in October 1996. The rating was supported primarily by the contractual commitments with Ecopetrol, but was constrained by the 'Baa3' sovereign ceiling for Colombia's foreign-currency debt. The agency's analysis noted that the contract with Ecopetrol covered all costs and expenses, including capital, financial, operating and administrative costs as well as taxes and profits. TransGas had no involvement with customers' contractual commitments for the amount or price of the commodity and the amount of the tariff did not depend on the amount of gas flowing through the pipeline. The tariff would continue in the event of a disruption, such as a guerrilla attack, as long as TransGas re-established operations within the allowed time period.

In April 1999 Standard & Poor's reaffirmed its 'BBB-' rating on the TransGas notes. Among the risks that the agency cited were:

- dependence on payment of the monthly offtake tariff by Ecopetrol;
- low debt service coverage for an investment-grade credit rating;
- high leverage, with debt equal to 72 per cent of capitalisation; and
- low need for pipeline capacity in years of high rainfall and high output from hydroelectric plants.

Offsetting these risks the agency noted that:

- the pipeline was substantially complete and had been operating since August 1997 with availability close to 100 per cent;
- Ecopetrol had paid the transport tariff on time and in full since the beginning of operations;
- Ecopetrol was required to assume a large portion of certain uncontrollable risks, such as currency exchange risk, changes in inflation rates and revisions in environmental or tax laws;
- certain *force majeure* risks assumed by TransGas were hedged by insurance;
- the project sponsors were assuming change-of-law risks not covered by Ecopetrol;
- the project was strategically important to Colombia; and
- the project sponsors had strong economic incentives to operate the pipeline successfully.

In August 1999 Moody's reduced its 'Baa3' rating on the TransGas notes by two notches, to 'Ba2', following its reduction of Colombia's sovereign rating to 'Ba2'. In September Duff & Phelps reduced its rating on the notes from 'BBB' to 'BBB-', also after having downgraded Colombia, on the basis of the deterioration in its public finances, and having downgraded Ecopetrol at the same time.

In January 2000 Standard & Poor's put its rating on the notes, then 'BB+', on CreditWatch after TransCanada Pipelines announced that it was looking to sell its noncore assets, including its overseas investments, and concentrate on its business in North America. A feature in the TransGas trust indenture provided that, if TransGas reduced its ownership below 25 per cent, the notes would be redeemable at the option of any noteholder at par plus accrued interest, plus a 'make whole' premium. If noteholders had exercised their right to redeem their notes, TransGas would have needed to raise sufficient funds to honour its repayment obligation, and a payment default could have occurred if TransGas was not able to raise the funds.

Also in January 2000 Duff & Phelps reaffirmed its 'BBB-' ratings on both TransGas and Ocesa (see the previous chapter of this volume). While TransCanada Pipelines was involved in both projects as a shareholder and technical services provider, the agency did not believe that the sale of its ownership stake would have a material impact on the operation of either one. If TransCanada wanted to sell its entire interests in either of those projects, it would require approvals from senior lenders and from Ecopetrol, the throughput offtaker. The issue was resolved later when TransCanada stated that it did not intend to sell its interest in TransGas. Duff & Phelps further downgraded TransGas to 'BB+' in March 2000 and then to 'BB' in March 2002, in conjunction with continued downgrades to the sovereign and to Ecopetrol, as the economic and political situation continued to deteriorate. (Colombia's economy and its sovereign credit ratings are discussed in detail in Chapter 3 of *Volume I – Power and Water*, which concerns the TermoEmcali power plant.)

Lessons learned

Both Centragas and TransGas were projects on which risks were mitigated through substantial credit support from Ecopetrol. Both were therefore widely seen as possible models for future pipeline project financings where minimising costs is a high priority for the shippers, and the shippers in turn are prepared to assume a significant portion of the project risks.

Ecopetrol did not guarantee these projects and Ecopetrol's obligations are not guaranteed by the Colombian government. However, because the policy of expanding natural gas output and exports represents one of the Colombian government's economic priorities, the government provided full support to the transaction short of an actual guarantee. In the case of Centragas Lehman Brothers was able to convince Standard & Poor's that the project credit was underpinned by Ecopetrol and that the credit rating of the Centragas notes should be on a par with Ecopetrol's rating.

Jacob J. Worenklein, then of Lehman Brothers (and now of Société Générale), believed that structured finance concepts and principles can be applied to a large number of infrastructure projects, particularly export projects that generate reserves in US dollars or some other hard currency. Examples include pipeline projects, securitisation of receivables or production payment loans, and offshore MTBE (methyl tertiary butyl ether) projects. In the evaluation of capital market access and acceptability, risks can be identified, evaluated and mitigated as they were with Centragas and TransGas.

To mitigate construction risk these projects had sponsor guarantees; fixed-price, date-certain contracts with strong creditworthy contractors; and contractor guarantees for the physical completion of the projects. Operating risks were overcome by strong operators, significant sponsor equity investments and proven conventional technologies. Political risk was mitigat-

ed by strong sovereign support. With other projects, particularly in countries with credit ratings below investment grade, political risk insurance is often considered necessary.

Centragas and TransGas were not concerned with sourcing or selling natural gas. However, with some other projects, such as power plants, sponsors would at least want to try to structure long-term offtake contracts with creditworthy offtakers, committed volume and some type of price protection, such as a fixed price or a floor price with a net back arrangement. This is not always possible, and project sponsors, investors and lenders are learning to live with an increasing degree of market risk.

¹ This case study is based on an interview with, and a speech by, Jacob J. Worenklein, then Managing Director and Head of Global Project Finance at Lehman Brothers, and now Managing Director and Head of Global Project Finance at Société Générale, as well as articles in the financial press.

² Brooks, Laura, 'New Colombia Gas Firm to Get Go-ahead', *Platt's Oilgram News*, 18 June 1997, p. 1.

³ 'Columbia Natural Gas: Right of Way Problems', *Emerging Markets Report*, 22 August 1996, p. 3.

⁴ 'Challenges Met in Building Record Elevation Pipeline', *Pipeline & Gas Journal*, 1 August 1997, p. 38.

Oleoducto Central SA (Ocensa), Colombia

Type of project

Pipeline.

Country

Colombia.

Distinctive features

- Financed in four tranches to accommodate wide range of shareholders' credit ratings.

Description of financing

Financing for the pipeline was provided by US\$608 million of equity, including US\$104 million pre-completion accrued returns, and US\$1.417 million senior debt in four tranches, each arranged by one of the principal shippers and owners of the pipeline.

Project summary¹

Oleoducto Central SA (Ocensa) is a project company established to acquire, expand and operate a pipeline that carries crude oil through Colombia, from the Cusiana and Cupiagua oil-fields across the Andes to the port of Covenas on the Caribbean coast, where it is largely exported to refineries on the Gulf coast and the eastern seaboard of the United States. At the time of the project financing, in 1995, Ocensa was owned by subsidiaries of Ecopetrol, the Colombian state-owned oil company, Totalfina, British Petroleum and Triton Energy Corporation, a Dallas-based oil exploration and development company. The particular challenge of this project was to arrange a multitranche debt financing in which there was a considerable range in the credit ratings of the obligors (as discussed below).

Despite recent difficulties in Colombia, Fitch has maintained an investment-grade credit rating for Ocensa's bonds, in contrast to its rating for TransGas (the subject of the next chapter of this volume), which has followed the sovereign and the Ecopetrol/Ecogas ratings. While TransGas serves primarily the domestic market, Ocensa transports oil for export. The lenders can take possession of Ocensa's oil and sell it if Ecopetrol does not pay the tolling fee.

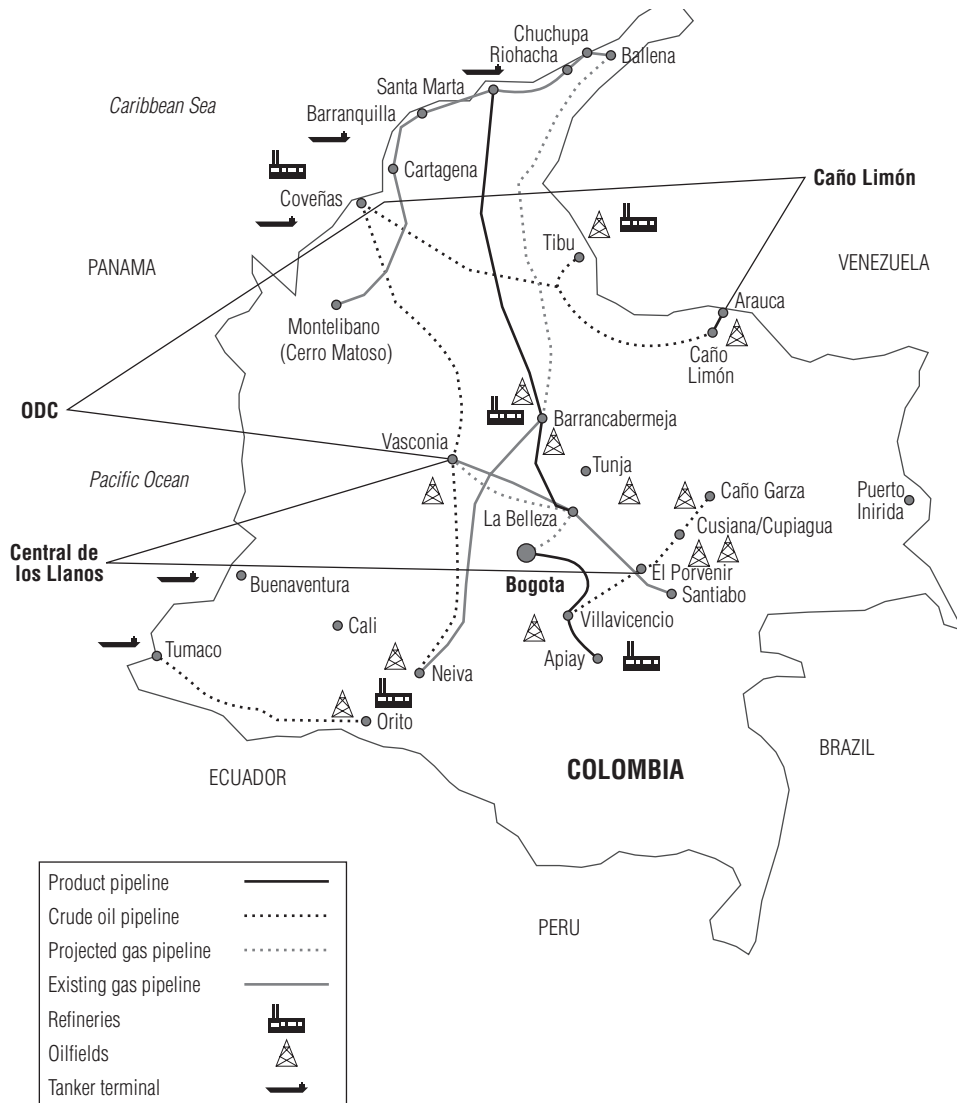
Background

Company form and purpose

Ocensa is a capital stock company (*sociedad anónima*) with limited liability that was organised under the laws of Colombia in December 1994 to acquire, expand and operate the Oleoducto Central pipeline. As shown on the map in Exhibit 19.1, the Oleoducto Central runs for approximately 800 kilometres (km) from the Cusiana and Cupiagua oil fields, in the eastern plains of Colombia, across the Andes to the port of Covenas on the Caribbean coast. The Cusiana and Cupiagua oilfields produce high-quality oil that is

Exhibit 19.1

Route of the Oleoducto Central



Source: Prospectus for Project Bonds.

Exhibit 19.2

Estimated gross reserves in Cusiana and Cupiagua, 1994 and 1995

	<i>Cusiana</i> <i>(31 December 1994)</i>		<i>Cupiagua</i> <i>(31 May 1995)</i>	
	<i>Liquids (mn)</i>	<i>Natural gas (Bcf)</i>	<i>Liquids (mn)</i>	<i>Natural gas (Bcf)</i>
Proved and developed	483	153	0	0
Proved but undeveloped	402	0	381	0
Total proved	885	153	381	0
Probable	243	2,090	242	794

Source: Prospectus for Tranche A Debentures.

exported mostly to refineries in the United States. The Oleoducto Central operates alongside, and partly replaces, the Oleoducto de Colombia (ODC) and Central Llanos pipelines, which carry 200,000 barrels of crude oil per day. The Oleoducto Central has substantially increased the current pipeline capacity of central Colombia. The existing pipeline facilities were acquired in 1995. Construction of new pipeline facilities was begun in early 1995 and completed in 1998.

Cusiana and Cupiagua oilfields

The Cusiana and Cupiagua oilfields contain some of the largest reserves of oil discovered in the western hemisphere since the discoveries of reserves in the Prudhoe Bay fields in Alaska. DeGolyer & MacNaughton, a firm of independent oil engineers, have compiled estimates of the reserves in the fields, as shown in Exhibit 19.2.

As a result of association contracts with Ecopetrol and subsequent contractual arrangements, the ownership percentages of oil produced from these fields are as follows:

- Ecopetrol 50 per cent;
- BPEC 19 per cent;
- TOTAL Exploratie 19 per cent; and
- Triton Colombia 12 per cent.

Ecopetrol is the state-owned oil company responsible for the exploration and exploitation of oil in Colombia. It is the largest company in Colombia in terms of assets, sales, net worth and employees. BPEC and TOTAL Exploratie are indirect subsidiaries of British Petroleum and Totalfina, both major multinational oil companies. Triton is a Dallas-based oil exploration and development company.

As of April 1998 the partners had spent US\$6 billion developing the Cusiana and Cupiagua fields. Numerous problems delayed the beginning of production, including threats from guerrilla groups, labour problems, a malfunctioning compressor, and difficulties related to the upgrade of Cusiana's central production facilities and the construction of the Ocesa pipeline. Output was scheduled to reach 500,000 barrels a day at the end of 1997, but it did not reach that level until the end of 1998.

Ownership of Ocesa

The percentage interests of Ocesa's shareholders are as follows:

- Ecopetrol 25.0 per cent;
- BP Pipelines 15.2 per cent;
- TOTAL Pipeline 15.2 per cent;
- Triton Pipeline 9.6 per cent;
- IPL Enterprises 17.5 per cent; and
- TCPL International 17.5 per cent.

BP Pipelines and TOTAL Pipeline are indirect subsidiaries of British Petroleum and Totalfina. IPL Enterprises is an indirect subsidiary of IPL Energy, Inc., and TCPL International is an indirect subsidiary of TransCanada Pipelines. IPL Energy and TransCanada Pipelines are experienced Canadian pipeline operators with an ownership interest in CITCOL, the pipeline operator.

In 1997 Triton sold its 9.6 per cent interest in Ocesa to private investors because of a cash squeeze, but it repurchased the interest in 2000. The company itself was purchased by Amerada Hess in 2001.

In December 1999 TransCanada Pipelines announced its intention to focus on its operations in North America and divest its noncore assets, including overseas investments such as its minority interests in TransGas and Ocesa. Ocesa had technical services arrangements with both TransCanada affiliates and Enbridge, another Canadian pipeline company. In May 2000 Enbridge announced its agreement to buy TransCanada's 17.5 per cent equity interest in Ocesa and its 50 per cent interest in CITCOL, for US\$107 million. As a result Enbridge was to become a 35 per cent owner of Ocesa and the sole owner of CITCOL. Subsequently Ecopetrol exercised an option under the ownership agreement to purchase part of a selling shareholder's stake. In September 2000 Enbridge bought a 7.2 per cent interest and Ecopetrol bought a 10.3 per cent interest in the pipeline from TransCanada.

Pipeline expansion

The route of the Oleoducto Central is shown in Exhibit 19.1. It consists of four segments:

- the Cusiana–Porvenir segment, about 33 km long;
- the El Porvenir–Vasconia (Central Llanos) segment, about 280 km long;
- the Vasconia–Covenas segment, about 480 km long; and
- the 'ODC loop' from Vasconia to Covenas, which runs parallel to, and is interconnected, with the Vasconia–Covenas segment of the existing ODC pipeline.

The terrain over which the Oleoducto Central has been constructed varies greatly. Starting at an elevation of about 400 metres above sea level, the route rises to a maximum elevation of about 3,000 metres between Cusiana and La Belleza, after which it descends from the mountains into Vasconia, which is about 130 metres above sea level. Downstream of Vasconia the route is generally flat to the Covenas terminal, except where the pipeline crosses the Serrana de San Lucas, which has a maximum elevation of about 750 metres above sea level.

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Exhibit 19.3

Oleoducto Central pipeline capacity (average number of barrels a day)

<i>Segment</i>	<i>Existing</i>	<i>Oleoducto Central Throughput capacity</i>	<i>Design capacity</i>
Cusiana–El Porvenir	185,000	588,000	500,000
El Porvenir–Vasconia	210,000	654,000	556,000
Vasconia–Covenas			
ODC pipeline	230,000		
ODC loop	341,000	290,000	

Source: Prospectus for Tranche A Debentures.

The Oleoducto Central has substantially increased the pipeline capacity available to transport crude oil, as shown in Exhibit 19.3.

The operator

Ocesa entered into a Technical Services and Management Agreement with CIT Colombiana SA (CITCOL), a capital stock company (*sociedad anónima*) with limited liability, organised under the laws of Colombia. The shareholders of CITCOL are indirect wholly owned subsidiaries of IPL Energy and TransCanada. Under the Technical Services and Management Agreement CITCOL is required to provide Ocesa's operating division with the necessary expertise, management skills and manpower to operate the Oleoducto Central under the same standards of performance that would apply to a prudent pipeline operator in Canada or the United States, modified to reflect operating conditions in Colombia. The agreement has an initial term of 15 years, which can be extended by Ocesa for two terms of five years each. It contains payment incentives relating to performance objectives, including bonuses for the reduction of operating costs.

Project cost

The budgeted cost of developing and constructing the Oleoducto Central was

Exhibit 19.4

Estimated uses of funds

	<i>(US\$ million)</i>
Capital expenditures	
Pipe and pipelaying	567.0
Supervisory control and data acquisition system	22.0
Contingencies	166.0
Engineering	30.5
Project management and supervision	29.0
Third-party contracts	6.5
Acquisition of land, legal services and right of way	29.0
Pump stations	123.0
Covenas terminal	118.0
Community relations	7.0
Health, safety, environment and quality support	5.0
Security	59.0
Construction communication	8.9
Aviation support	13.0
Insurance	10.0
Commissioning	3.0
Value-added tax	59.0
Freight	14.1
Total capital expenditures	1,270.0
Inflation during construction	132.0
Asset purchases under promissory contracts	300.0
Interest during construction	323.0
Total uses of funds	2,025.0

Source: Prospectus for Tranche A Debentures.

US\$2,025 million, including escalation, contingencies and interest during construction (see Exhibit 19.4).

Financing plan

Ocensa financed 30 per cent of the US\$2,025 million project cost – or US\$608 million – with equity contributions and ‘pre-completion accrued returns’ (profits from pipeline traffic during construction that are not distributed to shareholders). The remaining 70 per cent – US\$1,417 million – was financed with senior debt raised from several sources, including the capital markets; commercial banks, with and without the support of export credit agencies (ECAs); and the ‘initial shippers’, which means Ecopetrol, BPEC, TOTAL Exploratie and Triton Colombia.

Organisation and contract relationships

The organisation and contract structure is illustrated in Exhibit 19.5. The four senior lenders are parties to senior debt agreements with Ocensa, governed by the common security trust agreement. Each of the shareholders executed the Oleoducto Central agreement, equity subscription agreements, a political events agreement, a dividend trust agreement and a voting trust agreement with Ocensa. Ecopetrol has executed a share transfer agreement with IPL Enterprises and TCPL International. Ocensa executed equity subscription performance guarantee agreements with the parents of the five shareholders, as well as a transport agreement and an advance tariff agreement with Ecopetrol, BPEC, TOTAL Exploratie and Triton Colombia.

Oleoducto Central agreement

The Oleoducto Central agreement establishes the obligations of Ocensa and its shareholders with respect to the financing of the acquisition, continuing development and construction of the Oleoducto Central, and the operation and governance of Ocensa.

Political events agreement

The political events agreement defines terms and conditions under which shareholders may suspend (subject to reinstatement) or terminate their obligations to make equity contributions on a timely basis in the event of expropriation, political violence or convertibility or transfer restrictions.

Equity subscription performance guarantee agreements

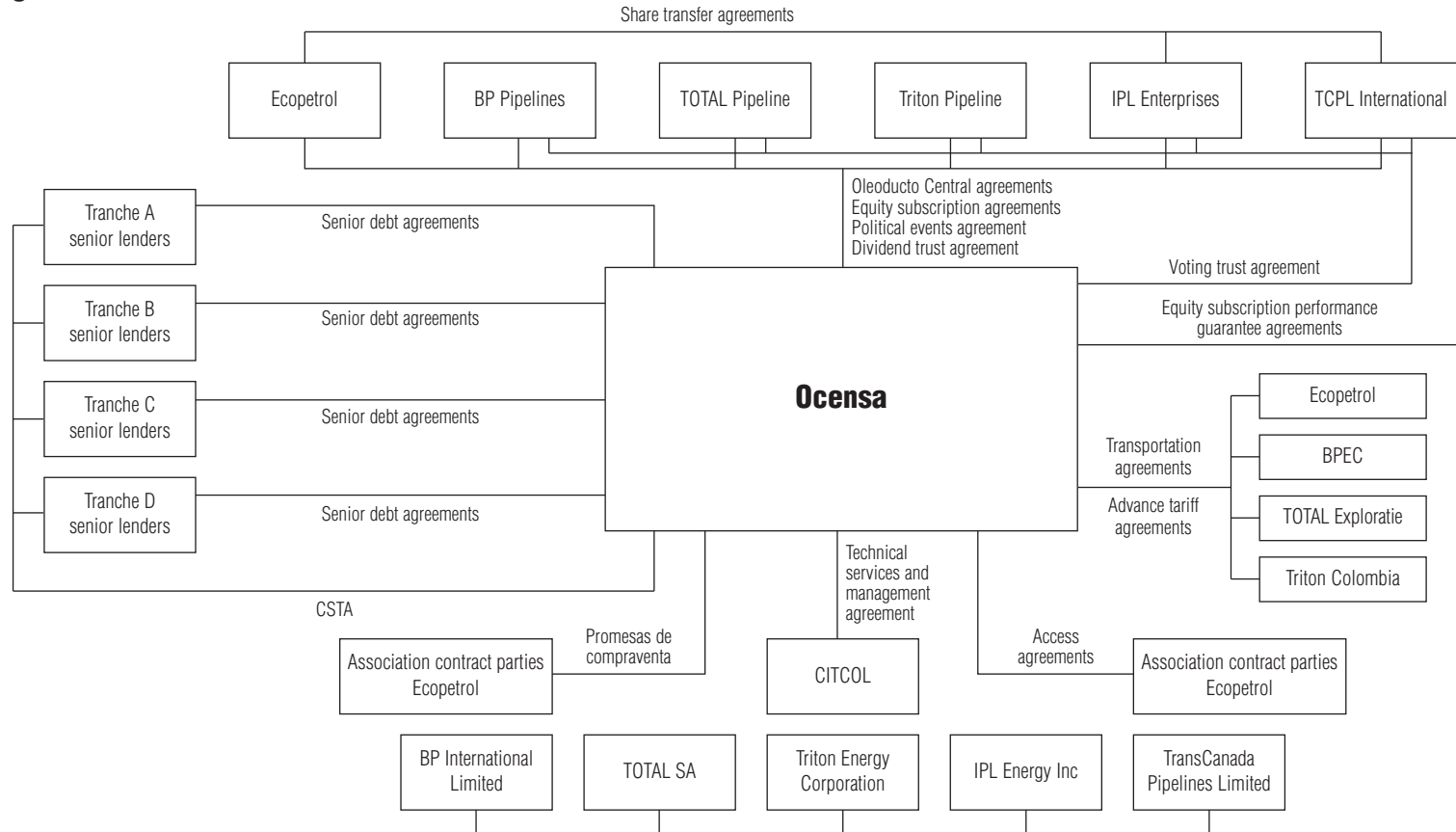
Under the equity subscription performance guarantee agreements the parents of each of the shareholders guarantee their subsidiaries’ obligations under the equity subscription agreement.

Share transfer agreement

The share transfer agreement gives Ecopetrol the right, but not the obligation, to purchase the shares held by IPL Enterprises and TCPL International at the end of a defined equity amortisation period, or no later than July 2022.

Exhibit 19.5

Organisation and contract structure



Common security trust agreement

The common security trust agreement (CSTA), signed by Ocesa, the CSTA trustee and the senior debt holders, contains common terms with respect to each senior debt tranche and across tranches, including common covenants, representations and warranties, conditions for drawdowns, events of default, and remedies for senior lenders. It provides for limited recourse and assigned rights, as described below.

Subscription agreements

The shareholders of Ocesa entered into separate subscription agreements that severally obliged them to make equity contributions totalling approximately US\$608 million and to achieve a ratio of senior debt to equity of 70:30. The obligations of each shareholder under its subscription agreement are supported by a performance guarantee issued by its parent or affiliate. To the extent that a shareholder fails to make its required equity contribution, or is unable to raise a defined amount of senior debt for its initial shipper group, Ocesa has the right to substantially increase the tariffs paid by that initial shipper group until the equity or debt shortfall is remedied.

Transport agreements

Ocesa and each initial shipper entered into separate transport agreements that define each party's obligations with respect to the use of the Oleoducto Central's throughput capacity and the payment of tariffs. Subject to certain limited exceptions, the initial shippers are obliged to ship all Cusiana petroleum they lift through the pipeline. The throughput capacity of the Oleoducto Central is dedicated first to the needs of the initial shippers. Any throughput capacity left unused after their needs have been met is marketed to third-party shippers.

The initial shippers and their respective shares of Oleoducto Central throughput capacity are:

- Ecopetrol 60 per cent;
- BPEC 15.2 per cent;
- TOTAL Exploratie 15.2 per cent; and
- Triton Colombia 9.6 per cent.

Except for certain domestic shipments made by Ecopetrol, all shipments of petroleum on the Oleoducto Central are subject to tariffs paid in US dollars into offshore accounts. The tariffs for each initial shipper, adjusted monthly, are based on that shipper's proportionate share of operating and maintenance costs, including:

- cash taxes and operators' fees;
- non-cash expenses, including depreciation;
- interest expense on all outstandings in the related senior debt tranche; and
- an after-tax return on equity of 13.5 per cent.

If principal payments for the related senior debt tranche exceed an initial shipper's proportionate share of non-cash expenses, that shipper is required to make tariff advances or purchase transport notes to provide Ocesa with the funds to pay the principal when it is due. If

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an initial shipper does not pay required tariffs and tariff advances, or does not purchase transport notes as required by the transport agreement, Ocesa is authorised to sell sufficient oil delivered by the initial shipper to satisfy the arrears, including interest, penalties and the cost of selling the oil. If an initial shipper's tariffs, charges, surcharges, tariff advances or obligations to purchase transport notes remain past the relevant due date for more than 31 days, Ocesa may levy a 50 per cent surcharge on top of the shipper's normal tariff.

The transport agreement provides for, and specifies the methods to be used in, calculating third-party tariffs, working capital tariffs, minimum tariffs, underutiliser tariffs and overutiliser tariffs.

- Third-party tariffs apply to shippers other than the Ocesa shareholders.
- The minimum tariff is designed to cover Ocesa's operating expenses during a period when no oil is being shipped.
- Underutiliser tariffs apply to shareholders that are not shipping their defined proportionate shares of crude oil through the pipeline.
- Overutiliser tariffs apply to shipments of crude oil beyond an initial shipper's proportionate share of throughput capacity.

BP and Ecopetrol have other large reserves in the Piemonte, about 25 miles from the Cusiana fields and not far from this pipeline. It is likely that a pipeline will be built to connect those new fields with the Oleoducto Central. TOTAL and Triton, the two other Ocesa partners, have no objection to the shipping of oil from the new fields through the Oleoducto Central. However, they do not want to bear the capital costs, which would effectively mean that they were subsidising the transport needs of British Petroleum and Ecopetrol unrelated to the Ocesa project. They are protected by the overutiliser tariff, which compensates the initial shippers at a premium rate for oil shipped through the Oleoducto Central by other parties. Because they are also initial shippers, BP and Ecopetrol have priority access to the pipeline after the initial shippers' oil from the Cusiana and Cupiagua fields has been shipped, but they will pay a premium rate that benefits all the initial shippers, including TOTAL and Triton.

Advance Tariff Agreements

Each initial shipper has entered into an Advance Tariff Agreement with Ocesa that allows Ocesa to call upon the shipper for advance tariff payments in cash to cover Ocesa's cash payment obligations related to that shipper in the event of a revenue shortfall. Failure by one initial shipper to meet its advance tariff obligation does not place any obligation on the other initial shippers, but the advance tariff agreements in the aggregate oblige the initial shippers severally to provide sufficient funds for Ocesa to meet its operating and maintenance costs, as well as its senior debt service obligations.

How the financing was arranged

Long-term debt structure

The long-term debt for Ocesa is in four tranches. Each tranche was arranged separately by one of the principal shippers and owners of the pipeline. The lenders in each tranche rely for credit support, not on Ocesa, the borrower, but on assigned rights related to their respective tranches. There is a common security agreement, but there are no cross-defaults or cross-

guarantees. All estimated sources of funds are shown in Exhibit 19.6.

Senior lenders in a particular senior debt tranche constitute a senior lender group. Accordingly, there are four separate senior lender groups. All senior debt in each tranche ranks *pari passu* with respect to the assigned rights that support each tranche, without any preference related to the date of incurrence, the currency of repayment or any other factor.

This multitranche debt financing arrangement reflected the considerable range in the credit ratings of the obligors: Standard & Poor's rated British Petroleum and TOTAL 'AA', Ecopetrol 'BBB-', and Triton 'B'. Ecopetrol was responsible for raising Tranche A debt, BP Pipelines for Tranche B debt, Total Pipeline for Tranche C debt and Triton Pipeline for Tranche D debt. Ecopetrol financed its tranche with US\$848 million from a bond offering, bank loans and ECA loans. TOTAL financed its tranche in the bank market, Triton in the private placement market and BP on its own balance sheet.

Exhibit 19.6

Estimated sources of funds

	<i>(US\$ million)</i>
Equity contributions by shareholders	504
Pre-completion accrued returns	104
Tranche A senior debt	847
Tranche B senior debt	215
Tranche C senior debt	215
Tranche D senior debt	140
Total sources of funds	2,205

Source: Prospectus for Tranche A Debentures.

Limited recourse

The rights and remedies of each senior lender group are entirely separate. The exercise of rights and remedies by the CSTA Trustee on behalf of one senior lender group does not entitle any other senior lender group to exercise rights and remedies against another initial shipper. Events of default affect each senior debt tranche separately. There are no cross-defaults across senior debt tranches. The CSTA trustee is the only party able to exercise remedies against the assigned rights supporting a senior debt tranche and can be authorised to do so only by a 'supermajority' of lenders in that tranche. A supermajority consists of lenders holding 66.66 per cent of the principal outstanding.

Assigned rights

Debt holders for each tranche have a security interest in assigned rights securing that tranche. These assigned rights include that tranche's proportionate share of Ocesa's right to receive cash under the transport agreement, the advance tariff agreement and the subscription agreement, as well as proceeds maintained by the CSTA trustee for that tranche's senior lending group, and Ocesa's rights and interests in the common account.

Order of priority of cash flow

Under orders from Ocesa the CSTA Trustee may withdraw funds from the proceeds account for the benefit of a particular tranche for the following purposes, in order of priority:

- the related initial shipper group's share of capital expenditures and operating and maintenance costs;

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- semiannual debt service obligations owed to lenders in that tranche;
- repayment of principal and interest on shareholder bridge loans;
- payment of transportation repayment obligations; and
- shareholder distributions.

Account structure

Tariff payments, tariff advances and transport note proceeds under the transport agreement, and advance tariffs under the Advance Tariff Agreement, are remitted to the proceeds accounts. After required payments to service senior debt the remaining funds are remitted to Ocesa's General Account. Overutiliser tariffs and third-party tariffs are paid into the common account, and common account proceeds are redistributed to the proceeds accounts in accordance with the Common Security Trust Agreement. Ocesa's General Account funds Ocesa's operating costs and taxes, fees paid to CITCOL, and dividends and other distributions paid through the dividend trust.

Risk analysis

Construction risk

There has been minor technical risk in the construction or operation of the project. Construction involved expansion of an existing pipeline that would serve the needs of the shippers until the project was completed. The technology of the pipeline and the pumps was proven over a long period (it has been described as a series of large vacuum cleaners). The most difficult part of the pipeline, the 93 km section through the Andes, was constructed in the summer of 1994, before the project financing. The shippers are contractually obliged to use the pipeline to transport all of their oil from the Cusiana and Cupiagua fields. The worst possible scenario was a delay in construction that would cause oil from these fields to be shipped through the Oleoducto Central at a reduced rate.

Guerrilla activities

The Colombian government provided 2,000 soldiers to move with the construction crews and defend them against leftwing guerrillas. The pipeline was designed to be 1 metre below ground in all possible places. The number of river crossings, where the pipeline would have to be above ground, was minimised.

Although oil pipelines in North America typically operate at 95–99 per cent capacity, projections for Ocesa were based on 85 per cent throughput to demonstrate that, even if there was an abnormally high level of guerrilla activity, the pipeline would still make good economic sense. The 85 per cent throughput rate was based on experience in Cano Limón, where the pipeline goes through swampland and must be above ground, where there is a higher level of guerrilla activity, and where virtually all of the oil is exported. The export of oil is a sensitive issue with the guerrillas. Most of the oil shipped through the Oleoducto Central is also to be exported, but a small portion will be shipped to Colombian refineries. Guerrilla attacks have reportedly prompted several oil companies, including the Royal Dutch Shell Group and the UK independent Lasmo plc, to curtail Colombian onshore operations entirely.

In October 1998 the Ocesa pipeline was blasted open in a weekend attack that claimed 50 lives and left dozens of people with severe burns, many of them women and children. Production was not affected by the blast and sufficient storage capacity was available. Ocesa activated an emergency plan to use the ODC pipeline. Oil that was not stored and shipped was diverted to the Barrancabermeja refinery. Repairs took about three days. When flows resumed it took about 20 hours for volume to reach the previously registered level of 350,000 barrels a day. About 30,000 barrels were spilled in the blast.

The Ocesa pipeline was again damaged by guerrilla attacks three times in 2000 and twice in 2001. The attack in February 2000 caused BP Amoco to cut production by 45 per cent, to 220,000 barrels per day, and caused flaming oil to engulf several nearby houses. Leftwing guerrillas also attacked the Cano Limón pipeline, the country's second largest, 79 times in 2000, spilling more than 200,000 barrels of crude oil. They now appeared to be broadening their targets. Their offensive against oil and electrical companies was in part aimed at protesting against plans to sell two state-owned energy companies to foreign investors.

Country risk

Investors in the Tranche A bonds are traditional buyers of Rule 144A bonds from Latin America and are familiar with Colombian credit risk. Despite problems related to drugs and guerrillas, Colombia is the only country in Latin America that did not reschedule its debt during the 1980s. Colombia has a history of conservative fiscal management, never taking on more debt than necessary.

The country's courts also have a history of honouring contracts. At the time of the Ocesa project financing there was an unrelated contract dispute between Ecopetrol and Occidental Petroleum over which party would bear certain costs in the Cano Limón fields. A Colombian court demonstrated its objectivity with a ruling based strictly on the terms of the contract, which happened to be against Ecopetrol. This conveyed a welcome message about the fairness of the Colombian court system to foreign investors and developers.

Credit ratings

In June 1999 Moody's downgraded Ocesa's senior secured debentures from 'Baa3' to 'Ba2' in conjunction with its recent downgrade of Colombia's foreign currency ceiling for bonds and notes. In August 1999 Duff & Phelps (now Fitch) downgraded Ocesa's debentures from 'BBB' to 'BBB-', and Standard & Poor's downgraded them from 'BBB-' to 'BB+' for similar reasons.

In April 2000 Standard & Poor's affirmed its 'BB+' foreign currency rating for Ocesa's Tranche A debt, as well as for Ecopetrol and the Republic of Colombia, all with a negative outlook. The agency cited Ocesa's strategic importance to Colombia, noting that it was the only export route for the Cupiagua and Cusiana fields. It believed that the continuing guerrilla attacks could cause delays in crude oil shipments through the pipelines, but pointed out that debt holders were protected in several ways. The terms of the borrowing agreements required Ecopetrol to make minimum tariff payments to Ocesa for 180 days following the declaration of *force majeure* or any other 'excusable event'. Further, the pipeline was buried, was of heavier construction than others in Colombia and had been designed to be more capable of withstanding attack. Because of a combination of significant unused capacity in the line

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and storage facilities for about a week of crude oil production, delays could be offset quickly by restoration of service. The agency noted that generally the line had been shut down by security-related events for only a few hours at a time and never for more than two or three days. However, in the unlikely event that security problems caused a more protracted shut-down Tranche A creditors would be reliant on payments from Ecopetrol for maintenance of debt service.

In May 2000 Standard & Poor's downgraded the foreign currency rating for Ocesa's foreign currency debt from 'BB+' to 'BB', in conjunction with similar downgrades for Ecopetrol and the Republic of Colombia.

In January 2002 Fitch downgraded Columbia's foreign currency debt rating, and consequently also reduced Ecopetrol's credit rating, from 'BB+' to 'BB'. However, it affirmed its 'BBB-' minus rating for Ocesa. The agency noted that each initial crude shipper, under its respective transport agreement, pays its *pro rata* share of total transport tariffs to Ocesa. These tariffs were designed to cover all of the financial obligations that Ocesa incurred in transporting the oil. As long as the crude oil shippers continued to produce oil in the Cupiagua and Cusiana fields, they had no alternative to the Ocesa pipeline if they wished to transport it to the Caribbean coast for export. Even though repayment of Ocesa's senior debentures depended partly on payment from Ecopetrol, Fitch believed that the provisions of the transport agreements minimised the likelihood that any of the shippers would fail to pay. In particular, the transport agreements granted Ocesa a contractual lien on the oil assets of any nonpaying crude shipper. Fitch therefore believed that Ocesa's credit rating should not be constrained to Ecopetrol's current rating level. Nonetheless, it warned that further deterioration in Ecopetrol's credit quality could have a detrimental effect on Ocesa's rating.

Lessons learned

The project's multitranche debt financing, accommodating four principal shippers and owners, was made possible by a common security trust agreement and a creative structure in which there are no cross-defaults or cross-guarantees, and lenders in each tranche rely, not on the project company, but on the assigned rights that support each tranche.

¹ This case study is based on the prospectus for the project bonds, an interview with Gregory G. Randolph, Managing Director, Goldman Sachs & Co., and articles in the financial press.

Compañía Mega, Argentina

Type of project

Integrated facility for processing natural gas.

Country

Argentina.

Distinctive features

- First oil and gas deal done on a project basis anywhere in the Southern Cone (Argentina, Chile, Paraguay and Uruguay).
- Largest energy-sector industrial project in the Southern Cone.
- First project bond in South America with pure emerging-market risk.
- First major project financing in Latin America after emerging market crisis of 1998 and a catalyst for revitalising the market.

Description of financing

Construction financing comprised:

- US\$167 million as secured floating-rate notes (Series A) at 325 basis points (bps) over the London interbank offered rate (Libor);
- US\$28 million as secured floating-rate notes (Series A-1) at 62.5 bps over Libor;
- US\$88 million as secured floating-rate notes (Series B) at 345 bps over Libor;
- US\$14 million as secured floating-rate notes (Series B-1) at 62.5 bps over Libor; and
- US\$175 million as Rule 144A privately placed 15-year senior secured fixed-rate notes (Series F) at 500 bps over US treasuries less 10.77 per cent per annum.

Permanent financing comprised:

- US\$195 million as 10-year floating-rate notes (Series D) starting at 325 bps over Libor;
- US\$102 million as 13-year floating-rate notes (Series E) starting at 345 bps over Libor;
- US\$175 million as Rule 144A privately placed 15-year senior secured fixed-rate notes (Series G) at 500 bps over US treasuries less 10.77 per cent per annum; and
- US\$203 million in sponsors' equity.

Project summary¹

This US\$675 million project involves construction of an integrated facility for processing natural gas in Argentina, comprising:

- a natural gas separation plant at Loma la Lata;
- a natural gas liquids fractionation plant at Bahia Blanca;
- a pipeline running for 600 kilometres (km) between the two plants; and
- related storage and loading facilities.

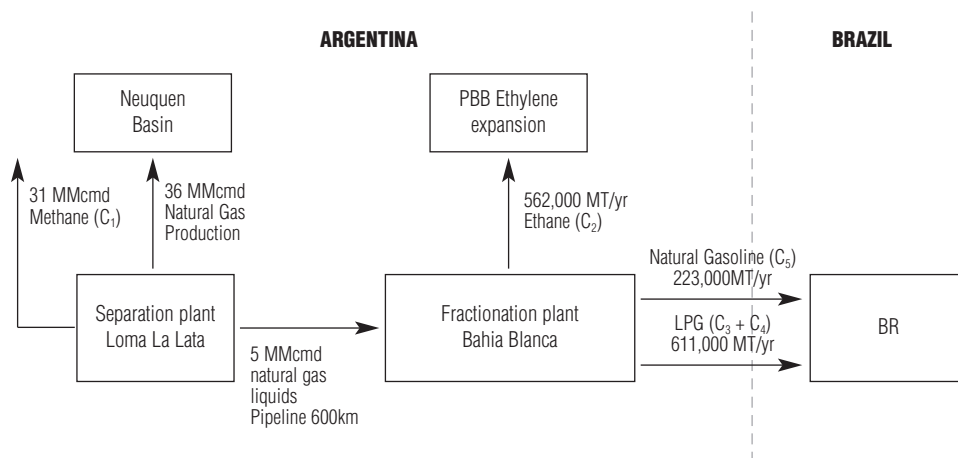
Exhibit 20.1 presents a schematic view of the project.

Yacimientos Petrolíferos Fiscales (YPF), which at the time of the project financing was a state-owned company, delivers natural gas to the natural gas separation plant, where ethane and natural gas liquids are separated from the natural gas stream and sold on to Petrobrás of Brazil, while 'dry' gas, or methane, is returned to YPF. The project company transports natural gas liquids through the pipeline to the natural gas liquids fractionation plant. In each year of operation this plant is to separate the liquids into about 562,000 tonnes of ethane, 369,000 tonnes of propane, 242,000 tonnes of butane and 223,000 tonnes of natural gasoline. This capacity is based on the assumption that YPF delivers 36 million cubic metres per day of natural gas with a composition that satisfies the requirements of the Natural Gas Contract.

The primary markets for ethane are for use either as a feedstock in the production ethylene or as an industrial fuel. The feedstock application generally results in higher value, because ethylene is a basic petrochemical component of plastics. Propane and butane are liquefied petroleum gases (LPGs) that can be sold separately or as a propane/butane mix with liquid volume compositions varying from 40 per cent/60 per cent to 60 per cent/40 per cent propane/butane. Propane, butane and commercial LPG mixes of the two are used as feedstocks in the petrochemical industry, as residential and commercial fuels for cooking, and for

Exhibit 20.1

Project schematic



* Quantities indicated represent approximate design capacities for the various components of the project. The Natural Gas Contract and the Offtake Contracts provide for various minimum and maximum daily, monthly and annual quantities.

space and water heating, and as refinery blendstocks in connection with petrol (gasoline). Natural gasoline is a natural gas liquid similar to petrol but with a lower octane level. It is used primarily as a feedstock in the production of ethylene and as a refining feedstock in the production of other petrochemical products.

Petroquímica Bahía Blanca (PBB), an Argentine company, will purchase ethane for use in a new ethylene cracker and Petrobrás will purchase the liquids for sale in the Brazilian domestic market. Petrobrás assumes responsibility for transporting the liquids, taking delivery at the project's storage and loading facilities. It owns and operates one of the world's largest merchant marine fleets for importing and transporting oil products.

The engineering, procurement and construction (EPC) contractor is a consortium of JGC Corporation of Japan, Comercial del Plata Construcciones, SA (CPC) of Argentina and Saipem SpA of Italy. Of the US\$675 million project construction cost, US\$429 million is 'hard' cost (EPC cost) and US\$246 million is 'soft' cost, such as for development, financing and taxes.

Even though construction had already begun, an original three-tranche commercial bank financing was shelved during Brazil's economic crisis in 1998. In 1999, after market conditions had improved, institutional investors committed themselves to a 15-year bond tranche before a syndicated commercial bank package with 10-year and 13-year maturities was arranged. Unlike other project bonds financing exports from countries in Latin American to member states of the OECD, Mega's bonds represent pure emerging-market risk.

As explained below in the description of project contracts, the long-term sales agreements are at market prices. The offtake and supply agreements have 10-year initial terms with automatic extensions until 2017.

Sponsoring consortium

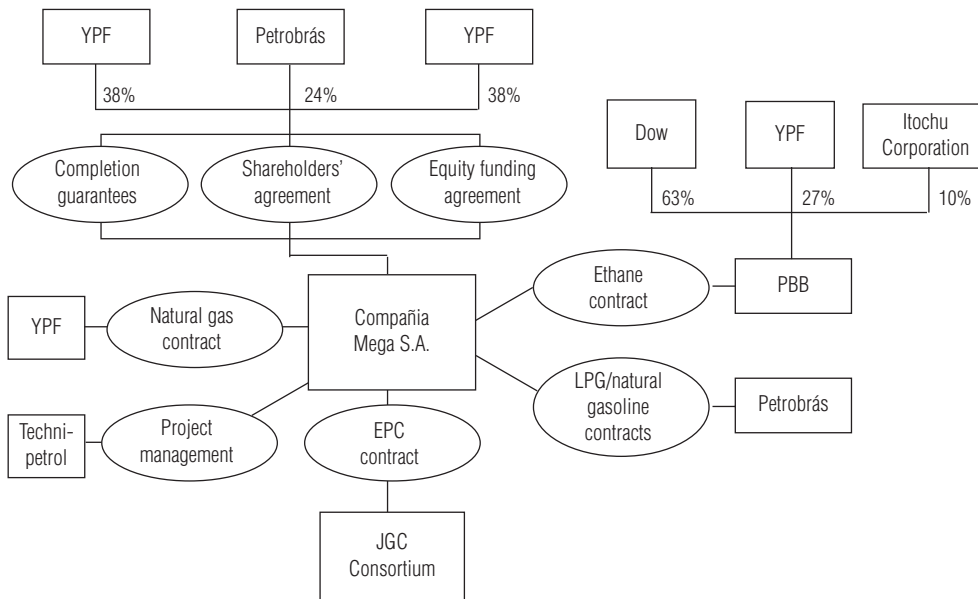
The sponsor of the project is a consortium made up of YPF (38 per cent), Petrobrás (34 per cent) and Dow Chemical (28 per cent). Exhibit 20.2 shows the various contractual and ownership relationships among the project company, the sponsors and the other project participants.

YPF

YPF, the largest company in Argentina based on revenue, and one of the largest diversified oil and gas companies in the world based on oil and gas reserves, has operations in Latin America, the United States and Southeast Asia. At the time of the project financing YPF was engaged in the exploration, development and production of oil and natural gas; the refining, marketing, transport and distribution of oil, a wide range of oil products and derivatives, petrochemicals, and LPG; and electricity generation activities. In 1999, shortly after the Mega project financing was closed, YPF was acquired by Repsol of Spain.

YPF expects to benefit from the project as it provides the company with the ability to realise a higher value from its natural gas through the monetisation of the liquids extracted from the natural gas stream. YPF will also benefit as a 27 per cent owner of PBB. By stripping out and selling the component parts of the 'wet' gas to the project company, and reselling the 'dry' gas returned to it from the project company for home heating and industrial purposes, YPF expects to realise a higher value than it would by just selling the wet gas for these purposes. Even though it may receive a lower price for the dry gas than the wet gas because

Exhibit 20.2

Project participants

of its lower thermal content, the company expects to benefit from higher prices because of the higher value added in the petrochemical products produced from the liquids.

Petrobrás

Petrobrás is the largest company in Brazil, and one of the largest in South America, in terms of consolidated revenues (net operating revenues of US\$15.5 billion in fiscal 1998) and consolidated assets (US\$33.2 billion as of 31 December 1998). It is also the world's third largest publicly traded oil and gas company based on oil and gas reserves. It has foreign operations in Argentina, Bolivia, Ecuador and the United States. Its controlling shareholder is the federal government of Brazil. Petrobrás must submit its budgets to the Ministry for Planning and Budget, and Congress, for approval. In the past governments have used Petrobrás as an instrument for pursuing macroeconomic and social objectives, without regard for the effect of such programmes on the company's profitability. Until 1995 Petrobrás had an exclusive agency with respect to the exploration, production, refining, importing and transporting of crude oil and oil products in Brazil (including its continental waters). The subsequent deregulation of the oil and gas business in Brazil has subjected Petrobrás to increasing competition, but the company has also benefited from the deregulation of prices and the reduction or elimination of various subsidies that it had to finance on behalf of the federal government.

Petrobrás expects to benefit from greater security of supply and lower cost for the propane, butane, LPG and natural gasoline purchased from the project company compared to the previous costs of importing those products. It also expects to benefit from lower shipping costs compared to the cost of transporting the products from the Gulf coast of the United States, North Africa or the Middle East.

Dow Chemical

Dow, the second largest chemical company in the United States based on revenue and one of the five largest in the world, operated 123 manufacturing facilities at the time of the project financing. These were located in 32 countries, including Argentina, Brazil, Canada, France, Germany, The Netherlands and Spain, as well as the United States. Dow expects to benefit from vertical integration of its petrochemical production processes. Dow owns 63 per cent of PBB, its largest single investment in Latin America, and 70 per cent of Polisor, another Argentine chemical company that purchases ethylene from PBB for the production of polyethylene.

PBB and Polisor

PBB, the Argentine ethane offtaker, is owned 63 per cent by Dow, 27 per cent by YPF and 10 per cent by Itochu of Japan. PBB is expected to benefit from the long-term dedicated supply of ethane from the project company under the Ethane Contract.

Polisor, PBB's largest customer, is expected to benefit from an increased supply of ethylene, produced by PBB from the ethane, at a lower cost than for imported ethylene. Based on the assurance of increased ethylene supply, Polisor plans to increase its polyethylene production capacity.

Execution of the project

A project team was formed before the financing, under the supervision of the project company's board of directors and general manager, to supervise construction of the project and to supervise its operation after the 'Commercial Operations Date', the first day on which the Natural Gas Contract and the Offtake Agreements take effect, and the company begins taking delivery of natural gas, and producing ethane, LPG and natural gasoline. The project team includes technically qualified personnel seconded from YPF and other specially hired qualified staff.

After operations began the project company was expected to organise two management teams, one for the separation plant and a portion of the pipeline, and the other for the fractionation plant and the remainder of the pipeline. Under the EPC Contract (described below) the EPC Contractor is responsible for training the company's operating personnel.

In 1995 YPF engaged Snamprogetti SpA of Italy, an international engineering firm, to develop the basic design of the project. Technipetrol SpA, an international engineering and construction firm specialising in energy-related projects, reviewed Snamprogetti's basic design, helped the sponsors to select the EPC Contractor and assisted the project team in overseeing project construction. Orloff Engineers, Ltd, which owns the patent rights to the Orloff 'turbo-expander' technology, reviewed the design of the separation plant.

At the time of the project financing the anticipated schedule for the project was as shown in Exhibit 20.3.

The Date Certain was the date by which the Exchange Date, the date on which all provisions for issuance of the notes were satisfied, was required to occur, assuming no *force majeure* extension. If there was such an extension it was not to exceed 182 days.

Exhibit 20.3

Anticipated project schedule

April 1998	Beginning of construction
June 2000	Mechanical completion
October 2000	Provisional acceptance and start of commercial operation
31 December 2001	'Date certain'

Source: Prospectus for Project Bonds.

How the financing was arranged

In late 1997, just as Latin America was feeling the first effects of the Asian financial crisis, YPF, Petrobrás and Dow Chemical formed Compañía Mega to build and operate the project. Credit Suisse First Boston (CSFB) had been financial adviser to Mega. In early 1998 CSFB and Citibank received a financing mandate from the sponsors, and tried unsuccessfully to finance 80 per cent of the project cost with commercial bank loans. Banks were avidly competing for similar deals at the beginning of 1998, but they became less receptive to emerging-market debt later in the year as a result of a Brazilian devaluation and the Long Term Capital Markets hedge fund crisis in the United States.

The original proposed US\$700 million 13.5-year syndicated loan had three tranches:

- US\$345 million A tranche priced at 162.5 bps over Libor for years one to six, 175 bps for years seven to nine and 212.5 bps for year 10 to term;
- US\$200 million B tranche priced at 175 bps for years one to six, 187.5 bps for years seven to nine and 212.5 bps for year 10 to term; and
- US\$155 million 3.5-year C tranche priced at 87.5 bps.

Even though financing was not lined up, the sponsors began construction in April 1998 and, over the following year, funded about US\$150 million in project costs. At this point the sponsors and their bankers thought that an investment-grade credit rating would be an essential component of the project financing, particularly in a difficult market environment. Both Standard & Poor's and Duff & Phelps (now Fitch) assigned 'BBB-' ratings to the project in July 1998. (Key points in their analyses are cited in the section 'Credit ratings' below.) An investment-grade rating for an Argentine project with a Brazilian offtaker was considered to be an extraordinary accomplishment at the time. The rating was particularly helpful for commercial bankers who were persuading credit committees to approve their participation in the loan amid concerns about Argentine and Brazilian credit risk.

During Brazil's economic crisis in 1998 the lead arrangers had no choice but to put the deal on the shelf. Then, late in the year, CSFB's first step towards structuring a new deal was to approach institutional investors concerning a tranche with a 15-year maturity, which was well beyond the time horizon of seven to nine years for the commercial banks. By the end of 1998 CSFB had sufficient commitments for the US\$175 million fixed-rate 15-year tranche. Having the institutional investors' commitments for the longest-term tranche helped the arrangers with their new approach to the commercial banks in early 1999, when market conditions improved. Steven Greenwald, Managing Director of CSFB, observed that, although institutional investors are sometimes considered more fickle and less willing to see a project through than commercial bankers, in this case the institutional investors proved to be more abiding in their commitment to the deal than the banks.

Under the new deal structure the sponsors increased their equity commitment from 20 per cent to 30 per cent, and agreed to fund that commitment up front and then *pro rata* with the debt elements, as opposed to their original commitment to fund it at completion. The sponsors also agreed to provide several completion guarantees on the floating-rate notes, requiring them to pay off the debt if the project was not completed on schedule. For a small number of banks that were willing to accept a considerably lower spread during the construction phase, the sponsors were willing to provide joint and several rather than just several guarantees.

Despite these enhancements to the debt package the lead arrangers were willing to syndicate the debt only on a non-underwritten, ‘best effort’ basis. They were pleasantly surprised when the general syndication closed some 80 per cent oversubscribed. The final debt package, as described above, consisted of US\$195 million 10-year floating-rate notes; US\$102 million 13-year floating-rate notes; US\$175 million 15-year senior secured fixed-rate notes; and US\$203 million in equity from the sponsors. To help get the deal done CSFB underwrote the higher-spread 13-year tranche and later sold most of that tranche to commercial banks. Greenwald of CSFB observed that some bankers were glad to have the higher spread on the 13-year notes and saw little incremental risk compared to the 10-year notes. As he commented, ‘If a project hasn’t defaulted by year 10, chances are that you will have a good credit to year 13’.

Principal requirements and obligations

Equity funding agreements

Under the Equity Funding Agreements the sponsors were required to contribute US\$150 million to the project company on the Closing Date for the construction phase of the project financing. Tranches of notes under the construction loan facility would be funded without further equity contribution until the debt/equity ratio reached 7:3. After that point the sponsors would be required to contribute additional equity from time to time to ensure that the ratio did not exceed 7:3, as well as certain other development and project costs, including cost overruns.

Limited recourse obligations

Payments of principal and interest for the notes are the obligation of the project company. As is typical in a pure project financing, the sponsors have no liability for the project company’s obligations beyond the obligations set out in the Completion Guarantees and Equity Funding Agreements.

Deposit of project revenues

All project revenues will be deposited directly into, and held in, the Project Control Account in the United States and applied in accordance with the terms of the Accounts Pledge Agreement. The agreement provides that project funds may be transferred from the Project Control Account into one or more fiduciary bank accounts in the name of the Argentine Collateral Agent at a commercial bank in Buenos Aires for the purpose of paying operating costs in Argentina, provided that security arrangements for the funds are considered satisfactory by the Administrative Agent.

Covenants

The bond indenture and loan agreements cover, among other items:

- reporting;
- maintenance of property and insurance;
- compliance with laws;
- project implementation;

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- payment of taxes;
- provision of operating budgets;
- obtaining and maintaining material permits;
- entering into interest-rate protection contracts;
- obligations upon casualty;
- readiness for the year 2000 ('Y2K'); and
- limitations on consolidations, mergers, sales of assets, additional indebtedness, liens, subsidiaries, investments, modifications of organisation agreements and project documents, other business ventures, and capital expenditures.

Events of default

Events of default defined by the bond indenture and loan agreements include:

- breach of representation by the project company or sponsors;
- breach of covenants in the financing documents;
- cross-defaults to the Completion Guarantees, Equity Funding Agreements or other project agreements, and other indebtedness;
- bankruptcy or insolvency of the project company or sponsors;
- loss of rights to possess either of the plants or the pipeline;
- invalidity, illegality or unenforceability of any of the project or financing agreements;
- violation of restrictions concerning transfer of shares;
- loss of title to the project or collateral;
- invalidity or lack of perfection of security interests in the collateral; and
- certain adverse judgements or government actions relating to the project company or sponsors.

Debt service liquidity facility

The project company is required to maintain a Debt Service Liquidity Facility equal to the maximum principal, interest and interest rate protection contract payments for the next six months, either in cash, as a standby letter of credit issued by a bank with either a Standard & Poor's P-1 or a Moody's A-1 rating, or as a substitute facility acceptable to the Administrative Agent.

Collateral

Security for the notes includes:

- a pledge of bank accounts;
- a collateral assignment of the project agreements;
- a pledge of the project company's capital stock;
- a pledge of the project's moveable assets;
- a mortgage on the separation plant site and fixed assets; and
- an assignment of the concession for the use of the fractionation plant site, the pipeline concession, the proceeds of interest rate protection contracts and insurance policies.

Other senior debt

The project company may incur additional senior debt if:

- it has a maturity greater than the maturity of the Series G notes or a weighted average maturity greater than the combined weighted average maturity of the Series F and Series G notes; and
- if the average and minimum annual debt service coverage ratios (DSCRs) are not less than in the Base-Case Projections (shown below).

Dividend restrictions

The project company will be entitled to make or set aside payments to its shareholders on 15 March and 15 August each year, subject to certain requirements and limitations, including 12-month historical and 12-month project DSCRs of at least 1.3:1.

Restrictions on transfer

Under the Sponsors Agreement the project sponsors agreed to maintain their original percentages of ownership in the project until the Exchange Date. The sponsors also agreed collectively to maintain not less than 51 per cent ownership of the project until the notes were fully repaid. At the same time YPF agreed to maintain minimum levels of ownership at 30 per cent for the first three years after the Exchange Date, 25 per cent for the next three and 20 per cent until the notes were repaid.

Principal project contracts

EPC contract

Under the EPC Contract with the project company the EPC Contractor agreed to construct, for a fixed price of US\$429 million, the separation plant, along with related pipeline and facilities; the pipeline; the fractionation plant; and the storage and loading facilities on a turnkey basis. The contract requires the EPC Contractor:

- to provide the front-end engineering and detailed engineering for all components of the project;
- to procure all materials necessary to construct the project, including certain spare parts and equipment;
- to transport all materials to the project sites;
- to construct all components of the project;
- to train the company's personnel to properly operate and maintain the project after completion;
- to complete the project and attain Provisional Acceptance, as defined in the contract, by October 2000, subject to *force majeure* or certain other unusual or unexpected events defined in the contract;
- to construct certain pipelines and related facilities to transport gas from the fields to the separation plant; and

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- after natural gas liquids are extracted, to transport dry natural gas to other locations designated by YPF, which will own these transport facilities after construction and which is expected to reimburse the project company for a portion of their approximate cost of US\$14 million.

The EPC Contract also provides for the payment of specified liquidated damages if there is any unexcused delay in Provisional Acceptance.

The EPC Contract provides for several types of performance tests. Performance tests running for 72 hours were to be conducted upon completion of the project to demonstrate the capacity of the separation plant to process natural gas, and the capacity of the fractionation plant to recover specified percentages of ethane, propane, butane and natural gasoline. As a condition for the Exchange Date to occur the project was required to satisfy a 30-day reliability test and a 24-hour performance test. If such tests were not satisfied the Exchange Date could not occur unless the project company reduced the balance of the construction loan or contributed additional equity to the project, in order to ensure that the average projected DSCR was at least equal to that set out in the base-case projections (shown below).

Natural gas contract

Under the terms of the Natural Gas Contract YPF is obliged to supply the separation plant with natural gas, and the project company is required to return the processed natural gas, or methane, to YPF for transport to its natural gas customers or reinjection into underground storage facilities to be held for future use. The gas comes from the Neuquén Basin, the largest oil and gas basin in Argentina, which contains about 48 per cent of Argentina's and 80 per cent of YPF's proven gas reserves. The Natural Gas Contract requires YPF to give the project company priority access to natural gas produced until the conditions of the contract have been met. The financial closing for the project bond offering requires YPF to certify that it has sufficient natural gas reserves to comply with the contract.

The Natural Gas Contract has an initial term of 10 years, starting with commencement of commercial operations, and is subject to automatic one-year extensions until 2017, unless YPF and the project company agree otherwise. The contract requires YPF to deliver not less than 12 billion cubic metres (Bcm) of natural gas during each year of the contract, equating to an average daily delivery of 34.5 million cubic metres. The contract also provides for minimum and maximum delivery requirements for each month and each day, in order to provide YPF with some flexibility in the quantities delivered while maintaining a relatively steady stream of gas for the separation plant. YPF is required to use its best efforts to deliver 37 million cubic metres of gas per day, but has the flexibility to deliver more gas during the peak winter season and less during the offpeak summer season, subject to a required minimum of 20 million cubic metres and a maximum of 41 million cubic metres. If the natural gas delivered by YPF does not satisfy the specified gas composition standards required to produce specified quantities of natural gas liquids, YPF is required to deliver enough additional natural gas to allow the plant to produce the required amounts of natural gas liquids.

The project company is obliged to pay YPF a market-based US dollar price for the natural gas liquids that it extracts and retains. A pricing formula represents a composite of prices for ethane, LPG, natural gasoline, No. 2 gas oil and No. 6 gas oil. The Natural Gas Contract provides for payment in US dollars, but if the Argentine government imposes exchange con-

trols or prohibits the purchase of US dollars, the project company may pay YPF in Argentine pesos at the rate quoted by Banco de la Nación Argentina at the close of the previous day. If official exchange rates are in effect at the time, it may apply Banco de la Nación's rate applicable to exports of fuel oil, propane or butane. The payment dates under the Natural Gas Contract are structured so that they coincide with the dates on which the company receives payments from Petrobrás under the Ethane Contract (described in the next subsection).

Offtake agreements

The project company will produce ethane, propane, butane and natural gasoline. A byproduct from the production of these products, carbon dioxide, may be sold to Argentine industrial customers on a negotiated basis.

The Offtake Agreements consist of the Ethane Contract, covering sales to PBB, and the LPG Contract and the Natural Gasoline Contract, covering sales to Petrobrás. These agreements have 10-year terms, commencing with initial deliveries, and are subject to automatic renewals until 2017, unless the offtakers and the project company agree to amend them.

The prices payable by PBB for ethane, and propane on an equivalent basis, and by Petrobrás for propane, butane and commercial LPG mix, are determined by reference to index prices for these products delivered FOB (free on board) at Mont Belvieu, Texas, as published in *OBIS-Petroscan*, subject to increase for any applicable value-added tax. The price that Petrobrás pays for natural gasoline is determined by reference to an index price for natural gasoline listed as 'Nap Phy' under the heading 'Cargoes CIF NNE/Basis ARA' in *Platt's European Marketscan*, subject to certain discounts and freight adjustments. The project company is responsible for Argentine taxes and Petrobrás is responsible for other taxes. The bond indenture and loan agreements prohibit the company from amending or terminating the contract unless the majority of the bondholders agree that such action would not have a material adverse effect on the project company's assets or business prospects.

The project company expects to sell all of its ethane production pursuant to the Ethane Contract, representing about 40 per cent of project revenues. The contract requires the company to deliver, and PBB to purchase, a minimum annual quantity of 500,000 tonnes of ethane and a maximum quantity of 540,000 tonnes. Within these annual parameters the project company is obliged to use its best efforts to deliver, and PBB to take, a minimum of 1,400 tonnes per day. For each day the project company is unable to deliver 1,500 tonnes of ethane, PBB has the option to purchase up to 300 tonnes of propane. Under the contract, for the purpose of delivering ethane or its equivalent, 2 tonnes of propane are considered to be equivalent to 1 tonne of ethane.

Under the LPG Contract the project company will sell all of its expected propane and butane production to Petrobrás, which is expected to account for about 45 per cent of its revenues. The contract requires the project company to deliver, and Petrobrás to purchase, an annual quantity of 365,000 tonnes of propane and 235,000 tonnes of butane, or the equivalent of such amounts in commercial LPG mix, plus or minus 6 per cent. The Natural Gasoline Contract obliges the project company to deliver, and Petrobrás to purchase, an annual quantity of 210,000 tonnes of natural gas, plus or minus 6 per cent at the option of the project company.

Under both the LPG Contract and the Natural Gasoline Contract the actual quantity to be delivered is determined by agreement between the project company and Petrobrás or, in the

absence of such agreement, by the project company. In both cases Petrobrás has the option to purchase any additional quantities produced by the project company under the same terms and conditions as for the required deliveries.

Risk analysis

Construction risk

The project was constructed using a proven technology under lump-sum, fixed-price, turnkey construction contracts that included time-of-completion and performance guarantees. However, as the bond prospectus pointed out, for any project of this nature unanticipated events could cause delays in the construction and completion of the project. Such events could include:

- shortages, or delays in delivery, of equipment or materials;
- shortages of labour, or labour disputes;
- political events, local or political opposition, blockades or embargoes;
- litigation;
- adverse weather conditions, natural disasters or accidents; and/or
- unforeseen engineering, design, environmental or geological problems.

In addition, or instead, there could be unanticipated increases in costs, including cost overruns resulting from additional interest charged during construction delays.

To mitigate these risks, and pursuant to the Completion Guarantees, Dow, Petrobrás and YPF severally guaranteed the construction loans in accordance with their respective ownership percentages, and jointly and severally guaranteed a small portion of those loans. Under the Equity Funding Agreements the sponsors agreed to provide funds to the project at various times up to project completion, to ensure that the ratio of debt to equity did not exceed 7:3.

Marketing risk

The project company's primary sources of revenue are payments from Petrobrás under the LPG Contract and the Natural Gasoline Contract, and payments from PBB under the Ethane Contract. The principal factor addressing marketing risk is that the three sponsors have a direct need for the products produced by the plant. However, failure by the project company to deliver under the Offtake Agreements, for whatever reason, could cause payments from the offtakers to cease, impairing the project company's ability to service its debt.

If the offtakers fail to take or pay for the products, the project company could be forced to seek other buyers. In the case of the Petrobrás contracts there are markets for propane, butane and natural gasoline at market prices in Argentina, Brazil, the United States, Japan, Europe and elsewhere. PBB, however, is the only logical buyer of ethane inside Argentina and, because it must be refrigerated during storage and transport, ethane would be prohibitively expensive to transport for sale outside Argentina.

To fulfil its contract obligations PBB needed first to complete its plant expansion. Although Dow and YPF are the principal owners of PBB, they do not guarantee its performance or payment obligations under the Ethane Contract.

Price risk

The prices to be received by the project company under the Offtake Agreements are based on published market prices of ethane, propane, butane and natural gasoline. These prices are, of course, subject to considerable fluctuation, reflecting many factors beyond the company's control, such as aggregate supply and demand, which fluctuate with:

- changes in the global economy;
- the price and availability of alternative feedstocks, fuels and blendstocks;
- the impact of energy conservation efforts; and
- international economic and political events.

Currency risk

The project's offshore revenues are payable in US dollars. As indicated above, under the Natural Gas Contract the project pays for its natural gas in US dollars, but if the Argentine government imposes exchange controls or prohibits the purchase of dollars, the project company may pay YPF in Argentine pesos.

Supply risk

The project company depends on YPF to deliver natural gas to the separation plant so that it can produce the natural gas liquids required for the fractionation plant. YPF's ability to deliver the gas could be impaired by a variety of operating hazards related to drilling and production, including fire, explosions, cratering, blowouts or formations with abnormal pressures. In respect of YPF's obligation to deliver 12.6 Bcm of natural gas for each year of the Natural Gas Contract, YPF has an estimated 169.8 Bcm of reserves in several fields, 144.7 Bcm developed and 25.1 Bcm undeveloped. YPF's natural gas production from all of its fields in 1998 was 27 Bcm, including 13.1 Bcm from the Neuquén Basin, where YPF has agreed to give the Mega project priority. Nonetheless, actual quantities of recoverable natural gas and levels of future production could be less than estimated.

Operating and technical risk

The project company was formed in July 1997 and at the time of the project financing it did not have an operating history. As with any complex facility, operation of this project involves many risks including, without limitation:

- the risk of breakdown or failure of equipment or processes;
- technical process problems in the separation plant or fractionation plant;
- performance below expected output of efficiency;
- labour disputes or shortages;
- delays or inability to obtain equipment or permits;
- changes in law or eminent domain proceedings;
- unforeseen environmental or geological problems; and/or
- fires, earthquakes, hurricanes or floods.

Many of these risks were assessed in the report prepared by Purvin & Gertz, the Independent Engineer (see below).

Insurance risk

Although the company is required by the bond indenture to maintain certain types of insurance, including business interruption insurance, not all operating risks are insurable and the proceeds of insurance may not be sufficient to cover lost revenues or increased expenses. Further, certain types of equipment may not be readily replaceable, given their large and project-specific character.

Political and economic risk: Argentina

Unlike other project bonds financing exports from countries in Latin America to OECD countries, the Mega bonds represent pure emerging-market risk. Because two thirds of the project's output is exported to Brazil, lenders are exposed to Brazilian crossborder risk as well as Argentine country risk. However, as a mitigating factor, the Brazilian risk is offset by Petrobrás's international scope of operations and resulting access to US dollars.

In 1913 Argentina was the tenth richest country in the world, but by 1990 its income per capita had dropped to 40 per cent of the average in western Europe.² For several decades Argentina had experienced periods of slow or negative growth, high inflation, large devaluations of the peso and imposition of exchange controls. The limited availability of foreign exchange had periodically required the Argentine government and public sector entities to restructure portions of their indebtedness. Inflation had been caused by the chronic reluctance of successive governments, military or democratic, to balance budgets, as a result of political pressures. In March 1991, however, the Convertibility Plan had been enacted, the principal element of which had been to make the Argentine peso and the US dollar convertible at a rate of 1:1. The plan had reduced the 12-month trailing inflation rate, as measured by the Argentine consumer price index, from 200 per cent in June 1991 to 0.7 per cent in December 1998, when the prospectus for the Mega 15-year project bonds was issued.

During the 1990s the regime of President Carlos Menem had taken significant steps to sell off government enterprises and liberalise the economy, but then several things went wrong. Emerging market jitters, first after the Mexican peso crisis in 1995 and then to a greater degree in response to the Asian, Russian and Brazilian crises of 1997–99, began to erode domestic bank deposits in Argentina. The bursting of the technology bubble in the United States reduced investors' appetites for all types of risk, including emerging-market risk. Economic stagnation in the United States reduced demand for Argentine exports. The flight to safety caused the spread between US treasuries and Argentine bonds to rise to 13 per cent by mid-2001 and to 30 per cent by the end of the year. High interest rates helped to push the Argentine government's debt burden to an unsustainable level of US\$155 billion, or five times annual exports, by the end of 2001.³ Convertibility, which had worked well when international capital was plentiful, became more of a millstone in a weakening economic environment. In early 1999 the 30 per cent devaluation by Brazil, Argentina's neighbour and largest trading partner, made Argentina increasingly uncompetitive and deepened its recession. The Convertibility Plan prevented the government from using monetary policy to ease the recession. By the end of 2001 Argentina's economy had contracted nearly 10 per cent as

compared to 1998, unemployment was nearing 10 per cent and tax receipts had declined 25 per cent from the previous year. Argentina finally defaulted on its sovereign debt in December 2001. The following month, after the resignations of President Fernando de la Rúa, one 'interim' president and two 'provisional' presidents within just two weeks, President Eduardo Duhalde assumed office and expedited what became a 29 per cent devaluation in the official peso–US dollar exchange rate. The long-term solutions to Argentina's fundamental economic problems remained as elusive as ever.

Political and economic risk: Brazil

The offering memorandum for the project financing pointed out that the Brazilian economy had been characterised by heavy federal government intervention, including frequent changes in monetary, credit, taxation, tariff, currency, exchange control and other policies that could adversely affect Petrobrás's business and financial results. Another characteristic had been high and unpredictable inflation, leading at various times to corrective measures, such as wage and price controls, and freezing of bank accounts and short-term investments. Fernando Henrique Cardoso (President from 1995 to 2003) had overseen the implementation of the country's latest economic stabilisation plan, the Real Plan, from 1994, when he was Finance Minister. Since the introduction of the new currency, the real, inflation had declined considerably. Cardoso also supported free-market and privatisation measures, such as the liberalisation of the state telecommunications and oil monopolies, that enjoyed broad political support. However, because he owed both his election and his re-election to the support of a coalition of political parties, he had to make compromises with factions opposed to elements of his reform programme. Foreign direct investment grew from US\$1 billion per year in the early 1990s to US\$5 billion in 1995, US\$26 billion in 1998 and US\$30 billion in 1999. Despite the hardwon benefits of economic stability, the economy grew only 2 per cent per year during Cardoso's first administration (1995–99), hardly enough to make a dent in the country's social problems.

In 1998 and 1999 Brazil's current account balance and hard currency reserves suffered a decline as a result of declining confidence in emerging markets caused by the crisis that began in Asia, and by declining agricultural, mineral, and industrial commodity prices. In early 1999, after credit-rating downgrades and a refusal by the government of the state of Minas Gerais to pay its debts to the central government had caused a further erosion of confidence and a rise in US dollar outflows, a newly appointed finance minister widened the existing currency band, initiating what became a 30 per cent devaluation.

Since the devaluation the Brazilian economy has performed better than expected and the implementation of a fiscal stabilisation program has helped secure the support of the IMF. Brazil still faces chronic problems, however, including an unfavourable trade balance, low domestic savings, a tax system that creates disincentives for investment, an excessively expensive public pension scheme, and a need to address a growing energy problem by resolving the legal and regulatory issues that are stalling the construction of new power plants.

Reports and projections

Independent Engineer's Report

Purvin & Gertz was retained by the lead arrangers and placement agents for the project financing as the Independent Engineer to prepare an independent assessment of the

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technical, economic and environmental aspects of the project. Among its conclusions were the following.

- The proposed design, construction and operation of the project had been developed in accordance with industry-standard engineering practices.
- The project should be capable of processing the design quantity of natural gas (36MMcmd (million cubic metres per day)) and producing the design quantities of ethane, LPG and natural gasoline, which should satisfy the minimum contractual obligations of the project company under the offtake contracts.
- The experience of the sponsors' project team and other sponsors' resources provided a reasonable basis for concluding that the project could be completed and operated successfully.
- The project would have a useful life exceeding the terms of the floating-rate and fixed-rate notes.
- On the basis of certain assumptions about interest rates and reinvestment rates, the principal amount of the notes, interest earned during the construction period and the equity contribution of the sponsors should be sufficient to pay for the estimated project costs and other capitalised costs.
- In the absence of abnormal or *force majeure* events, the sponsors' cost projections provided sufficient funds for operation and maintenance of the project.
- The gas-processing technology employed in the project was commercially proven and did not represent any major technological risk.
- The pipeline design was suitable for the project and did not introduce any innovative or uncommon design features.
- The fractionation plant would use the same distillation technology as many other fractionation facilities and conformed to industry standards.
- The fixed price of US\$429 million payable under the EPC Contract was reasonable in the light of estimated construction costs, which had been determined in accordance with generally accepted engineering and estimating practices and methods.
- Assuming that the project would be constructed in accordance with the EPC Contract, it would be in accordance with all material permits and, when operated under those permits, it would be able to meet its obligations under the Natural Gas Contract and Offtake Agreements.
- According to site assessments conducted in accordance with standard industry practice, the project sites were considered suitable for construction of the project.
- The EPC Contractor's project schedule was achievable and typical for a gas-processing facility.
- The EPC Contractor comprised experienced and qualified contractors selected through a rigorous and transparent bid evaluation procedure.
- If the project was designed, constructed, operated and maintained as was then proposed by the project company and the EPC Contractor, it should be capable of passing the project guarantees specified in the EPC Contract, as well as the Exchange Date Performance Test and the Exchange Date Reliability Test. As designed, these tests were adequate to determine that the project had reached completion and that the economic projections were achievable on the basis of the conditions forecast by the Market Consultant (as summarised below.)

Using the *pro forma* Base-Case Projections (shown below), projected revenues from the sale of the natural gas liquids appeared to be adequate to pay the project's annual operating expenses, and to provide a minimum annual DSCR of 2.02 following operations in 2004 and an average DSCR of 2.72 until at least 2014.

Market Consultant's Report

Pace Consultants Inc. was retained by the lead arrangers and placement agents to provide supply/demand information, and to review the marketability and value of the project's products. The firm's principal conclusions were as follows.

- The prices used in the Base-Case Projections (shown below) were consistent with the Market Consultant's in-house projections and with the terms of the Offtake Agreements. Further, the prices used in the market pricing sensitivity analysis described in the Independent Engineer's Report were consistent with the Market Consultant's view of the lowest sustainable price for crude oil on a long-term basis.
- The ethane price provisions of the Ethane Contract were appropriate and competitive.
- Argentina's capacity to consume ethylene exceeded present domestic production capacity. PBB, as the largest producer of ethylene in Argentina with an 83 per cent market share, would be able to purchase all of the project's planned ethane production, particularly after its planned expansion.
- The availability of ethane at the Ethane Contract prices should support PBB's competitiveness, given the desirability of ethane as a feedstock for ethylene production. An ethane-based ethylene plant has a lower investment cost than other types of ethylene plants.
- Brazil was expected to experience continued growth in LPG demand, resulting in continued reliance on LPG imports.
- The LPG pricing specified in the LPG contract should provide Petrobrás with a reliable supply at competitive pricing compared with Brazil's alternative sources of supply.
- LPG was readily saleable on the worldwide spot market at approximately the Mont Belvieu price (as mentioned above).
- Natural gasoline is a valuable commodity that can be sold readily on the spot market. The price to Petrobrás under the Natural Gasoline Contract would be an attractive price to either Petrobrás or other buyers in Brazil.

Insurance Consultant's Report

The project company would maintain employer's liability, general liability and automobile liability insurance. During the operating phase of the project the project company would also maintain physical damage and business interruption insurance.

Financial projections

The *pro forma* Base-Case Projections are shown in Exhibit 20.4. Under these projections the minimum DSCR, which occurs in the first year, is 2.02 and the average is 2.72.

Then the minimum and average DSCRs under various sensitivity-analysis scenarios were calculated as shown in Exhibit 20.5.

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Exhibit 20.4

Compañía Mega SA – base case projections (US\$ million)

	2001	2002	2003	2004	2005	2006
Stream factors (%)	90	96	96	97	97	97
Ethane price (US\$/ton)	217.8	224.3	226.6	233.4	235.7	233.1
LPG price (US\$/ton)	221.7	227.4	233.0	240.5	246.6	251.9
Natural gasoline price (US\$/ton)	204.8	209.8	214.9	218.9	223.3	238.8
Feedgas price (US\$/mmbtu)	1.7	1.8	1.9	1.9	2.0	2.0
Ethane production (mtn/year)	505.8	539.5	539.5	545.1	545.1	545.1
LPG production (mtn/year)	549.9	586.6	586.6	592.7	592.7	592.7
Natural gasoline production (mtn/year)	200.7	214.1	214.1	216.3	216.3	216.3
<i>Revenues</i>						
Ethane sales	110.2	121.0	122.3	127.2	128.5	127.1
LPG sales	121.9	133.4	137.2	142.5	146.2	149.3
Natural gasoline sales	41.1	44.9	46.0	47.4	48.3	51.6
Interest income	1.5	3.9	5.5	6.7	7.0	6.5
Total revenues	274.7	303.3	311.0	323.8	330.0	334.5
<i>Expenses</i>						
Gas costs	110.8	126.5	130.0	134.7	138.4	141.3
Labour	3.9	4.0	4.1	4.2	4.4	4.5
Transport	2.2	2.2	2.3	2.4	2.4	2.5
Land/pipeline/environmental fees	0.6	0.6	1.4	0.6	0.6	0.6
Tanks at BB	2.1	2.1	2.2	2.3	2.3	2.4
Maintenance	5.1	5.2	5.4	5.6	5.7	5.9
Electricity	5.1	5.2	5.4	5.6	5.7	5.9
General administration	4.1	4.2	4.3	4.4	4.6	4.7
Stamp taxes	0.7	0.8	0.8	0.8	0.8	0.8
Other operating coats	4.4	4.7	4.8	5.0	5.2	5.3
Total expenses	138.9	155.6	160.7	165.5	170.1	174.0
Operating cash flow	135.8	147.7	150.3	158.3	159.8	160.5
Income tax paid	4.1	5.1	4.8	29.5	32.4	34.2
Interest expense tax	7.1	6.6	6.0	5.4	4.8	4.2
VAT refund	22.3	23.4	17.7	4.6	4.3	3.4
Change in working capital	-3.8	1.3	0.4	0.7	0.2	0.3
Cash available for debt service	150.7	158.1	156.7	127.4	126.6	125.3
<i>Debt service</i>						
Interest service	46.0	43.1	39.0	35.0	31.4	27.5
Agent and L/C fee	1.3	0.8	0.8	0.8	0.8	0.8
Principal service	27.1	27.1	25.2	25.2	26.9	30.0
Total debt service	74.5	71.0	64.9	61.0	59.1	58.3
Debt service coverage ratio	2.02	2.23	2.41	2.09	2.14	2.15
Average	2.72					
Minimum	2.02					
Reserve fund for sustaining capital						
Beginning balance	–	2.5	5.2	–	2.8	5.6
Funding	2.5	2.6	2.7	2.8	2.9	2.9
Drawdown	–	–	7.9	–	–	8.6
Ending balance	2.5	5.2	–	2.8	5.6	–

Exhibit 20.4 *continued*
Compañía Mega SA – Pro forma projections base case (US\$ million)

	2007	2008	2009	2010	2011	2012	2013	2014
Stream factors (%)	97	97	97	97	97	97	97	97
Ethane price (US\$/ton)	240.1	252.4	270.6	284.2	298.3	313.1	322.5	326.0
LPG price (US\$/ton)	258.2	266.2	276.7	287.3	300.5	311.1	322.6	330.0
Natural gasoline price (US\$/ton)	248.6	258.9	270.9	282.0	288.9	296.0	300.1	309.1
Feedgas price (US\$/mmbtu)	2.1	2.1	2.2	2.3	2.4	2.5	2.6	2.7
Ethane production (mtn/year)	545.1	545.1	545.1	545.1	545.1	545.1	545.1	545.1
LPG production (mtn/year)	592.7	592.7	592.7	592.7	592.7	592.7	592.7	592.7
Natural gasoline production (mtn/year)	216.3	216.3	216.3	216.3	216.3	216.3	216.3	216.3
<i>Revenues</i>								
Ethane sales	130.9	137.6	147.5	154.9	162.6	170.7	175.8	177.7
LPG sales	153.0	157.7	164.0	170.3	178.1	184.4	191.2	195.6
Natural gasoline sales	53.8	56.0	58.6	61.0	62.5	64.0	64.9	66.9
Interest income	6.5	6.5	7.2	7.5	8.4	8.6	9.4	10.0
Total revenues	344.2	357.8	377.3	393.8	411.6	427.7	441.3	450.2
<i>Expenses</i>								
Gas costs	144.5	149.2	155.2	161.6	167.8	174.3	180.4	185.5
Labour	4.6	4.8	4.9	5.1	5.2	5.4	5.5	5.7
Transport	2.6	2.7	2.7	2.8	2.9	3.0	3.1	3.2
Land/pipeline/environmental fees	0.6	1.4	0.6	0.6	0.6	0.6	1.4	0.6
Tanks at BB	2.5	2.5	2.6	2.7	2.8	2.9	3.0	3.0
Maintenance	6.1	6.3	6.4	6.6	6.8	7.0	7.3	7.5
Electricity	6.1	6.3	6.5	6.6	6.8	7.0	7.3	7.5
General administration	4.8	5.0	5.1	5.3	5.4	5.6	5.8	6.0
Stamp taxes	0.8	0.8	0.9	0.9	0.9	0.9	1.0	1.0
Other operating costs	<u>5.5</u>	<u>5.7</u>	<u>6.0</u>	<u>6.2</u>	<u>6.5</u>	<u>6.7</u>	<u>7.0</u>	<u>7.2</u>
Total expenses	178.1	184.7	190.9	198.5	205.8	213.5	221.6	227.1
Operating cash flow	166.0	173.1	186.3	195.3	205.8	214.2	219.7	223.1
Income tax paid	38.2	42.0	47.8	52.3	57.1	61.5	64.7	67.2
Interest expense tax	3.5	3.0	2.5	2.0	1.6	1.1	0.6	0.1
VAT refund	3.6	4.3	2.0	–	–	–	–	–
Change in working capital	<u>0.6</u>	<u>0.7</u>	<u>1.2</u>	<u>1.0</u>	<u>1.1</u>	<u>0.9</u>	<u>0.7</u>	<u>0.5</u>
Cash available for debt service	127.5	131.7	136.8	140.0	146.0	150.7	153.8	155.3
<i>Debt service</i>								
Interest service	22.4	19.2	16.3	13.1	10.2	7.2	4.1	0.8
Agent and L/C fee	0.8	0.8	0.5	0.5	0.5	–	–	–
Principal service	<u>31.1</u>	<u>23.0</u>	<u>36.0</u>	<u>26.3</u>	<u>-28.0</u>	<u>28.0</u>	<u>31.5</u>	<u>14.0</u>
Total debt service	54.3	43.0	52.9	39.8	38.6	35.2	35.6	14.8
Debt service coverage ratio	2.35	3.07	2.59	3.52	3.78	4.29	4.33	5.26
<i>Reserve fund for sustaining capital</i>								
Beginning balance	–	3.0	6.2	–	3.3	6.7	–	3.6
Funding	3.0	3.1	3.3	3.3	3.4	3.5	3.6	3.7
Drawdown	–	–	9.4	–	–	10.3	–	–
Ending balance	3.0	6.2	–	3.3	6.7	–	3.6	7.4

Source: Bond prospectus.

- The ‘price backcast’ case assumed historical prices for outputs (ethane, LPG and natural gasoline) for the period 1987–97.
- The ‘alternative LPG market’ case assumed that Mega would have to sell to alternative markets because Petrobrás failed to take it.
- The ‘inflation rate’ case assumed a drop in the Argentine inflation rate from 3 per cent to 2 per cent per year.
- The ‘gas shortage’ case assumed a reduction in gas-processing volumes from 36MMcmd to 31MMcmd.
- The ‘interest rate increase’ scenario assumed that interest rates on the financing rose by 2 per cent.
- The ‘increase in non-fuel operating costs’ scenario assumed that these costs rose by 20 per cent.
- The ‘minimum price case’ assumed the lowest prices for hydrocarbons sustainable on a long-term basis: US\$13 per barrel, West Texas Intermediate, Cushing.

 Exhibit 20.5

Minimum and average debt service coverage ratios (DSCRs) under various scenarios

	<i>Minimum DSCR</i>	<i>Average DSCR</i>
Base case	2.02	2.72
Price backcast	1.09	1.93
Alternative LPG market	1.70	2.34
Inflation rate	1.93	2.48
Gas shortage	1.67	2.30
Interest rate increase	1.78	2.52
Increase in non-fuel operating costs	1.95	2.61
Minimum price	1.16	1.87

Source: Bond prospectus.

Credit ratings

YPF

In 1999 YPF was acquired by Repsol of Spain, a larger oil company with a higher credit rating. It is now known as Repsol-YPF. (It follows that ‘YPF’ should be read as shorthand for Repsol-YPF in every reference to events since the takeover.)

At the time of Repsol’s unsolicited bid both Standard & Poor’s, and Moody’s, placed their ratings for YPF – respectively ‘BBB-’ and ‘Ba3’ (foreign currency) – under review for a possible upgrade. Fitch placed its ‘BBB-’ foreign-currency rating for YPF on review with evolving implications while downgrading its rating for Repsol from ‘AA-’ to ‘A+’.

In November 2000 Standard & Poor’s reaffirmed an ‘A-’ rating for Repsol-YPF but reduced its outlook from stable to negative, citing its recent Argentine sovereign rating reduction, and the company’s aggressive financial and business strategies. In November 2001 the agency reduced the company’s rating to ‘BBB+’, citing weakening international crude prices, adverse economic conditions in Argentina, and strategic growth targets and capital spending that were too aggressive to allow a continued ‘A-’ rating. In March 2002 the agency reduced the rating to ‘BBB’ because of concerns that the Argentine economic and fiscal environment was deteriorating faster than expected. The agency expected that the company’s ratio of funds from operations to debt would be in the range 25–30 per cent, and the ratio of EBITDA to interest in the range 5.5–6.0, compared to the ratios of 30 per cent and 6.0 expected for a ‘BBB+’ rating. The downgrade also reflected continuing uncertainty over negotiations with the Argentine government on the country’s prices for natural gas and refined products, and on additional taxes, with an export duty taking effect that month. The agency maintained its ‘BBB’ rating in May 2002, following news that Argentina’s energy commission planned to

propose legislation that included price controls, export duties and a capping of oil companies' profits at the levels reached in 2002.

Petrobrás

In September 2001 Moody's upgraded Petrobrás's long-term foreign currency bond rating from 'B1' to 'Ba1', piercing Brazil's sovereign rating of 'B1' but not striking the investment grade that the company was seeking. The agency also affirmed the company's global local-currency rating of 'Baa1', based on its substantial assets and revenues, its dominant position in Brazil's oil industry, the integrated nature of its operations, its sizeable hydrocarbon reserves and the strong prospects for growth in its oil output. On the downside Moody's considered the company's status as a state-controlled enterprise subject to financial and other restrictions, the need to import crude oil and oil products to supplement its own production, its high financial leverage relative to its peers, the challenges of improving its safety and environmental record, and the need to further develop its internal systems and controls. The 'Ba1' foreign currency bond rating was slightly lower than the domestic rating and closer to the sovereign rating because it incorporated convertibility risk, relating to the possibility that the government could declare a debt moratorium to counter a foreign currency crisis. Moody's noted that the convertibility risk was relatively high because the company was a net importer of crude oil and most of its debt was denominated in US dollars, while the bulk of its refined products was sold domestically. Although Petrobrás generated substantial US dollar-linked revenues, its access to foreign currency was still controlled by the Brazilian central bank. The company had been investing in several oil and gas projects outside Brazil, but they were not expected to generate meaningful cash flow for several years.

In June 2002, while not changing its ratings for Petrobrás or the sovereign, Moody's reduced its rating outlook from stable to negative because of negative investor sentiment about the elections due to be held in October, when Brazilians would elect a new president as well as congressmen, state governors and members of state legislatures. The agency noted that negative sentiment could have a strong impact on government debt dynamics. Even though the government had so far been successful in facing monetary pressure, a discernible shift in sentiment had reduced the capacity of the government and other Brazilian borrowers to maintain access to the financial markets.

Compañía Mega

In November 1998 Duff & Phelps (now Fitch) gave the project a 'BBB-' pre-sale rating, noting that the sovereign risks of Argentina and Brazil were key factors. At the time the agency rated the foreign-currency obligations of the Republic of Argentina 'BB' with a positive outlook and those of Brazil 'BB-' with a negative outlook. Duff & Phelps considered the Argentine foreign-currency and convertibility risk to be mitigated by the Mega project's offshore accounts, which collected US-dollar-denominated payments for commodities from the offtakers. Petrobrás would have a strong incentive to meet its obligations, in the agency's opinion, because of the importance of its offtake commodities for Brazilian domestic consumption and because of its need to maintain good relations between Argentina and Brazil as the dominant members of the Mercado Común del Sur (Southern Cone Common Market, or Mercosur). Duff & Phelps noted that production offtake risk was mitigated by sales agreements with PBB and Petrobrás that

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were to be terminated no earlier than 2017, beyond the longest maturity of the project debt. Although bondholders would still be exposed to the price risk of the products, the agency cited the contractual price linkage between the gas supply agreement and the offtake agreements, under which the project's fuel price is 50-per-cent indexed to its output prices. Duff & Phelps cited several reasons for rating the project above the sovereign ceilings of Argentina and Brazil:

- YPF's support of the project, and the strategic importance of the project to both YPF and Argentina in helping to monetise the country's natural gas resources;
- Petrobrás's need for LPG and natural gasoline to satisfy demand in Brazil;
- the status of Petrobrás's LPG payments as operating expenses and their likely high priority among government-authorised cash payments in any crisis;
- Mega's alternative option of selling LPG in international markets at prevailing prices; and
- the relations between Argentina and Brazil within the framework of Mercosur.

Standard & Poor's assigned a 'BBB-' rating to the Mega project bonds when they were issued in 1999. Among the risks that this agency noted were:

- a new technology in which carbon dioxide in the natural gas stream would not be extracted before it was run through the separation plant;
- exposure of product sales to market prices, even though they are governed by long-term agreements;
- exposure to Petrobrás for natural gas and LPG sales;
- production of natural gas, the principal feedstock, running below the level required by the project as of early 1999;
- a natural gas purchase agreement with a duration shorter than the project's longest debt maturity; and
- leverage of 70 per cent.

The agency cited the following strengths as, in its view, offsetting the risks:

- the fixed-price, turnkey construction contract with a reputable consortium backed by liquidated damage provisions and completion guarantees from the sponsors, some several, and some joint and several;
- insurance to protect the lenders against *force majeure* events;
- long-term sales contracts with PBB and Petrobrás;
- competitive feedstock cost;
- similar mechanisms for adjustment of feedstock and product sales prices resulting in a stable operating margin of about 50 per cent, the biggest risk being a prolonged slump in the hydrocarbon pricing environment;
- the project's ability to sell in the open market even in the absence of the long-term sales agreements; and
- adequate base-case DSCRs, with a minimum of 2.0 and an average of 2.7.

In November 2000 Standard & Poor's put Mega on CreditWatch because it had taken out US\$30 million in unauthorised *pari passu* loans from Argentine banks to finance increased construction costs caused by minor changes in the scope of the project. The bond covenants

had given Mega leeway to take on a small amount of additional debt, but had stipulated a mix of subordinated, *pari passu* and guaranteed loans, as well as an overall ceiling. The additional US\$30 million in *pari passu* loans was in breach of these limits and put Mega in technical default, risking a downgrade in its credit rating to a level below investment grade. The way in which the loans were structured turned out to reflect an oversight by the project sponsors and the problem was resolved with a new US\$40 million subordinated financing.

In November 2001 Standard & Poor's assigned a 'B' rating to Compañia Mega, reflecting the following factors:

- the company's strong financial support from shareholders;
- the volatility of product prices;
- the high level of debt; and
- the tight financial situation resulting from unexpectedly high construction costs, which resulted from delayed completion of the project and the consequent postponement of the starting of commercial operations.

The rating also incorporated the company's long-term sale contracts for ethane, gasoline and LPG, and its very competitive natural gas purchase contracts. The agency also placed Mega on CreditWatch, reflecting the fact that it was in technical default under its bond indentures because of certain information required by the administrative agent and because the debt service reserve account was not yet funded as required.

In December 2001 Fitch downgraded Mega to a 'B+' rating to reflect the economic situation in Argentina and, in particular, the recent series of capital controls designed to halt capital flows out of the country. Under a government decree the use of local bank deposits for private-sector external-debt service would require authorisation from the central bank. The government also placed limitations on cash withdrawals from Argentine financial institutions. In response to these measures Fitch reduced its country ceiling from 'CCC+' to 'CC'. The agency commented that Mega was one of several rated projects that had stronger credit and business fundamentals than their credit ratings indicated. Despite the continuing economic recession and other sovereign pressures, these companies were supported by continued demand for products and services, stable pricing, and controllable costs. However, Fitch noted, the imposition of controls raised doubts as to whether a project company or its banks could make foreign currency payments abroad.

In May 2002 Standard & Poor's expressed concern that Compañia Mega might have difficulty meeting its financial obligations if the Argentine Energy Ministry started to limit exports. By that time the agency's rating on Mega was 'CC'. The authorities had recently imposed a 20 per cent duty on LPG exports, with effect until September 2002, and had widened the scope of pre-export registration requirements. These official measures indicated the possibility of further interference with Mega's exports.

As of January 2003 Fitch was maintaining its 'B+' rating for Mega, based primarily on its offtake agreements with the sponsors. Its sovereign rating for Argentina was 'DDD'.

Brazil

Declines in Brazil's economic outlook and foreign-currency reserves led Moody's to reduce its credit ratings on Brazil's foreign debt from 'B1' to 'B2' in September 1998, and led

Standard & Poor's to reduce its foreign debt ratings from 'BB+' to 'B+' in January 1999, at the time of the devaluation.

In November 1999 Standard & Poor's affirmed its 'B+' rating, and revised its outlook from negative to stable, reflecting the recovery of financial stability that Brazil had earned through recent fiscal austerity and monetary discipline. The agency cited the likely achievement of a 3.1 per cent GDP public-sector primary-surplus target as the most serious fiscal effort of the Real Plan period and a break from past fiscal laxity. However, it noted that further fiscal reform was needed to reverse a rising trend in net public indebtedness, which was estimated to be 53 per cent of GDP. The agency said that Brazil's ratings were constrained by several factors.

- The structure of federal and state finances was poor, and reducing the fiscal and economic burden of public debt presented a significant challenge. Among the problems were the bloated active and retired civil-service payroll, high taxes and poor compliance, and weak public financial institutions. The agency noted that, while Brazil's ratio of debt to GDP was below that of many investment-grade countries, it had substantial liquidity risk, as well as a fiscal burden (particularly the ratio of interest to revenues, then 40 per cent) and an economic burden (in terms of crowding out borrowing by the private sector).
- There were major vulnerabilities in respect of the balance of payments. Private sector indebtedness had doubled since 1995 to 232 per cent of exports, helping to drive the country's external debt-service ratio to 186 per cent of exports. Although the nominal current-account deficit was projected to improve, it was still structurally high, at 4.8 per cent of GDP.
- Brazil also faced the challenge of achieving sustainable growth in the presence of comparatively high real domestic interest rates (albeit they were low by Brazil's historic standards), 7.4 per cent unemployment and a potentially weaker private-sector appetite for external credit in the context of the floating exchange rate.

According to the agency, the strengths supporting its credit rating included:

- emerging political support for fiscal consolidation, including growing public awareness of issues such as social security;
- the initial success of the inflation-targeting framework;
- a comparatively deep and increasingly sophisticated domestic financial market relative to other sovereigns with 'B' ratings; and
- a sound, well-developed, relatively liquid corporate and industrial sector compared to other similarly rated countries.

In October 2000 Moody's raised its ceiling on Brazil's foreign currency bonds from 'B1' to 'B2'. It cited economic expansion and low inflation that appeared to be sustainable over the medium term, tight fiscal management, and lower interest rates.

In January 2001 Standard & Poor's raised its long-term foreign currency sovereign credit rating from 'B+' to 'BB-', reflecting the government's improved macroeconomic management since the currency crisis of 1999, including progress on structural reform and credible regimes for the floating exchange rate and inflation-targeting. The agency noted Brazil's success in the control of public spending in an election year and, for the first time, the legislature's approval of the budget before the beginning of the fiscal year.

In June 2001 Standard & Poor's affirmed its 'BB-' long-term foreign-currency rating with a stable outlook, citing the Cardoso government's commitment to appropriate policy actions against a worsening macroeconomic climate and a more challenging domestic political scene, with the approaching campaign to elect Cardoso's successor in 2002.

In July 2001 Fitch maintained its 'BB-' foreign-currency rating for Brazil but changed the outlook from stable to negative, noting that:

- the real had fallen against the US dollar by 15 per cent since early May, forcing the central bank to raise interest rates by 200 bps to keep inflation expectations on target;
- Brazil's debt was vulnerable to contagion from Argentina, despite the relatively modest trade exposure; and
- the combination of interest-rate hikes, exchange-rate depreciation, the ongoing crisis in Argentina and the electricity shortage could intensify pressure on public finances in the coming months.

In June 2002 Fitch reduced Brazil's foreign-currency sovereign rating from 'BB-' to 'B+' with a negative outlook, citing a shortening of domestic debt maturities, a sharp rise at the long end of the domestic yield curve, pressure on foreign-exchange reserves and the sovereign's inability to gain access to the international capital markets, at least temporarily. The agency noted that Brazil's public debt burden and balance of payments were vulnerable to investor sentiment, which was unlikely to improve in the near future. The country's reduced access to the capital markets, combined with heavy financing needs, was likely to put pressure on its already thinning foreign-exchange reserves. Brazil's country-risk spread, the difference in yields between Brazil's sovereign external bonds and comparable US treasuries, had widened since the beginning of the year from 750 bps to 1,500 bps. General government debt now represented 69.5 per cent of GDP, of which 34 per cent was indexed to the exchange rate, and 30 per cent was short-term and at risk of not being rolled over at maturity. Fitch also noted that, in response to the deterioration in market conditions, the authorities had announced an increase in the public-sector primary surplus target for 2002 from 3.5 per cent to 3.75 per cent.

In October 2002 Fitch further downgraded Brazil's foreign-currency sovereign rating to 'B', noting a worsening of the country's credit fundamentals caused by uncertainty over economic policies after the elections due later in the month. The agency cited a weakening of the exchange rate, caused by the withdrawal of capital by international banks and the closure of international capital markets to Brazilian borrowers, despite a recent improvement in the trade balance. General government debt was expected to reach 90 per cent of GDP by the end of the year. The agency noted that the new administration could be compelled to further raise the primary budget surplus target to 4.5 or 5 per cent to bolster public confidence in the government's debt management, but such a strategy would carry both political and economic risks.

Argentina

When the project bonds were issued in mid-1999 Argentina's foreign-currency obligations were rated 'B1' by Moody's, and 'BB' by Standard & Poor's. Argentina's creditworthiness was beginning a steady decline because of problems with its fixed exchange rate, the lack of federal and provincial fiscal discipline, growing government debt, and a recession.

In November 2000 Standard & Poor's reduced Argentina's rating to 'BB-', and Moody's changed its outlook from stable to negative, reflecting the country's hefty financing needs amid slow growth and political uncertainty. Moody's noted that the reluctance of foreign investors to take on sizeable net additions of Argentine paper would force the country to rely on its domestic market to complete its financing for 2001, with a resulting negative impact on growth.

In July 2001 Fitch downgraded Argentina's sovereign rating from 'B+' to 'B-', citing a weaker outlook for economic growth, persistent high domestic interest rates and the less favourable economic environment. At the same time the agency reduced its foreign-currency ceiling from 'BB-' to 'B+'. The agency placed the ceiling, reflecting the risk of sovereign interference with private-sector access to foreign exchange for debt-service purposes, at a higher level than the sovereign ceiling because it considered the risk that private access to foreign currency for debt service would be interrupted to be less than the risk of sovereign default, even though the turmoil surrounding a sovereign default could trigger private-sector default.

In October 2001 Standard & Poor's reduced its long-term credit ratings for Argentina from 'B-' to 'CCC+' with a negative outlook, reflecting the increasingly severe economic and social challenges that the federal government faced in balancing its budget. The agency considered that the government's prospects for achieving its zero-deficit budget goal for 2001 were remote and that its prospects for maintaining budgetary austerity, while ensuring timely debt service in 2002, were continuing to wane. It noted that the government had met its monthly budgetary objectives in part by accumulating US\$480 million of arrears in transfer payments due to the provinces. It said that the Argentine government was increasingly likely to have to restructure its debt, noting a 14 per cent decline in revenue collections year on year and a consequent need for further spending cuts to balance the budget.

In November 2001 Standard & Poor's reduced Argentina's rating to 'selective default' because it expected a sovereign default within the following month. In the agency's opinion, if Argentina's debt could be handled in an orderly way, as Ecuador's had been, there would be little spillover into other markets. If a sharp contraction led to social unrest, however, it could cause problems for Latin America as a whole. The agency noted that neighbouring markets, having been dragged down by Argentina in recent months, had begun to decouple and move higher even as Argentine assets continued to sink. It recognised the country's worsening economic situation, but also recognised that the dollarisation of the economy allowed for a substantial differential between the sovereign rating and the highest possible foreign-currency rating on any project in the country. The agency expressed the opinion that dollarisation made the authorities less likely to interfere with projects' foreign-exchange transactions if there was a sovereign default.

Continuing impact of Argentina's crisis

Argentina's credit ratings remained at the default level throughout 2002 as the peso was floated and declined to a rate of Ps3.50 to US\$1.00, bank savings accounts were frozen, unemployment rose above 20 per cent and inflation reached 40 per cent. Negotiations with the IMF resulted in a partial debt rollover in May 2002, with another rollover expected in January 2003. Argentina defaulted on a World Bank debt obligation in November 2002, pending its negotiations with the IMF. As of early 2003 the recession showed signs of abating and infla-

tion was lower than some had feared, but Argentina still faced the need for comprehensive fiscal restructuring and debt rescheduling.

The projects most severely affected by the crisis have been infrastructure projects, such as power plants or toll roads, with peso-denominated revenues and US dollar-denominated debt. Before the crisis some utilities had dollar-denominated tariffs, but utility contracts were switched from dollars to pesos in January 2002 when the government moved to 'de-dollarise' the economy. Mega and other projects in the oil and gas export sector have fared slightly better because of their hard-currency earnings.⁴ Although Mega's Natural Gas Contract requires the project to pay YPF for natural gas in US dollars, it also provides for what has in fact happened: the government has imposed exchange controls and the payments have been switched to pesos.

Lessons learned

Mega has received credit ratings higher than the sovereign ratings of Argentina and Brazil, and has fared better than many projects in Argentina during the country's economic difficulties. This can be attributed to the strong demand for Mega's output from project sponsors, offshore revenues payable in dollars, mechanisms to adjust feedstock and product sales prices resulting in a stable operating margin, and the ability to switch payment for feedstock from dollars to pesos upon the imposition of exchange controls in Argentina.

¹ This case study is based on the prospectus for the project bonds, articles in the financial press and an interview with Steven S. Greenwald, Managing Director, Credit Suisse Boston.

² Wolf, Martin, 'Argentina's Rags to Riches Tale', *Financial Times*, 20 March 2001.

³ Fernández, Raquel, and Jonathan Portes, 'Argentina's Senseless Sacrifice', *Financial Times*, 18 December 2001.

⁴ Marray, Michael, 'No Protection', *Project Finance*, April 2002, p. 27.