

To my son Tiago

o Executive Summary – abstract and main conclusions

In broad sense, Project Financing¹ as a mean of financing large scale infrastructural projects worldwide has had a steady growth in popularity for the last 20 years. This growth has been relatively unscathed from most economic cycles. However in the wake of the 2007 systemic Financial Crisis, Project Financing was also in trouble. The liquidity freeze and credit crunch that ensued affected all parties involved. Traditional Lenders, of this type of financial instrument, locked-in long-term contractual obligations, were severely hit with scarcity of funding compounded by rapidly increasing cost of funding. All the while, Banks were “rescued” by the concerted actions of Central Banks and other Multi-Lateral Agencies around the world but at the same time “stressed” by upcoming regulatory effort (Basel Committee).

This impact resulted in specific changes to this type of long-term financing. Changes such as Commercial Banks’ increased risk aversion; pricing increase and maturities decrease of credit facilities; enforcement of Market Disruption Event clauses; partial responsibility for project risk by Multilateral Agencies; and adoption of utility-like availability payments in other industrial sectors such as transportation and even social infrastructure.

To the extent possible, this report is then divided in three parts. First, it begins with a more instructional part, touching academic literature (theory) and giving the Banks perspective (practice), but mostly as an overview of Project Finance for awareness’ sake. The renowned Harvard Business School professor – Benjamin Esty, states² that Project Finance is a “relatively unexplored territory for both empirical and theoretical research” which means that academic research efforts are lagging the practice of Project Finance. Second, the report presents a practical case regarding the first Road Concession in Portugal in 1998 ending with the lessons learned 10 years after Financial Close. Lastly, the report concludes with the analysis of the current trends and changes to the industry post Financial Crisis of the late 2000’s.

To achieve this I’ll reference relevant papers, books on the subject, online articles and my own experience in the Project Finance Department at a major Portuguese Investment Bank. Regarding the latter, with the signing of a confidentiality agreement, I’m duly omitting sensitive and proprietary bank information.

o.1 Statement and relevance of the problem

Not before the current Financial Crisis, Project Financing had seen reasons for distress. Even considering the capital amounts involved, it’s classified as a low-risk investment based on tight contractual control and commitment by all parties present. The systemic nature of the current Financial Crisis however caused financing parties to seek alternative sources of funding, tighten due diligence processes and increase risk mitigation measures especially on cash-flow generation. Finally, Project Finance has an implicit link with Public-Private Partnerships, for which macro-economic agents and policy makers regard as the recipient of various stimulus packages that provide a much necessary boost to the ailing economies.

o.2 Acknowledgements

I hereby extend my sincere gratitude to **Tiago Simões de Almeida** and **Tomás Costa Gonçalves** of Banco BPI.

I’m deeply appreciated of their help, availability and our talks of project financing strategy as well as clever details of the industry. Suffice to say, without them this report would not have been as good.

¹ Please notice that, throughout the report, project finance and project financing will be used interchangeably with the same meaning unless stated otherwise.

² Esty, B. (2004). Why Study Large Projects. *European Financial Management*, 10, 214-215

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2 Project Finance: an overview

E. R. Yescombe defines³ project finance as “a method of raising long-term debt financing for major projects. It is a form of ‘financial engineering’, based on lending against the cash flow generated by the project, and depends on a detailed evaluation of a project’s construction, operating and revenue risks, and their allocation between investors, lenders, and other parties through contractual and other arrangements.”

It is a well-established technique for long-term financing of capital intensive projects such as infra-structure (e.g.: road, rail, port, airports), natural resources (e.g.: mining, oil & gas), energy (e.g.: power plants, wind farms and other renewables), and more recently social infrastructure (e.g.: school, prison, health). It is also used by private and public sector, the latter gaining prevalence in form of Public-Private Partnerships (henceforth PPP).

As it stands, it is useful for corporations and governments to increase debt capacity and make large simultaneous off balance sheet investments in economically strong projects while allocating intrinsic and extrinsic risks across the relevant parties involved in the deal.

Projects need be economically strong as there is limited recourse to the Borrowers. As such, debt is serviced from the cash flow stream generated by the project. Risk allocation is particularly important because if risk is held by the party that best manages it, the overall risk of project default is lessened considerably.

Incidentally there is no “standard” Project Finance deal *per se*, and although they can be generally characterized by industry, there can be some variances among deals within the same sector in each country, as it can be read on their contracts.

For this purpose this chapter will then address the core of this type of structured finance, looking at the several parts of a typical project finance deal with academic or practitioner’s perspective where appropriate, as follows:

- Common features
- Project Finance vis-à-vis others financing structures (the academic perspective)
- Parties involved
- Financing Structure
- Contracts, Term Sheets and Letters
- Financial Model
- Due Diligence
- Risk Matrix
- Origination and Syndication
- Timeline of events

Please note that in Project Finance all parts relate directly to one another, some even with significant overlaps (contracts are signed between applicable parties and define risk allocation across them, due diligence reports feed most information present in the financial models).

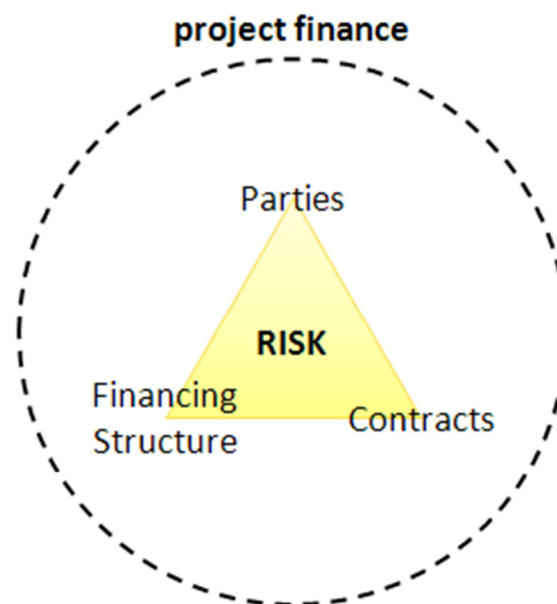
2.1 Common features of Project Finance

In most project financing deals, we can observe a common set of features as follows. In short Project Financing is used to finance large capital intensive⁴ economically strong infra-structural projects⁵. In those projects the

³ Yescombe, E. R. (2007). *Public-Private Partnerships: Principles of Policy and Finance* (Ch. 8 pp. 113). Elsevier.

⁴ Due to very high set-up costs that limit the applicability this method to very high capital investments

borrower is always a Special Purpose Vehicle (henceforth SPV), which is “ring-fenced” entity created specifically for the project to be financed. This means that both the project and the SPV are shielded from Sponsor risks, and the activities and uses of the project’s free cash flow are limited within the legal boundaries of the project. Sponsors (investors and shareholders of the SPV) benefit from limited or non-recourse to their own assets, the recourse is further constrained to the project’s assets and generated cash flows. In fact, sponsors are able to achieve a high debt-to-equity ratio, with leverage reaching up to 95:5. Lenders allow this high ratio under specific conditions, such as, Debt Service payments from a very stable and predictable cash flow stream generated during the project’s operation stage. They expect full repayment of debt before the end of project life (the tail), extending long term debt maturity up to 30 years (of course limited by the project’s finite life). Lenders also require that each and every possible risk be allocated to the party that can best handle that risk. Finally the Lenders enforce a series of extensive binding contracts (both financial and project) that exert tight control over the permissible and forbidden actions that the management of the SPV can take.



In fact, all these features are subsets of three distinctive characteristics: a large number of involved **Parties** (including the “ring-fenced” SPV), a limited recourse and highly leveraged **Financing Structure** and several lengthy and complex **Contracts** that based on proper risk analysis yield the effectiveness of risk mitigation present in Project Finance. In fact, Project Financing is the financial instrument where Risk has highest priority.

2.2 Project Finance vis-à-vis other financing structures (the academics’ perspective)

In his paper⁶, Esty, makes the case for Project Finance. From the onset he challenges Modigliani and Miller irrelevance proposition in that financing structures do not affect firm value and the independence between financing and investing decisions. Esty claims that the proposition fails to hold with the realm of Project Finance and argues that the particular financing structure affects investment incentives, asset transaction costs among other deadweight costs and asset generated cash flows, thus financing structures are value relevant. Even with the steep requirements for Project Finance’s benefits to overcome its higher transaction costs vis-à-vis traditional corporate finance, in his paper he presents the economic motivations for using this financial instrument in large investments and also the focus on value creation by reducing agency costs (associated with

⁵ High tech projects are avoided due to their quick obsolescence and short lifecycles

⁶ Esty, B. (2003). *The Economic Motivations for Using Project Finance* (pp. 9). Harvard Business School.

opportunistic behavior, conflicts between ownership and control and between equity holders and debt holders) and by reducing opportunity costs of under-investment⁷ (associated with high leverage, risk-averse management, asymmetry of information and incremental distress costs).

According to Harris and Krueger⁸, Project Finance has several differences from other financing structures. Unlike Securitization, another type of off balance sheet financing, the underlying in project finance is a very illiquid infrastructural asset. For the authors the distinction is less clear when compared to leverage buy-outs and privatizations. Even though both use high leveraged long-term non-recourse debt to finance the operation, the authors argue that LBO's and privatizations can only be classified as project finance when acquire standalone single purpose industrial assets.

In their 2007 paper⁹, three authors developed a model to explain the apparent self-reinforcing adoption of project finance over corporate finance, with regards to lower agency costs of free cash flow and lower deadweight costs from bankruptcy, as instruments used for large investments that happens in countries where creditors' (legal) protection against "managerial self-dealing" is weak/absent and vice-versa. Their work builds upon the seemingly counterintuitive benefits of project finance over corporate finance as stated by previously by Esty.

Other authors, such as Finnerty¹⁰ and Fight¹¹, have explicitly identified the advantages of project financing such as, capture of an economic rent, economies of scale, risk sharing, expanded debt capacity, lower overall cost of funds, project bound free cash-flow, reduced costs of resolving financial distress, possible reduced legal and regulatory costs (Sponsors specific added value), limited or non-recourse financing, favorable tax treatment and financing terms, off-balance sheet treatment.

However Finnerty questions the off-balance sheet "advantage" for Sponsors. According to him, not only financial risk remains, but investors incorporate this information in their valuations and ratings agencies can in their credit risk exposure assessments.

Conversely, both authors identify the following disadvantages such as, complex risk allocation, "increased" Lender risk, time-consuming and complex structuring, indirect credit support (debt service covered by contractual commitment, the lower the support the higher the yield premium required by Lenders), increased insurance coverage, higher Lender monitoring and reporting, and very high transaction costs (higher interest rates and fees).

Finally Fight¹² raises common Project Finance misconceptions such as, the assumption that Lenders focus solely on the Project's cash-flow stream for debt service payments, the assumption that Lenders don't demand a higher equity percentage in the financing structure, the assumption that Project's assets provide 100% security for Lenders (in fact Lenders seek Sponsors utmost commitment to project delivery), the assumption that technical and economic performance are benchmarked against pre-defined targets (in fact Lenders and Borrower's continuously negotiate these targets to protect their interests), Lenders will not abandon a project as long as project cash-flow covers operational costs.

⁷ Over-investment is limited by legal contracts, preventing cross-subsidization or pooling of cash-flows

⁸ Harris, S. and Krueger, K. (1999). An Overview of the Project Finance Market (pp. 2-3). Harvard Business School, N9-200-028.

⁹ Subramanian, K., Tung, F. and Wang X. (2007). Project Finance versus Corporate Finance. Emory University

¹⁰ Finnerty, J. D. (2007). *Project Financing: Asset-based Financial Engineering* (Ch. 2 pp. 22, 25-30) John Wiley & Sons, Inc.

¹¹ Fight, A. (2006). *Introduction to Project Finance* (Ch. 1 pp. 4-7). Butterworth-Heinemann.

¹² Fight, A. (2006). *Introduction to Project Finance* (Ch. 1 pp. 7-8). Butterworth-Heinemann.

To summarize differences between Corporate and Project Finance, Finnerty¹³ and Gatti¹⁴, propose the following set¹⁵ compiled and abridged by myself in the table below:

	Corporate Finance	Project Finance
Adverse Selection Effect	<ul style="list-style-type: none"> high as a result of information asymmetry between Borrowers and Lenders 	<ul style="list-style-type: none"> low as a result of the characteristic meticulous due diligence
Financial distress	<ul style="list-style-type: none"> reduces management efficiency and increases conflict of interests with bondholders 	<ul style="list-style-type: none"> Lenders prefer workout than foreclosure (up to a certain time) stress tests with sensitivity analysis of critical project variables makes financial distress unlikely project risk may decrease with maturity
Organization	<ul style="list-style-type: none"> corporate form 	<ul style="list-style-type: none"> partnership or limited liability company to explore tax benefits of ownership
Financing guarantees	<ul style="list-style-type: none"> Borrower's assets 	<ul style="list-style-type: none"> Project's assets
Accounting treatment	<ul style="list-style-type: none"> on balance sheet 	<ul style="list-style-type: none"> off balance sheet
Control and monitoring	<ul style="list-style-type: none"> control by management corporate performance monitored by the board of directors in behalf of the shareholders 	<ul style="list-style-type: none"> control by management but bound by contractual arrangements that facilitate monitoring by investors
Allocation of risk	<ul style="list-style-type: none"> Lenders have full recourse to Borrowers risks are diversified in portfolio of Borrowers assets 	<ul style="list-style-type: none"> Lenders have limited or no recourse to Sponsors risks are allocated to parties who can better manage that risk contractual arrangements define risk allocation
Financial flexibility	<ul style="list-style-type: none"> financing arrangement is usually quick process cash-flows can be freely used to finance other projects 	<ul style="list-style-type: none"> financing arrangement is highly structured and time consuming process cash-flow usage is limited to the waterfall payment mechanism higher transaction costs
Free cash-flow	<ul style="list-style-type: none"> cash-flow usage is at management allocation discretion (dividends or investments) mixed cash-flows from different assets and businesses 	<ul style="list-style-type: none"> cash-flow usage is limited to the waterfall payment mechanism assets and cash-flows are separate from Sponsors other activities
Agency costs between Equity and Debt	<ul style="list-style-type: none"> higher agency costs difficulty to make management incentives project specific equity investors are exposed to costs of free cash-flow 	<ul style="list-style-type: none"> lower agency costs management incentives are tied to project performance contracts and arrangements limit management freedom of action reduced costs of free cash-flow
Financing structure	<ul style="list-style-type: none"> Lenders look for Borrower's entire portfolio of assets for debt service debt is typically unsecured 	<ul style="list-style-type: none"> Lenders look for specific pool of assets for debt service debt is typically secured
Debt capacity (and leverage)	<ul style="list-style-type: none"> depends on the Borrower's balance sheet debt financing reduces Borrower's debt capacity 	<ul style="list-style-type: none"> depends on the project generated cash-flow debt financing expands Sponsor's debt capacity higher leverage is possible (more tax shield)
Bankruptcy	<ul style="list-style-type: none"> costly and time consuming financial distress Borrower's default can affect all projects Lenders have seniority over Borrower's entire portfolio of assets 	<ul style="list-style-type: none"> lower cost of resolving financial distress project is "shielded" from Sponsor's default Lenders have limited or no recourse to Sponsor's portfolio of assets

The next pages refocus on the more practical view of Project Finance from the Lenders' perspective.

¹³ Finnerty, J. D. (2007). *Project Financing: Asset-based Financial Engineering* (Ch. 2 pp. 23-25) John Wiley & Sons, Inc.

¹⁴ Gatti. S. (2008). *Project Finance in Theory and in Practice* (Ch. 1, pp. 4). Academic Press.

¹⁵ The first five categories are not contrasted directly by the authors

2.3 Parties involved

There are several parties involved in each project finance deal and each party may also include several companies and/or institutions. All parties have a stake in the project and expectations of efficiency, quality and cost. Generally, for-profit parties expect a return on their investments, and non-profit parties expect a higher value-for-money proposition against public sector procurement processes.

The major parties involved are the following:

- Public Authority – Launches the tenders, regulates the market and makes the availability and service payments. Sometimes the Public Authority also provides guarantees when required by Multilateral Agencies
- Lenders – The lenders provide the long-term debt facilities, guarantees and interest rate hedging to the Project Company. They are composed by Commercial Banks, Multilateral Agencies, Export Credit Agencies and other financial institutions. Commercial Banks may also act as consultants to the Sponsors in the bidding stage and can get preferential choice as the facility providers (if appointed as mandated lead arrangers)
- Sponsors (Investors) – Prepare and present the offer, provide construction, operation & maintenance cost estimates. The Sponsors are also the shareholders of the Project Company. They usually pledge to maintain shareholder stability and unity during project's life. The Sponsors provide equity funding to the Project Company
- Project Company – is the Borrower, a “ring-fenced” SPV created specifically for the duration of the project. It will build, operate and maintain the project. The revenues collected from operations will be used firstly used to cover the cost of operations, secondly for debt service payments to the lenders and finally to repay the equity injected in the Project Company and/or to remunerate the Sponsors

Other relevant parties include:

- Construction Company – is the company that will build the project during the construction phase. Usually its shareholders of the construction company are the specialized construction arm of the project's Sponsors, although there are cases where the Sponsors are not construction conglomerates and construction is totally outsourced to third parties
- Operation and Maintenance Company (henceforth O&M Company) – is the company that will operate and maintain the built project. Parallel to the Construction Company, the O&M Company's shareholders are usually also part of the project's Sponsors
- Specialized Consultants – are entities that with their expertise advise the Sponsors regarding, Market and Demand – forecast the demand and do market risk analysis (e.g.: traffic, wind, solar), Technical – engineering design (e.g.: bridge, road, rail) and other reports (e.g.: environment, archeology), Legal – draft the contractual package, Insurance – determine insurance needs during all project phases, Financial – prepare the financial model from the inputs of all consultants and Tax & Accounting – audit the financial model for tax purposes
- Independent Advisers/Consultants – they provide the Lenders the critical and independent analysis of the project in all stages (market and demand, technical, legal, insurance, financial model). They validate the Specialized Consultants reports/figures and Lenders rely on their assessments when deciding whether or not to finance the project. Lenders also depend on them to evaluate the progress of the project's different phases (construction, operation)

- Suppliers – when applicable, suppliers can also be a key party in the construction/operation phase of the project
- Clients/Customers/Consumers – when applicable, clients make payments to the Project Company, when the service provided is charged directly to the client, e.g.: toll road concessions, hospitals

The unwritten rule in project financing is that a deal should only be made if all parties can benefit from it and that it is in their best interest¹⁶ to do so, only then there are proper incentives to go through with the project.

2.4 Financing Structure

As mentioned before, the financing structure in project finance is highly leveraged, with typical debt ratios covering 70% to 95% of the investment costs, and structured with the following seniority:

- Multilateral Agencies Senior Debt (medium to long-term credit facility including subsidies provided by multilateral agencies and/or sovereigns¹⁷) – comprises the cheapest source of a project's funding, and normally part of this debt is guaranteed (either by Commercial Banks or the Public Authority)
- Commercial Banks Senior Debt (medium to long-term credit facility provided by commercial banks) – it is not the cheapest source of a project's funding, but it is still cheaper than Junior/Mezzanine Debt and Equity. This source of debt normally requires some sort of “reserve” facilities in order to bring additional comfort to the lenders (the most common reserves are Debt Service and Heavy Maintenance Costs)
- Junior/Mezzanine Debt (other term facility provided by commercial banks, other private investors, special mutual funds or private equity investors, ranked junior when compared with Senior Debt)
- Equity – comprises the most expensive source of funding and is provided by the Sponsors by way of Share Capital and Supplementary Capital.

The right proportions of debt and equity are determined from a financial model based on revenue and cost projections and consider the appropriate risk allocation among parties. The process is said to be iterative until an acceptable amount of risk is reached for the expected returns on investments. Sometimes it means demanding additional equity, contingent funds, additional guarantees, additional facilities and adoption of other financial instruments (interest and/or currency rate hedging contracts). In practice, the number of variables (some of them recursive) and the constant fine-tuning of the model make it very difficult to reach the optimal solution in the first few attempts, hence the necessity of an iterative process between the parties.

Any agreement on the financing structure needs to be supported by contracts, and like any other credit loan, contracts are signed to provide security to the debt holders.

2.5 Contracts, Term Sheets and Letters

As mentioned previously, because of the limited-recourse to Sponsors, **Contracts** are the instrument used to establish the security the Lenders need to have over the project's assets and future cash-flows (also called Security Package). Also, due to the long-term maturity of the facilities, the contractual relationships established between parties can become very inflexible. Therefore, in general, Contracts must extensively describe obligations, warranties, covenants, undertakings, events of default, and risk mitigation.

In the Contracts, some of the Lenders (normally the mandated lead arrangers) assume specific roles: Global Facility Agent (i.e.: interface between the SPV and the Lenders), Security Agent (i.e.: representing the Lenders'

¹⁶ Finnerty, J. D. (2007). *Project Financing: Asset-based Financial Engineering* (Ch.2 pp. 14). John Wiley & Sons, Inc.

¹⁷ Subsidies can also be non-reimbursable

interests regarding the Security Package), Account Bank (i.e.: where the project's bank accounts are located) and Intercreditor Agent (i.e.: an interface between Commercial Banks, Multilateral Agencies and Interest Rate Hedging providers).

Contracts are divided in two groups (assuming a typical public infra-structure concession):

- **Project Contracts**

- Concession Contract – between the Public Authority, the SPV and the Intercreditor Agent, describes the object of the concession, project requirements for construction and O&M, price model, applicable deductions, financial rebalance triggers and actions post event of default
- Construction and O&M Contracts – between the SPV and the Construction Co./Operation Co., defines the transfer of responsibilities from the SPV to the Construction Co./Operation Co. (e.g.: on a back-to-back basis, which means that all responsibilities assumed by the SPV regarding construction are passed down to the Construction Co.)
- Insurances – general third party risk insurance as requested by Public Authority and Commercial Lenders (e.g.: construction all risks, third party liability, loss of revenues)
- Shareholders Agreement – between the Sponsors to regulate the relationships between themselves and to define the management principles of the SPV

- **Finance Contracts**

- Common Terms Agreement – between the SPV, the Sponsors and the Commercial Lenders, its aim is to present the definitions for the terms used in all other finance contracts
- Facility and Accounts Agreements – between the SPV and the Commercial Banks, the first defining the terms of all loans including repayment schedules and the second describing all SPV's Bank Accounts and their withdrawal conditions
- Hedging Agreement – an agreement between the SPV and the Hedge Providers describing the usage of derivatives (commonly interest rate swaps)
- Intercreditor¹⁸ Agreement – between the SPV, the Commercial Lenders, the Multilateral Agencies and the Hedge Providers defining in advance how their competing interests will be dealt with during the life of the financing
- Security Agreement – between the SPV, the Sponsors and the Commercial Lenders describing the security package that guarantee the Lenders' exposure to the project under event of default scenarios that for instance, trigger acceleration and enable pledge over project accounts, pledge over the Project Co. shares and the assignment of receivables under project contracts and insurance to the Lenders
- Call Option Agreement – between the SPV, the Sponsors and the Commercial Lenders describing the transfer of all asset ownership to the Lenders under the occurrence of an event of default which was not or cannot be remedied
- Direct Agreements – between the SPV and the Construction Co./Operation Co., the Sponsors and the Intercreditor Agent, establishes that if the Lenders assume the project's control from the Shareholders of the SPV in case an event of default occurs, the Construction Co./Operation Co. will continue to duly perform its obligations
- Equity Subscription Agreement – between the Sponsors, in order to raise the amount of equity necessary and define the Guarantees each shareholder must provide regarding its equity commitments

¹⁸ This agreement exists whenever there are different classes of debt present the financing structure

Although it seems that Contracts are rigid, Waivers and Consents exist and allow for past failed obligations or future intents to break contractual clauses respectively to be waived by the Lenders.

However, no matter how complex the contract, the most important clauses, and usually those that differ substantially from similar projects in the same industry, are highlighted on the Term Sheet. Notwithstanding this, during the negotiation of the contracts (between Sponsors and Lenders) it is normally possible to include additional conditions from the Lenders which were not included on the Term Sheet.

Term Sheets are used in two stages of Project Financing. A lighter version is part of a submitted proposal to become Lead Arrangers, and a denser version gets gradually updated until the contracts begin to be prepared and negotiated towards the Financial Close.

A Term Sheet is in fact a summary of the Lenders financing proposal, with the following information:

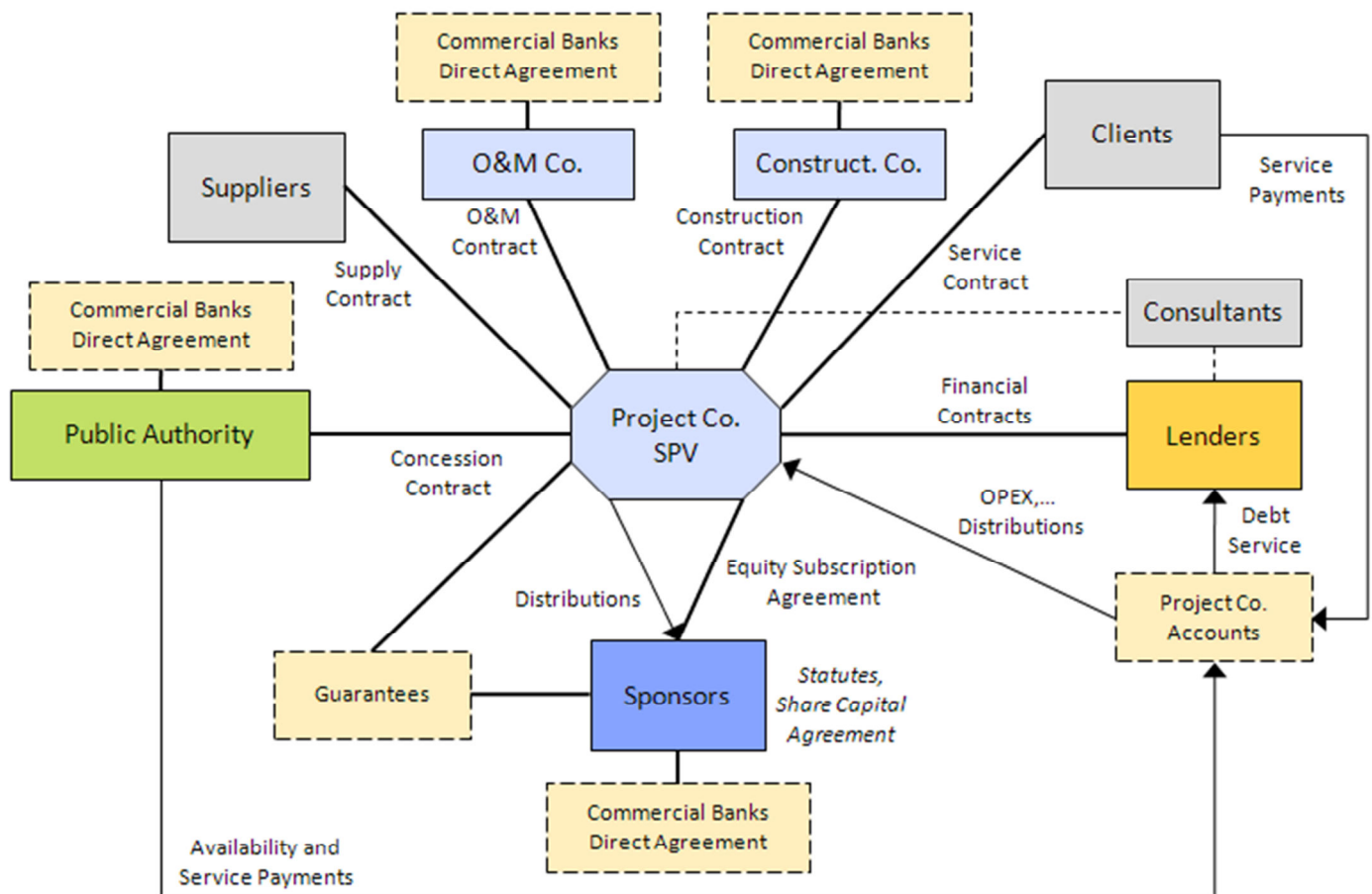
- A description of the type and size of the Equity
- A description of all Credit Facilities by value, maturity, pricing, structuring and immobilization fee, reimbursement type and any hedging main conditions (interest rate swap, currency rate swap,...)
- A description of the necessary Security Package
- The minimum Annual Coverage Ratio acceptable in the Base Case, together with the minimum Annual Coverage Ratio acceptable to realize distributions to the Sponsors and the Annual Coverage Ratio that triggers an Events of Default
- A description of the necessary Reserve Accounts and their funding method

While they are not exhaustive documents, Term Sheets are generally considered non binding.

Other similar and legally “weak” binding documents used in Project Finance are the group of **Letters (Mandate Letter, Commitment Letter and Letter of Intent)** that serve different purposes before Financial Close. Usually these letters are written not to be very legally binding postponing offer conditions to certain events (no material adverse changes, acceptance of due diligence reports, final credit approval). Each letter has a different purpose:

- Mandate Letter – a formal letter between Sponsors and Lead Arrangers to set the commercial terms of the loan according to an attached Term Sheet, including the main covenants and events of default, but most importantly to ensure exclusivity of the Lead Arrangers to the particular financing. Usually the Sponsors have to pay the Lead Arrangers an compensation if they grant the financing to a different group of Banks (rather than to the Lead Arrangers)
- Commitment Letter – normally used because of public tender rules, where each Bank commits to the main financial and legal terms of the deal as per an attached Term Sheet and subject to some conditions (no material adverse changes, acceptance of due diligence reports)
- Letter of Intent – a formal letter between the Banks and the Sponsors, confirming the Bank’s basic interest in the Sponsors’ project. It is hardly an official commitment

Before moving on, the following image illustrates the relationship between parties, the contracts that bind them together and principal cash flows. Notice that this illustration is for a typical concession contract in Portugal.



2.6 Financial Models

If not for the invention of spreadsheet software, this type of complex financing operations would probably not exist. The level of inputs and the kind of analysis expected of single project requires a great number of calculations that would be unthinkable to do by hand.

As explained previously, Financial Models help determine the financing structure by optimizing the debt to equity ratio and allow sensitivity analysis to be performed by the parties. Depending on the project, the inputs used and the level of sophistication implemented, these models can become very complex and difficult to manage and analyze, so they are usually divided in specialized sheets for:

- Macro-economic assumptions for interest rates, inflation, currency and tax. Currently in Portugal, as defined¹⁹ by decree-law
- Micro-economic assumptions for price/tariffs
- Market and demand projections through project life. Market and Demand specialists, which forecast the volume of demand based on their experience, on industry size and maturity, and on macro-economic factors trends as GDP, Labor costs, inflation and interest rates, among others. The volume, together with a price (single/bracketed/formula based) and any other construction stage generated revenues yield the Revenues. In Project Financing, these revenues are expected to be very stable and predictable
- CAPEX and OPEX through project life, including all direct costs with design, engineering, procurement, construction, depreciation, operation & maintenance, insurance, regular and heavy maintenance²⁰.

¹⁹ The current public sector discount rate is fixed at 6.08% p.a.

Engineering, procurement and construction costs are usually provided by the Construction Co. O&M costs are usually provided by the Operation Co. And usually both are provided at constant values, that is, without accounting for inflation. In Project Financing, the costs are supposed to be fixed, with any overruns assumed by the Construction and/or Operation Cos.

- Financial (facilities), amortization, guarantees, reserve accounts and all other indirect costs with commissions/fees (pricing). The Financial consultants determine these indirect costs, considering the facility characteristics, size, maturity and market spreads
- Drawdown of facilities and equity funding throughout the construction phase. There can be two types of drawdown of funding, simultaneous and pro rata to the financing structure and sequential, starting with the funding of lowest cost of capital until depletion and so on up to equity (also called back-ended equity)
- Deductions and other penalties if and when applicable
- Debt service payments indicating semester or yearly amounts due. Debt service payments are said to be sculpted when they are proportional to a pre-given annual coverage ratio. Debt service payments are also the first use of free cash flow after OPEX
- Distributions indicating the amounts available for distributions. Distributions is the last use of free cash flow (if available) after senior debt service payments, replenishment reserve accounts minimum balance, and junior debt service payments. Usually a distribution payment needs to verify a special annual coverage test
- Annual coverage tests like ADSCR (annual debt service cover ratio with or without cash balances), LLCR (loan life cover ratio) and PLCR (project life cover ratio), that indicate the projects current capacity to repay debt
- Net Present Value and Internal Rate of Return (Project and Sponsors), indicate the value creation of the project and of the Sponsor's investment and the correspondent IRR
- Sensitivity analysis of macro-economic factors, demand, costs, deductions and cross-variable in order to gauge the project's resistance to harsh effects and other more crippling conditions

The model will be complete when a series of semester/yearly cash flows and a defined financing structure, verify the annual coverage tests (including acceptable results of the sensitivity analysis) and the expected Sponsors' return on investment. With the closing of the financing, the model becomes the Base Case – and also a conservative reference later used to track the project's real performance.

2.7 Due Diligence

Due diligence is a long process of thorough analysis and validation of all project's assumptions. It is a multidisciplinary process that spans Insurance, Technical, Demand and Market, Tax & Accounting and Legal. Typically performed with the assistance of external advisers and experts in their respective fields, due diligence reports yield a comprehensive list of all the project's foreseeable risks and allows Lenders for a better investment decision.

2.8 Risk

As seen previously, risk allocation plays a crucial role in project finance. The general principle is that all actions should be taken in order to reduce overall project risk as it benefits all parties. The idea is that a non-distressed SPV can fulfill their OPEX needs and make debt service payments whereas a distressed SPV might be unable to

²⁰ Large interventions are important maintenance operations with large-scale repairs usually date and value set by contract

meet its debt service and at the same time reduce the project's equity return. So this is accomplished through specific risk identification and transfer to the party that is more capable to manage each risk. Also, risk tends to decrease with time, from the construction stage to ramp-up in operations (between 1 and 3 years depending on the project) to steady state operations and the end of project life.

DentonWildeSapte's report²¹ summarizes well some ground rules for the involved parties when allocating risk:

- A complete risk analysis as early as possible in the process
- Each identified risk should be allocated to the party that can control or bear that risk
- Risks should not be borne by the SPV alone (as the SPV has no balance sheet to accommodate risks), and contracts should provide solutions to allow risk sharing and the required insurance

Also, taking into account the risk groups' classification in DentonWildeSapte's report²², I believe that in project finance risks should be categorized in five major groups:

- Financial risks – interest rate, inflation rate – these risks are allocated to the SPV and can be mitigated through hedging agreements
- Market risks – or demand risk – these risks are allocated to the SPV and can be mitigated through conservative forecasts in the financial model, detected through sensitivity analysis and dampened through proper tariff settings (e.g.: band pricing) or allocated to the Public Authority through off-take agreements, availability payments as described in the concession contract
- Political, legal and regulatory risks – regulation, specific law, archeology²³, unilateral project design changes, these risks are all allocated to the Public Authority and described in the concession contract
- Construction and operation risks – project design and its unilateral changes, expropriation, performance, cost overruns, delays and completion, these risks are all allocated to the SPV and mitigated through turn-key contracts (Construction and O&M Agreements) that are fixed price lump sum with back-to-back clauses. Lately, through Contingent Equity, Sponsors have been required to raise more equity if cost overruns occur
- Force Majeure – unforeseeable risks, natural disasters and terrorism, these risks are allocated to the Public Authority as long as they can't be insured in the insurance market at a reasonable price

When all risks are determined, how can Lenders participate in the project?

2.9 Origination and Syndication

There are two types of commercial bank participation in project financing, as follows:

Origination – where a bank or a group of banks (normally called lead arrangers) negotiate with the Sponsors the terms of the financing. This process ends with the Financial Close of the financing, and the participating banks assume (underwrite) the total debt necessary for the project. Currently, this is the more common process.

Syndication (always follows an Origination process) – where a bank is invited to join an ongoing project finance deal and take part of a syndicate of banks. In this case there is a tendency for banks to join syndicate during the less risky stage of operations. Syndication normally happens because the lead arrangers want to reduce their exposure to that specific project.

²¹ DentonWildeSapte... (2004). *A guide to project finance* (pp. 39). DentonWildeSapte....

²² DentonWildeSapte... (2004). *A guide to project finance* (pp. 40-46). DentonWildeSapte....

²³ The current trend allocates Archeology risk shared between the Public Authority and Sponsors after a defined timeframe

2.10 Timeline of events

To wrap up this overview of project finance, the following timeline of events illustrates a typical concession project in Portugal, from the tender set-up to the end of the concession period, across the different phases that each major party goes through. Please note the following example is for a typical public infra-structure concession in Portugal. Notable milestones include the following:

- Tender – the date of the new project launch by the Public Authority
- Initial Bid – the date when all interested Sponsors submit their proposals
- Best and Final Offer (henceforth BAFO) – the date of a second bid when a short list of Sponsors submits their reviewed and final proposals
- Financial Close – the date when financing is contracted with the Lenders (by signing the Finance Contracts) and normally also when the concession contract is signed between the Public Authority and the SPV
- Visto do Tribunal de Contas (if applicable²⁴) – the date of the announcement of the *Visto* by the *Tribunal de Contas*, which usually is a condition precedent for the drawdown of senior debt
- End of Construction – if approved, marks the start of the operation & maintenance stage, when the project can start to generate cash-flows and start paying debt service
- Maturity of long-term facility – at this point there are no further obligations of the SPV to the Lenders and as such performance bonds and other guarantees can be released
- End of Concession – usually matches the project life and it is the final possible date for full loan repayment

In brief, the **Public Authority** sets-up the tender and starts contractual package negotiations between the Initial Bid and Financial Close. After that, it will mostly just monitor and track the contract performance (if necessary asking the support of its Consultants).

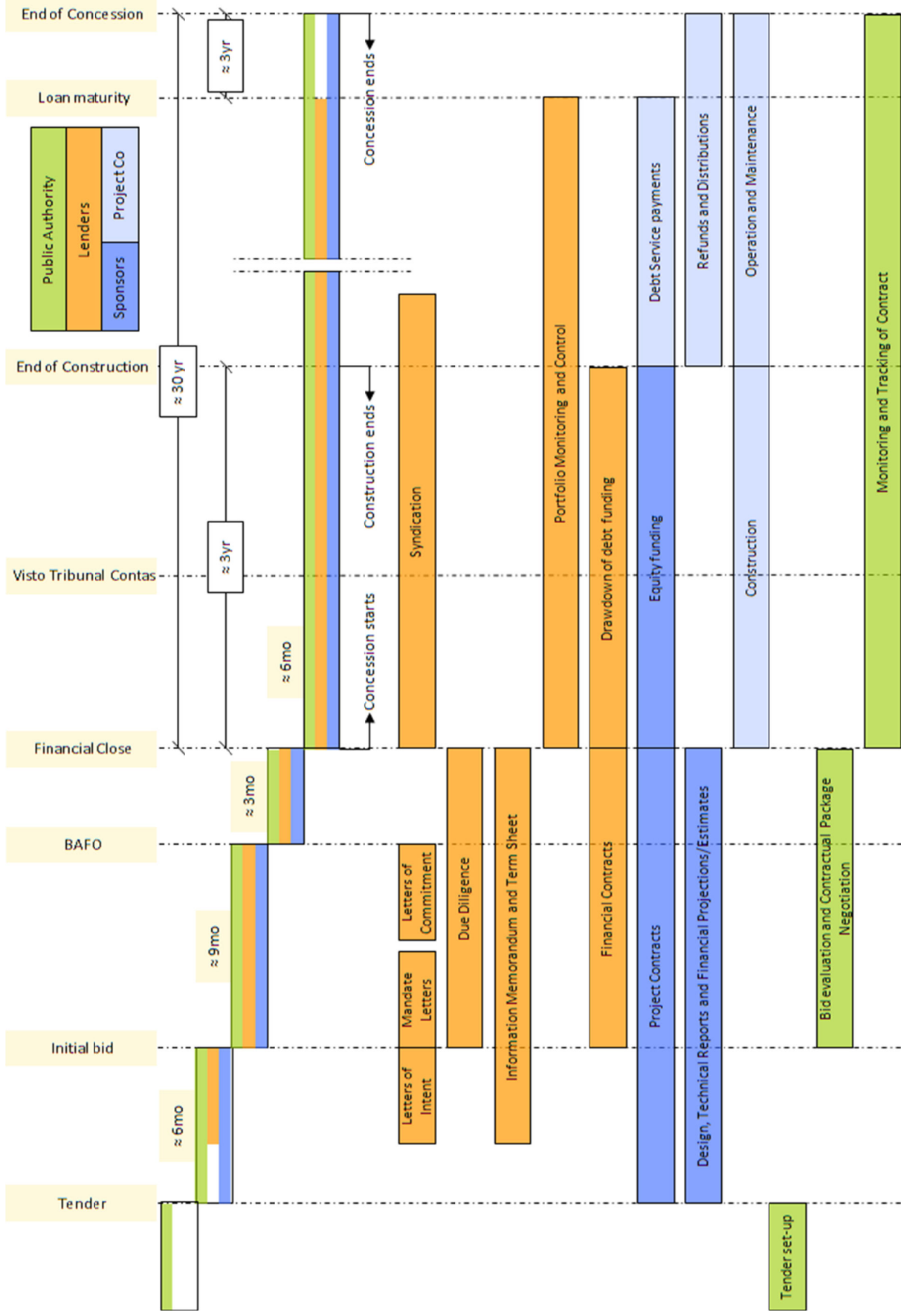
The **Sponsors** will contract specialized Consultants, who will design the project, produce all necessary technical reports, and forecast demand for the project. With the aid of the Financial Consultant to structure a financial model, the Sponsors will make the initial bid regarding the Public Authority's tender. If the Sponsors' bid is shortlisted to the BAFO Stage, and if its BAFO bid is selected as winner of the tender process, the Sponsors negotiate the final details in the contracts in order to reach the Financial Close. The newly created SPV will then use a proportional amount of equity funding to build the project. It will start operations as soon as construction ends and through revenue collection fulfills any defined OPEX and CAPEX needs, pay debt service and when allowed make equity reimbursements and distributions.

The **Lenders**, as (Mandated) Lead Arrangers will have an active participation in the structuring of the project, conducting the due diligence process and negotiating the finance contracts until Financial Close. With the concession start, the Lenders rely on specialized Consultants to monitor the project's construction and operation and allow for drawdown of facilities during the debt availability period. With the start of operations, debt begins to get repaid as the SPV receives its revenues.

The following page illustrates the typical timeline of events.

²⁴ Only applicable when the project involves public expenditure, which needs to be approved by the *Tribunal de Contas*

On Project Finance and the First Road Concession in Portugal



3 West Toll Highway Project

Even though this project is now 11 years old it was the first highway concession project finance in Portugal (and the first highway concession after Brisa's concession, awarded back in 1972). It wasn't however the first use of this financial innovation. According to a study published by Allen and Overy²⁵, project finance in Portugal started in the early 90's with the Pego coal-fired power plant and the Tapada do Outeiro natural gas power plant BOT²⁶ projects. Just one year later, in 1994, with the financial close of the second crossing over the Tagus River (Ponte Vasco da Gama) the Portuguese government gave way to the ambitious DBFO²⁷ road concession programme (1997-99) on a project finance basis. In this programme, the West Toll Highway Project was the first.

This project was important in many ways. First, it was financed by the EIB together with commercial banks providing equal facility amounts. The success of this project gave confidence to the EIB to finance several other infra-structure projects in the programme. Second, it allowed the national commercial banks to be mandated lead arrangers for these projects. Finally, the State marked the beginning of a series of infra-structural investments benefitting from the off-balance sheet treatment. Regarding Banco BPI's perspective, this was a landmark project, as Banco BPI participated also as one of the leading shareholders of the project.

From a legal point of view, the Portuguese Code Law was not developed enough at the time to accommodate all the rights and obligations, covenants and risk mitigation requirements imposed by Lenders. As such, the legal drafting had to be imported from countries where project finance was already in mature stage resulting. Therefore the finance contracts used were subject to English Law, and the other contracts (mainly Construction and O&M Contracts) were subject to Portuguese Law.

Further information regarding the legal and regulatory framework, active sectors and recent developments, concessions structure and security technicalities in the Portuguese Project Finance market are extensively detailed in the Allen and Overy²⁸ study.

The presented project is limited to abridged material disclosed with the owner's permission taken from the project's information memorandum. The information here contained also reflects the assumptions used at the time for the elaboration of the information memorandum. It is reasonable to believe that in hindsight some of those assumptions did not occur as predicted.

3.1 Background

The West Toll Highway Project was the first highway concession projects to be awarded in Portugal in late 1998. Back then, the context in which the International Public Tender for the Award of the Project was conducted (through MEPAT²⁹ and JAE³⁰) included:

²⁵ Allen & Overy LLP (2010). Global Guide to Public-Private Partnerships (pp. 109), <http://goo.gl/FaiFJ>, accessed 20/08/2010

²⁶ Build Operate Transfer

²⁷ Design Build Finance Operate

²⁸ Allen & Overy LLP (2010). Global Guide to Public-Private Partnerships (pp. 107-126), <http://goo.gl/FaiFJ>, accessed 20/08/2010

²⁹ "Ministério do Equipamento, do Planeamento e da Administração do Território" now called "Ministério das Obras Públicas, Transportes e Comunicações"

³⁰ "Junta Autónoma de Estradas" since divided, of which the current role belongs to "Estradas de Portugal, E.P.E."

- the increasing levels of traffic observed in Portugal due to its high growth of GDP (3.4% on average for the previous 10 years) and of car-ownership (50 cars per 1,000 inhabitants in 1970 to approximately 350 in the late 1990's)
- the decision from the Portuguese Government to promote the entry of private entities in the highway sector, thus assuring continued growth of the network without overburdening the State Budget
- the high population density and the economic activity in the Western part of Portugal (where the West Toll Highway Project is located), one of the most dynamic regions in Portugal

The West Toll Highway Project encompassed the design, construction, financing, operation and maintenance of two adjoining sections of highway in the western part of Portugal and the acquisition, financing, operation and maintenance of the existing A8 section from North of Lisbon to Caldas da Rainha (approximately 86.4 km long). The two new sections would link Caldas da Rainha northwards to Leiria (approximately 47.3 km long) along the A8 and eastwards to Santarém (approximately 37.0 km long) along the A15.

The existing stretches that were transferred to the Project Company for immediate operation were previously operated by Brisa since their entry into service in 1982. The fact that most of the Existing Stretches had an established traffic flow together with the fact that the set of Existing Stretches was expected to be responsible for more than half of the Project cash flow significantly reduced the Project's traffic risk.

The New Stretches, which were going to be built by the Contractor, were expected to be completed and opened to traffic by the end of September, 2001. The Contractor was also responsible for the construction of the Company's Headquarters and the Assistance and Maintenance Centers (CAM), as well as for the preliminary works related with 4 new Service Areas.

3.2 The Parties

The following table presents the shareholding structure of the Project Company (Auto-Estradas do Atlântico, S.A.), the Construction Company (Nova Estrada, A.C.E.) as of 1998:

Shareholder	Project Company		Construction Joint Venture
	% Equity	% Sub. Debt	%
Somague	8.99	18.99	15.00
Edifer	8.99	8.99	10.76
MSF	8.99	8.99	10.76
Zagope	8.99	8.99	10.76
Construtora Abrantina	8.99	8.99	10.76
Construtora do Lena	8.76	8.76	10.49
Construtora do Tâmega	8.76	8.76	10.49
Conduril	8.76	8.76	10.49
Novopca	8.76	8.76	10.49
Banco BPI	10.00	10.00	--
Abertis ³¹	10.00	--	--

The Construction Company members represented together the majority of the Portuguese road construction sector and Somague was at the time the largest construction company in Portugal. Banco BPI was one of the largest financial groups in Portugal and Albertis was at the time the largest highway operator in Spain.

³¹ Former Autopistas Concesionaria Española S.A. (ACESA)

The financing was provided by the European Investment Bank along with the following mandated lead arrangers, Banco BPI, S.A., Banco Bilbao Vizcaya Argentaria, S.A.³², Caixa Geral de Depósitos, S.A. and Calyon³³.

3.3 Concession Structure



Source: Auto-Estradas do Atlântico Information Memorandum

The Concession Agreement dated 21st December, 1998 and entered into between Auto-Estradas do Atlântico and the Portuguese State sets out the basis of the Concession for the design, construction, operation and maintenance of the Project for a period of 30 years.

The object of the Concession is the design, construction (both to be carried out by the Construction Company under the Construction Contract), operation and maintenance, under a toll system, of the Stretches along A8 from Caldas da Rainha to Leiria (approximately 47.3 km long) and along A15 from Caldas da Rainha to Santarém (approximately 37.0 km long) and the operation and maintenance of the Existing Stretches from CRIL to Loures and from Bombarral to Caldas da Rainha free of charge (not subject to tolls) (approximately 26.1 km long); from Torres Vedras South to Torres Vedras North, from Arnóia to A-dos-Negros and from Caldas da Rainha (Industrial

³² Former Banco de Negocios Argentaria, S.A.

³³ Former Crédit Lyonnais, S.A.

Zone) to Tornada subject to the toll system save for Local Traffic (approximately 13.5 km long); and from Loures to Torres Vedras South and from Torres Vedras North to Bombarral under a toll system (approximately 48.8 km long). The construction of the New Stretches will be carried out by the Construction Company under the Construction Contract.

3.3.1 Risk Allocation

Regarding risk allocation, the Concession Agreement includes the rights and obligations and reflects the Project risk sharing between the Grantor and the Company. In a particular case, the Company benefits from a Grantor compensation mechanism (Financial Balance) contained in the Concession Agreement. This Grantor compensation mechanism operates to compensate the Company in certain events that directly cause the Company to incur material cost increases or material losses of revenue, such as, unilateral modifications imposed by the Grantor, Force Majeure events, archeological findings and alterations to the NRP 2000, among others. Below is the Project's Risk Allocation Matrix:

DESCRIPTION	MITIGATING FACTORS	SPONSORS	PROJECT COMPANY	CONSTRUCTION COMPANY	GRANTOR	LENDERS
CONSTRUCTION RISKS				<u>Joint and Several liability of its members</u>		
Archeological					X	
Geological	LTA review, Construction Company expertise, geological surveys			X		
Licences and permits	Undertakings and Reps and Warranties		Back-to-back to Construction Company	For application	For delivery	
Environmental approvals	Condition Precedent to the second drawdown		For application	For preparation of information	For approval	
Expropriations	To be made according to the Works Schedule		Back-to-back to Construction Company	Documentation for Declaration of Public Utility	For expropriation (incl. costs)	
Adequacy of land	Identification and documentation for DUP to be submitted before second drawdown		Back-to-back to Construction Company	Documentation for Declaration of Public Utility	For expropriation (incl. costs)	
Designs approval	- Condition Precedent to the second drawdown (preliminary designs) - Base and construction designs subject to Grantor's approval		Submission for approval	X	Tacit approval within 60 days	
Adequacy of site access roads				X		
Costs overruns	Turnkey, fixed price contract			X	If imposes changes	
Modifications	Banks approval necessary	If not agreed by Banks	If agreed by Banks	If required by Construction Company	If asked by Grantor	
Compliance with environmental restrictions during construction				X		
Damage to site access roads				X		
Adverse weather conditions	Depending if considered as Force Majeure or not			X	if Force Majeure	
Damage to work by third parties	Insurance			X		
Third parties claims	Insurance			X		

Delays in completion	- Construction Company penalties back-to-back with Company penalties - Liquidated damages up to 6 months			X	Extension of time	
Performance Guarantee	- Bonds (up to 10% of the Construction Price) - Warranty period for 5 years			X		

DESCRIPTION	MITIGATING FACTORS	SPONSORS	PROJECT COMPANY	CONSTRUCTION COMPANY	GRANTOR	LENDERS
OPERATING RISKS						
Traffic	More than half of cash flow should be generated in Existing Stretches		X		If upgrades roads not in accordance with NRP2000	
Toll levels	- In line with tolls in Portugal - Indexed to inflation		X		If imposes different level	
Remedying latent defects on New Stretches	5 years Construction Company guarantee period		After the expiry of Guarantees	If within the time limit period		
Remedying latent defects on Existing Stretches	Guarantees on Existing Stretches transferred to the Company on signing date		After the expiry of Guarantees		If within the scope of the guarantees transferred	
Widenings	Investment Reserve Account and limits imposed by the Banks		If costs agreed by Banks			
Major maintenance	Investment Reserve Account and limits imposed by the Banks		If costs agreed by Banks			
Operation & Maintenance costs	Control costs procedure		If approved by Banks			
Lane occupation charges during maintenance	Not provided by the Concession Agreement					

DESCRIPTION	MITIGATING FACTORS	SPONSORS	PROJECT COMPANY	CONSTRUCTION COMPANY	GRANTOR	LENDERS
OTHER RISKS						
Termination	- Step-in right - Rebalance mechanism		Company default	Construction Company default	Force Majeure or Grantor default	X
Interest rate	Partially fixed rate loan for EIB (about 35.7% of senior debt)		X			X
Inflation	- EIB partially fixed rate loan - Fixed construction price - Toll rates - Inflation linked (90%)		X	X		
Force Majeure	Insurance programme		If not insured when mandatory		X	
Blockades	Considered as Force Majeure under the Concession Direct Agreement				X	
Insurance	Reviewed by Banks' Insurance Adviser		X	X		
Change in law			General Law / taxes / environment		Specific Law	
Securities / Guarantees		X				

3.4 Construction

The Construction Contract dated 19th December, 1998 and entered into between Auto-Estradas do Atlântico and the Construction Company is the contract whereby the Company subcontracts the Construction Company for the design and construction of the New Stretches.

The main features of the Construction Contract are presented below:

- Construction Company Members joint and severally liable for the Works, which means that in case of default of any of its members, the others will assume its responsibilities
- Fixed price contract with limited scope for variations³⁴
- Fixed term contract (September 2001) with penalties for delays, which cover both the penalties charged by the Grantor to the Company (pass through concept) and loss of revenues of the Company (net of avoided costs)
- Back-to-back concept, which means that any responsibilities assumed by the Project Company through the Concession Contract in terms of design and construction activities were all transferred to the Construction Company
- Turnkey contract including preparation of studies and design, preparation of the expropriation process (for which JAE will be responsible), construction of road sections and special structures and installation and testing of equipment
- Supervision by an independent engineer
- Performance bond in the form of a bank guarantee
- Retention bond in the form of a bank guarantee
- Payment mechanism linked to performance
- Five years guarantee period - defects liability period
- Force Majeure provisions linked to those under the Concession Agreement (pass through concept)
- Settlement of disputes through an arbitration process

3.5 Operation and Maintenance

During the initial period of the Concession, the operation and maintenance was carried out by Briser, (a services supplier company, subsidiary of Brisa), under a renewable contract with an initial term of 6 months. The purpose of this agreement was to assure a smooth transition in the operation and maintenance of the Existing Stretches in order not to disturb the quality of the service rendered to the users.

After this initial period, the Company itself assumed the operation and maintenance activities. Abertis had an important role in preparing the Company and assisting it with technical support.

3.6 Traffic Projections

Auto-Estradas do Atlântico appointed VTM and MVA Consultancy as the Company's Traffic Advisers. Capita Symonds (former STM) was appointed as the Banks' Traffic Adviser to audit VTM/MVA's model and to prepare its own forecasts. Traffic risk was significantly reduced due to the well established traffic flows on the Existing Stretches and to the fairly conservative projections made by both VTM/MVA and validated by Capita Symonds.

³⁴ At the time was very difficult to assume by any Construction Company

Regarding Central Traffic Forecasts, the traffic projections were prepared for light and heavy vehicles. To change these projections from light and heavy vehicles to classes 1, 2, 3 and 4 the following assumptions were used during the whole Concession period. The central traffic forecasts considered in the Reference Model were split between light vehicles and heavy vehicles, which were further split into each of the toll tariff classes:

Class	% Light Vehicles	% Heavy Vehicles
1	81%	-
2	19%	43%
3	-	16%
4	-	41%

The following table shows the average annual traffic growth rates considered in the Reference Model:

Stretches	2000	2000-05	2005-12	2012-20	2020-28
Total Highway	5.15%	0.60%	1.85%	1.15%	0.85%

The growth rates projected for the period 1998-2005 were relatively higher than those used for the rest of the Concession period. This was due not only to a very high traffic growth in the late 1990's which was expected to continue in the following years but also to the fact that, whenever a new highway infrastructure is opened, a substantial reallocation of traffic from neighboring roads to the new highway and inducement of traffic occurs. For the period 2006-2030 the projected traffic growth was more related with macro-economic variables growth, such as GDP and car ownership. In any case, the average rate of growth between 2006 and 2015 was higher than the one used for the period between 2016 and 2030.

3.7 Revenues

The Company's main source of revenues is toll collection. In addition, it can charge rents and/or down payments to Service Areas sub-contractors and fees for mechanical and sanitary assistance to road users. Transitorily, the Company would also receive compensation from the Grantor in respect of the Torres Vedras North - Bombarral Stretch. Tolls are collected both on manual toll booths, where toll operators charge tolls to users, and on automatic toll booths through the Via Verde system.

Toll tariffs are established for Class 1 vehicles under the Concession Agreement in Portuguese Escudos per kilometer for each Substretch and can be annually revised with up to 90% of the previous year's inflation rate. For Classes 2, 3 and 4 a ratio between the respective toll tariff and Class 1 toll tariff is also established.

Toll rates charged to users are calculated by multiplying toll tariffs by the length of the respective Substretch and the ratio between each Class and Class 1 toll tariff (including VAT).

3.8 Insurance

A comprehensive Project insurance programme (the "Insurance Programme") has been arranged to cover all major insurable risks during both the construction period and the operational period. The Insurance Programme has been agreed with the Lenders' Insurance Adviser and would be the minimum requirement of the Banks until the maturity of the loans.

Companhia Mediadora de Riscos Empresariais, S.A. (CRE), a local insurance broker which was responsible for local placing of the required insurances, and Lambert Fenchurch, an international reinsurance broker, were both

appointed as Insurance Advisers of the Company. Willis (former Willis Corroon) was appointed by the Banks to act as the Lenders' Insurance Adviser and review the Insurance Programme.

The Insurance Programme is an employer's controlled programme, which means that the construction phase and operational phase insurances are covered under the same policy bought by the Company (although the Construction Company is responsible for the payment of the construction phase insurances), thus assuring a perfect dovetailing between the two phases and full control by the Company.

Before Financial Close the following insurances were required by the Banks to be in place: Operational Material Damage "All Risks", Contractors "All Risks" - Existing Property, Business Interruption, Third Party Liability and Compulsory Insurances.

Before the beginning of the New Stretches' construction, in addition to the insurances referenced above, the following insurances were also required: Contractors "All Risks", Contractors "All Risks" - Existing Property, Advance Loss of Revenue, Third Party Liability, and Professional Indemnity.

3.8.1 Force Majeure

In the event of a Force Majeure event, the Company shall be released from its liability for failing to comply with its obligations arising from the Concession Agreement, and subject to other provisions of the Concession Agreement, shall be entitled to restoration of the financial balance. Despite this provision in the Concession Agreement, it has been agreed that Force Majeure events would be insured provided the insurers would retain the rights of subrogation against the Portuguese Government.

3.9 Project Economics and Sensitivity Analysis

Financial projections that comprise the Reference Model (together with the set of assumptions used therein) and a range of sensitivities were prepared to assist in the analysis of the Project economics. The set of assumptions used reflected the terms and conditions of the Finance Documents and Project Contracts, the assumed macro-economic scenario, the central traffic forecasts and other traffic data provided and/or reviewed by the Lenders' Traffic Adviser, the operation and maintenance data and all other data necessary based on the Company's estimates (validated by the Lenders' Advisers). The Reference Model has been developed by Banco Português de Investimento, S.A. (the Company's Financial Adviser) as an annual, nominal economic and financial projection for the period between 1997 and 2028, the year in which the Concession ends.

Macro-Economic Assumptions and Taxes

	1998	1999	2000	2001	2002-28
Inflation rates	2.80%	2.20%	2.20%	2.20%	2.20%
Real reference interest rates	3.11%	3.35%	3.35%	3.35%	3.32%
Nominal reference interest rates (Euribor)	6.00%	5.63%	5.63%	5.63%	5.63%
Corporate Tax ("IRC")	34.00%	34.00%	34.00%	34.00%	34.00%
Municipal tax ("Derrama") (% of IRC)	10.00%	10.00%	10.00%	10.00%	10.00%
Total Corporate Tax	37.40%	37.40%	37.40%	37.40%	37.40%
Loss carry-forward maximum period	6 years	6 years	6 years	6 years	6 years
Stamp duty on interest and bank fees	4.00%	4.00%	4.00%	4.00%	4.00%
Value Added Tax (normal tax)	17.00%	17.00%	17.00%	17.00%	17.00%

The following tables present the main results from the Reference Model for the first 17 years of the Concession:

YEAR	Earnings Before Interest and Taxes	Depreciation and Amortisation	Taxes Paid	Working Capital Needs	Investment	Cash Flow Available for Debt Service	Interest Paid	Senior Debt Principal Repayment	Drawdowns on Senior Debt	Interest Income
1998	-42	60	-	2,363	-19,109	-15,600	-1,306	-	14,560	6
1999	1,181	873	-	-1,204	-9,705	-8,497	-1,688	-	12,740	263
2000	1,773	998	-7	3,599	-40,706	-32,234	-2,830	-	20,111	185
2001	2,014	2,091	-463	-882	-27,672	-23,738	-4,193	-	21,203	3
2002	5,595	4,134	-110	-2,318	-4,457	1,986	-5,203	-	6,370	0
2003	5,816	4,397	5	-516	-431	8,094	-5,466	-	-	65
2004	6,547	4,398	-23	-35	-23	9,584	-5,437	-2,013	-	108
2005	7,175	4,400	-18	50	-178	10,097	-5,289	-2,159	-	85
2006	8,037	4,400	-127	164	-1,254	9,864	-5,136	-2,315	-	85
2007	8,871	4,416	-1,344	363	-3,750	7,241	-4,931	-4,433	-	95
2008	9,667	4,611	-1,446	-12	-3,515	7,871	-4,634	-4,715	-	106
2009	10,241	4,945	-1,780	-356	-649	10,685	-4,319	-5,015	-	105
2010	11,142	4,936	-2,095	-74	-239	11,833	-3,983	-5,336	-	105
2011	12,073	4,947	-2,661	423	-3,201	9,814	-3,626	-5,677	-	105
2012	13,000	4,994	-3,096	349	-5,673	7,851	-3,246	-6,041	-	104
2013	13,443	5,553	-3,545	-501	-1,739	11,124	-2,840	-6,428	-	104
2014	14,519	5,660	-3,827	29	-2,079	12,103	-2,351	-6,841	-	103
2015	15,223	5,918	-4,607	-29	-1,658	12,499	-1,898	-7,281	-	102

YEAR	Reserve Accounts Variations	Excess Cash (Beginning of Year)	Cash Flow Available for Shareholders	Drawdowns on Share Capital	Subordinated Debt Repayment	Interest on Subordinated Debt	Dividends	ADSCR1	ADSCR2	LLCR
1998	-	-	-2,065	5,200	-	-	-	#N/A	#N/A	#N/A
1999	-	2,699	6,031	329	-	-	-	#N/A	#N/A	#N/A
2000	-	6,142	-8,540	9,249	-	-	-	#N/A	#N/A	#N/A
2001	-	84	-6,305	6,769	-	-	-	#N/A	#N/A	#N/A
2002	-4,755	9	-1,242	1,333	-	-	-	#N/A	#N/A	#N/A
2003	-696	1	2,267	-	-	-	-	1.41	1.41	1.53
2004	221	2,197	5,178	-	-1,004	-2,647	-	1.70	1.20	1.52
2005	-1,766	1,436	2,889	-	-719	-697	-	1.39	1.20	1.53
2006	-1,809	1,434	2,606	-	-479	-647	-	1.35	1.20	1.57
2007	2,210	1,432	2,175	-	-	-325	-	1.24	1.20	1.59
2008	2,058	1,783	3,079	-	-303	-925	-	1.34	1.20	1.66
2009	-985	1,777	2,932	-	-513	-594	-	1.32	1.20	1.73
2010	-2,640	1,770	2,467	-	-75	-558	-	1.27	1.20	1.82
2011	446	1,764	3,543	-	-1,208	-553	-	1.39	1.20	1.94
2012	4,013	1,756	5,167	-	-2,997	-470	-	1.57	1.20	2.08
2013	-267	1,749	4,243	-	-2,265	-263	-	1.47	1.20	2.22
2014	-213	1,741	5,413	-	-1,546	-107	-2,210	1.61	1.20	2.44
2015	-978	1,721	5,063	-	-	-	-3,567	1.57	1.20	2.73

- Other relevant results:
 - Maximum amount of debt: EUR 400 million in year 2002
 - Debt fully repaid in year 2021
 - First distribution to Shareholders in year 2004
 - Nominal Internal Rate of Return to the Shareholders: 11.30%.

The sensitivity analysis presented showed that, according to the Reference Model, the Project was fairly robust in relation to both internal and external variables, such as:

- **O&M Expenditure and Capital Expenditure:** according to the Reference Model, the Project was fairly unharmed by increases of at least 10% in O&M Expenditure and at least 5% in Capital Expenditure
- **Inflation rates:** due to the initial gap between operational revenues and operational costs, although tolls could only be revised with up to 90% of inflation, high inflation rates were, up to a certain limit, beneficial for the Project
- **Interest rates:** the fact that more than 1/3 of debt was provided by EIB on a fixed rate basis represents a natural hedging for the Project. According to the Reference Model, the Project seemed to be unharmed by worse macro-economic scenarios
- **Traffic flows:** the Reference Model showed a satisfactory robustness of the Project to traffic flow fluctuations

3.10 Financing Structure

The financing of the Project is primarily based on a EUR 210,000,000 long term loan provided by the EIB and guaranteed by the Banks and on a EUR 210,000,000 long term loan provided by the same Banks, besides the equity injected by the Sponsors and the Company's toll revenues during the construction period.

Regarding the **EIB Loan**, it is a EUR 210,000,000 (divided in three tranches) long-term facility with a maturity of 23 years (up to 2021), fully guaranteed under the Bank Facility Agreement. Its availability period is between one year after Financial Close and the earlier of Project Completion Date and December 2002. The first two tranches have fixed interest rates and the third tranche can be fixed, variable or revisable at the Company's discretion. The purpose of the EIB Loan was to fund Eligible Project Cost, defined as the expenditure related with the works for extending the A8 highway from Caldas da Rainha to Leiria and for construction of the A15 highway from Caldas da Rainha to Santarém. EIB Loan repayment is semi-annual with a grace period of 8 years.

Regarding the **Commercial Banks' Guarantees** and **Term Loan**, they amount to EUR 210,000,000 each. While the purpose of the Guarantees is to guarantee the Company's obligations under the EIB Facility Agreement, the purpose of the Term Loan was to fund Loan Advances towards Capital Expenditure, O&M Expenditure, Financing Expenditure, Project Taxes and the Reserve Accounts minimum balances. It is important to take into consideration that the Company may not borrow any amount under the Bank Guarantees or Term Loans for the purpose of funding any damages or penalties payable by the Company or any Unexpected Cost (unless the Company can demonstrate that Assured Funding is available to cover such Unexpected Cost). Term Loan repayment is semi-annual with a grace period of 4 years. The Guarantees have a 23 year maturity (same as the EIB Loan) and the Term Loan has an 18 year maturity until 2016. Regarding interest rate, the Term Loan accrues interest at EURIBOR plus a defined margin (different from Construction and Operation). Then there are applicable Commitment Fees (for committed funds by the Lenders not yet disbursed), Bank Guarantee Fees, Agency Fees (for managing the financing during its maturity), Arrangement Fees (for setting up the financing of the Project) and Advisers' Fees.

Regarding the sources of funding they are based on the following facilities:

- Share capital and Subordinated debt committed under the Equity Subscription Agreement backed by bank guarantees
- Standby facility committed under the Standby Facility Agreement and backed by bank guarantees
- EIB's loan and Commercial Banks' loan in which drawdowns were subject to Conditions Precedent
- Cash-flow from operations generated from Existing Stretches operation

The following summarizes the uses of the funds:

- Acquisition of Existing Stretches from the Portuguese State
- Construction of New Stretches to be built by the Construction Company under the Construction Contract (fixed price and fixed term turnkey contract)
- Interest during Construction (capitalized)
- Other assets and Works
- Funding of Reserve Accounts (debt service and investment reserve accounts)

The tables below detail the timeline of **the sources and the uses of funding** during the construction period:

Sources of Funding	Facility Size	Projected Requirements Under Reference Model						
		1998	1999	2000	2001	2002	Total	% of Total
Shareholder Funding								
- Base Equity	55.0	25.0	1.5	28.5	-	-	55.0	9.6%
- Subordinated Debt	55.0	-	-	15.0	30.0	10.0	55.0	9.6%
- Standby Facility	17.5	-	-	-	-	-	-	0.0%
Senior Debt								
- EIB Loan	210.0	80.0	70.0	60.0	-	-	210.0	36.6%
- Banks' Loan	210.0	-	-	50.0	115.0	45.0	210.0	36.6%
Cash flow from Operations*	44.0	-10.0	-30.0	65.0	14.0	5.0	44.0	7.7%
Total	591.5	95.0	41.5	218.5	159.0	60.0	574.0	100.0%

* includes Working Capital needs, namely VAT

Uses of Funding	Projected Requirements Under Reference Model						
	1998	1999	2000	2001	2002	Total	% of Total
Acquisition of Existing Stretches	85.0	4.0	-	-	-	89.0	15.5%
Construction of New Facilities	-	29.5	210.0	133.0	5.0	377.5	65.8%
Interest during Construction	-	2.0	8.0	15.0	-	25.0	4.4%
Other Assets and Works	10.0	6.0	0.5	11.0	25.0	52.5	9.1%
Reserve Accounts	-	-	-	-	30.0	30.0	5.2%
Total	95.0	41.5	218.5	159.0	60.0	574.0	100.0%

3.11 Monitoring and Control

Under the Contractual Structure, namely the Finance Documents, the Banks have the ability to monitor and control the Project.

3.11.1 Information (reporting)

The Company undertakes to deliver to the Banks the following documents:

- Annual and semi-annual audited accounts together with the Auditor's report
- Quarterly accounts together with a cash flow statement for each quarter
- Quarterly Progress Reports during the construction period to cover matters like status of approvals, licenses, authorizations, design, expropriations, construction, quality and safety, among others
- Any requests from the Construction Company for extensions of time under the Construction Contract or for changes of the contract price above EUR 250,000
- Semi-annual Provisional Forecasts which, after approval by the Banks, are renamed Reference Forecasts and are used to recalculate the financial ratios considering the most recent assumptions

In addition, the Company has to inform the Banks of any event that might be materially adverse to the Project, including changes in law, litigations and defaults under other contracts.

3.11.2 Reserve Accounts

There are three accounts that have an important role in the control of the Project, the Banks' Debt Service Reserve Account, the EIB's Debt Service Reserve Account and the Investment Reserve Account.

Regarding the Investment Reserve Account which must be funded at any time, on and after the Final Availability Date, with an amount equal to the greater amount between EUR 10,000,000 and the aggregate of:

- 100% of the investment requirements³⁵ for the following year; plus
- 60% of the investment requirements for the second following year; plus
- 30% of the investment requirements for the third following year; plus
- 10% of the investment requirements for the fourth following year

The Debt Service Reserve Accounts are treated as security for the Banks, while the Investment Reserve Account is one of the means by which the Banks force the Company to keep the necessary amounts for future investment requirements within the Company instead of distributing them to its Shareholders. On the other hand, the Investment Reserve Account is important to stabilize the Project cash out flows which are naturally somewhat volatile due to the widening and major maintenance obligations.

3.11.3 Cash Flow Waterfall

The allocation of cash flow is made in decreasing relative order of priority as follows:

- O&M Expenditure, Capital Expenditure and/or Project Taxes
- Banks' fees
- Interest on Senior Debt
- Repayment of principal on Senior Debt
- Funding of Reserve Accounts
- Distributions to Shareholders
 - Interest on Junior Debt
 - Repayment of Junior Debt
 - Dividends: 50% for distribution and 50% for early repayment of Senior Debt

³⁵ Including major repairs, widening and horizontal signaling

3.11.4 Annual Ratios

The key annual ratios used by the Banks are the Annual Debt Service Cover Ratio 1 and 2 (ADSCR 1 and 2) and the Loan Life Coverage Ratio (LLCR). These annual ratios, as well as the Cash Flow Available for Debt Service are defined as follows:

CFADS - Cash Flow Available for Debt Service:

Calculated from 1st January to 31st December of the year in which the Calculation Date falls as:

+	Operating revenues (tolls, service areas, road assistance)
-	Operating costs (personnel, supplies, third party charges, other operating costs)
-	Capital expenditure during operation (widening, major repairs, replacement)
-	Taxes (payments net of refunds)
±	Working capital variations (including VAT variations)
=	CFADS

ADSCR1 - Annual Debt Service Cover Ratio 1: computes the capacities of the Project to service its debt. On any Calculation Date ADSCR1 means the ratio of:

+	CFADS
±	Variation on Debt Service Reserve Accounts ³⁶
±	Variation on Investment Reserve Account ³²
+	Excess Cash in the beginning of the year (1st January)
+	Interest Income during the year.
/	Annual Debt Service (principal, interest and guarantee fees, from 1st January to 31st December)
=	ADSCR1

ADSCR2 - Annual Debt Service Cover Ratio 2: computes the capacities of the Project to service its debt after distributions to Shareholders. On any Calculation Date ADSCR2 means the ratio of:

+	CFADS
±	Variation on Debt Service Reserve Accounts ³²
±	Variation on Investment Reserve Account ³²
+	Excess Cash in the beginning of the year (1st January)
+	Interest Income during the year
-	Distributions to shareholders (subordinated debt - interest and principal, dividends and other distributions)
/	Annual Debt Service (principal, interest and guarantee fees, from 1st January to 31st December)
=	ADSCR2

³⁶ balance begin of year minus balance end of year

LLCR - Loan Life Cover Ratio: computes the capacity of the Project to service its debt on the loan maturity. On any Calculation Date LLCR means the ratio of:

+	Sum of the Present Values ³⁷ of CFADS ³⁸ available for each Facility Tranche ³⁹ , from the beginning of the year ⁴⁰ until each Facility Tranche's final repayment date
+	The balance on the Investment Reserve Account in the beginning of the year (1st January)
/	Total Debt Outstanding in the beginning of the year
=	LLCR

The ratios must have the following minimum values for distributions to be made to the Shareholders:

- ADSCR ≥ 1.20
- LLCR ≥ 1.40

If the ratios fall below the following levels on any Calculation Date an Event of Default is triggered:

- ADSCR ≤ 1.10
- LLCR ≤ 1.25

As a Condition Precedent for each drawdown, the LLCR must be above 1.40 on any calculation date.

ADSCR2 is used to determine the amount of distributions to the Shareholders.

3.11.5 Distributions to Shareholders

Distributions (in the form of interest on Subordinated Debt, repayment of Subordinated Debt and Dividends) to Shareholders were blocked in the Reference Model until 2003 (the 3rd year after the year in which the Project Completion Date occurs). In addition to that, Distributions are also limited to:

- ADSCR1 both for the year in which the Distribution occurs and for the following year being greater than or equal to 1.20
- ADSCR2 for the year in which the Distribution occurs being greater than or equal to 1.20
- the Debt Service Reserve Account and the Investment Reserve Account being fully funded
- the Company having cash flow available for Shareholders

3.12 Lessons Learned

To close the presentation of the West Toll Highway Project, some of the lessons learned over the 10 years since the financial structuring that are considered fundamental to future project finance deals.

3.12.1 Construction, Widening and Traffic Forecasts

During the year 2000, the Public Authority decided to launch two Tenders that would have a significant impact in Auto-Estradas do Atlântico (still in the construction phase at the time) – the *Concessão do Litoral Centro* and the *Concessão da Costa da Prata*. Together with AEA, these two new concessions would form a competing parallel

³⁷ CFADS available for each Facility Tranche is discounted at each Facility Tranche interest rate

³⁸ CFADS is allocated to each Facility Tranche at its proportion in Total Debt Outstanding each year

³⁹ Facility Tranche is either the Direct Loan (which is consolidated after the Final Availability Date or each of the EIB Tranches)

⁴⁰ year in which the Calculation Date falls

corridor to the A1 – the existing main link between Lisboa and Porto (Brisa's most profitable concession). And that when completed would considerably increase the traffic in AEA.

Concurrent to this announcement, AEA ordered a new traffic projections study. Forecasts indicated that by 2006 (only 5 years after the end of AEA's construction), the increased traffic levels would reach the annual average daily traffic limit for the 2x2 section, making necessary the widening of those sections. Therefore, AEA took the decision of building the A8 northern stretches as 2x3 sections.

On this matter, the Banks authorized AEA to raise additional subordinated debt as funding for the Project (with equivalent additional equity injection). The additional funding allowed AEA to start widening 2x3 works taking advantage of the northern stretches still under construction. The reasoning was significant cost savings in this operation assuming the new traffic projections proved accurate. Unfortunately the new traffic projections (2000) turned out to be too optimistic and the traffic levels at the northern stretches are still below the widening threshold.

Nevertheless, it was deemed a success the fact that it was possible to raise additional debt (though subordinated debt) and to sign an additional fixed term and fixed price construction contract with the Construction Company.

There is one lesson here. Regarding Public-Private Partnerships, the Portuguese Public Authority always establishes an over-arching Grand Plan for the major infrastructural investments classified of national importance. However, no matter how detailed their breadth and implementation stages, these Plans are highly subject to Political Risk. So, the structuring of a new deal should take into account the eventual positive or negative externalities that result from changes or partial execution of the grand plan. Normally, negative externalities are covered by the financial rebalance clauses

3.12.2 Refinancing Troubles

Unlike the more recent Concession Agreements with the Portuguese Public Authority, the AEA Concession Agreement did not stipulate a mechanism of shared benefits from refinancing between the Project Company and the Public Authority but the Grantor must approve any refinancing attempt by AEA.

In AEA's case, between 2003 and 2006, the Project Company made several attempts to refinance their debt. Their purpose was to better adapt the debt amortizing profile to the Project's duration in order to anticipate distributions to the Project Company's shareholders. In turn, the Grantor's position on this matter was always a non-negotiable demand for 50% of the refinancing benefits, which in turn was never accepted by the Project Company.

To date it was not possible to refinance the Project, especially after 2007 with the Financial Crisis (the margins for this type of asset increased well above AEA's margins). As such the Project Company decided to postpone its refinancing efforts to an undefined future date.

There is one lesson here. When structuring a new deal, the Concession Agreement must specify in which conditions refinancing operation should be allowed and what are the appropriate percentages of benefit sharing resulting from the operation. This should be considered from the beginning of the contractual package negotiations, allowing a quick refinancing process if a good opportunity appears in the market.

3.12.3 Changes in Shareholder Structure

As previously described, in the beginning there were 11 Shareholders in the Project Company, of which 9 were construction companies (the members of the Construction Company). With construction completion, 6 of the 11 Shareholders wanted to divest their position in AEA.

This operation was structured in a way that the direct participation in AEA would be transferred to two SPVs - SPV1 with a 90% stake in AEA and SPV2 with a 10% stake in AEA. This allowed the SPVs to finance themselves in order to acquire the stakes of the 6 divesting Shareholders. SPV 1 was at the time held by the 5 remaining Shareholders (Banco BPI, MSF, Lena, Somague and Novopca), being the SPV2 wholly held by the SPV1. SPV1 held a stake of 90% of AEA, while SPV2 held the remaining 10% stake.

Some years later, Banco BPI, one of the 5 Shareholders, also decided to divest its position. This triggered a new restructuring of the shareholder structure between the remaining 4 Shareholders. By that time, Brisa bought SPV2 (10% of AEA). After this operation, Brisa managed a new agreement with the 4 Shareholders of SPV1 (MSF, Lena, Somague and Novopca). Brisa was able to reach a 50% stake at AEA (through the SPV2).

The last operation was the share transfers from Somague to Lena and from Novopca to MSF. Nowadays, MSF and Lena control 25% of AEA each (through their 100% stake in the SPV1).

This was a positive outcome, as an unusual number of Shareholder Structure changes were possible (authorised by the Lenders and also by the Grantor). This SPVs shareholding structure also allowed SPV1 to become Shareholder in a new Highway Concession (Concessão do Litoral Oeste). This also proved the liquidity of AEA's asset, allowing a numerous number of Shareholders to sell their stakes in the Project Company.

3.12.4 Sub-par Traffic growth

Even though the real traffic growth is well below the expected growth in the traffic projections' study, this effect is dampened by the satisfactory robustness of the Project to traffic flow fluctuations (already predicted by the sensitivity analysis). To date, even with a decrease in revenues, it is not expected any difficulties for the Company to service the whole debt.

There is one lesson here. Regarding forecasts, by nature, demand risk needs to be as mitigated as possible in the structuring of the new deal. Hence the evolution to utility-like Concessions Agreements based more on availability payments and less on service payments (e.g.: tolls or traffic bands).

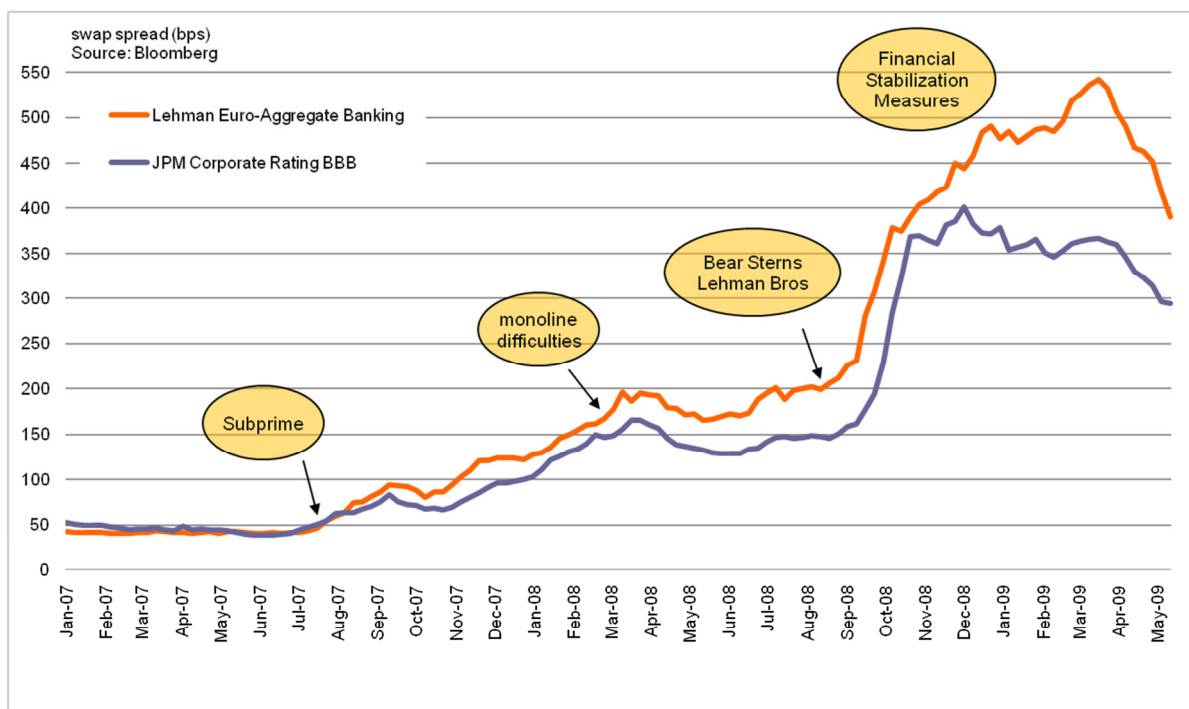
4 Project Finance trends post Financial Crisis of the late 2000's

In short, the Financial Crisis of the late 2000's made the Lenders' cost of funding rise to unprecedented levels. This chapter will very briefly address the Financial Crisis, its impact on the access to funding, the specific changes to Project Finance and finally a short-term outlook. Note that detailed analysis of the financial crisis is beyond the scope of this report.

4.1 The Financial Crisis of the late 2000's impact on access to funding

There is a general consensus that the Financial Crisis of the late 2000's started in the USA, as the steady rise of the interest rate (after a significant period of low interest rates) until homeowners could no longer cover their debt payments, up to a point when in summer of 2007, an unpredictable and simultaneous default of a large number of mortgages took place in the subprime segment. Because these and other mortgages were the basis of very complex structured products (such as collateralized debt obligations) that were insured by *monolines* covered by special financial instrument (such as credit default swaps), packaged and resold worldwide to investors as investment grade products, the exposure of financial markets to all this "bad debt" was significantly amplified. The level of debt rose considerably and financial institutions began themselves defaulting on their obligations. Until September 2008, when the last-minute rescue of Bear Sterns and the collapse of Lehman Brothers unleashed widespread panic and since destabilized financial markets, creating a market disruption that caused both *liquidity freeze* and a *credit crunch* situations. This meant the financial markets no longer trusted financial institutions which in turn did not trust themselves. In a way, what the markets have been experiencing since then can be described by the process of debt deflation⁴¹, compared to that of the Great Depression.

Specifically for financial institutions, the evolution of the swap spread metric shows how expensive financing became. The following chart that illustrates that evolution through time and the comparison swap spread of financial institutions and corporations.



⁴¹ Fisher, I. (1933). *The debt-deflation theory of Great Depressions* (pp. 337-357). *Econometrica*

According to the European Central Bank⁴², in the wake of the financial crisis, financing through the interbank and securitization markets shut down, and after the Lehman Brothers demise, financing through certificates of deposit and covered bonds also shut down. What this means was, that short term financing was provided through the Central Bank (as deposits were showing signs of difficulties and possible *bank runs*) and long term financing through guaranteed bonds. Specifically for Commercial Banks, on the one hand they had extreme difficulties rolling their own debt and on the other hand became extremely risk averse and tightened credit concession conditions, further aggravating the situation.

Suffice to say, the survival of Financial Markets depended on worldwide coordinated efforts of governments and central banks and their measures for financial stability.

4.2 Macroeconomic and Policy Changes (and its importance for Project Finance)

The depressed state of most world economies led policymakers to return to Keynes policy theory and to invest themselves of the crisis, that is, to fight the economic downturn with heavy spending. This in turn can benefit greatly from the advantages of project financing. According to the Reddy, S. in his article⁴³ of the Wall Street Journal governments around the world decided to stimulate their economies by choosing large infrastructural investments, from heavily subsidizing new projects to assuming project risk partial responsibility.

However, historical outcomes of massive investment need remind us that once growth picks up it becomes increasingly harder for governments to curtail the spending⁴⁴, the waste of resources and finally the inflation.

Like the scarcity of research on project finance, there are even fewer academic sources on project finance within the context of the Financial Crisis. Nonetheless, in an IMF working paper, the authors recognize the threats⁴⁵ posed by the current financial crisis and propose several measures that can be adopted by Governments to cope with it and allow for continued investment in Public-Private Partnerships. The focus of their concern is that to maintain the value-for-money premise, Governments need to carefully define exit strategies and/or “trip switch” clauses⁴⁶ as economic indicators get better and financial conditions return. For the purpose of this report, however, and from the Traditional Lenders’ point of view, they’re strategy is mostly about the reduction of their exposure to project risks while remain able to secure financing and if possible, at a lower cost of funding.

4.3 Changes in Project Financing post Financial Crisis of the late 2000’s

To this extent what follows are some of the major trends in Project Financing adopted by Traditional Lenders to deal the uncertainty in today’s financial markets.

4.3.1 Origination through Club Deals

Strategically speaking, before the financial crisis, it was usual for a small number of very large commercial banks (2 or 3) to underwrite equally very large amounts of the credit facility and later syndicate it after financial close. However after the financial crisis, market conditions deteriorated significantly and there was no longer interest

⁴² European Central Bank (2009). EU banks funding structures and policies (Chart 6 pp. 11), <http://goo.gl/Yi6VI>, accessed 20/08/2010

⁴³ Reddy, S. (2009). The New Old Big Thing in Economics: J.M. Keynes, <http://goo.gl/gKNsU>, accessed 20/08/2010

⁴⁴ Bodie, Z., Kane, A. and Marcus, A. (2009). Financial Crisis Update (pp. 10-12), <http://goo.gl/tVJYX>, McGraw-Hill.

⁴⁵ Burger, P., Tyson J., Karpowicz, I. and Coelho M. (2009). The Effects of the Financial Crisis on the Public-Private Partnerships (pp. 10). International Monetary Fund

⁴⁶ Burger, P., Tyson J., Karpowicz, I. and Coelho M. (2009). The Effects of the Financial Crisis on the Public-Private Partnerships (pp. 21). International Monetary Fund

in underwriting very large amounts (as the syndication market seemed closed). So the origination process started being conducted through **Club Deals** where a large number of commercial banks pledge smaller participation amounts but commit on a take-and-hold basis, hence reducing syndication needs with the decrease on its participations amounts.

4.3.2 Increased risk mitigation through Contracts

The Contract drafting and negotiation is now more cautious than ever. Three particular instances have gained relevance after the Financial Crisis:

- Market Disruption Event Clause – this clause when triggered allows the Lenders to review their pricing in case of negative (adverse) evolution of the financial markets (e.g.: as it happened when interbank lending markets froze – LIBOR was not quoted for weeks – and there was a steep increase in the funding cost for Lenders). So although this clause existed prior to the financial crisis, in more recent contracts, the clause lowers the minimum number of banks (within syndicate) required to notify about their increased funding costs above the reference interbank rate, thus making it much easier to trigger the event. In example, whereas in 2006, about 2/3 of the bank syndicate had to notify their increased funding cost, in 2009, certain contracts allowed for a single bank's notification to trigger the market disruption event.
- Increased Costs Clause – being triggered, this clause allowed Lenders to review their pricing when they experienced increased costs from outside independent sources (e.g.: the capital requirements proposed by the Basel II Accord).
- Availability Payments – this revenue source gives greater comfort to the Lenders, especially when demand/market risk cannot be allocated to a party because no party can control it. So revenues come from the mere availability of the project (e.g.: traffic demand on a new public concession project is especially hard to estimate and even beyond control by the Public Authority), which makes the project's risk easier to evaluate and assume by financing entities. As a consequence of the financial crisis, the economic slowdown and subsequent demand reduction are the basis for the increasing market risk.

4.3.3 Changes in credit facility conditions

Credit facility conditions are much stricter as Lenders became much more cautious and risk averse (credit crunch), with the current trend towards mini-perms, and as such facilities are established with overall lower risk, lower amounts, higher pricing, shorter maturities (larger tails), implementing cash sweeps and bullet payments at debt maturity.

Mini-perms⁴⁷ are financing structures that tend to reduce the maturity of the financing, with strong incentives for the Sponsors to refinance the facility within 8 to 12 years, and from that date on a cash sweep mechanism will apply, which means all available funds in the project will be used to repay senior debt (delaying shareholders' return until the senior debt full repayment).

4.3.4 Risk allocation paradigm shift

On risk allocation, because of the Commercial Banks' current lack of liquidity, there is now growing trend in which Sovereigns and other Multilateral Agencies allocate non-reimbursable subsidies to projects and thusly

⁴⁷ KPMG (2009), *The Use of Mini-perms*. KPMG.

assuming project risk on a recurrent basis. This type of measures, however, can distort the benefits of project financing and unduly expose Governments to greater risk⁴⁸, especially those facing the Sovereign Debt Crisis.

4.3.5 Project Bond Market and Securitization of Project Loans (CDOs)

Two Project Finance based financial innovations have experienced different outcomes of the current financial crisis. On the one hand, the need to find new sources of funding marked the return to the Project Bond Market⁴⁹. As very low risk long-term fixed-rate return bonds they are preferred by Pension Funds and Insurance Companies alike. On the other hand the securitization of project loans that resulted in historically “sound” project finance based CDOs has, according to the author⁵⁰, suffered from “guilt by association” with the remaining CDO market (the subprime mortgage based CDOs). The investor aversion for this kind of structured product has depressed the new issuance of CDOs. However, the author believes in the “soundness” of the principles of CDO structuring applied to Project Finance loans. CDO structuring facilitates risk transfer from banks to non-bank investors and allows those banks to better manage their project finance exposure and release needed regulatory capital (i.e.: Basel II).

4.4 Global Project Finance Outlook (and Toll Roads in Europe in particular)

According to the most recent Fitch Ratings report⁵¹, after two years of clear negative ratings, project finance rating outlooks are now showing improvements or stability in most sectors as a whole. These improvements result from a slowly recovering economy. However, the report also states two reasons for the continuation of non-positive outlook; first there is still uncertainty about the pace of economic recovery and second, most projects will still undergo more economic cycles in their lifetime.

The report credits the resilience of infrastructural assets albeit their known correlation with economic activity. This resilience comes from both project finance structuring, designed to sustain stressful financing conditions (sensitivity analysis driven) and from the specific nature of the assets for which there is a significant ongoing service demand.

The Fitch report goes on to explain the main driver for rating stability – low volatility in operational cash-flows. This is a characteristic of projects with take-or-pay agreements (in energy and renewables) and projects with availability payment structures (in transportation and social infrastructure). Nevertheless, these same projects tend to have higher leverage ratios (in part because of high-predictability of cash-flows). This higher leverage, in fact, raises credit exposure and consequent refinancing risks, which according to Fitch levels with the remaining sectors that have high-volatility operational cash-flows (subject to market demand and service payments).

And finally the report gives some macroeconomic insights, such as; persistent low inflation that will impair projects with “normal” inflation growth assumptions; unexpected high inflation spike in which costs above revenues; the impact on consumer spending/demand.

As for the Toll Roads in the EMEA region⁵², the Fitch report gives a stable-to-negative outlook. Taking into account the already expected decline in traffic, the report recognizes two different outcomes. On the one hand,

⁴⁸ Burger, P., Tyson J., Karpowicz, I. and Coelho M. (2009). The Effects of the Financial Crisis on the Public-Private Partnerships (pp. 19-21). International Monetary Fund

⁴⁹ Harris, S. and Krueger, K. (1999). An Overview of the Project Finance Market (pp. 7). Harvard Business School, N9-200-028.

⁵⁰ Forrester, P. (2010). Project Finance CDOs after the credit crisis, <http://goo.gl/VvfWp>, accessed 30/08/2010

⁵¹ Fitch Ratings Special Report (2010). Global Infrastructure and Project Finance 2010 Outlook (pp. 1-2). Fitch Ratings.

⁵² Fitch Ratings Special Report (2010). Global Infrastructure and Project Finance 2010 Outlook (pp. 15-16). Fitch Ratings.

Fitch awards a stable outlook rating for mature and diversified networks, where strong regulation⁵³, little competition and that compensate traffic drop with toll increase and O&M savings (effectively mimicking the utilities operational behavior). On the other hand, Fitch awards a negative outlook rating to those networks of weaker economies⁵⁴ that have existing free alternatives.

However, this negative rating outlook is also influenced by the increasing number of transactions with mini-perm debt structure (refinance risk) and deals that are highly dependent on traffic growth projections. Also contributing to the negative outlook ratings there are the road concessions that connect weekend destinations and newly developed areas or that have a high presence of heavy traffic.

As for 2011 and onwards, according to Bowker⁵⁵ his is more optimistic view. He recognizes the difficulties of 2010, but cites the new funding routes⁵⁶ backed by insurance companies, pensions and private equity funds as alternatives to the traditional bank lending. He also claims that infrastructure funds will reenter the market, backed by institutional funds and returning investor confidence. The funds' total size, however, should be under pre-financial crisis levels.

⁵³ In countries such as Italy and France

⁵⁴ In countries such as Portugal and Spain

⁵⁵ Bowker, T. (2011), 2011 - reasons to be cheerful in the year ahead, <http://goo.gl/S2Ncu>, accessed 4/01/2011

⁵⁶ Mahmudova, M. and Sourbes, C. (2010). Infrastructure & Pension Funds – Financial Investors Outlook 2010, <http://goo.gl/ZdPuZ>, accessed 4/01/2011

5 Conclusion and final words

In conclusion, as stated elsewhere in this report, it is hard to establish a hard and fast rule for long-term facility and contract design. Of the many advantages, Project Finance results in very low risk investment grade assets geared to risk-averse issuers and investors. And as that risk aversion attitude is expected to remain for many years, there are incentives for the innovation that ensures the lowest possible overall project risk, either through more comprehensive due diligence processes, or through pinpoint accuracy in planning/forecasting revenues or even through cleverer risk mitigation designed in contractual packages.

To summarize the significant changes to the Project Finance industry post Financial Crisis:

- Increased risk aversion by Traditional Lenders
- Increased risk mitigation through Contracts Clauses
- More restrictive credit facility conditions
- Recurrent (partial) project risk responsibility by Sovereigns and Multilateral Agencies
- Adoption of rulings introduced by the Basel II accord

Despite these changes Project Finance is still the financial instrument of choice for large infrastructural investments for both private companies and public authority alike. In spite of negative outlooks⁵⁷ and somewhat more hopeful prognosis⁵⁸, its presence in Public-Private Partnerships⁵⁹, a model that is gaining traction and relevance by governments in developed nations as a means to boost their depressed economies and importance by government in developing nations to modernize their economies.

This hardly should come as a surprise because, at worst Project Financing creates and demands an alignment incentives between all parties involved to reach the best possible final outcome, and at best it is driver of economic growth post financial crisis of the late 2000's.

⁵⁷ Fitch Ratings Special Report (2010). Global Infrastructure and Project Finance 2010 Outlook. Fitch Ratings.

⁵⁸ Bowker, T. (2011), 2011 - reasons to be cheerful in the year ahead, <http://goo.gl/S2Ncu>, accessed 4/01/2011

⁵⁹ Burger, P., Tyson J., Karpowicz, I. and Coelho M. (2009). The Effects of the Financial Crisis on the Public-Private Partnerships (pp. 4). International Monetary Fund

6 Summer internship self-evaluation, work project update and other notes

As explained elsewhere in this report, in theory, Project Financing is easily explainable as concept. In practice however, it is a long process that generates an intricate structured product bound by extensively detailed contracts that regulate all permissible and forbidden courses of actions for the parties involved in the project, which risk is thoroughly assessed and duly mitigated. To put it candidly, after Financial Close, there can be no surprises in project finance.

With that in mind, this summer internship at **Banco BPI** provided me the best possible “crash course” in Project Financing, bringing me up-to-speed on the latest projects, rationales and market trends insofar as two months allow. Unfortunately, summer is typically the period of lowest activity, which is to say, the likelihood of seeing either a project origination or a financial close is very dim (even taking into account the international exposure of the bank). Nonetheless it was a great learning opportunity for which I’m very thankful.

My studies focused on ongoing projects in key industry sectors, starting with a renowned BPI classic of the Transportation sector (later with other tolled road concessions and the high speed rail concession), then Renewables (solar and wind) and finally a very brief look at social infrastructure in Hospital PPPs. By covering as much as humanly possible each of the parts in the process, I sought to understand both the purpose and the relationships between them. It is my realization that the reach of project financing is as large as it is multidisciplinary, going beyond the lenders financing scope. For that I deem, a couple more months necessary to obtain a more comprehensive view and of course experience through practice. Nevertheless I believe I’ve acquired industry-specific knowledge and I feel able to discuss the subject matter confidently.

By and large, the greatest hurdle was writing the internship report. A time constrained process in order to yield a summary of Project Finance fundamentals, a performance analysis of the bank and a research on worldwide market trends. The challenge is further raised by my target audience as readers who are experts in the field.

Finally, as far as I’m concerned, as an outsider I knew **Banco BPI** was in the forefront of financial regulation adoption and deployment, and now, as an insider I know it has a winning team in Project Finance, one that portrays the bank’s conservative corporate culture and one that uses a more cautious approach protecting its interests than competition.

Work Project Update:

The internship report was subsequently adapted into the present form Work Project, in which the major changes were the exclusion of the bank analysis chapter to allow for the inclusion of the West Toll Highway Project as a practical and real example of project finance in Portugal, an overhaul of the market trends chapter to refocus on the sector’s performance under the current Financial Crisis and an overall greater articulation with the academic literature where possible. The latter part, nonetheless, had its hindrances.

To complement the report with academic literature, I sought both physical libraries and online sources for previous articles and papers on the subject matter. Alas, as mentioned previously, there is still little academic work on this “promising” field. And much of the material that is freely available echoes the thoughts of the same group of authors over and over again.

Bearing the MBA workload hurdle including the Business Case Competition, reaching the source material was by far the greatest challenge in my research effort. Thankfully, I found an online index at the Harvard Business

School Project Finance Portal⁶⁰ with a comprehensive source of information regarding theory and practice of Project Finance. However invaluable it might be for its academic resources that springboard research, it can be prohibitively costly as almost all of the content isn't freely available. Now that I knew which articles were out there, actually getting to read them was an entirely different thing.

A note regarding data sources, collection, treatment and analysis:

Regarding sources and collection, the private status of the majority of project companies makes it difficult if not impossible to access private information. Fortunately I had the benefit of having worked with an investment bank that shared their experience. Several situations make data treatment very complex and difficult: as stated previously there is still too little academic research on the field of project finance; the number of large infrastructural projects is very limited and by nature they have a very long project life as well as idiosyncratic features that complicate aggregation and statistical analysis efforts. Finally regarding analysis, a significant time commitment is required to understand the lengthy contracts let alone spot similarities and variations. All is not lost however, because an increasing source of literature based on cases studies and commercial databases and league tables of the project finance industry⁶¹.

Final words:

Notwithstanding what was written previously and to conclude my personal take on writing a thesis (such as this one), one must start with a clear understanding of the problem and then outline the desirable result or end goals. To achieve this result, then a reasonable scope and level detail of the research effort must also be defined and legitimately respected to later triage the large number of available sources, otherwise risking to lose oneself in the immense world of Finance.

Other than that, I've enjoyed the process all along, learned plenty about Project Finance, and gathered large amounts of information. I remain however, with the belief that there is ample room for improvement.

⁶⁰ Harvard Business School (2010). Project Finance Portal, <http://goo.gl/Jl1FS>, accessed 21/12/2010

⁶¹ Infrastructure Journal Online Project Finance Database, <http://goo.gl/6M7hT>, accessed 7/01/2011

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