SECOND EDITION

PROJECT FINANCE IN THEORY AND PRACTICE

DESIGNING, STRUCTURING, AND FINANCING PRIVATE AND PUBLIC PROJECTS

Stefano Gatti

Project Finance in Theory and Practice

Designing, Structuring, and Financing Private and Public Projects

Second Edition

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Preface to the Second Edition

The first edition of this book was published at the end of 2007, with its preface dating back to June 2007. At that time, financial markets worldwide were at their peaks in most of the segments of financial intermediation. The growth was sustained by a very long period of expansive monetary policy by the Federal Reserve, with very low levels of real interest rates, growth of equity indices and prices, expansion in the real estate and credit markets, and an increased use of a new generation of increasingly complex asset-backed securities and structured debt products. In Europe, many columnists were criticizing the more conservative policy of the European Central Bank and its excessive attention to inflationary pressures rather than economic growth.

In this favorable environment, the syndicated loans market and project finance reached their unsurpassed peaks in 2007. The syndicated loans market registered around 4.5 trillion U.S. dollars, of which around 5% was represented by project finance.

We all know what happened after 2007. With the bankruptcy of Lehman Brothers, the whole economic system started a period of prolonged recession and of overall weak macroeconomic performance compared to the previous decade.

The massive interventions put in place by the central banks and in particular the extraordinary quantitative easing actions by the Federal Reserve attempted to restore normalized market conditions. After 2009, the United States began showing signs of recovery. However, the financial crisis had already spilled over from the private sector (the financial sector) to public deficits. The more recent crisis of the sovereign debt in peripheral countries in Europe (Portugal, Italy, Ireland, Greece, and Spain, or the PIIGS, as they are frequently labeled) has plunged Europe into a double-dip recession, and the credit crunch determined by the need for bank recapitalization has strongly reduced the commitment to lend by the banking system. Some of the intermediaries that in the first part of 2000 were very active in the syndicated loans and project finance markets have almost completely withdrawn from this business. The market recorded a remarkable downturn from around 4.5 trillion US dollars in 2007 to 3.6 trillion US dollars at the end of 2011 (with a dramatic bottom in 2009 at 1.5 trillion US dollars). The declining trend was mirrored in the project finance market, with figures falling from around 220 billion US dollars in 2007 to a bottom of 138 billion US dollars in 2009. In 2011, the market for project finance loans returned to the pre-crisis period with a value of about 214 billion US dollars.

This changed landscape has radically modified the way to approach a project finance deal and the deal structuring. This holds true for project sponsors, banks, investors in infrastructures, project bondholders, and public authorities.

The second edition starts exactly where the first stopped. Although the fundamentals of project finance remain unchanged, the process that leads to the financing is now very different from what was depicted in the first edition. Almost all the chapters have been influenced by the new macroeconomic scenario, and all of them include specific references as to how the recent financial turmoil has affected the business.

This new edition includes several new or revised sections. I want to summarize the most relevant.

Chapter 1 includes a new, expanded section dedicated to the emerging role of infrastructure funds as equity providers to special-purpose vehicles (SPVs). While in the past, the ownership of an SPV was almost exclusively represented by industrial or public sponsors, nowadays industrial developers are looking with increasing interest at the opportunities offered by specialized investors in infrastructure. After a pause in growth between 2008 and 2009, the flow of funds invested by infrastructure funds has almost recovered to the level of the peaks recorded in 2007.

Chapter 2 has been revised and now includes updated time series on the market trends for project finance and public-private partnerships (PPPs).

Chapter 4 has been expanded in the section dedicated to the monoline insurers. Before the financial crisis, these intermediaries boosted the growth of the securitization market, providing convenient credit enhancement with their high ratings. The collapse of Lehman Brothers spurred a chain reaction of downgrades and bankruptcies of these monoliners. The wrapped bonds market (for asset-backed securities [ABS], but also for project finance) is now almost inexistent.

Chapter 6 is probably the chapter that has been modified the most. The sections relative to multilateral banks and export credit agencies (ECAs) have been updated with the inclusion of the new lines of products made available in response to the financial turmoil. Special sections have been included to explain how the new methods of syndication (club deals) work and why the crisis has forced banks to propose new ways to amortize long-term loans (mini perm structures) to project sponsors. Furthermore, careful attention has been dedicated to project bonds. Curiously, although the market for these instruments has almost evaporated after the defaults and downgrades of the monoliners, the European market is now experiencing a revived interest in this type of financing, which is seen by the European Union as a possible solution to the downward trend in bank loans dedicated to infrastructures. The 2020 European Union Project Bond initiative is discussed in detail.

Chapter 8 includes a new section dedicated to how the Basel Capital Regulations have been modified in response to the crisis (Basel III) and how the changes have affected the project finance market. Furthermore, a completely new section is dedicated to a review of the performance of project finance loans in terms of probability of default and loss given default from a long-term perspective. Overall, the data indicate that project finance is a resilient asset class even in period of severe financial stress, much more resilient than other traditional loans.

The second edition also includes new case studies.

The first, Case Study 3 (Quezon Power Ltd), refers to a very large power generation infrastructure located in the Philippine Islands and focuses on the application of risk analysis/risk management techniques and how a change in the soundness of the SPV's key counterparts can affect its cost of funding. The second new case study, Case Study 4 (Milan Metro Line 5), focuses on transportation infrastructures, in particular the expansion of the underground metropolitan railway network in Milan. It is useful to analyze how the concession agreement can be set up in order to share risks in a fair way between the awarding public authority and the private sponsors.

At the end of this long period of manuscript revision, let me express my renewed thanks to my contributors in this volume: Alessandro Steffanoni and Daniele Corbino (for the release of the Excel file supporting the Italy Water

Case), Massimo Novo (for Chapter 7), Sarah De Rocco, Fabio Landriscina, and Mark Pollard (for the insurance section in Chapter 4). Thanks also to Scott Bentley, Kathie Paoni and Andre Cuello at Elsevier for the precise support and useful suggestions throughout the preparation of the new edition.

Let me thank also the colleagues who in several occasions have shared with me ideas and comments on my research work: Veronica Bonetti, Simone Mauro, Andrea Sironi, Francesco Saita, Alvaro Rigamonti, Mauro Senati, Giancarlo Forestieri, Emilia Garcia-Appendini, Andrea Resti, Ben Esty, Bill Megginson and Dario Scannapieco (who were so kind to take the time to write the presentation), Stefanie Kleimeier, Marco Sorge, Blaise Gadanecz, Ian Cooper, Michel Habib, Robert Hauswald, Yener Altunbas, Frederic Blanc Brude, Timo Valila, Stefano Caselli, Paolo Colla, Giacomo Nocera, Sergio Ferraris, Marco Percoco, Veronica Vecchi, Mark Hellowell, and Issam Hallak. A special thanks to Gimede Gigante for excellent research assistance and help in updating most of the data in Chapters 2 and 6.

I tried to put every possible effort into preparing this new, updated, and expanded edition. My hope is to have prepared a book that is at the forefront of knowledge on project and infrastructure financing and that is a useful tool for academics, practitioners, and students in their day-to-day work in this fascinating field of finance.

Stefano Gatti
Milan, July 2012

Preface to the First Edition

I started working in the project finance sector in 1993, when I was assistant professor at the Institute of Financial Markets and Financial Intermediation at SDA Bocconi School of Management in Milan. My initial involvement in this field was due to the launch of a new research project investigating the development of project finance techniques in Italy.

At that time, Europe had just started to see the use of this technique in the private sector, particularly for the development and subsequent exploitation of off-shore crude reserves (the Forties Fields, off the coast of Scotland). The Italian project finance market was still in its infancy.

From that point on, the most absorbing field of interest on my research agenda and in my professional activity has become project finance. In the past few years, I've organized several teaching activities, both at a graduate level and in MBA programs, in Italy and abroad, in order to disseminate knowledge on this important field of finance.

If we look at the numbers, the growth of the market is impressive: during the period from 1994 to 2004 project finance loans have grown at a 24% annual compounded rate and today this technique accounts for more than 5% of the total market of syndicated loans.

Despite these numbers, this topic has received little attention from the academic and practitioners' press. There aren't many books nor are there any corporate finance international handbooks that deal with project finance. Academic journals that have hosted papers on the subject are very few.

This is the reason why I decided to collect a large part of the teaching notes, reports, and case studies I have developed over the past few years and organize them into a book. My objective is to provide the reader with a complete view on how a deal can be organized—from industrial, legal, and financial standpoints—and the alternatives for funding it. But what must never be forgotten is that project finance is a highly leveraged transaction where two principles are key to its success: (1) cash is king; (2) lenders control the destiny of the project. In fact, their satisfaction is just as important as the legitimate claim of project sponsors for a satisfactory return on the capital employed.

The book doesn't require previous experience in the field, and most of the concepts are explained for readers who are approaching this subject for the first time. Yet the complete coverage of all the aspects involved in deal structuring makes it suitable for both professionals and graduate/MBA/EMBA students.

The book opens with a description of the rationale underpinning project finance deals and a discussion of the difference between corporate finance and project finance in Chapter 1.

Chapter 2 is dedicated to the analysis of the market at an international level. Trends clearly demonstrate that (1) project finance loans are a rapidly growing segment of the syndicated loans market; (2) the destination of funds is quickly changing. In particular, the largest portion of loans is beginning to flow into PPPs (public-private partnerships) and projects where the public administration or public bodies play the role of concession awarder to private sponsors. In Europe, PPP projects account for more than 36% of total project finance loans; in Asia this percentage stands at a remarkable 25%.

Chapter 3 focuses on risk analysis and risk management. The chapter considers project contracts as risk management tools. Together with insurance policies, in fact, they are the most powerful instruments of this kind for reducing cash flow volatility of the deal, to the benefit of both lenders and sponsors.

Chapter 4 covers a seldom-seen discussion on the role of external consultants in project finance transactions. Here we also describe what legal advisors, independent technical advisors, and insurers are required to do in the overall process of deal design, implementation, and funding.

In Chapter 5 we discuss how to appraise the bankability of the deal. Since cash is king, two topics are of particular relevance: (1) the analysis of cash flows generated by the venture; (2) the optimal capital structure. The analysis of cover ratios (which represent the balance between cash generation and cash needs for debt service) and sensitivity and scenario analysis completes the financial analysis of the transaction.

Chapter 6 contains an overview of financing options. Since the book targets an international readership, we address the role played by multilateral and bilateral institutions, also in developing countries. Syndicated loans, equity and mezzanine/subordinated loans, leasing and project bonds are all included and analyzed from the economic and financial point of view.

Chapter 7 is dedicated to the legal aspects of project finance. After examining the special purpose vehicle, we provide a thorough description of the finance, security, and project documents. Although we take the lawyers' perspective, constant attention is given to the implications for the finance profession.

Finally, Chapter 8 explores some recent developments in the literature on project finance, brought about by the forthcoming adoption of the new Basel II rules. The chapter looks at Basel II requirements for lenders in terms of credit risk analysis of specialized lending deals (which encompasses project finance) and discusses the as yet unresolved issue of how to measure the value at risk of a project finance transaction.

The book also includes three case studies. The aim of the first, Cogeneration 1, is to describe the setup of the contractual network of a deal and to identify the weak points of a project and possible available solutions. The second, Italy Water, is an Excel-based case study which can be used as a business game. The aim here is to develop negotiating skills in the participants, who must maximize the trade-off of conflicting utility functions (of sponsors, lenders, and public administration). The third case is a reprinting of a classic article by Benjamin Esty from Harvard Business School; it discusses the syndication process of the Hong Kong Disney Park.

The book has taken me more than a year and a half to finish. I hope that the reader will appreciate all the effort put into making an updated and complete handbook.

This result wouldn't have been possible without the continuous support provided by Karen Maloney, Dennis McGonagle, and Roxana Boboc at Elsevier. My special thanks go to Karen, who from the very beginning enthusiastically supported my proposal to publish a book on the topic with her publisher and followed the progress of the work step by step.

Acknowledgements go to all the people who have worked with me these past years, both scholars and professionals, to disseminate knowledge on this subject. For their suggestions and encouragement I would like to thank Andrea Sironi, Francesco Saita, Alvaro Rigamonti, Mauro Senati, Giancarlo

Forestieri, Emilia Garcia-Appendini, Andrea Resti, Ben Esty, Bill Megginson (who was so kind to dedicate his time to write the presentation), Stefanie Kleimeier, Marco Sorge, Blaise Gadanecz, Ian Cooper, Michel Habib, Giuseppe Cappellini, Sergio Ferraris, and Issam Hallak.

Special thanks to my contributors in this volume, Alessandro Steffanoni and Daniele Corbino (for the release of the Excel file supporting the Italy Water Case), Massimo Novo (for the legal part of the book), and Fabio Landriscina and Mark Pollard (for the insurance section). Thanks also to Jill Connelly for her help in translating the manuscript and Lorenzo Marinoni for the valuable support in preparing the instructors' material.

Finally, thanks to all my friends and relatives who I have taken time and attention away from while spending days (and sometimes nights) writing the pages of this book. I want to dedicate it to my mother, Graziella, whose love for her son is one of the most precious jewels in his life.

Stefano Gatti
Milan, June 2007

Scannapieco's Foreword

By Dario Scannapieco, Vice President
European Investment Bank

Project financing ('PF') has proved a very powerful tool for financing the delivery of infrastructure investments and services around the globe over the last 30 years. Although gathering reliable data is rather difficult, it is estimated that the value of investments brought about by PF amounts to around EUR 200 billion globally every year. Recent events have given rise to new challenges for PF and, more than ever, there is a need for incisive advice and guidance in this often complex area.

Projects financed through PF can be found across the world in a range of sectors such as transport (e.g. roads, railways, airports, ports, light rail), energy (generation and distribution), environment (e.g. water and wastewater treatment and distribution, waste treatment) and social infrastructure (e.g. hospitals, schools, government buildings).

The European Investment Bank's own portfolio of PF transactions includes over 250 transactions across sectors and EU Member States. Many European transportation projects, energy plants and distributions networks, environment investments and social infrastructure assets (e.g. hospitals, schools) have benefited from EIB PF loans over the last 20 years.

PF is also the most commonly used tool for financing public-private partnership projects ('PPPs'). PF loans to PPPs amounted to about EUR 70 billion in 2011 globally, of which approximately EUR 18 billion in favour of European projects. The versatility of the PF tool is such that it has been used for many different forms of PPPs, whether concession arrangements (user-pay) or government-pay models (such as the UK Private Finance Initiative or the French *Contrat de Partenariat*). As such, PF has become an important means to support the provision of assets and high-quality public services. Indeed, in addition to optimising the costs of finance for a PPP project, PF underpins the allocation of risks between the public and private sectors. It ensures that risks are well managed within and between the project company, its sponsors and its financiers. This gives the public sector the comfort that the private sector is both incentivised and empowered to maximise performance and deal in a timely manner with any problems that may occur in the project.

However, as demonstrated in Professor Gatti's book, PF transactions are complex and require specific expertise, skills and a significant level of analysis, structuring and negotiations. Understanding project risks, allocating them and managing the interests of the many stakeholders are just some examples of the issues practitioners face in PF transactions.

Raising PF debt has become an increasing challenge since the onset of the financial crisis. The balance sheet of most commercial banks has been significantly affected by the financial, economic and sovereign crises. Basle III and a degree of loss of confidence have further constrained the ability of banks to provide suitable PF loans. The PF market has arguably moved from one extreme of an oversupply of cheap and long term liquidity to a new tighter environment in which:

– loan tenors have shortened dramatically and "mini-perm" structures, which impose a refinancing at some stage of the project life, are becoming the norm;
– loan pricing has increased drastically;
– the terms and conditions of PF loans are significantly more demanding on project sponsors;
– competition amongst lenders has reduced, leaving a few lenders available to finance ever increasing capital investment needs; and
– underwritings and loan syndication have disappeared. Banks now finance transactions on a "club deal" basis and only retain small "tickets" in projects.

Much of this new environment seems both global and permanent in nature. Yet, in a crisis era characterised by a significant fiscal tightening, PF can bring about much needed capital investments.

Professor Gatti's contribution to this new world is both timely and necessary. The "value for money" for the public sector of PPP investments, which rely on PF techniques, and the financial attractiveness of these investments for private sector sponsors, are coming under ever greater scrutiny. This book seeks to educate and enlighten PF practitioners and empower them to meet the challenges of the new financial and economic environment.

Foreword

This is a very timely revision to a book that has for five years served as a standard academic and professional reference on project finance. Project finance has emerged over the past four decades as a vital tool for financing large-scale, high-risk domestic and international business ventures. Along with all other forms of syndicated bank lending, the total value of project finance (PF) lending fell sharply during and immediately after the global financial crisis of 2008–2009, from a record $220 billion in 2007 to a mere $138 billion in 2009, but total PF financing has recovered and, at $242 billion during the year ending in February 2011, now actually exceeds its 2007 peak level.[1] Given its inherent flexibility and its effectiveness as a risk-sharing tool, project finance is likely to increase in relative importance even more in the years immediately ahead, despite the many challenges that all forms of cross-border lending will face during this period.

Project finance is usually defined as limited or nonrecourse financing of a new to-be-developed project through the establishment of a vehicle company (separate incorporation). Thus the distinguishing features of project finance are, first, that creditors share much of the venture's business risk and, second, that funding is obtained strictly for the project itself without an expectation that the corporate or government sponsor will co-insure the project's debt—at least not fully. PF is most commonly used for capital-intensive projects, with relatively transparent cash flows, in riskier-than-average countries, using relatively long-term financing, and employing far more detailed loan covenants than conventionally financed projects. The revised text by Stefano Gatti and his collaborators provides an excellent and comprehensive survey of project finance techniques, processes, and practices, which both practitioners and researchers should value as a key resource.

Project finance grew very rapidly during the period up to 2007 and, as noted above, has recovered quite robustly after the global financial crisis of 2008–2009. A key reason why project finance has prospered is that the emerging market economies of the world are continuing to grow at near