



FINC-GB.3186.10 Project Finance and Infrastructure Investment

Tuesdays 6:00 – 9:00 pm [SAMPLE SYLLABUS]

November 7 – December 19, 2017 (KMC 4-90)

Prof. Ingo Walter (iwalter@stern.nyu.edu, 212-998-0707)

Prof. Paul Tice (ptice@stern.nyu.edu, 908-872-3722)

Course Description

This six-session mini-course focuses on the infrastructure and project finance market, one of the most dynamic and challenging areas in the global financial architecture. Infrastructure provides the connective tissue for most economies and societies and is a key dimension of global development; its impact reaches deep into the broader economy, with important implications for overall living standards and social progress. Based on McKinsey estimates, the world will need to spend an aggregate \$57 trillion (at 2010 prices) between 2013 and 2030 to keep up with infrastructure demand—both from developed OECD countries and the emerging markets—or roughly \$3.2 trillion per year in real terms, which is up from an average of \$2.0 trillion per year over 1993-2010. To meet such infrastructure demand, a significant amount of funding—mostly in the form of highly-structured, asset-based project financings—will need to be raised in the coming years.

The course is designed to provide students with an introduction to the expanding and rapidly-changing infrastructure and project finance market and an understanding of the myriad risks involved in developing large-scale infrastructure projects around the world. Working through actual cases and examples drawn from the markets, the course seeks to develop the technical and analytical skills—both quantitative and qualitative—that are required to evaluate, structure and finance complex infrastructure projects, while also tracing the historical development of the infrastructure and project finance market, with a particular focus on the various bottlenecks now facing the market in the wake of the 2008 global financial crisis.

The course is also intended to provide students with an introduction to the variety of roles available in the field of infrastructure and project finance including: commercial bank project lender, financial/structuring advisor, rating agency analyst, sell-side research/debt capital markets analyst, buy-side debt investor, investment banker and infrastructure private equity sponsor, as well as related roles in the project design, engineering, construction and consulting industries and legal and accounting professions. For those interested in pursuing infrastructure and project finance as a career path, additional research and industry information sources are also provided for student reference and further follow-up.

Course Method

The course subject matter will be taught through a combination of formal lectures, in-class exercises and class discussions of reading and case assignments. Given the idiosyncratic, credit-specific nature of the infrastructure sector, the course will emphasize a case-based analytical approach, using actual cases and market examples to illustrate important teaching points. Students are required to complete the assigned readings and cases before coming to class, and should be prepared to discuss both during each session. Classroom discussions will be highly interactive and all students are expected to participate.

For each of two case assignments, students are required to submit written case briefs answering the questions posed in the case (3-4 pages maximum length); these write-ups should be handed in at the start of the class. There will be an in-class, closed-book, case-based final examination lasting approximately 90 minutes during the second half of the last session of the course.

Course Rules and Requirements

Students registering for this course should have successfully completed the Foundations of Finance course as well as the Economics MBA core course, while also having a basic understanding of corporate finance, financial statement analysis and the capital markets. Prerequisites may be waived with the consent of the instructors.

Students are expected to conform to all of the Stern Default Rules on attendance and punctuality, and to adhere to the Stern and New York University Honor Codes.

Open laptops will not be allowed in class. Text messaging, web browsing or other use of cellphones will not be permitted. None of these devices or activities are necessary for this course.

Students are required to bring their name-signs to class and display them where they sit. Absence of name-signs will mean zero credit for classwork (see below).

Course Materials

All course reading and case assignments will be available in the NYU bookstore as well as posted on *NYU Classes* (under "Assignments") in advance. *NYU Classes* will be the main method of communications with students. Copies of PowerPoint slide presentations used in class discussion will be posted on *NYU Classes* following each session.

The reading assignments for the course will be primarily drawn from the following textbooks:

- John D. Finnerty, *Project Financing: Asset-Based Financial Engineering, Third Edition*. Hoboken: John Wiley & Sons, Inc., 2013. (Finnerty) – available from NYU Bookstore.
- Ingo Walter (Editor), *The Infrastructure Finance Challenge* (London: OpenBook Publishers, 2017). (Walter) – posted on *NYU Classes*.

Additional readings will be assigned during the course. Also, faculty opinion on current events in the infrastructure and project finance markets can be accessed at: <http://www.stern.nyu.edu/experience-stern/faculty-research/index.htm>.

Grading

Course grades are weighted as follows: 40% Final examination, 40% Case briefs and 20% Class participation. The full range of grades will be awarded. All student work will be submitted and graded on an individual basis; there will be no group project assignments.

Course Outline

The course is comprised of six three-hour sessions (including a 15-20 minute break each session). The initial course outline is provided below. It may be subject to change on short notice to adapt to current events. The “official” course outline is the one posted (and occasionally changed) on *NYU Classes*.

Session 1: Basics of Infrastructure and Project Finance (November 7, 2017)

- Infrastructure: definitions, stakeholders, macroeconomic benefits, historical and projected requirements
- Key role of government in building and maintaining infrastructure assets
- Users versus free riders: Who pays for the cost of infrastructure?
- Key risks and mitigants in developing large-scale infrastructure projects
- Fundamentals of project finance as a tool for risk management
- Project finance capital providers, market statistics and recent market developments

Required Reading:

Finnerty, Chapters 1-4

Walter, Chapters 1-3

Optional Reading:

[Bridging Global Infrastructure Gaps](#), McKinsey Global Institute, June 2016

Session 2: Developing the Requisite Transactional Skill-Set (November 14, 2017)

- Project viability and evaluation
- Financial modeling and returns analysis
- Legal and financial structuring
- Contract documentation and debt covenants
- Rating agencies and project credit risk

Guest Panel Discussion:

Debt Capital Providers (Project Finance Commercial Bank Lender/Advisor, Infrastructure Debt Investor)

Required Reading:

Finnerty, Chapters 5, 7, 9, 11

Walter, Chapters 7- 9

Optional Reading:

Fitch Ratings, August 24, 2017

Session 3: Growing Reliance on the Private Sector (November 21, 2017)

- Public sector constraints: politics, election cycles and fiscal budgetary considerations
- Evolution of public-private partnerships (PPP or P3)
- PPP/P3 project spectrum, key benefits and main drawbacks
- Comparative government infrastructure policies and best practices

Case Study Preparation/Discussion:

Cheniere's LNG Liquefaction Strategy: Pushing the Boundaries of the Project Finance Debt Market
(submit written case brief at start of class)

Required Reading:

Finnerty, Chapter 13

Walter, Chapters 10 - 14

Optional Reading:

[Infrastructure Investment Policy Blueprint](#), World Economic Forum, February 2014

[Infrastructure Spending and Public-Private Partnerships](#), Hudson Institute, March 2017

Session 4: Fortifying a Stationary Target (November 28, 2017)

- Assessing political and sovereign risk over long-term investment/planning horizons
- Governance and transparency
- Providing value to host governments
- Creeping versus outright expropriation
- Infrastructure investments in emerging markets versus developed countries
- Piercing non-investment grade sovereign ratings ceilings

Guest Panel Discussion:

Equity Capital Providers (Project Finance Investment Banker, Infrastructure Private Equity Fund Manager)

Required Reading:

Finnerty, Chapter 16

Optional Reading:

[Strategic Infrastructure: Mitigation of Political & Regulatory Risk in Infrastructure Projects](#), World Economic Forum, February 2015

[How We Rate Sovereigns](#), Standard & Poor's Ratings Services, February 13, 2015

Session 5: Environmental and Other Regulatory Considerations (December 5, 2017)

- Fossil fuel versus renewable energy projects
- Government energy policy and the impact of subsidies
- National and supranational environmental and climate change regulations

- Sustainability, social impact and human rights

Case Study Preparation/Discussion:

Rutas de Lima (submit written case brief at start of class)

Required Reading:

Walter, Chapters 5 - 6

Optional Reading:

[Policy Perspectives: Water, Growth and Finance](#), OECD, August 2016

[Financing Change: How to Mobilize Private-Sector Financing for Sustainable Infrastructure](#), McKinsey Center for Business and Environment, January 2016

No Class (December 12, 2017)

Session 6: Market Outlook and Final Examination (December 19, 2017)

- Infrastructure as a new and developing asset class
- Recent market innovations, current bottlenecks and regulatory roadblocks and possible solutions
- Repurposing the multi-lateral development banks and sovereign credit agencies
- Credit enhancement and the role of the rating agencies

Required Reading:

Walter, Chapter 15 - 16.

Integrative case: *Dakota Access Pipeline* (no hand-in - read and be prepared to discuss in class – case questions on DAPL will be included on Final Exam)

Final Examination

90 minutes, in-class closed-book

Instructors

Ingo Walter holds the Seymour Milstein Chair in Finance, Corporate Governance and Ethics Emeritus at the Stern School of Business, New York University.

From 1971 to 1979 he was Vice Dean for Academic Affairs and subsequently served a number of terms as Chair of International Business and Chair of Finance. He served as Director of the New York University Salomon Center for the Study of Financial Institutions from 1990 to 2003 and Director of the Stern Global Business Institute from 2003 to 2006. He was Dean of the Faculty of the Stern School from 2008 to 2012.

Ingo Walter has had visiting professorial appointments at the Free University of Berlin, University of Mannheim, University of Zurich, University of Basel, the Institute for Southeast Asian Studies in Singapore, IESE in Spain, NYU Abu Dhabi, the University of Western Australia and various other academic and research institutions. He also held a joint appointment as Professor of International Management at INSEAD from 1986 to 2005, and remains a Visiting Professor there.

His current areas of academic activity include international financial intermediation and banking. He has published papers in most of the professional journals in these fields and has authored or coauthored some two dozen books and monographs, and has served as a consultant to various corporations, banks, government agencies and international institutions.

Ingo received his A.B. *summa cum laude* and M.S. degrees from Lehigh University and his Ph.D. degree from New York University and has been on the faculty at New York University since 1970.

Paul Tice is an Adjunct Professor of Finance at the Leonard N. Stern School of Business at New York University, where he teaches mainly on the energy, infrastructure and project finance markets. Mr. Tice has been a frequent guest lecturer, panel speaker and research contributor at NYU Stern since 2013, and served as an Executive-in-Residence at the school from 2015-2017. He also periodically writes Op-Ed pieces on energy- and finance-related topics in The Wall Street Journal and other news media.

Mr. Tice has worked on Wall Street for the past three decades and is a 28-year veteran of the fixed income and credit markets, including investment grade, high yield, emerging markets and private/illiquid/esoteric credit. For the last 22 years, he has specialized in the energy and infrastructure sector, both as a buy-side portfolio/hedge fund manager and a sell-side research analyst.

Mr. Tice currently works in the Fixed Income division of Schroder Investment Management, where he heads up research coverage for the energy and natural resource sectors. Prior to joining Schrodgers in August 2017, he was a Senior Managing Director and Head of the Energy Capital Group in the Asset Management division of U.S. Capital Advisors LLC, an energy-focused financial services boutique. Prior to joining USCA in 2015, he worked at BlackRock, where he was the Head of private energy investments for the firm's Credit platform and Americas Fixed Income business, while also serving as the Lead Portfolio Manager for the Energy Strategy book within BlackRock's R3 Fund.

Prior to joining BlackRock in 2009, Mr. Tice was the Chief Operating Officer, Co-Chief Investment Officer and a Senior Partner of R3 Capital Management, a multi-strategy, credit-focused hedge fund manager that was spun out of Lehman Brothers in May 2008 and subsequently acquired by BlackRock in April 2009.

Prior to R3 Capital, Mr. Tice worked for a total of 14 years at Lehman Brothers (2002-2008, 1989-1997) in a variety of roles, most recently as a Managing Director in the firm's Global Principal Strategies (GPS) division, an internal, credit-focused proprietary fund that was formed in June 2006 and spun out in May 2008. While at GPS, Mr. Tice supervised the fund's investments in the energy and power sector, while also managing the overall GPS research effort and approving all private equity and longer-term investments by the fund.

Prior to joining the GPS group in 2006, Mr. Tice spent 17 years in sell-side credit research, both at Lehman Brothers and Deutsche Bank/Bankers Trust (1997-2002), where he mainly covered the energy sector, both as a senior analyst and a producing manager.

Mr. Tice has covered the energy sector since 1995 and was one of the top-ranked Investment Grade Energy analysts over 1995-2006. In 2006 and 1998, he was the #1 ranked Investment Grade Energy analyst on Institutional Investor's All-America Fixed Income Research Team. Prior to originally joining Lehman Brothers in 1989, Mr. Tice was a senior financial analyst at JPMorgan Chase.

Mr. Tice has previously served on the Board of Directors for Lightfoot Capital Partners GP LLC, International Resource Partners GP LLC, Arc Terminals GP LLC, Crown Oil Partners IV, LP and Richland-Stryker Investment LLC, all of which were investment portfolio companies of the R3 Fund.

Mr. Tice earned a BA degree in English, *magna cum laude*, from Columbia University in 1983, and an MBA degree in Finance from the Leonard N. Stern School of Business at New York University in 1988. He is a member of *Phi Beta Kappa*.

Infrastructure Debt Panel:

Erik Codrington is a Managing Director in the Project Finance group of Mitsubishi UFJ Financial Group (MUFG), where he leads the firm's project finance team in the energy sector. Erik has over 25 years of project finance experience and, prior to joining MUFG in 2011, Erik spent 17 years with Citi, JPMorgan and UBS primarily focused on the project financing of energy and infrastructure assets, as well as acting as a senior advisor to the U.S. Department of Energy. His experience includes over 70 transactions spanning debt capital markets, bank market, ECA/MLA financing and advisory roles, and he has raised over \$30 billion for clients throughout the Americas. Erik has successfully closed transactions in the upstream, midstream and downstream oil & gas sectors, thermal and renewable power, electrical transmission, LNG, petrochemicals, mining and infrastructure. Recent lead bank roles include Cheniere Energy Partners, Cameron LNG, Freeport LNG, Sabine Pass Liquefaction, NET Mexico and Tenaska C-Solar South. Notable advisory/capital markets experience includes Florida Southeast Connection, Southern Lights Pipeline, Nassau Bahamas Airport, Reliance Home Comfort, Canaport LNG, OCP Pipeline and Yemen LNG. Erik holds a BA in Economics from Cornell University and an MBA in Finance from Duke University's Fuqua School of Business. Prior to entering banking, he served as a shipboard officer in the United States Navy.

Ariel Jankelson is a Senior Vice President at Macquarie Asset Management (MAM), where he runs the U.S. operations for Macquarie Infrastructure Debt Investment Solutions (MIDIS), the firm's infrastructure debt funds management platform. MIDIS was founded in London in 2012 and has grown into one of the market leaders in infrastructure debt. Ariel started with Macquarie in 2006 in its advisory business and has worked across all aspects of debt financing for infrastructure projects. In 2016, Ariel moved to MAM to start up the U.S. business of MIDIS. Ariel holds a BA with Honours in Politics and International Relations from The University of New South Wales (UNSW), a Master of Commerce in Accounting from the UNSW Business School and a Master of Finance from INSEAD.

John Tanyeri is a Managing Director in the Private Capital group of MetLife Investments, where he heads up the firm's Infrastructure and Project Finance effort. Prior to joining MetLife in 1996, he worked in a variety of investing and finance functions at Salomon Brothers. John holds a BS in Finance from The College of New Jersey and an MBA in Finance from the University of Tennessee.

Infrastructure Equity Panel:

Steven S. Ggreenwald is a Senior Advisor at Credit Suisse and the senior member of the Global Project Finance Group, based in New York. He joined the firm in 1979 and has worked on more than 250 projects with an aggregate value in excess of US\$300 billion. Steve has developed and/or implemented financing plans for independent power projects, telecommunications projects, paper mills, coal, diamond and copper mines, petrochemical and synfuel facilities, oil and gas projects and certain venture capital start-up situations. These projects have been located in North America, South America, Europe,

Asia, Africa and Australia. In March 2013 he received a "Lifetime Achievement Award" - the only US banker to be so honored - from *Project Finance Magazine*, which described him as "one of the most influential and most knowledgeable figures in the project finance world today." He obtained his B.A. degree *cum laude* from the State University of New York at Buffalo and his M.B.A. in Finance from Baruch College.

Hadley Peer Marshall is Senior Vice President - Investments at the Brookfield's Infrastructure Group. She leads the firm's infrastructure mezzanine investments in the Americas with responsibility for the origination, execution, and asset management. Hadley joined Brookfield in 2015 from Goldman Sachs, where she was Co-Head of the Project Finance and Infrastructure Group, responsible for originating, structuring and executing as well as advising on infrastructure and project financings for clients in the capital markets. Hadley holds a Masters of Business Administration and Bachelor of Arts (Economics) from the University of North Carolina at Chapel Hill.

Benjamin W. Morton is Senior Vice President and manager of Cohen & Steers' infrastructure portfolios. He has 19 years of infrastructure-related investment experience. Prior to joining Cohen & Steers in 2003, Ben worked at Salomon Smith Barney as a research associate for three years, covering the utility and pipelines sectors. He also worked at New York Mercantile Exchange as a research analyst. Mr. Morton holds a BA from the University of Rochester and an MES from Yale University. He is based in New York.