THE OBSOLESCING BARGAIN REDUX? FOREIGN INVESTMENT IN THE ELECTRIC POWER SECTOR IN DEVELOPING COUNTRIES

ERIK J. WOODHOUSE*

I. INTRODUCTION

Developing countries are anticipated to need $5 trillion of investment to meet demand for electricity by 2030, with more than $2 trillion for new generation capacity alone.[1] For most countries, mobilizing sufficient investment is beyond the capacity of the government itself; the majority of developing

* Law Clerk (2005-06) to the Hon. M. Margaret McKeown, United States Court of Appeals for the Ninth Circuit; Postdoctoral Fellow (2004-05), Program on Energy & Sustainable Development, Stanford University; J.D., Stanford Law School, 2004; B.A., Emory University, 2000. This paper reports the results of a study sponsored by the Program on Energy & Sustainable Development (PESD) at Stanford University, and would not have been possible without the leadership and support of Dr. David Victor and Professor Thomas Heller, as well as the dedicated work of PESD researchers: Peter M. Lamb, Pei Yee Woo, Katia Olexiyivna Karpova, Jeff Rector, Joshua C. House, Efe Cakarel, and Alejandra Nuñez-Luna. PESD also collaborated with Dr. Anton Eberhard and Katharine Gratwick at the University of Cape Town, who contributed invaluable insight with a study on the IPP experience in Africa, and with Dr. Adilson de Oliveira, Luciano Losekann, and Felipe V.S. Araujo at the Universidade Federal de Rio de Janeiro on research on the Brazilian IPP experience. Earlier drafts of the paper benefited from presentation and discussion at the General Counsel's Roundtable, Jan. 21-22, 2005, and Feb. 10-11, 2006, at Stanford University, and at "The Experience of Independent Power Projects in Developing Countries" seminar hosted by PESD at Stanford University, June 2-3, 2005. For invaluable discussions, support in arranging field research, and helpful comments on drafts, special thanks to Anthony Becker, Mario Veiga Pereira, Jessica Farmer, Bart Lucarelli, Myrna Velasco, David Michaels, Sundar Sundaresan, Jeff Meller, John Schuster, Mark Kantor, and Gerald West. And for excellent editing and critique, thanks to the staff of the N.Y.U. JOURNAL OF INTERNATIONAL LAW & POLITICS. Errors are my own.

1. INTERNATIONAL ENERGY AGENCY, WORLD ENERGY INVESTMENT OUTLOOK 2003, at 364 (2003); *see also* DELOITTE TOUCHE TOHMATSU, SUSTAINABLE POWER SECTOR REFORM IN EMERGING MARKETS: FINANCIAL ISSUES AND OPTIONS, Joint World Bank/USAID Policy Paper (June 2004), at ix [hereinafter DELOITTE TOUCHE, SUSTAINABLE POWER SECTOR REFORM] (estimating that developing countries will need $140-160 billion of investment in power annually through 2025 to meet projected electricity demand).

countries will rely on some form of private investment to meet this demand.[2] Yet, private investment in public infrastructure—already an enormous market in the 1990s—has proven to be a traumatic experience for host countries and for investors alike. From a high of $46 billion in 1996, private infrastructure investment in emerging economies dwindled to $15 billion by 2003, and is only recently beginning to show signs of recovery.[3] Popular perception views the private infrastructure landscape as littered with wreckage—especially for investments in electric power infrastructure and for investors who have been victims of government opportunism and corruption.[4] Despite lengthy debate and examination of these issues, the key lessons from the 1990s cycle of investment remain rather vague and ill-focused to inform the next round of decisions by investors and policy makers that are now taking shape.

This Article examines the experience of investment in greenfield independent power projects (IPPs) in developing countries: privately developed power plants that sell electricity to a public electricity grid, often under long term contract with a state utility.[5] The classic foreign-sponsored, project-financed IPP has taken root in more than fifty emerging coun-

2. DELOITTE TOUCHE, SUSTAINABLE POWER SECTOR REFORM, *supra* note 1, ("[A]ssuming that 40% to 50% of power sector investment in emerging markets . . . comes from self-financing, this still leaves an additional investment need of about US $50 billion to $70 billion per year, which policy makers would seek to attract from the private sector.").

3. Data from the World Bank Public Participation in Infrastructure Database, *available at* http://ppi.worldbank.org [hereinafter World Bank PPI Database].

4. *See, e.g.*, Louis T. Wells & Eric Gleason, *Is Foreign Infrastructure Investment Still Risky?*, HARV. BUS. REV., (Sept./Oct., 1995); Tom Marshella, *Debt Financing of Projects in Emerging Economies: Lessons from Asia*, 7 J. PROJ. FIN. 30 (2001); Jacob J. Worenklein, *The Global Crisis in Power and Infrastructure: Lessons Learned and New Directions*, 9 J. STRUCT. & PROJ. FIN. 7 (2003).

5. For a brief overview see Mangesh Hoskote, *Independent Power Projects (IPPs): An Overview*, ENERGY THEMES (The World Bank, Washington, D.C.), May 1995. This paper distinguishes this entity, a "classic IPP," from several other arrangements including wholly captive generation or state-developed projects that have adopted some aspects of private ownership. This study does not address either captive generation or state-controlled investment, because such projects do not confront many of the issues that comprise the focus of our study, such as the ability of private investors to enforce contract terms.

tries that display wide variation in economic, political, and social environments.[6]

Assessing the IPP experience is important not only for understanding the prospects for private investment in infrastructure; it also contributes to a long body of literature on managing risk in environments where it is difficult for the parties to enforce contracts.[7] Power projects—like many large infrastructure investments—recover huge initial capital outlays over long periods of time, and are thus acutely vulnerable to opportunism or other changes in circumstance. During the rapid growth in IPP investment in the 1990s, these risks were addressed often with legal tools (including elaborate contracts and transaction structure, offshore arbitration, and insurance provisions) or financial tools (such as frontloading investment returns or maximizing leverage). At the same time, developing countries often included special provisions designed to attract investment by insulating greenfield IPPs from risk; such provisions were often themselves part of broader power sector reforms that have proven politically difficult to implement and have introduced risks of their own.[8] These innovations, cou-

6. David G. Victor, Thomas C. Heller, Joshua C. House, & Pei Yee Woo, *The Experience of Independent Power Projects (IPPs) in Developing Countries: Introduction and Case Study Methods* 33 (PESD, Working Paper No. 23, 2003), *available at* http://pesd.stanford.edu/publications/20528/.

7. For an overview of these issues, see Theodore H. Moran, Political and Regulatory Risk in Infrastructure Investment in Developing Countries: Introduction and Overview, Paper presented at "Private Infrastructure for Development: Confronting Political and Regulatory Risks, (Sept. 8-10, 1999); Louis T. Wells, Private Foreign Investment in Infrastructure: Managing Non-Commercial Risk, Paper presented at "Private Infrastructure for Development: Confronting Political and Regulatory Risks, (Sept. 8-10, 1999). Perhaps the best known exploration of the relationship between institutional credibility and investment performance is the 1994 piece by Levy and Spiller, *see* Brian Levy & Pablo T. Spiller, *The Institutional Foundations of Regulatory Commitment: A Comparative Analysis of Telecommunications Regulation*, 10 J.L. ECON. & ORG. 201 (1994). During the 1990s, the project finance model, and IPPs particularly, occupied a central place in the ongoing debate regarding the relationship between risk, institutions and investment. *See* DELOITTE TOUCHE, SUSTAINABLE POWER SECTOR REFORM, *supra* note 1, at 132 ("The most well-established risk management framework in the power sector is the IPP project finance structure."). **R**

8. DAVID G. VICTOR & THOMAS C. HELLER EDS., POLITICAL ECONOMY OF POWER SECTOR REFORM: THE EXPERIENCE OF FIVE MAJOR DEVELOPING COUNTRIES (Cambridge University Press) (forthcoming 2006) [hereinafter VICTOR & HELLER, POLITICAL ECONOMY OF REFORM].

pled with strong demand for power investment, fueled a steep increase in investment during the 1990s as project stakeholders anticipated that project risk had been effectively mitigated. However, as discussed in Part II, by the end of the decade power investment collapsed under the weight of successive economic crises and high profile disputes between host governments and investors.

In exploring the historical record, previous studies on infrastructure investment have often employed large statistical reviews[9] and specific case studies.[10] Each method of analysis has proved valuable yet limited in its ability to inform general conclusions that are relevant for future projects. The former offers the rigor of systematic analysis and large data sets but suffers where key variables that relate to plant operations have been difficult to quantify and measure. The latter has cor-

9. For examples of large statistical reviews, see Antonio Estache & Maria Elena Pinglo, *Are Returns to Private Infrastructure in Developing Countries Consistent with Risks since the Asian Crisis* (World Bank Policy Research Working Paper No. 3373, 2004) (finding that average returns on infrastructure investment in developing countries, including 6% average return-on-equity for power sector investment, has generated equity returns far below the cost of equity); SOPHIE SIRTAINE, MARIA ELENA PINGLO, J. LUIS GAUSCH, & VIVIEN FOSTER, THE WORLD BANK, HOW PROFITABLE ARE INFRASTRUCTURE CONCESSIONS IN LATIN AMERICA? EMPIRICAL EVIDENCE AND REGULATORY IMPLICATIONS (2004) (finding that while infrastructure concessions in a sample of ten countries have generated returns above their weighted average cost of capital, low distribution policies, possibly reflecting the ongoing investment requirements of concessions, have limited equity returns to a level far below the average cost of equity).

10. For specific case studies, *see, e.g.,* Mark Kantor, *International Project Finance and Arbitration with Public Sector Entities: When is Arbitrability a Fiction?*, 24 FORDHAM INT'L L.J. 1122 (2001); Harold F. Moore, *Allocating Foreseeable Sovereign Risks in Infrastructure Investment in Indonesia: Force Majeure and Indonesia's Economic Woes*, 822 PLI/Comm. 463, Practising Law Institute (2001) [hereinafter Moore, *Allocating Risks*]; Harold F. Moore, *Restructuring International Projects: Lessons Learned from Indonesia*, 866 PLI/Comm. 283, Practising Law Institute (2004) [hereinafter Moore, *Restructuring*]; Piyush Joshi, *Dabhol: A Case Study of Restructuring Infrastructure Projects*, 8 J. STRUCT. & PROJ. FIN. 27 (2002); Robert E. Kennedy, InterGen and the Quezon Power Project: Building Infrastructure in Emerging Markets, Harvard Business School Case No. 9-799-057 (1999); Frank J. Lysy, *Pagbilao Thermal Power Plant – The Philippines*, *in* INTERNATIONAL FINANCE CORPORATION, RESULTS ON THE GROUND: ASSESSING DEVELOPMENT IMPACT 13-32 (1999); Gary S. Wigmore & Desiree Woo, *Running the Marathon: The Long March to the Successful Completion of Miezhouwan*, *in* PROJECT FINANCE MODELS FOR GREATER CHINA (Asia Law & Practice, 1999).

rected that problem by offering immense detail on actual experience, but suffers from the standard problem that it is difficult to generalize from very small sample sets (often just one project). As a result, the literature has poorly documented the variation in outcomes across IPPs and has not been able to identify fully the factors that explain why some projects are successful while others founder.

This study takes an intermediate approach,[11] relying on historical studies from thirteen emerging markets—a sample selected from the more than fifty emerging markets that have had any experience with IPPs. Within that sample of countries, the study identifies the full universe of IPPs in each country and selects a smaller sample of thirty-four projects that capture the relevant factors that distinguish projects within each IPP market. This methodology incorporates enough data points (projects) to generate generalizable results, yet remains small enough to allow a detailed analysis of project variables that are difficult to quantify and measure.

The first goal of this Article, addressed in Part IV, is to explain the wide variation in outcomes across the thirteen countries and thirty-four projects. Significant portions of the variation in outcomes reflect the work of factors that are structural in nature and largely beyond the capacity of individual stakeholders to adjust easily; they relate to the institutional characteristics of the host country and its electricity sector. Most of the stress on projects originates in these factors, but the actual project outcomes often depend on a secondary group of factors that relate to the design, structure, and management of particular projects.

Project stakeholders have adopted a range of solutions designed to sustain the financial and political viability of their assets. Most of the industry literature has focused on the solutions that figured prominently in the infrastructure revolution of the 1990s. These legal and financial tools—referred to as "risk engineering" in this Article—aim to bolster property rights by constraining host government discretion and by distilling risk into manageable parcels that can be priced, allocated, and litigated with some certainty. Such measures, which depend critically upon strong public institutions, are necessary

---

11. The research methodology for the project is reported in a working paper. *See* David G. Victor et al., *supra* note 6. **R**

but rarely sufficient to ensure that developers' property rights in their investment remains secure. A second group of tools—referred to as "strategic management" in this paper—aim to anticipate key vulnerabilities and to reduce the likelihood that potential risks become actual problems. These are decisions by key stakeholders within government or among project investors regarding how to select, structure, and manage an investment in a long-lived asset. While this category of mechanisms has been proposed in the literature on foreign investment,[12] it remains only lightly populated. This Article discusses a range of strategic responses that have seen some success in the IPP experience in order to explain the variation in outcomes among various projects.

The second goal of this Article, addressed in Part V, is to build upon the lessons of the past and identify implications for the future IPP market, as well as particular implications for host governments and investors. In coming years the market for the classic foreign-dominated IPP of the 1990s is likely to be small. Such investment will be dominated by firms that have developed special political assets and management techniques that allow them to operate in uncertain (and, for many western firms, unfamiliar) electric power markets. Nonetheless, the niche for "classic" IPPs will remain in countries unable to meet their investment needs solely from these specialized firms. Thus, this Article offers a series of lessons for both host governments and for investors to carry forward key insights from the last round of investment.

II. The 1990s Market for Independent Power Projects

A. *The Perfect Storm? Risks and Strategies in Electric Power Investment*

IPPs in the 1990s were undertaken in circumstances saturated with risk. The investments generated revenue in currencies that were unstable and often not freely convertible. Government finances were frequently in disarray and retail tariffs for electricity often did not cover costs, which meant that government-controlled utilities that would buy bulk power from

12. Theodore H. Moran, *The Changing Nature of Political Risk*, *in* Managing International Political Risk 7, 11 (Theodore H. Moran ed., 1998).

IPPs were not themselves solvent.[13] Governments sought IPPs at a time when they were often changing the rules that governed their electricity sectors, which introduced regulatory risk. Production factor markets, including fuel, labor, and other raw inputs, usually operated in opaque ways that were poorly understood by foreign investors. Some degree of corruption was common in many countries that welcomed private power investment. Finally, IPPs operated prominently on the forefront of the movement to introduce private ownership and full-cost pricing for a critical and politically salient good—electricity.

Much of the literature on managing risk for long-term investment has viewed these risks through the lens of the "obsolescing bargain."[14] This seminal model posits that negotiating leverage in a large private infrastructure project shifts during the project life cycle. Initially, the government needs private investors and thus offers attractive terms. Once operational, the investors require a long amortization period to attain their expected return while the host government has already secured what it needs; the original bargain has become obsolete. Theory predicts that the host will force a change in terms—either by outright nationalization or by squeezing revenue streams as far as possible. As the incidence of wholesale expropriation declined,[15] subsequent development of the original obsolescing bargain hypothesis primed analysts to be wary of subtler attacks on project value, so-called "creeping expropriation."[16]

---

13. A thorough examination of the challenges of state-owned firms is included in THE WORLD BANK, BUREAUCRATS IN BUSINESS: THE ECONOMICS AND POLITICS OF GOVERNMENT OWNERSHIP (1995).

14. The obsolescing bargain was originally proposed by Raymond Vernon in 1971. *See* RAYMOND VERNON, SOVEREIGNTY AT BAY: THE MULTINATIONAL SPREAD OF U.S. ENTERPRISES 46-53 (1971).

15. Michael S. Minor, *The Demise of Expropriation as an Instrument of LDC Policy 1980-1992*, 1 J. INT'L BUS. STUD. 25 (1994); Clive Harris et al., *Infrastructure Projects: A Review of Cancelled Private Projects*, *in* PUBLIC POLICY FOR THE PRIVATE SECTOR (The World Bank, 2003).

16. *See, e.g.,* Linda F. Powers, *New Forms of Protection for International Infrastructure Investors*, in MANAGING INTERNATIONAL POLITICAL RISK (Theodore M. Moran ed., 1998); Theodore H. Moran, *Political and Regulatory Risk in Infrastructure Investment in Developing Countries: Introduction and Overview*, preliminary draft presented at "Private Infrastructure for Development: Con-

The obsolescing bargain was a response to the rash of nationalizations that beset natural resources investments in the 1960s. Mindful of the lessons of the past, investors and host governments subsequently built projects in settings where they thought it possible to manage these risks. In part, this reflected developments in host countries; from the late 1980s through the 1990s, host countries followed two tracks of reform and innovation. First, most developing countries implemented broad economic restructuring programs (often under the guidance of the multilateral lending agencies) that were intended to establish the institutional foundation for market economies with strong rule of law. These efforts were animated by a growing body of academic work that had analyzed the institutional underpinnings of market economies, such as secure private property rights, and offered guidance for market reformers.[17] Across countries that are today known as "emerging economies," reformers focused on creating an investment environment that included new democratic institutions with separation of powers, special foreign investment laws, and investment treaties that provided protection for foreign investors, measures to reduce corruption and streamline the bureaucracy, and legal reforms that bolstered the independence of the judiciary, among others.

Second, reformers also attempted often dramatic changes in the electricity sector itself. Over the last fifteen years essentially every major developing country has undertaken some reform of its electric power system.[18] These reforms generally have aspired to the model of power sector reform adopted in

---

fronting Political and Regulatory Risks, Sept. 8-10, 1999, Rome, Italy [hereinafter Moran, *Risk in Infrastructure Investment*].

17. This body of thought is often traced to the pioneering work by Douglass North which focused attention on the role of institutions in economic growth. *See* DOUGLASS C. NORTH, INSTITUTIONS, INSTITUTIONAL CHANGE AND ECONOMIC PERFORMANCE (1990). Subsequent work applied these insights to the unique challenges of infrastructure investment, proposing specific institutional arrangements that allow a country to credibly commit to long term investors. *See* Levy & Spiller, *supra* note 7. **R**

18. For broad reviews of the pace and scope of reform, see, *e.g.*, R.W. Bacon & J. Besant-Jones, *Global Electric Power Reform, Privatization and Liberalization of the Electric Power Industry in Developing Countries*, 26 Annual Rev. Energy Environ. (2001); GLOBAL ENERGY SECTOR REFORM IN DEVELOPING COUNTRIES: A SCORECARD, Joint UNDP/World Bank Energy Sector Management Assistance Programme (July 1999).

Chile and in England & Wales—successful market reforms that helped to write a "textbook" for power sector reform. The textbook envisioned unbundling state utilities into separate generation, transmission, distribution and marketing companies, followed by privatization. It also called for exposing generation to market competition while establishing independent professional regulators to oversee the natural monopolies of transmission and distribution.[19] In practice, very few countries have followed through on such radical power sector reforms because they have learned that the task is politically and institutionally difficult. Most countries embraced these ideas when facing the need for new investment to provide the power for rapidly growing economies. Thus, most market reforms gave particular attention to provisions, notably for IPPs, that would increase the nation's generation capacity.[20] Once immediate needs were met, political inertia and—often—troubles in the pioneering private projects contributed to lagging demand for reform.

Aside from these general reforms, both governments and project developers created a host of project-specific innovations that were designed to identify, allocate, and mitigate the considerable risks that remained as the institutional environment remained in flux. The inability of host governments to make credible long-term commitments and the persistent fear of investors about the obsolescing bargain suggested a solution: The government's hands must be bound as tightly as possible with respect to a potential investment. In fact, this was explicitly called for in early explorations of long-term investment where government credibility was lacking.[21]

Historically, this was not a problem for law, but rather for shrewd business strategy—investors with long-lived assets in de-

19. The ideas for standard market reforms in the electricity sector are long-standing. For an overview and discussion of this "textbook" reform, see DAVID NEWBURY, PRIVATIZATION, RESTRUCTURING AND REGULATION OF NETWORK UTILITIES (2000); PAUL L. JOSKOW & RICHARD SCHMALENSEE, MARKETS FOR POWER: AN ANALYSIS OF ELECTRICAL UTILITY DEREGULATION (1983). Most developing countries have found it difficult to implement the strictures of the standard textbook model. (Many in the industrialized world have also stumbled—spectacularly so in California.)

20. VICTOR & HELLER, POLITICAL ECONOMY OF REFORM, *supra* note 8, at 406. **R**

21. Levy & Spiller, *supra* note 17, at 202. **R**

veloping countries relied on bargaining power that derived from the continued dependence of the host country on that particular investor. For example, in seeking to protect an investment in the El Teniente copper mine in Chile, U.S. investors maximized the technical complexity of mining operations and signed a number of long-term contracts with prominent foreign business interests, transforming the strategic topography from one where the lone investor was facing off against the Chilean government to one that bound Chile's reputation to its behavior toward a diverse array of international business interests.[22] For decades, IBM dealt freely in the developing world, protected by a decisive lead in technological sophistication that no other company could offer. As this advantage eroded over time, so did the security of IBM's property rights in its developing country assets.[23]

In contrast, investors in infrastructure, including power plants, lacked such self-help strategies.[24] Rather, as the infrastructure investment boom of the 1990s gained speed, so too did the construction of an ad hoc system of institutions and practices designed to protect property rights in settings where bargaining leverage was likely to erode.[25] In the context of IPP investment, most efforts to manage project risks started with long-term power purchase agreements (PPAs)—the contracts that were signed between investors and the utility

22. James K. Sebenius, *A 3-D View of Negotiation Theory and Practice* 18–20 (unpublished working paper, Harvard Business School) (on file with author).

23. Louis T. Wells, Jr., *The New International Property Rights: Can the Foreign Investor Rely on Them?*, *in* INTERNATIONAL POLITICAL RISK MANAGEMENT: LOOKING TO THE FUTURE 87, 88 (THEODORE H. MORAN & GERALD T. WEST, EDS., 2005).

24. Moran, *Risk in Infrastructure Investment*, *supra* note 16, at 10 ("Private infrastructure investors find themselves in the contemporary period without many of the tools that other kinds of investors have been able to use to lessen their vulnerability"); Wells, *supra* note 23, at 89 ("In the case of infrastructure, foreigner [sic] investors usually brought no unique technology or access to markets . . . Without external protection, direct investors in these industries would have to be very brave, or perhaps ignorant, to enter these industries, where they would have little bargaining power once their capital was committed."). **R** **R**

25. This ad hoc system has been referred to as the "new international property rights." Wells, *supra* note 23, at 89. **R**

"offtaker" that bought the power.[26] As investors sought to insulate their projects from the vagaries of government decision-making and unexpected changes in circumstance, PPAs and related security mechanisms became more elaborate, incorporating sovereign guarantees of various types, increasingly stringent allocation of legal and regulatory risk to the host government, and elements designed to increase enforceability, such as international arbitration, political risk insurance, and the involvement of prominent partners (notably foreign export credit agencies or multilateral lending institutions) as a deterrent to political expropriation by the host government.[27] The project financing vehicle itself often limited lenders' recourse to the assets of the project itself, which meant that banks were particularly active in seeking stringent and specific loan agreements.[28] Risk allocation in a power project involves an intricate web of contracts and counterparties;[29] however, the critical focus was on allocating "country" risk—including financial, legal, political, and regulatory risks—away from the investors.

The emphasis on contractual risk allocation had important consequences. First, it focused attention on contracts rather than on fundamental reforms. Governments learned that to attract IPP investment, actually reforming the electricity sector in a way that reduced risk was not necessary. Rather, all they needed to offer was the right package of contract

26. Reliance on a long-term power purchase agreement is not unique to developing countries. Most of the early IPPs in the United States relied on similar arrangements until the market was mature enough to support investment in merchant or other less secure models.

27. *See generally*, Wells, *supra* note 23; *see also* Allison Fine, *Dealing Away Risk in Foreign Infrastructure Investment*, 9 J. STRUCT. & PROJ. FIN. 53 (2003) (finding that the extent to which investors and governments relied on contractual and other "project-specific" safeguards in telecommunications investment depends critically on perceived institutional weakness). **R**

28. Restrictive loan covenants common to all lending tend to be stricter in project finance deals. Mansoor Dailiami and Robert Hauswald, *The Emerging Project Bond Market: Covenant Provisions and Credit Spreads* 10 (World Bank Policy Research Working Paper No. 3095, 2003). In developing countries these requirements are even more restrictive, for example, often containing "institutional environmental provisions" that trigger redemption or takeover rights when there is a change in the underlying regulatory or legal environment. *Id.* at 9.

29. For a more complete discussion, see, *e.g.,* John G. Mauel, *Common Contractual Risk Allocations in International Power Projects*, 1996 COLUM. BUS. L. REV. 37, 42 (1996).

terms.[30] Investors in many cases allowed the economic aspects of selling electricity to fade to the background as they focused on managing political and regulatory risk. Thus, running somewhat counter to the reform agenda of many host countries, IPP investment often concentrated in unreformed systems in which investors could deal with single state-owned offtakers—even when otherwise troublesome characteristics, such as patronage and market concentration, persisted—in part because investors welcomed a context in which they needed to work with a limited number of players and could seek special arrangements for first-of-a-kind deals.[31]

Second, the reliance on contracts focused attention on contract stability as the indicator of host government credibility. The thesis of the obsolescing bargain primed analysts to assume that even small changes in deals would necessarily disfavor the investor and were evidence that attempts of expropriation were at work.[32] In this account, the failures of the first

30. *See, e.g.,* Suman Babbar & John Schuster, *Power Project Finance: Experience in Developing Countries* 10 (World Bank RMC Discussion Paper No. 119, 1998) ("As long as countries enable private project sponsors to sell power under long-term PPAs, countries do not have to make additional regulatory and market reforms to reduce the dominance of state-owned enterprises"); BUREAU FOR ECONOMIC GROWTH, AGRICULTURE AND TRADE, U.S. AGENCY FOR INT'L DEV., ANALYSIS OF THE RELATIONSHIP BETWEEN IMPROVED ENERGY SECTOR GOVERNANCE AND THE ATTRACTION OF FOREIGN DIRECT INVESTMENT (2002), *available at* http://pdf.usaid.gov/pdf_docs/PNACU026.pdf (finding that levels of greenfield investment in generation, distinct from other forms of power investment, demonstrated little correlation to improvements in electricity sector governance) [hereinafter USAID, GOVERNANCE AND FDI]; DELOITTE TOUCHE, SUSTAINABLE POWER SECTOR REFORM, *supra* note 1, at 85 R ("Generation projects . . . continued to attract private investment even during the difficult financing period over the past 5 years, when the proper security package, guarantees, insurance, and PPA and tariff terms were offered.").

31. For discussion of the advantages and disadvantages of the single-buyer model for electricity procurement, see Lazslo Lovei, *The Single Buyer Model: A Dangerous Path Toward Competitive Electricity Markets, in* PUBLIC POLICY FOR THE PRIVATE SECTOR (The World Bank, Washington, D.C., 2000), *available at* http://www-wds.worldbank.org/ (search "Documents and Reports" for "Lovei, The Single Buyer Model;" follow hyperlink); IOANNIS N. KESSIDES, REFORMING INFRASTRUCTURE: PRIVATIZATION, REGULATION, AND COMPETITION 148–153 (2004).

32. This emphasis is not limited to academic analysis, but is reflected in behavior by project sponsors and lenders. *See, e.g.*, Susan E. Turner and Gary S. Wigmore, *The Disappearing PPA: Moving to Merchant Power in Asia*, 19 J.

round of investment would call for better contracts. In reality, such a blanket condemnation is premature, for the fundamental characteristics of investment in public utilities (including IPPs) introduce many uncertainties and stresses on contracts that are not solely the work of expropriation. As discussed in this Article, across the IPP experience many instances of renegotiation are of mutual benefit, by making a project more competitive, by clarifying contract terms, or by otherwise making the investment more sustainable for both parties.

B. *The Rough Guide to the IPP Experience*

Private investment in greenfield power generation projects in developing countries was a booming market in the 1990s. The total value of IPP deals closed in 1996 alone was almost $17 billion.[33] While facilitated by the institutional reforms and contractual innovations discussed above, the supply of capital and demand for investment in this market was primarily fueled by three interacting trends. The first was increasing demand from developing countries as they reformed their electric power sectors in response to electricity or financial crises. Second, key changes in lending policies from major multilateral banks shaped governments' emphasis on private investment by restricting access to concessionary loans unless coupled with complementary moves to reform and privatize infrastructure. From 1990 until 1996, the World Bank Group had a "no-lend" policy (officially promulgated in a 1993 paper) for the power sector unless accompanied by substantial reforms intended to commercialize and corporatize the electricity sector and to introduce independent regulation.[34] Third, massive liquidity and tight domestic returns in

ENERGY NAT. RES. & ENVTL. L. 72, 73 (2001) ("[A] state owned utility's failure to honour contract terms tends to erode investor and lender confidence in a host nation's commitment to the rule of law, with resultant investor caution and higher cost of funds to be expected in the future."); *see also* Van Mejia, *The Philippines Re-Energizes: Privatization of the National Power Corporation and the Red Flag of Political Risk*, 16 COLUM. J. ASIAN L. 355, 363 (2003) (characterizing the 2001 review of IPP contracts in the Philippines as "nothing more than an attempt to back out of contracts").

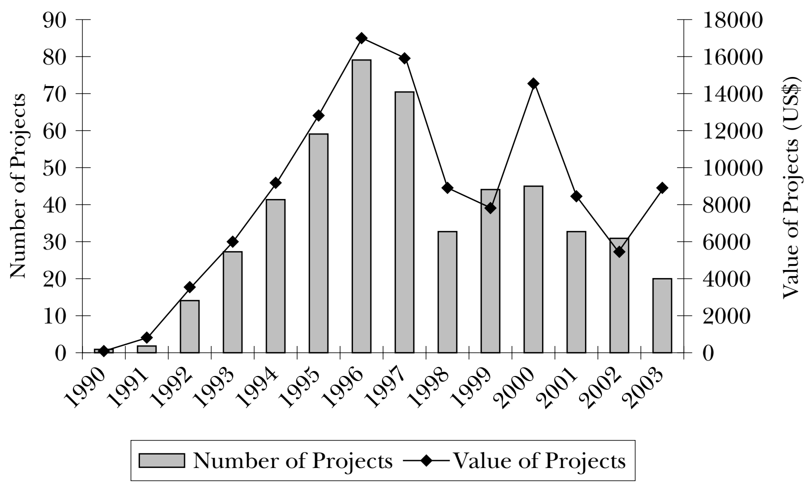
33. Data from the World Bank PPI Database, *supra* note 3.

34. WORLD BANK, PRIVATE SECTOR DEVELOPMENT IN THE ELECTRIC POWER SECTOR: A JOINT OED/OEG/OEU REVIEW OF THE WORLD BANK GROUP'S AS-

U.S. and European utilities markets drove investors to seek higher returns in new markets abroad.[35]

The first steps in this new market were cautious, yet momentum grew quickly. Figure 1 illustrates the rapid growth of IPP investment during the boom years of 1992-1997. While a body of theoretical and empirical work guided the architects of these early private participation in infrastructure (PPI) schemes, careful planning often faded to the background during the IPP boom years.[36] In this environment, actual practice drifted from the theoretical foundations for PPI discussed above, particularly once the pioneers had blazed a trail that was easier for others to follow.

FIGURE 1: PRIVATE INVESTMENT IN POWER GENERATION IN DEVELOPING COUNTRIES



Source: World Bank Private Participation in Infrastructure Database, available at *http://ppi.worldbank.org* (visited April 14, 2005).

SISTANCE IN THE 1990s, Report No. 26427, 2 (2003) [hereinafter WORLD BANK, PRIVATE SECTOR REVIEW].

35. *See, e.g.,* DELOITTE TOUCHE, SUSTAINABLE POWER SECTOR REFORM, *supra* note 1, at 15, Figure 2-10 and associated text. **R**

36. Investors with experience managing projects in developing markets comment on this regularly. Additionally, there is increasing recognition of this factor in relevant literature. *See, e.g.,* DELOITTE TOUCHE, SUSTAINABLE POWER SECTOR REFORM, *supra* note 1, at 76 ("During boom markets, investors have often pursued market share while overlooking more prudent risk and return analysis"). **R**

Troubles began to appear in 1997 with the Asian financial crisis. By the end of the decade, the market for greenfield IPPs had collapsed in both quantitative and qualitative terms.[37] The Asian troubles propagated throughout the developing world—Russia in 1998, Brazil in 1999, Argentina in 2001—and projects began to unravel and new development stalled. Private investment in IPPs sank to $6 billion dollars in 2001.[38] China, India, and Argentina—countries that, among many others, had been prized attractions—saw investors flee in droves. Spectacular controversies, such as the Dabhol project in India, the Hub project in Pakistan, and the entire IPP sector in Indonesia, dominated the industry headlines. The docket of international commercial arbitration bodies was crowded with a growing list of claims by disgruntled investors.[39]

In addition to successive economic shocks in emerging markets, the decline in IPP investment coincided with a rash of corporate scandals in the United States (including the downfall of Enron, a major IPP investor),[40] the bursting of the dot-com bubble, domestic recession in the United States, and somewhat later, the attacks of September 11th and an increasingly uncertain global security environment. The same period was one of unprecedented turmoil in United States utilities markets, particularly in merchant electricity trading.[41] Euro-

37. The 2003 increase of private infrastructure investment in dollar terms seen in Figure 1 reflects primarily the financial closing of a few massive deals in Southeast Asia. *See* Ada Karina Izaguirre, *Private Infrastructure: Activity Down by 13 Percent in 2003*, PUBLIC POLICY FOR THE PRIVATE SECTOR (The World Bank, Washington, D.C.), Sep. 2004, *available at* http://www-wds.worldbank.org/ (search "Documents and Reports" for "Izaguirre, Activity Down by 13 Percent"; follow hyperlink). .

38. Data from the World Bank PPI Database, *supra* note 3.

39. The Argentine crisis of 2001–2002 alone precipitated roughly 30 claims before arbitral panels. *See* Izaguirre, *supra* note 37, at 3. For a rough glance at these claims, see the list of pending cases at the website for the World Bank's International Centre for the Settlement of Investment Disputes (ICSID), at http://worldbank.org/icsid/cases/pending.htm.

40. *See, e.g.*, Henry A. Davis, *How Enron has affected project finance*, 8 J. STRUCT. & PROJ. FIN. 19 (2002) (discussing the collapse in infrastructure project financing in the context of the major corporate scandals of the late 1990s).

41. *See* Roberto S. Simon, Private Sector Electricity, presentation at World Bank Energy Week 2005, *available at* http://www.worldbank.org/energy/energyweek2005/ (detailing massive losses to the major merchant

pean utilities weathered equally grave losses in their home market and grew cautious in their developing country adventures.[42] These losses in home markets, along with strategic decisions to refocus on industrialized nations, drove many of the most prominent players in the IPP market to exit.[43]

By 2002, the experience with IPPs had been highly variable. Some projects, such as Enron's Dabhol project in Maharashtra had been very visible failures, and a pall hung over the industry.[44] Yet, many projects continued with relative success. In the shadow of Dabhol, several IPPs in the Indian state of Andhra Pradesh have been generating electricity and receiving timely payments even in the face of controversy. In the heart of the Asian financial crisis of 1997, the government of Thailand and its IPP investors found ways to adjust projects that have recently entered service, and more are now planned. In the notoriously difficult power market in China, rife with legal uncertainty, some investors are earning acceptable returns and planning new investment. Thermal power projects in Brazil that are under severe pressure because they are much more costly than the incumbent hydro power have faced pressure to readjust their tariffs or be forced offline; yet some Brazilian IPPs have found ways to contract around these challenges. The next Part in this Article introduces a methodology for assessing this variation in outcomes, and Part IV summarizes the main factors that explain such outcomes.

III. Assessing the IPP Experience

The central task of this paper is to explain the wide variation in outcomes across countries and across projects with a particular focus on the stability of property rights and their protection. This Part briefly reviews the methodology for exploring this variation.[45] The factors that affect the viability of

---

power companies and major utilities in the United States during 2002 and 2003).

42. Deloitte Touche, Sustainable Power Sector Reform, *supra* note 1, at 109. R

43. *Id.*; *see also*, *Global Power Beats a Retreat*, Power Magazine, March 1, 2000.

44. *See, e.g.*, *IPP sector unravels on Enron collapse, casts cloud over entire industry*, Corp. Financing Wk., June 10, 2002.

45. The study's approach to selecting particular cases for study followed standard scientific methods that call for identifying hypotheses about the

TABLE 1: LIST OF INDEPENDENT VARIABLES

Country Level Factors	
Macroeconomic Context	The degree of macroeconomic shock disrupting the economy or currency of the host country.
Political & Social Context	The general environment for foreign investment, including the legal framework, political and social stability, and the extent of corruption.
Legal & Regulatory Framework	The status and goals of electricity reform and of efforts to attract foreign investment to the sector.
Electricity Market	The structure of the electricity market, including tariff levels, supply-demand balance, and the size of the market.
Fuel Markets	The fuel mix for generation, including countries with dominant incumbent fuels, and the markets that control the supply and price of those fuels.
Project Level Factors	
Investor Composition	The nature and experience of project developers, and the presence of local partners or multilateral/officials partners in the project.
IPP Program	The characteristics of the IPP program, including goals, relationship to sector reform, project selection, government counterparties, and overall size.
Financial Arrangements	The structure of revenue generating activities (power sales), and the terms and cost of obtaining financing for the project.
Fuel & Technology Choice	The economic, financial, and social ramifications of different fuel and technology arrangements.
Operations & Management	The differing capacity to manage the political, regulatory, operational, and social risks involved in developing country power investment.
Exogenous Events	
Global Industry Downturn	Troubles in the home markets of investors and other reasons unrelated to developing country investment often constrained capital supply.

IPP investments may be found in the characteristics of the host country (country factors), in the structure and management of the projects themselves (project factors), or in events that are external to the particular choices by host governments and investors (exogenous factors), such as troubles in the home mar-

factors that explain outcomes and then selecting cases for variation in those factors. The core tenets of this case study methodology are set forth in GARY KING, ROBERT O. KEOHANE & SIDNEY VERBA, DESIGNING SOCIAL INQUIRY: SCIENTIFIC INFERENCE IN QUALITATIVE RESEARCH (1994).

kets of Western investors. Table 1 identifies the key explanatory variables that were considered in this study.[46]

From the full set of over fifty developing and transition countries that have had at least one IPP, the study selected a sample of thirteen countries (Table 2) that displayed variation across the country-level factors. Based on initial reviews, the study selected seven countries for in-depth treatment, including field visits:[47] Brazil, China, Egypt, India (in the states of Andhra Pradesh and Gujarat), Kenya, the Philippines, Tanzania, and Thailand.[48]

46. The variables in Table 1 were identified and defined through an initial literature review and in discussions with electricity sector investors and other experts. This process is reported in a working paper. *See* Victor et al., *supra* note 6, at 15-21.

47. The key factor for fieldwork was substantial variation between project characteristics *within* a country. In Mexico, Argentina, Malaysia and Poland, observed variation in outcomes is primarily driven by country-level factors, and in many cases, projects are substantially similar. By contrast, in Brazil, China, India, and the Philippines, basic project characteristics such as the identity of investors, the regulatory regime in place, and fuel choice vary widely and have often affected outcomes. Thailand, while primarily a country-level story, was included for in-depth study because of its central role in the Asian IPP experience. Egypt, Kenya, and Tanzania were selected from within the universe of African countries with IPP experience, for the primary reason that they represented countries with the most numerous projects.

48. As part of the IPP study, over 150 interviews were conducted in the following locations: Washington D.C. (Jan. 10-14, Mar. 14-16, 2005); The Philippines, Manila (Feb. 21-Mar. 5, 2005); India, Delhi (Mar. 21-23, 2005), Hyderabad (Mar. 24-25, 2005), Ahmedabad (Mar. 28-29, 2005); Thailand, Bangkok (Apr. 4-7, 2005); Brazil, Rio de Janeiro (July 4-5, 12-15, 2005), Sao Paulo (July 6-7, 2005), Brasilia (July 11, 2005). Interviews were followed by email correspondence to clarify discussion points. Stakeholder interviews included host government officials, project sponsors and other equity investors, project advisors and lenders, academic and civil society representatives, and multilateral officials. Due to the sensitivity of key data and information, stakeholders are not identified by name in the text.

TABLE 2: COUNTRY SAMPLE AND COUNTRY FACTORS

Country (#IPPs) Year of first IPP	Economic Shock	Investment Climate[49]		Dominant Fuel	Electricity Reform	Mode of Investment In Generation
		Average	Av. Dev.			
Argentina (16+) 1992	High 2002	66.99	5.59	Nat'l Gas, Hydro	All sectors 1992	Brownfield and greenfield IPPs sell to privatized grid
Brazil (12) 1995	Medium 1999	64.08	2.03	Hydro	All sectors 1994 *New reform 2003*	Brownfield and greenfield IPPs selling to privatized grid
China (32) 1985	None	71.92	4.24	Coal	Generation 1985 *Ongoing changes*	Greenfield IPPs selling to sub-national SOE's
Egypt (3) 1998	Medium 2001	66.00	n/a	Gas, Hydro, Oil	Generation 1996	Greenfield IPPs selling to national electricity SOE
India (16) 1991	Slow deval. 1998-2003	62.66	5.83	Coal	Generation 1991	Greenfield IPPs selling to sub-national SOE's
Kenya (4) 1996	Low 2000-2003	58.70	n/a	Hydro	Generation 1996	Greenfield IPPs selling to national electricity SOE
Malaysia (13) 1993	High 1997	76.81	2.76	Nat'l Gas	Generation 1993	Greenfield IPPs selling to national electricity SOE
Mexico (16) 1995	None	70.69	1.45	Oil	Generation 1994	Greenfield IPPs selling to national electricity SOE
Philippines (45) 1988	High 1997	64.90	6.60	Oil	Generation 1988 All sectors 2001	Greenfield IPPs selling to national SOE or private utility
Poland (3) 1997	None	73.85	4.57	Coal	All sectors 1993 PPI in 1997	Greenfield IPPs selling to national electricity SOE
Tanzania (2) 1998	Low	n/a	n/a	Hydro	Generation 1992	Brown and greenfield IPPs sell to national electricity SOE

TABLE 2 - CONTINUED

Country (#IPPs) Year of first IPP	Economic Shock	Investment Climate		Dominant Fuel	Electricity Reform	Mode of Investment In Generation
		Average	Av. Dev.			
Thailand (7) 1997	High 1997	73.46	3.26	Nat'l Gas	Generation 1994	Greenfield IPPs selling to national electricity SOE
Turkey (9) 1994	Medium 2001	56.55	5.47	Hydro	Generation 1984	Greenfield IPPs selling to national electricity SOE

49. The investment climate of a country is commonly evaluated with a dizzying array of commercial and scholarly indices, including commercial sovereign debt rating (e.g. Standard & Poor's), commercial country risk evaluation (e.g. International Country Risk Guide), or rankings developed by prominent multilateral or non-governmental entities (e.g. the Transparency International Corruption Perceptions Index (ICPG), World Bank Investment Assessment). Except for the correlation between various basket indicators (such as the ICRG index) and aggregate levels of FDI inflow, there is scant evidence that presents a robust relationship between the common measures of these factors and investment outcomes (of any kind). *See, e.g.*, Witold J. Henisz & Bennet A. Zelner, *Measures of Political Risk*, mimeo, *available at* http://www-management.wharton.upenn.edu/henisz/ (criticizing a variety of political risk indicators for failing to explain economic or political instability, events of expropriation, or other investment outcomes); Anja Linder & Carlos Santiso, *Assessing the Predictive Power of Country Risk Ratings and Governance Indicators* (SAIS Working Paper Series, WP/02/02), *available at* http://www.sais-jhu.edu/workingpapers/WP-02-02b.pdf. This study comments on various specific aspects of the investment climate, such as the state of public finance or perceived levels of corruption, where appropriate, but does not address these broad measures.

From the universe of all IPPs in each of these 13 countries, the study selected a smaller set of thirty-four projects that demonstrated variation across project-level factors.[50]

Evaluating the success of these projects requires attention to the goals that investors and hosts could reasonably expect to achieve when they commit to a project.[51] For host countries, these factors include whether the country has succeeded in attracting investment that actually led to the production of electricity, and whether the price, quantity, and other terms for such private electricity are within a band of reasonable expectations.[52] Outcomes are viewed over time, considering

50. Each country displays its own pattern of IPP characteristics in terms of sponsors, fuel, and other arrangements. The task of accounting for individual country characteristics means that not every project-level variable is reflected neatly in each project. Detailed information on the variables considered in country- and project-selection is provided in the third appendix to Erik J. Woodhouse, *A Political Economy of International Infrastructure Contracting: Lessons from the IPP Experience* (PESD, Working Paper No. 52, 2005), *available at* http://pesd.stanford.edu/publications/. The core analysis of the paper rests on this sample of thirteen countries and thirty-four projects. Where appropriate information is available, experiences from other countries such as Indonesia are commented upon to extend the reach of the paper. Additionally, the process of researching each of the thirteen sample countries yielded a rich body of information regarding other projects beyond those selected for individual study. Where useful (or in some cases necessary), these experiences are also referred to.

51. During the 1990s, both governments and investors often carried unrealistic expectations into new projects. For example, many governments supported the increasing density of legal restraints in the expectation that IPPs would lead to lower prices; yet existing power plants, against which IPP prices were compared, were often built with soft capital and hidden subsidies that artificially reduced their posted prices; the bare fact that IPPs, in practice, were often more expensive than the incumbent state-built power projects cannot, without additional analysis, be taken as signaling a poor outcome. Similarly, investors often had unrealistic expectations about their ability to manage risks and inflated their expected returns; the inability of a particular plant to earn a posted return, or of a contract to hold strictly to its original terms, is not necessarily evidence of the project's failure to meet reasonable goals.

52. A core problem in IPP investment is that there is no transparent metric for evaluating success from the perspective of the host country. By contrast, for privatizations of distribution companies or for wholly competitive regulated generation markets, the promulgation of metrics for success has been a difficult but attainable goal. For examples of such evaluations from Argentina and Chile, s*ee* Antonio Estache & Martin Rodriguez-Pardina, *Light and Lightning at the End of the Public Tunnel: Reform of the Electricity Sector in the Southern Cone* (The World Bank, Policy Research Working Paper, No. 2074,

TABLE 3: PROJECT SAMPLE AND PROJECT FACTORS

Project Name	Country	Fuel	Capacity	Cost US$*	COD	Investor Mix
Termoceará	Brazil	Nat'l Gas	290MW	$100	2002	Foreign/Local
Norte Fluminense	Brazil	Nat'l Gas	780MW	$887	2004	Foreign
Uruguaiana	Brazil	Nat'l Gas	600MW	$350	2000	Foreign
Caña Brava	Brazil	Hydro	450MW	$426	2002	Local
Shajiao C	China	Coal	1980MW	$1,870	1996	Foreign
Meizhouwan	China	Coal	724MW	$755	2001	Foreign
Shandong Zhonghua	China	Coal	3000MW	$2,200	2003	Foreign/Local
Sidi Krir	Egypt	Nat'l Gas	683MW	$418	2002	Foreign
Suez	Egypt	Nat'l Gas	683MW	$340	2003	Foreign
Port Said	Egypt	Nat'l Gas	683MW	$338	2002	Foreign
GVK Jegurupadu	India	Nat'l Gas	216MW	$261	1996	Foreign/Local
Lanco Kondapalli	India	Nat'l Gas	250MW	$285	2000	Foreign/Local
Essar Power	India	Naphtha/Gas	515MW	$514	1995	Local
CLP Paguthan	India	Naphtha/Gas	655MW	$734	1998	Foreign
PPN Power	India	Naphtha/Gas	330MW	$252	2001	Foreign/Local
ST-CMS	India	Coal (Lignite)	250MW	$320	2002	Foreign/Local
IberAfrica	Kenya	Diesel	56MW	$65	1997	Foreign/Local
Tsavo	Kenya	Diesel	75MW	$85	2001	Foreign/Local
Monterrey III	Mexico	Nat'l Gas	1140MW	$609	2001	Foreign
Rio Bravo II	Mexico	Nat'l Gas	568MW	$234	2002	Foreign
Merida III	Mexico	Nat'l Gas	530MW	$260	2000	Foreign
Navotas I	Phil.	Diesel	210MW	$40	1991	Foreign
Pagbilao	Phil.	Coal	700MW	$888	1996	Foreign
Quezon	Phil.	Coal	460MW	$895	2000	Foreign/Local
Casecnan	Phil.	Hydro	140MW	$495	2001	Foreign
Cavite	Phil.	Diesel	63MW	$22	1995	Foreign
ENS	Poland	Nat'l Gas	116MW	$132	2000	Foreign/Local
Elcho	Poland	Coal	720MW	$324	2003	Foreign/Local
Songas	Tanzania	Nat'l Gas	190MW	$130	2004	Foreign/Local
IPTL	Tanzania	Diesel	100MW	$127	2002	Foreign/Local
Eastern Power	Thailand	Nat'l Gas	350MW	$250	2003	Foreign
Independent Power	Thailand	Nat'l Gas	700MW	$369	2000	Foreign/Local
Gebze, Adapazari, Izmir	Turkey	Nat'l Gas	3860MW	$2000	2002	Foreign/Local
Trakya Elektrik	Turkey	Nat'l Gas	478MW	$600	1999	Foreign/Local

* In millions of United States dollars.

whether the management of the IPP experience to date has affected the country's ability to secure investment—from any source—in the electric power sector. For investors, the study looked to analogous indicia of success, although hard data regarding a project's performance are often confidential or are

1999); Antonio Estache & Martin Rodriguez-Pardina, *Regulatory Lessons from Argentina's Power Concessions*, *in* PUBLIC POLICY FOR THE PRIVATE SECTOR (The World Bank, 1996.); Pedro J.A. Ferreira, *On the Efficiency of the Argentinean Electricity Wholesale Market*, (Seminario, No. 09/02, June 6, 2002). Distribution companies are regulated entities that offer a range of available data for evaluation. In most cases, IPPs are not regulated in any public manner, and obtaining any data on useful performance criteria such as price, efficiency, heat rate, or emissions, is extremely difficult.

aggregated in ways that make it difficult to examine the investor's experience with a particular country or project.[53] For this reason, this Article focuses on visible indicia such as the stability of contracts and the nature of adjustments, the record of payments, debt service and any equity turnover, and subjective evaluations by investors, experts, and officials.

With this methodology in mind, the remainder of this section offers a brief introduction to the countries included in the study.

Argentina.[54] In the early 1990s Argentina adopted what was widely seen as an "ideal" electricity reform and IPP law, unbundling and privatizing generation, transmission, and distribution and establishing a competitive generation market and independent regulator. Approximately sixteen natural gas, oil, and hydroelectric IPPs were built to sell electricity to a private contract and spot market. Investment and development outcomes were positive until the country's 2001-02 macroeconomic crisis exposed enormous currency risks in the private, dollar-based public utilities. The government's decision to change the denomination of contracts from dollars to local currency addressed this problem in part, but foisted massive losses on investors and invited legal disputes over the enforceability of contracts.

Brazil.[55] In the mid-1990s, the government of Brazil intended to implement a reform roughly similar to Argentina's,

---

53. *See, e.g.*, Estache & Pinglo, *supra* note 9, at 13 (explaining reliance on an independent method of calculating return-on-equity, because the best measure of project returns, internal-rate-of-return, is generally unavailable); Sirtaine et al., *supra* note 9, at 10 (discussing the problems associated with gathering and evaluating financial data on infrastructure investment across countries, including differing accounting and reporting standards, and the confidentiality of critical data). R R

54. Erik J. Woodhouse & Alejandra Nuñez, *The IPP Investment Experience in Argentina* (PESD, Working Paper No. 44, 2005), *available at* http://pesd.stanford.edu/ipps. The primary determinants of project outcomes in Argentina were country-level factors. No detailed project studies were conducted.

55. Adilson de Oliveira, Erik J. Woodhouse, Luciano Losekann, & Felipe V.S. Araujo, *The IPP Experience in the Brazilian Electricity Market* (PESD, Working Paper No. 53, 2005), *available at* http://pesd.stanford.edu/ipps. *See also* Adilson de Oliveira, *The Political Economy of the Brazilian Power Industry Reform*, *in* VICTOR & HELLER, POLITICAL ECONOMY OF REFORM, *supra* note 8. The project sample in Brazil reflects two key variables: (1) fuel type (thermal or hy- R

but political and other problems stalled the effort and led to a power market that was only partially reformed and that created special risks for some IPPs. The Brazilian power sector is dominated by hydroelectricity, which made new investment particularly difficult in gas-fired power plants because costly gas-fired electricity fared poorly compared to plentiful hydroelectricity in Brazil's marginal cost dispatch system. This challenge was exacerbated by the fact that gas pricing arrangements were not aligned with the needs of the power sector. Additionally, Brazil's constantly changing market rules multiplied the uncertainties for investors. Some projects have managed these risks effectively, and the Brazilian case reveals a wide variation in investment outcomes and development outcomes across projects.

China.[56] China is the world's largest IPP market, with thirty-two mostly coal-fired projects selling electricity to state utilities. In broad terms, investment outcomes in China have been poor. Investors have found it extremely difficult to enforce contracts and have adopted a long list of project-based strategies, from strategic partnerships to various privately-ordered payment and security arrangements, in an effort to manage this risk. Development outcomes for China have been positive in some ways, introducing new technology and helping continue investment during a fragile fiscal period in the 1990s. China now benefits from a new class of largely domestic investors who rely sparingly on contracts to manage risk; however, it remains to be seen whether the country will pay a price for the uneven foreign investment experience, or whether in transi-

---

droelectric), and (2) power sales arrangements (sales to a merchant market, sales to a state utility, sales to a related private utility).

56. Pei Yee Woo, *China's Electric Power Market: The Rise and Fall of IPPs* (PESD, Working Paper No. 45, 2005), *available at* http://pesd.stanford.edu/ipps; *see also* Pei Yee Woo, Recurring Dream or Incessant Nightmare?: Foreign Direct Investment in China's Power Industry (2003) (unpublished thesis) (on file with PESD); Chi Zhang & Thomas C. Heller, *Reform of the Chinese Electric Power Markets: Economics and Institutions*, *in* VICTOR & HELLER, POLITICAL ECONOMY OF REFORM, *supra* note 8; Jianping Zhao, *The Private Sector and Power Generation in China* (World Bank, Discussion Paper No. 406, 2000). **R**
The project sample in China focuses on large coal-fired projects that represent the vast majority of IPPs in the country. Within that group, the project sample in China reflects two variables: (1) ownership structure (local government investment versus wholly foreign-owned), and (2) location (Fujian, Guangdong, and Shandong).

tioning to primarily domestic investment, the country is sufficiently insulated from a backlash in the foreign investment community.

Egypt.[57] Egypt opened its generation sector for private investment in 1996 and now buys electricity from three natural gas-fired IPPs. The Egyptian IPPs are notable for their low prices (U.S. 2.3 cents/kWh at 75% capacity factor in one case), which reflect both the highly competitive bidding that allocated the projects and the availability of subsidized natural gas from the Egyptian state gas monopoly. The central challenge has been macroeconomic shock—during 2001-02, the Egyptian pound fell to almost half of its original value and the dollar-denominated IPP contracts doubled in price (in local currency terms). Despite these shocks, investment outcomes have been positive; the contracts for these plants have held with only minor adjustments to ease some burden from the currency devaluation. Development outcomes, while damaged by the macroeconomic troubles, have also remained positive; the projects have low prices, the small number has helped limit exposure to the devaluation, and the record of success leaves investment options open in the future, although the reform effort has swung back towards state control of the sector.

India.[58] India is the site of the most striking controversy in foreign greenfield IPPs—Enron's Dabhol project—but has also hosted a series of relatively successful projects. Overall, roughly twenty-two IPPs have been built to sell electricity to state utilities. The study focuses on three states—Andhra

57. Anton Eberhard & Katharine Nawaal Gratwick, *From State to Market and Back Again: Egypt's Experiment with Independent Power Projects, Managing Infrastructure Reform & Regulation* (University of Cape Town, working paper, 2006), *available at* http://www.gsb.uct.ac.za/mir. The project sample in Egypt contains all three operating IPPs.

58. Peter M. Lamb, *The Indian Electricity Market: Country Study and Investment Context* (PESD, Working Paper No. 48, 2005), *available at* http://pesd.stanford.edu/ipps; *see also* Rahul Tongia, *The Political Economy of India Power Sector Reforms*, in VICTOR & HELLER, POLITICAL ECONOMY OF REFORM, *supra* note 8. The project sample in India focuses on naphtha/natural gas projects **R** in two states with the deepest IPP experience (Andhra Pradesh and Gujarat), and also a review of an ongoing dispute in Tamil Nadu. Within that sample, the project selection reflects a number of variables, including: (1) project selection (direct negotiation, cost-based bidding, tariff-based bidding), (2) fuel arrangements (public gas supply or private gas supply), and (3) investor composition (domestic investment versus foreign investment).

Pradesh, Gujarat, and Tamil Nadu—with IPPs that vary across critical variables including the mode of solicitation, fuel arrangements, and type of sponsor. Moreover, the legal and regulatory framework has evolved dramatically in three waves during the 1990s. By examining projects from different states and different regulatory regimes, the study was able to control for a number of country level factors and examine the impact of regulatory and local conditions. Across the Indian projects, outcomes have been mixed for both investors and the host government.

Kenya.[59] The IPP experience in Kenya began with a 1995 bidding process that led to contracts for two projects following a standard international model (a single buyer with a long-term 20-year PPA). However, the Kenyan government balked at providing sovereign guarantees for these projects, which led to delays in financing. In the interim, Kenya solicited two "stop-gap" IPPs with seven-year contracts. Investment outcomes have been mixed; in each group of projects one investor has lost interest while the other investor has demonstrated strong interest in remaining in the Kenyan power sector. Development outcomes have also been mixed; high initial tariffs have been reduced through negotiation, and the projects have provided much needed electricity, but persistent devaluation has inflated the local currency cost of the IPPs.

Malaysia.[60] In Malaysia, a 1993 solicitation led to private investment in thirteen mostly natural gas-fired IPPs. While most countries have seen foreign investors dominate the IPP sector, the Malaysian experience has been a local affair—local investors, local capital, and local fuel inputs denominated in local currency. Notably, IPPs in Malaysia weathered the Asian financial crisis with healthy profits because currency risks and

59. Anton Eberhard & Katharine Nawaal Gratwick, *Take 4: The Contribution and Evolution of Independent Power Projects in Kenya, Managing Infrastructure Reform & Regulation* (University of Cape Town, working paper, 2006), *available at* http://www.gsb.uct.ac.za/mir. Kenya's IPP fall into two categories, reflecting distinct regulatory frameworks for the projects. The project sample includes one project from each framework: Tsavo (classic IPP), IberAfrica (stopgap IPP).

60. Jeff Rector, *The IPP Investment Experience in Malaysia* (PESD, Working Paper No. 46, 2005), *available at* http://pesd.stanford.edu/ipps. The primary determinants of project outcomes in Malaysia were country-level factors. No detailed project studies were conducted.

other shocks to the projects were fewer and less severe. Projects that demonstrate poor outcomes were limited to those endeavors that were plagued by poor design or planning (such as the Bakun Hydro project[61]).

Mexico.[62] Unlike Argentina and Brazil, Mexico followed the Asian model and kept a single buyer that contracted with the country's sixteen natural gas-fired IPPs. The government adopted three distinct arrangements for IPPs by adjusting the terms for foreign participation and (notably) the arrangements for fuel contracts while other factors remained constant. The government's obligations to the IPPs are financed through a payment scheme, known by its Spanish acronym "Pidiregas," that has kept liabilities associated with the dollar-denominated contracts largely off of the federal government's balance sheet.[63] The result is that IPPs have seen Mexico as a reliable host country; along with Egypt and Thailand, the Mex-

61. *Id.* at 14; Ariane Sains, *No Guts, No Glory: Country Risk A Fact Of Life for IPPs Abroad*, ELECTRICAL WORLD, Nov. 1, 1997 (detailing the problems that beset the Bakun project).

62. Alejandra Nuñez, *Private Power Production in Mexico: A Country Study* (PESD, Working Paper No. 37, 2005), *available at* http://pesd.stanford.edu/ipps. IPPs in Mexico are all natural gas-fired, combined-cycle, BOO projects sponsored by foreign firms, though occasionally in partnership with local companies. Project selection in Mexico reflects only two key variables: the investor composition (foreign versus local), and the evolving regulatory regime. Three distinct models for IPPs are observed in Mexico, with differences revolving around the fuel supply and exit/termination provisions. The project sample in Mexico includes three projects: one project from each regulatory regime, and one project that includes a local partner.

63. For purposes of this paper, which refers to Pidiregas several more times, the important characteristic of the program is the extent to which it allowed the government to obscure the extent of its borrowing. For several years, Pidiregas liability was identified as non-banking private sector activity in the government balance sheet. In early 2004, the Mexican Central Bank disaggregated Pidiregas debt from general foreign borrowing by the non-banking private sector, revealing that *all* "non-bank private sector borrowing" for 2002, 2003, and 1Q 2004 was for Pidiregas projects, which has raised concern in the financial community. Deborah L. Riner, *Look Who's Borrowing Now*, BUSINESS MEXICO, August 2004 ("Now that what appeared to be private sector debt turns out not to be, Mexico's foreign debt to GDP ratio isn't quite as attractive as it seemed."). If growth in Mexico's power sector is met substantially by private sector investment, CFE's Pidiregas liability has been estimated to reach 60% of CFE's book value and 3% of Mexico's GDP within 10 years. Morgan Stanley Equity Research (Latin America), *Electric Utilities: Power to Converge*, Jan. 27, 2003, at 15.

ican case reveals the best experiences for investors and hosts. Yet, the long-term sustainability of the program is of increasing concern as the partially hidden liabilities mount.

The Philippines.[64] The Philippines has had a long history with IPPs; the first contract was signed in 1988 and more than forty projects have been built that vary in fuel choice, investor composition, and the identity of the offtaker. Despite these variations, investment outcomes have been consistent—IPPs in the Philippines have largely earned healthy returns, even in the wake of economic crises and a highly visible renegotiation. Development outcomes have been mixed. Political instability and poor sector planning have led to expensive electricity (notably from "fast track" plants built to address a severe electricity shortage during 1992–93). The impact of the Asian financial crisis inflated the local currency cost of private power substantially, affecting the economy as a whole and inviting loud criticism from politicians and civil society.

Poland.[65] Poland's power system is dominated by coal, but a new gas pipeline from Russia built in the 1990s made gas-based power generation possible on a large scale. Environmental considerations along with an interest in fuel diversity animated the country's interest in natural gas; a move that politically powerful groups in the coal industry resisted. The Polish case also illustrates the tension between power industry market reforms and the arrangements that are necessary to attract IPPs. Several attempts to cancel long-term PPAs to meet reform goals have met with resistance from investors, yet complementary attempts to fashion a plan to provide compensation have been overruled by EU regulators. While caught in this drama, investor outcomes appear differentiated primarily by time; while one project operated for several years before the debate over PPA cancellation erupted, another project

64. Erik J. Woodhouse, *The Philippines Electricity Market Investment Context* (PESD, Working Paper No. 37, 2005), *available at* http://pesd.stanford.edu/ipps. The project sample in the Philippines reflects three variables: (1) fuel choice (oil, coal, or hydro), (2) regulatory regime (emergency "fast track" plants versus later baseload projects), and (3) choice of offtaker (state utility, export processing zone, or private utility).

65. Joshua C. House, *The Polish Electricity Market Investment Context* (PESD, Working Paper No. 31, 2005), *available at* http://pesd.stanford.edu/ipps. The project sample in Poland reflects two variables: (1) fuel (coal or natural gas), and (2) timing.

reached commercial operations just in time to join the debate over its demise.

Tanzania.[66] Beginning in the early 1990s, Tanzania embarked on extensive power sector reform and IPP development. While reform efforts have proceeded slowly, the addition of two IPPs between 2002 and 2004 transformed the electricity sector, reducing the country's dependence on hydropower dramatically. As hydrological conditions have deteriorated in recent years, the IPPs have played a critical role in alleviating potentially serious shortages. For investors, the experience has been turbulent, yet positive, as the original contracts have been honored. As in most countries, however, Tanzania's IPPs have not been without controversy. One project was mired in a three-year arbitration over construction costs and allegations of corruption, while the state electric utility pays more than 50% of its revenue to the IPPs (currently, the government subsidizes up to 30% of these payments).

Thailand.[67] Seven (mostly) natural gas-fired IPPs entered Thailand in a highly competitive and transparent 1994 bidding process. The disruption of the Asian financial crisis delayed many of these projects and forced governments and investors to make substantial adjustments that, in turn, have allowed most of the original IPPs to survive and eventually to prosper financially. Along with Egypt and Mexico, both investment and development outcomes in Thailand have been positive, although continued investment has been derailed by political opposition and a retrenchment around dominant state-owned corporations.

Turkey.[68] IPPs in Turkey were developed under two very distinct regimes—an earlier "build own transfer" (BOT)

66. Katharine Gratwick, Rebecca Ghanadan, & Anton Eberhard, *Generating Power and Controversy: Understanding Tanzania's Independent Power Projects, Managing Infrastructure Reform & Regulation* (University of Cape Town, working paper, 2006), *available at* http://www.gsb.uct.ac.za/mir.

67. Pei Yee Woo, *Independent Power Producers in Thailand* (PESD, Working Paper No. 51, 2005), *available at* http://pesd.stanford.edu/ipps. The primary determinants of project outcomes in Thailand were country-level factors such as fuel markets and economic shock, or project factors that are constant across all IPPs, such as project selection and bidding. Field research in Thailand focused on illuminating the interaction of these factors in the aftermath of the 1997 crisis.

68. Efe Cakarel & Joshua *House, IPP Investment in Turkey's Electric Power Industry* (PESD, Working Paper No. 32, 2005), *available at* http://pesd.stan-

scheme in which each plant negotiated its contract with the government utility individually, and a subsequent "build own operate" (BOO) system in which PPAs were awarded through competitive bidding. A 2001 shock to the Turkish economy (which severely devalued the Turkish Lira) stressed all projects; although the original contracts have held in all cases, the plants that had been developed through competitive bidding found it easier to manage the consequences of the currency devaluation.

IV. Explaining Outcomes in IPP Investment

This Part synthesizes the factors that explain IPP outcomes at two levels.[69] The first focuses on structural sources of risk that arise mainly from the host country and its electricity market. These risks are not easily controlled by either party (*e.g.* the path of electricity reform), not easily changed (*e.g.* enforcing a fiscal policy that will mitigate the impact of external financial contagion), nor easily evaluated by investors (*e.g.* the risk of political or social instability).[70] These structural factors determine the risks to which a project will be exposed and thus often appear to be the primary determinants of outcomes. This is more true for host countries than for investors. Development outcomes for IPPs are heavily dependent on macroeconomic stability and on the ability of the government

ford.edu/ipps. IPPs in Turkey vary along three key variables: (1) fuel choice (coal, hydro, or natural gas), (2) regulatory regime (BOT or BOO), and (3) investor composition (foreign or local). However, the major variable explaining different outcomes is regulatory regime; for this reason, project selection in Turkey controlled for fuel and investor mix in order to isolate the significance of regulatory changes, and includes one BOO project (Gebze, Adapazari, Izmir) and one BOT project (Trakya Elektrik). The IPP study did not conduct field research in Turkey, however, and relied on public information and limited interviews.

69. The relationship between institutions, transactions/projects, and risk has been explored in literature from a variety of disciplines. The hierarchy utilized here draws in particular on Oliver E. Williamson, *The Institutions and Governance of Economic Development and Reform*, *in* THE MECHANISMS OF GOVERNANCE 322, 326-328 (1996); *and also* ROGER MILLER & DONALD LESSARD, THE STRATEGIC MANAGEMENT OF LARGE ENGINEERING PROJECTS: SHAPING INSTITUTIONS, RISKS, AND GOVERNANCE (2002).

70. Claire A. Hill, *How Investors React to Political Risk*, 8 DUKE J. COMP. & INT'L L. 283, 284–86 (1998) (noting a pattern of risk premiums in foreign direct investment declining steadily to low points just prior to major crises that jolt them back up).

to reduce risks for investment by establishing a reliable legal and regulatory context. However, investment outcomes have been no more than broadly consistent with this hypothesis; variation in key structural variables—such as macroeconomic shock, power sector reform, and corruption—does not explain the security of property rights across projects. Second, the study examines two types of project-level arrangements that influence how the structural context affects outcomes for individual projects: the heavily legal and financial "risk engineering," and a portfolio of strategic and defensive management techniques.[71]

A. *Countries: The Structural Determinants of Risk*

The persistent pressure on project arrangements that flows from adverse country conditions has bred cynicism on the part of investors. This section explores the contours of that pressure and highlights unexplained variation, where projects seemed to "beat the curve." This Article identifies five factors that are often cited as determinants of a country's performance with private investment generally and in the power sector specifically. They include: the occurrence of macroeconomic shock, the cost structure in the host electricity market, corruption and other political risks, and the organization of fuel markets. These four factors comprise risks that supposedly were allocated to host government offtakers and consumers. The section concludes by examining a factor that

---

71. The tools that comprise this second approach to risk management have been described in a variety of ways. *See* Moran, *The Changing Nature of Political Risk*, *supra* note 12 (noting the prevalence of "legal and financial" risk management that seeks to price risk appropriately and lock in absolute terms, as opposed to strategic management that seeks to anticipate and reduce risks); Donald Lessard & Roger Miller, *Mapping and Facing the Landscape of Risks*, *in* MILLER & LESSARD, *supra* note 69, 76–92, at 85–86 (distinguishing between "decisioneering" approaches to risk management, which attempt to calibrate discounted cash flows to predictions about future risk, and "managerial" approaches to risk management, which attempt to "match risks with strategies" in order to "influence outcomes"); *See also,* Roger Miller & Xavier Olleros, *Project Shaping as Competitive Advantage*, *in* MILLER & LESSARD, *supra* note 69, at 93–112 (arguing that large engineering projects, including power plants, that are successful are not "selected"—i.e. dependent wholly on external variables—but rather are "shaped"—a process that entails constant adaptation, innovation and adjustment by key managers who understand and react effectively to evolving risks).

was supposed to help mitigate country risk—the legal and regulatory framework for private investment.

1. *Macroeconomic Shock*

The most prominent single explanation for the collapse of the IPP market in the late 1990s is a succession of macroeconomic crises. These include the Asian financial crisis, devaluation of local currencies in Turkey, Egypt and Brazil, and the meltdown of the Argentine economy in 2001-02. In all, six of thirteen sample countries in this study suffered a substantial macroeconomic shock; all six saw severe stress imposed on IPPs as a result of the macroeconomic shock. Recent work examining the aftermath of the Asian financial crisis for infrastructure investment has illustrated how country- and project-specific factors determine how the macroeconomic shock propagates to the level of individual projects.[72] These factors, and the experiences of the six countries that faced macroeconomic shock (along with Indonesia, which is included because of its central position in the IPP experience following the Asian financial crisis), are summarized in Table 4.

In most cases, the outcomes for IPPs are consistent with the conventional wisdom about how macroeconomic shock should affect investments. The worst performers in this group—Argentina and Indonesia—suffered severe shocks that easily propagated to the private power sector. In Indonesia, a massive devaluation was combined with IPP contracts denominated in hard currency and a relatively large proportion of power sourced from IPPs scheduled to come online. Moreover, the state utility PLN was already in dire straits. Argentina faced a crisis of similar severity when trading pressure and underlying macroeconomic trouble forced the government to abandon the currency board that had pegged the peso to the dollar. Since Argentina's entire electricity system, from natu-

72. *See* R. David Gray & John Schuster, *The East Asian Financial Crisis-Fallout for Private Power Projects*, *in* PUBLIC POLICY FOR THE PRIVATE SECTOR (The World Bank, 1998), *available at* http://rru.worldbank.org/documents/Public PolicyJournal/146gray.pdf; Thierry Lefevre & Jessie L. Todoc, IPPs in APEC Economies: Issues and Trends, Paper Presented at The Joint Eighth APEC Clean Fossil Energy Technical Seminar and Seventh APEC Coal Flow Seminar (Oct. 30-Nov. 3, 2000), *available at* http://rru.worldbank.org/documents/paperslinks/thierry.doc.

TABLE 4: EXPOSURE TO FOREIGN EXCHANGE RISK OF IPPS IN SELECTED COUNTRIES

	Ways that Macroeconomic Shock Affects IPPs. . .						
	Macroeconomic shock	. . . through foreign exchange exposure			. . . through the solvency of the offtaker		
Country and Period	*severity of economic crisis*	*. . . currency of fuel supply*	*. . . currency of IPP payments*	*. . . foreign project debt*	*IPP share of capacity* *Operating*	*IPP share of capacity* *Planned*	*. . . retail tariff margin*
Indonesia 1997-98	Rupiah lost 80% GDP = −13%	LOW Local currency	HIGH Hard currency	HIGH 14% local	LOW 6%	HIGH 35%	HIGH. Retail tariffs not adequate.
Thailand 1997-98	Baht lost 60% GDP = −10%	HIGH Hard currency	LOW Local currency (*until indexed*)	HIGH Majority foreign	LOW 0%	HIGH 26%	LOW. Retail tariffs provide adequate margin.
Malaysia 1997-98	Ringgit lost 50% GDP = −7%	LOW Local currency	LOW Local currency	LOW 90% local	HIGH 34%	HIGH 51%	LOW. Retail tariffs provide adequate margin.
Philippines 1997-98	Peso lost 35% GDP = −0.5%	HIGH Majority hard currency	HIGH Hard currency	HIGH Majority foreign	HIGH 32%	HIGH 37%	HIGH. Retail tariffs not adequate.
Turkey 2001	Lira lost 100% GDP = −7.5%	HIGH Hard currency	HIGH Hard currency	HIGH Majority foreign	LOW 6%	HIGH 22%	MEDIUM. Persistent high cross-subsidy.
Egypt 2002-03	Pound lost 50% GDP = 3%	LOW Local currency	HIGH Hard currency	HIGH Local, but USD denominated	MED 11%	MED 11%	HIGH. Retail tariffs not adequate.
Argentina 2002	Peso lost 200% GDP = −11%	HIGH. Hard currency	HIGH. Hard currency	MEDIUM. Limited project Finance.	HIGH. Almost 100% of power sector private.		HIGH. Retail tariffs adequate until frozen.

Source: Adapted from model first presented in R. David Gray and John Schuster, The East Asian Financial Crisis-Fallout for Private Power Projects, Viewpoint, Note No. 146 (The World Bank, August 1998); additional data based on PESD research.

ral gas supply to power generation and distribution companies, was privately held with dollar-denominated contracts, the aggregate economic effect of the rapidly devaluing peso was enormous. In contrast, the countries that weathered their economic shocks the best—including Thailand and Egypt—all benefited from structural variables that lessened the impacts of shock (indicated by "Low" designations in Table 4).

These broad patterns, however, do not provide a full explanation for observed outcomes. For example, other than enjoying some leeway because none of its projects were online at the time of the Asian financial crisis, Thailand's IPPs were gravely exposed to the effects of that shock through foreign-denominated financing and fuel. The country was able to manage the impact on its IPP sector in part because of the timely intervention of key policy officials and because the transparency of the Thai bidding process ensured that its IPPs were highly competitive and politically sustainable.[73] Similarly, despite a large shock in the Philippines and a large fraction of power that came from IPPs—both factors that would suggest high vulnerability to macroeconomic shock—the government's review and renegotiation of IPP contracts helped to calm public concerns about the cost of private power while also maintaining the confidence of investors.

Exposure to currency risk remains the central risk in power investment. Development outcomes in nine of thirteen sample countries were adversely affected by macroeconomic conditions. Nonetheless, some countries took advantage of structural factors (Egypt, Thailand, Malaysia) or otherwise managed to preserve the viability of the IPP sector (the Philippines, Turkey) in the aftermath of crisis. These countries remain free to adjust the sources and terms of future investment in its power sector, yet also have a relatively successful base of experience to build upon.[74] Investors remain wary despite the

73. See discussion *infra*.

74. In rating a country's IPP experience in the aftermath of macroeconomic shock, it is also important to consider that the alternative, state investment, would in many cases have faced similar currency exposure. Most countries pay for fossil fuels in hard currency and import the major equipment for power plants in hard currency. Reflecting these needs, in some countries the majority of the debt issued by state utilities is in hard currency (notably in the Philippines). The primary differences between state investment and private investment, in terms of vulnerability to eco-

fact that of the countries that weathered macroeconomic shock, only in Argentina and Indonesia did investors bear a significant proportion of the loss. In fact, in most countries, including Malaysia, Thailand, the Philippines, Turkey, and Egypt, IPP contracts have held under pressure or have been adjusted cooperatively. With this in mind, the variation in outcomes between projects that faced similar macroeconomic disruption offers important lessons for the future. This variation reflects the country and project factors discussed in the sections that follow.

2. *Political Risk and Corruption.*

Political risk in the classic sense—such as civil war or outright nationalization—has not been a significant factor in the IPP experience anywhere in the last two decades. The nearest examples are Enron's Dabhol project in India, the Hub River project in Pakistan,[75] the collapse of the IPP sector in Indonesia after Suharto,[76] and perhaps the 2001 Argentine crisis.[77] All of these cases include, to different degrees, elements of expropriation by host governments—although the full stories are compounded by many other factors, such as macroeconomic shock. Rather than outright nationalization, more common is a form of creeping expropriation that reduces the private value of equity assets without formally taking title. This type of opportunism usually operates through the accumulation of changes in rules, regulations, or other institutions, and less egregious refusals to honor contracts, discussed in turn throughout this paper.

---

nomic shock, is in the hard currency denominated equity returns in private projects—while significant, these are a small portion of total project costs. Additionally, spiraling costs for state utilities are more easily managed (or hidden) than contractual obligations in a time of crisis. Thus, the pain flowing from IPP arrangements in many countries recovering from a crisis reflected costs that would have been borne regardless. *See* Gray & Schuster, *supra* note 72.

75. For discussions of the Hub river project and the dispute with the Pakistan government, *see, e.g.,* Kantor, *supra* note 10, at 1146; JOINT UNDP / WORLD BANK ENERGY SECTOR MANAGEMENT ASSISTANCE PROGRAMME, ANALYSIS OF PRIVATE POWER PROJECTS UNDER STRESS, Box 1 (2005).

76. See Kantor, *supra* note 10; Moore, *Allocating Risks*, *supra* note 10; Moore, *Restructuring*, *supra* note 10; Wells, *infra* note 191. **R**

77. Nuñez-Luna & Woodhouse, *supra* note 54, at 14–16. **R**

The topic of corruption merits separate attention. The literature on corruption and economic performance in developing countries is vast, and the literature on corruption and foreign direct investment is growing.[78] Despite the fact that corruption is widely identified as a core problem in private infrastructure investment,[79] studies casting light on the impact of corruption on infrastructure investment are scarce.[80] In the IPP experience, operating in an environment perceived to be corrupt does not appear to be a major explanatory variable for project outcomes.

Investors in IPPs did not shy away from embracing countries perceived to have corrupt business environments.[81] Rather, as with other country-level factors, investors and government officials have attempted to manage the risks created by corruption by adjusting project design. Projects in countries where the incidence of corruption is higher appear somewhat more likely to rely on risk engineering mechanisms than on strategic practices.[82] Perhaps most conspicuously, reliance

78. *See* Shang-Jin Wei, *Corruption in Economic Development: Beneficial Grease, Minor Annoyance, or Major Obstacle?* (World Bank Policy Research, Working Paper No. 2048, 1999) (reviewing the literature on corruption and foreign direct investment).

79. *See, e.g.*, ASIAN DEVELOPMENT BANK, JAPAN BANK FOR INTERNATIONAL COOPERATION, & THE WORLD BANK, CONNECTING EAST ASIA: A NEW FRAMEWORK FOR INFRASTRUCTURE (2005); Laszlo Lovei & Alastair MacKechnie, *The Costs of Corruption for the Poor—The Energy Sector*, *in* PUBLIC POLICY FOR THE PRIVATE SECTOR (The World Bank, 2000).

80. *See id.*

81. For example, foreign direct investment generally is less likely to include local partners in countries where corruption is perceived to be widespread. Beata K. Smarzynska & Shang-Jin Wei, *Corruption and Composition of Foreign Direct Investment: Firm-Level Evidence* 14 (National Bureau of Economic Research, Working Paper No. 7969, 2000). IPP investment demonstrates no such pattern. In countries that score in the lower half in the TI Index (in order: Turkey, Egypt, Tanzania, India, Philippines, Argentina, Kenya), local partnering arrangements for foreign investors are prevalent in Turkey, India, the Philippines, Tanzania, and Kenya. For countries in the top half of the TI Index (in order: Malaysia, Brazil, Thailand, Mexico, Poland, China), local partnering arrangements for foreign investors are prevalent in Brazil, Thailand, Mexico, and Poland. (In China they are common as well, but for a different reason: there, local partners were required by the government).

82. In risk engineering categories other than reliance on guarantees, variation is either limited (*e.g.*, all of these projects relied on long-term contracts of various times, and the vast majority included dispute resolution provisions that provided exclusive recourse to international arbitration), or de-

on full sovereign guarantees has occurred almost exclusively in the countries that investors perceive to be more corrupt.[83] However, to date, no allegation of corruption related to an IPP in any of thirteen sample countries examined here has resulted in a full public adjudication.[84] Given the lack of enforcement, the risk of corruption has not been a *legal* risk per se, but rather primarily a *social* risk that invites opposition from political actors and civil society.

Thus, most strikingly, the use of transparent and competitive bidding (which, as discussed below, is largely a project-level innovation) appears to be the most effective protection against the pressure of corruption. In Mexico, Thailand, and Egypt, the three countries with the most competitive and transparent bidding in the power sector, no serious concerns regarding corruption have been encountered in this study, despite wide variation in perceived levels of corruption between these countries. In Tanzania, Turkey, and Kenya, projects allocated by competitive bid have remained immune to allegations of corruption that have plagued other projects in the same

termined by other factors (*e.g.*, reliance on multilateral partners or other "prominent victims" appears to reflect mostly the status of capital markets and financing requirements of a project).

83. Ranking the thirteen sample countries according to their place in the Transparency International Corruption Perceptions Index. *See* Transparency Int'l, Corruption Perceptions Index (2004), http://www.transparency.org/ (follow hyperlink for "corruption perceptions index"; then follow hyperlink for "2004." The six countries that scored worst on the TI Index (in order: Turkey, Egypt, Tanzania, India, Philippines, Argentina, Kenya) almost all offered sovereign guarantees for some or all of their IPPs. The exception is Kenya, in which several projects faced long delays in obtaining financing due in part to the absence of a sovereign guarantee. None of the six countries that scored best in the TI Index (Malaysia, Brazil, Thailand, Mexico, Poland, China) offered full sovereign guarantees, although at times analogous security arrangements were common.

84. The IPTL arbitration in Tanzania came close. Government allegations of bribery in the negotiation and signing of the PPA were incorporated into an ongoing arbitration. However, the tribunal strictly limited the time and compulsory discovery available to pursue the claims. Ultimately the corruption charges were found to lack merit on the existing record. *See* Gratwick et al., *supra* note 66, at 14-15; Tanzania Electric Supply Company Limited v. Independent Power Tanzania Limited, ICSID Case No. ARB/98/8 (Final Award, July 12, 2001), available at http://www.worldbank.org/icsid/cases/awards.htm. **R**

country that were allocated otherwise.[85] In the Philippines, civil society criticism of corruption in the IPP projects falls most heavily on the early "fast-track" projects or on unsolicited projects, both of which were allocated by direct negotiation, as opposed to projects developed under the BOT bidding framework.[86] Where the risk management tool (transparency and low prices) is tailored to the risk (public resentment of secret and seemingly expensive projects), results tend to improve.

3. *The Host Electricity Market*

In addition to macroeconomic instability, the electricity system's capacity to generate revenue (reflecting aggregate demand and tariff levels) to cover the contracted supply (the fixed costs of the generation, transmission, and distribution) was an independent source of risk for IPPs. IPP obligations typically increase the cost basis of the state utility offtaker—the amount of money that must be paid on-time, every month, at a level that covers the PPA obligations.[87]

85. In Kenya, a newly elected government convened a commission to investigate corruption in the energy and petroleum sectors. The Nyanja Commission singled out Westmont and IberAfrica (projects allocated via a "selective" international tender) for corruption indictments, but did not address Tsavo or OrPower4 (projects allocated via general international competitive bidding guidelines). Eberhard & Gratwick, *supra* note 59, at 7. In Turkey, **R**
government allegations of "irregularities" focused on the first round BOT projects, while largely sparing the second round BOO projects.

86. Sheila Samonte-Pesayco & Luz Rimban, *Ramos Friends Got Best IPP Deals*, PHILIPPINE CENTER FOR INVESTIGATIVE JOURNALISM, Aug. 5–8, 2002, *available at* http://www.pcij.org/stories/2002/ramos3.html; Luz Rimban and Sheila Samonte-Pescayo, *Trail of Power Mess Leads to Ramos*, PHILIPPINE CENTER FOR INVESTIGATIVE JOURNALISM, Aug. 5–8, 2002, *available at* http://www.pcij.org/stories/2002/ramos.html; Luz Rimban, *In Haste, Government Approves Controversial IMPSA Deal*, PHILIPPINE CENTER FOR INVESTIGATIVE JOURNALISM, Apr. 2–3, 2001, *available at* http://www.pcij.org/stories/2001/power.html.

87. Where this happens, additional IPP obligations increase the risk for existing IPP obligations—a fact increasingly recognized by lenders, including the World Bank, which is including clauses in power sector loan agreements prohibiting borrowing states from contracting additional IPPs without approval. DELOITTE TOUCHE, SUSTAINABLE POWER SECTOR REFORM, *supra* note 1, at 122 (noting four IPPs that obtained World Bank support and **R**
closed within the last five years, for which the terms of Bank support included constraints on the government continuing to add private capacity without adequate justification); Gratwick et al., *supra* note 66, at 27-28 (not- **R**
ing similar conditions on World Bank loans to the Songas project).

With this price spike coursing through the electricity supply chain, pressure on IPP arrangements often mirrored the basic commercial context. India, with no major macroeconomic shock, provides the best example;[88] across the three states with the deepest IPP markets, the commercial viability of the electric power market offers clues as to the outcomes of private power projects in those states. In each, the market share is similar; in Andhra Pradesh, IPPs account for 12% of installed capacity, in Gujarat 10.5%, and in Tamil Nadu 10%.[89] Andhra Pradesh exhibits relatively healthy cost recovery in its retail tariffs and is furthest along the path of reform with a capable regulatory agency and has faced an acute power deficit that abated only in 2004.[90] Here, IPPs are regularly paid, despite sharp disputes concerning accounting for cost overruns. In Gujarat, with similarly strong cost recovery and acute electricity shortages[91] but a less mature reform program, IPP's have faced chronic payment problems. Success has depended on individual innovation, such as securing (rare) private gas contracts and reducing offtake risk by securing captive offtakers.[92] By contrast, the state of Tamil Nadu scores lowest in terms of cost recovery in retail tariffs and has barely begun reform efforts. When IPPs came online in Tamil Nadu the state's power deficit shrank rapidly from 15% in

---

88. It should be noted, however, that the late 1990s and early 2000s witnessed a prolonged gradual devaluation that inflated the local currency cost of the projects.

89. For a comparison and evaluation of the performance of these utilities, known as "State Electricity Boards" (SEBs), *see* CONSOLIDATED REPORT TO THE MINISTRY OF POWER (REVISED), Jan. 29, 2004, *available at* http://powermin.nic.in.

90. Andhra Pradesh's peak electricity deficit remained above 10% and sometimes as high as 23% between 1996 and 2003, before shrinking to 2.3% in 2004.

91. Gujarat has spent most of the same period with peak shortages between 15-25%. *Id.*

92. Another factor that likely contributes to the appearance of stability in the Gujarat experience is that the investors there (local Indian industrial interests in Essar Power, and China Light & Power in the Paguthan project) all exhibit the long-term focus and comfort operating in unstable environments that define the new breed of IPP investor. By contrast, IPPs in Andhra Pradesh and Tamil Nadu have seen more participation from "classic" IPP investors—foreign, mostly U.S., firms that are more likely to resist changes and go public with disputes. For more on the differences between broad categories of investor, see discussion *infra* in Part V.A.

2000 to 1% by 2004;[93] the IPPs offered electricity that was not only more costly than local alternatives but also increasingly less necessary. In 2001, the Tamil Nadu Electricity Board, notwithstanding binding PPAs to the contrary refused to pay more than 2.25 rupees/kWh to its five operating IPPs, with ad hoc payments to cover debt service.[94] The dispute has led to one attempted arbitration[95] and has strained the relationships between project stakeholders and government officials.[96]

With these already delicate conditions, adverse changes in the commercial context—unstable hydrological conditions, a drop in demand, a cap on prices (usually driven by political interference) or a poorly timed increase in supply—often triggered pressure on IPP contracts. Independently of macroeconomic shock, such changes preceded controversy or stress in the IPP sector in four of the thirteen sample countries. The hydroelectricity dependent countries—Brazil, Kenya, and Tanzania—each developed thermal IPPs during periods of poor hydrology. In each case, the return of normal rainfall left the thermal projects looking unnecessary and expensive. The fate of China's IPPs has also closely mirrored the supply-demand context in the host province.

The (mostly) unexpected changes discussed above are often exacerbated by political interference, since the complex and often opaque cost structure of the electricity market is an attractive target. In the Philippines, the aftermath of the Asian

93. Data from Ministry of Power, Gov't of India, available at http://powermin.nic.in/JSP_SERVLETS/internal.jsp.

94. The 2.25 rupee policy was apparently derived by quantifying the TNEB's average cost recovery for the sale of power. *IPPs fault TNEB for poor tariff*, THE HINDU BUSINESS LINE, August 28, 2001, *available at* http://www.blonnet.com/2001/08/28/stories/142856eb.htm.

95. The foreign investors in the Pillai Perumal Nallu project (El Paso Corporation and PSEG) filed an arbitration claim in January 2004 against the Tamil Nadu state government after the local partners and Marubeni refused, in an 8-5 vote of the board of directors, to allow the project company itself to file the arbitration claim. N. Ramakrishnan, *TNEB dues: PPN's 2 US partners go for arbitration, majority shareholders vote against the decision*, THE HINDU BUSINESS LINE, Nov. 18, 2004.

96. Recent discussions with some industry participants in Tamil Nadu suggest that the IPPs and the government may be reaching an accommodation. This follows on the heels of (and may reflect) the equally recent thawing in the Dabhol gridlock, beginning with the agreement between Bechtel and the Government of India during the summer of 2005 pursuant to which Bechtel dropped its arbitration claim against the Government of India.

financial crisis coincided with a politically delicate moment following the ouster of President Joseph Estrada. Under pressure to address rising electricity prices, the new president capped wholesale prices, forcing the state utility to absorb massive losses.[97] In Thailand, opposition to reform from within the state utility has prompted the government to take similar steps, forcing EGAT to absorb increasing losses.

Political mismanagement of tariffs can also invite problems in the long term. In the Philippines,[98] because Napocor's base rate was not allowed to increase for years,[99] the full cost of the IPP program was lumped into the cost adjustment mechanism. Standard practice would have left base costs for IPPs (such as capacity payments) in the base rate and only variable costs (such as fuel and operations) in the price adjustment mechanism. Instead, all of these costs appeared as a line item on consumer power bills, magnifying the visibility of IPPs and multiplying their political troubles during the tense and highly politicized period after the Asian financial crisis.[100]

These troubles explain why some of the variation in country experience is related to the size of the IPP market as a fraction of the country's total generating portfolio. The best-performing countries generally have been cautious in their embrace of IPPs—they contract for a few projects and maintain a smaller percentage of their total generating capacity in IPPs. Many of the best cases for IPPs—Egypt (11%), Thailand (only 6% by 2002), and Mexico (9% in 2003) cluster near the low

---

97. In the first six months of the Philippines' cap on the pass through of PPA costs, Napocor had to borrow US$500 million to cover its shortfall. MYRNA VELASCO, SURVIVING A POWER CRISIS: THE PHILIPPINE EXPERIENCE 100 (2006).

98. The following discussion is based on Woodhouse, *supra* note 64, at 20-21. **R**

99. A concise account is provided in Edgardo del Fonso, *NPC's Financial Odyssey*, BUSINESS WORLD, Oct. 18, 2004, at 25.

100. The pass-through mechanism in the Philippines is known as the "purchased power adjustment," whose acronym (PPA) leads to some confusion for outside observers. In March 2002, NPC's base rate of P1.78/kWh had not been adjusted since 1993. However, Napocor's effective selling rate to Meralco and other distribution companies was P4.22/kWh—the difference of P2.44 reflected the adjustment for fuel costs and for power purchases from IPPs. VELASCO, *supra* note 97 at 66.

end of the spectrum.[101] In these cases, when a change in circumstances creates a special burden, the IPP obligations are small enough in relation to the electricity sector or government budget as a whole that the increased costs are manageable. In countries unable to manage the inevitable financial stress of an IPP program, the fact that pressure on contracts often reflected risks that were allocated to the host government and consumers invites skepticism regarding the feasibility of long-term investment.

4. *Host Fuel Markets*

IPPs are highly exposed to the vagaries of fuel markets, both because the price of fuel is the principal cost component of electricity and because control of fuel markets is one of the critical sources of leverage that governments have over projects. Stress acts upon projects in opportunistic ways; like tariff manipulation, fuel markets often provide a focal point for stress—be it financial, social or political.

Problems within host fuel markets contributed significantly to project outcomes in eight of thirteen sample countries, either negatively (Brazil, China, India, Philippines) or positively (Egypt, Mexico, Thailand, Tanzania).

The most striking case is that of India. In India, one political decision to allocate surplus naphtha to IPPs in 1996 and another decision to deregulate previously controlled naphtha prices caused enormous problems for IPPs and hosts alike when the prices almost doubled within a year.[102] Facing SEBs resistant to purchasing electricity that passed along the high naphtha prices, the IPPs struggled to obtain allocations of less

101. The outlier on the upper end of the spectrum—Malaysia (with 34% of capacity from IPPs during the crisis)—relied almost exclusively on domestic inputs of capital and fuel, which also happened to minimize vulnerability to currency devaluation flowing from the IPP sector itself.

102. In the early 1990s when India's IPP program was taking shape, potential investors faced enormous difficulties in securing fuel promises for thermal plants. Low grade Indian coal was abundant, but government agencies that controlled coal and railways were leery of delivering to power producers after repeated payment defaults from the SEBs, and IPPs were wary of a coal supply system that was incapable of making credible delivery commitments. Navroz K. Dubash and Sudhir Chella Rajan, The Politics of Power Sector Reform in India 12, (Apr. 2, 2001) (unpublished draft) (*available at* http://pdf.wri.org/india.pdf).

costly price-controlled gas in the state-managed gas market, a task that proved to be difficult because gas quotas were awarded via a political and non-transparent process and supplies were often unreliable.[103] Projects that have managed to secure gas supply contracts in India's nascent private (non-state-owned) gas market, including Essar Power and CLP Paguthan in Gujarat, have seen a marked improvement in enforcing the offtake provisions of their PPAs with the state electricity boards.[104]

In the Philippines, efforts to provide a market that would encourage private development of the offshore Malampaya field[105] included plans for several gas-fired IPPs to purchase the gas. Contracts for these projects were signed in late 1997, just before the Asian financial crisis broke. As demand for power dipped between 1999-2002, the state utility Napocor found itself saddled with excess capacity just as 2,500 megawatts of new natural gas-fired electricity came online. The politics of fuel dovetailed with halting reform efforts to ensure that the costs for many of these projects fell directly on Napocor; the ensuing drain on Napocor's finances contributed to public and political dissatisfaction with the power sector generally and exposed IPPs to public criticism and eventual renegotiation.[106]

---

103. Gas supply contracts with GAIL (the Gas Authority of India, Ltd.) at the time contained no penalty for failure to deliver specified amounts of gas.

104. Selected interviews with investors and regulators, Ahmedabad (Gujarat), India, Apr. 23-26, 2005.

105. ALDO BAIETTIE ET AL., PRIVATE SOLUTIONS FOR INFRASTRUCTURE: OPPORTUNITIES FOR THE PHILIPPINES 23 (2000).

106. With dollar-denominated power purchase costs increasing and the peso losing value rapidly, a 2001 law barred cost recovery for IPPs that had not registered with the Electricity Regulatory Board by Dec. 31, 2000. For no apparent reason, several of the largest or most expensive IPPs, including Ilijan, Casecnan, and San Roque, were not registered by Napocor by this deadline. This meant that while the state utility was obliged to pay its full obligations under the contracts, it was not allowed to recover these costs in its grid rate to distribution companies and other offtakers. This law also called for a full review of Napocor's obligations under its IPP contracts that eventually grew into the renegotiations discussed later in the paper. An Act Ordaining Reforms in the Electric Power Industry, Amending for the Purpose Certain Laws and for Other Purposes, Rep. Act No. 9236, §§ 32, 33, 68 (2001), *available at* http://www.gov.ph/laws/ra9136.doc. [hereinafter Electric Power Industry Reform Act].

Alongside its power market restructuring, the Brazilian government pushed for gas-fired IPPs in an effort to diversify away from near-complete dependence on hydroelectricity and to provide a market for supplies from domestic wells and imports from a government-backed pipeline from Bolivia. Yet Brazil's natural gas markets, at the time, were immature in size and regulation[107] and highly vulnerable to political manipulation.[108] Only a small fraction of these projects ever reached commercial operations, yet by 2002 it was clear that Petrobras (which had been directed to provide gas to the projects) lacked gas for even these plants.

In an environment of scarcity, natural gas-fired plants faced new and prohibitive regulations, including one decree that banned any contracts for power above the amount that could be generated based on the actual amount of natural gas Petrobras could deliver. In a rapidly eroding operating environment, the outcomes for IPPs diverged according to their fuel supplies and contracts. For example, MPX's Termoceará competed for gas with another IPP that has a take-or-pay contract with the local distribution company (Endesa's Termofortaleza) and also with numerous industrial offtakers. Because Termoceará sells electricity on a merchant basis, and because Petrobras pays a revenue guarantee to the project whether or not the plant actually produces electricity, Petrobras found it easier to cut gas delivery to that plant than to other plants. Thus, during a mini-drought in 2002—which affected only the north of Brazil due to transmission constraints—Termoceará was, in principle, well-situated to provide power at a healthy profit; yet the plant sat idle for lack of gas. With no relief in sight, the project's sponsors sold the IPP to Petrobras in early 2005 for $120 million.[109]

107. On the disconnect between the regulation of natural gas markets and electricity markets in Brazil, see L.A. Barroso et al., Integrated Gas-Electricity Adequacy Planning in Brazil: Technical and Economical Aspects, Paper presented at IEEE General Meeting (June 15-16, 2005), *available at* http://www.systep.cl/brasilPSR.pdf.

108. De Oliveira, *The Political Economy of Brazilian Power Reform*, *supra* note 55, at 38. **R**

109. The details regarding Termoceará reflect interviews with project stakeholders in Rio de Janeiro, Brazil, July 12-19, 2005. The original cost of the project was approximately $100 million.

In contrast, two of the most competitive IPP markets—Mexico and Thailand—owe their success in part to master gas supply arrangements that create more predictability in gas pricing and the pass-through of fuel costs. In both, the national electricity utility (CFE in Mexico, EGAT in Thailand) established binding agreements with the state-owned gas supplier (PEMEX in Mexico, PTT in Thailand). So far, these agreements have reduced the exposures of IPPs that operate in the middle between primary gas supply and the offtake of their electric power. (The third country where IPPs have consistently delivered low prices, Egypt, simply provides gas to its IPPs at highly subsidized prices).[110] Such arrangements—which notably exist at the project level, not the country level—while increasingly vulnerable,[111] have made these countries darlings for IPP investors.

5. *A Solution? The Legal and Regulatory Framework for Investment*

The legislative and regulatory framework in the electricity sector is the central institutional medium through which risk is mediated for any investment, including IPPs. This factor usually ranks among the most important when investors list concerns with investment in a particular country.[112] And these

110. Eberhard & Gratwick, *supra* note 57, at 23. R

111. In Thailand, new tenders for IPPs are facing fresh difficulties securing competitive fuel contracts, not least because PTT is weighing a possible entry to the electricity market. (Private investors fear competing in a market where the gas company is both fuel supplier to all and competitor for electric service.) Woo, *supra* note 67, at 31. In Mexico, the government has R gradually moved away from a policy that had required CFE to assume the risks associated with gas pricing, in part because gas prices (which are partly indexed to the U.S. market) have risen sharply since 2001. Current guidelines for IPPs in Mexico shift substantially all fuel risk—including procurement, contracting, pricing, and quality—to the private operators. John Schuster & Bob Marcum, *Emerging Fuel Supply Issues in Mexican IPP Project Financing*, 8 J. STRUCT. & PROJ. FIN. 40, 42 (2002). Investors in Mexico now worry that they will be unable to compete directly with the earlier-owned plants that have special fuel arrangements.

112. Ranjit Lamech & Kazim Saeed, *What International Investors Look for When Investing in Developing Countries* 9 (Energy and Mining Sector Board, Discussion Paper No. 6, May 2003) (reporting the results of a survey of investors indicating that a "legal framework defining the rights and obligations of private investors" is the most important element in evaluating a potential investment); PriceWaterhouse Coopers, *Under Pressure: Utilities Global Survey* 6

concerns are not just academic, as perceived regulatory or legal risk can increase the cost of capital substantially.[113] However, and somewhat counter-intuitively, a series of studies have found that investment in IPPs bears little correlation to the extent or quality of legal or regulatory reform.[114] This apparent contradiction is explained by the fact that, in most cases, IPP investors do not look for an "ideal" legal or regulatory system; rather, they seek particular IPP arrangements that apply to their particular investment and risk profile. Such arrangements usually rest on specific legal and regulatory provisions,[115] but they also require intense negotiations such as those leading to an agreed PPA contract.[116] Indeed, early best-practices manuals for private participation in generation explicitly stated that establishing a coherent legal framework for IPPs was not necessary so long as a few core provisions were

---

(2005) (citing regulatory uncertainty as investors' primary concern for investment in utilities).

113. J.L. GUASCH & P. SPILLER, MANAGING THE REGULATORY PROCESS: DESIGN, CONCEPTS, ISSUES, AND THE LATIN AMERICAN AND CARIBBEAN STORY (1999) (finding that perceived legal and regulatory risk could raise the cost of capital by 2–6%).

114. This pattern in observed in several areas of foreign direct investment outside of the power sector. *See, e.g.*, Amanda Perry, *An Ideal Legal System for Attracting Foreign Direct Investment? Some Theory and Reality*, 15 AM. U. INT'L L. REV. 1627, 1646–48 (illustrating the disparity between theory—that more efficient legal systems will attract and sustain more investment—and reality with a case study of investment in Sri Lanka, and discussing a series of hypotheses that might explain the comfort level of investors in an environment that provides little systemic legal certainty).

115. Pascale Michaud & Donald Lessard, *Transforming Institutions*, *in* MILLER & LESSARD, *supra* note 69, 151–63, 154 (finding that of sixty large **R** engineering projects reviewed worldwide, including twenty IPPs, one-third required at least one change in laws and rules, more than one-fourth required complementary changes in property rights, and more than one-third required the development or improvement of exiting frameworks for concessions or BOT ownership).

116. This is in stark contrast to private participation in distribution, which demands a coherent and overarching regulatory framework, either in public legislation and regulation or in private contracts. For a discussion of these challenges, *see generally* THE WORLD BANK, THE PRIVATE SECTOR IN INFRASTRUCTURE: STRATEGY, REGULATION, AND RISK (1997); TIMOTHY IRWIN, MICHAEL KLEIN, GUILLERMO E. PERRY, AND MATEEN THOBANI, DEALING WITH PUBLIC RISK IN PRIVATE INFRASTRUCTURE (1997); Tonci Bakovic, Bernard Tenenbaum and Fiona Woolf, *Regulation by Contract: A New Way to Privatize Electricity Distribution?* (World Bank, Working Paper No. 14, 2003); KESSIDES, *supra* note 31.

present.[117] These included a legal authorization for foreign investment and for private investment in power, allowing public utilities to procure power from private producers, and providing a dispute resolution mechanism.[118] Detailed regulation was left for specific project documents.[119]

In general, this approach succeeded in isolating IPPs from the surrounding country environment and reducing the investor-government relationship to a small set of critical contracts that, if they held, would ensure the viability of the project. In the cases where custom-tailored provisions in IPP contracts have fallen prey to risks stemming from the legal or regulatory environment specifically, one of two factors is usually at work. First, the special contracts might not allocate risks completely because the legal framework will not allow necessary provisions to take effect. Second, IPPs could become caught in the politics of power sector reform, making it increasingly difficult for government counterparties to make and honor contracts.

As to the first factor, examples of regulatory structure causing incomplete allocation of risk abound. For example, wholesale tariff formulas for IPPs in China were not approved until the plant was already close to commercial operations; once approved, tariffs were subject to yearly reviews with only vague standards according to which this was to happen.[120] Natural gas-fired projects in India, in addition to suffering from a lack of gas, must grapple with supply contracts that do not impose hard delivery obligations on GAIL (the state gas company), leaving the projects unsure of supply. A range of electricity investments in Brazil, including several IPPs (such as Uruguaiana), were unable to adjust prices to hard currency values more than once a year, remaining exposed to considerable currency risk in the interim.

---

117. *See, e.g.*, World Bank Indus. & Energy Dep't & United States Agency for Int'l Dev. Office of Energy and Infrastructure, *Submission and Evaluation of Proposals for Private Power Generation Projects in Developing Countries* 6 (World Bank Industry and Energy Department ,Occasional Paper No. 2, 1994).

118. *Id.*

119. *Id.* ("If the basic enabling legislation exists, private projects can be structured, and obligations can be clearly defined and established in contractual agreements between the private power producer, the purchaser of power, and the government.").

120. Woo, *supra* note 56, at 18–19. R

These knotty problems were further complicated when attempts to contract around them were derailed. In Turkey, for example, the initial BOT law for private investment in power was passed in 1984, but ten years elapsed before the first IPP deal was signed, primarily because the constitution required private participation in public services to be governed by complex public concession law that was inappropriate for IPPs.[121] In 1994, facing an electricity crisis, the Turkish government passed a new IPP law that exempted new projects from public law requirements, but the Constitutional Court struck down this crucial distinction. While the original projects were allowed to retain their private status, new development was postponed until the Turkish constitution was reformed.

As to the second factor, contrary to expectations, the correlation between formal reform indicators and successful country performance in the IPP sector is ambiguous, if not negative. For example, the three most successful IPP countries—Egypt, Mexico, and Thailand—had relatively unreformed electricity sectors during most of the bidding and structuring of projects. Ministry-based regulation in these countries has proven effective for purposes of the IPP program. On the other side of the spectrum, core aspects of the reform process have introduced new risks for existing IPPs (even where the incompatibility of long-term contracts is overlooked), including efforts to create a comprehensive legal framework for electricity (in Brazil and in the Philippines), establishing new regulators (the Philippines), and unbundling generation from transmission and distribution where generation assets remain under state control (Thailand, China). In the extreme, there is Poland, where E.U. regulators have refused to authorize compensation for PPAs that are to be cancelled as that country liberalizes its electricity market.

In most cases, these troubles reflect the inevitable infusion of politics into the reform process, which ensures that reform does not simply create raw uncertainty, but often actively tilts the playing field against new entrants. Brazil offers a key example. The early stages of reform were dominated by a battle between the federal government utility (Eletrobras) and

---

121. Cakarel & House, *supra* note 68, at 4–7; *see also* Catherine Pédamon, *How is Convergence Best Achieved in International Project Finance*, 24 FORDHAM INT'L L. J. 1272 (2001). R

the state development bank (BNDES) for control of the privatization process. (BNDES won that battle and launched the privatization without fully considering the overall structure or governance of the market.[122]) Following the first round of privatization the rules governing the electric sector remained uncertain, and Eletrobras and other interests deeply vested in Brazil's massive hydroelectric industry reinserted themselves into the reform process, perpetuating a regime that protected hydroelectric plants to the exclusion of thermal units.[123] In this context, thermal power plants have only been possible with a range of special arrangements that proved costly. The fates of many thermal plants have swooned as their electricity became relatively expensive when hydrological conditions returned to normal and the special deals were questioned. While Brazil's troubles with thermal generation reflect a range of factors—notably immature gas markets—the political reality of reform in a hydro-dominated system maximized the troubles for thermal investors.

China, like other countries, began reforms when facing constraints on the state's ability to finance necessary capacity additions. One of the first steps was to dismantle the central government monopoly in the electricity sector in order to harness provincial governments in the financing effort for the power sector. Provincial power bureaus, already in existence as administrative units, were vested with increasing responsibility for investment and system management, as well as receiving increasing shares of the revenue generated by electricity sales. This decision eventually created a structural incentive for local protectionism to favor provincially owned power plants, as well as making regulatory risks more difficult to allocate and manage.[124] Investor concern was justified; the Chinese IPP history

122. Adilson de Oliveira, *The Political Economy of Brazilian Power Sector Reform*, *in* VICTOR & HELLER, *supra* note 8, at 26, 37. **R**

123. They did this by ensuring that power plants were dispatched (meaning that electricity to serve public demand was sourced from particular plants) according to short-run marginal cost. A hydroelectric plant, with no fuel cost, has very low short-run costs, but the price of power does not reflect the true cost of building or operating the hydro facility. A thermal plant, by contrast, has short run marginal costs that reflect fuel prices, and are much higher. *Id.* at 64.

124. For example, in Intergen's Miezhouwan project, a major point of contention during PPA negotiations was precisely the allocation of risks flowing from changes in the legal or regulatory framework that could adversely

is rife with accounts of non-transparent dispatch decisions favoring local plants,[125] while local regulators found myriad ways to undermine commitments to foreign IPPs.[126]

The primary offtakers for IPPs in the Philippines, private distributor Meralco and state utility Napocor, have each seen their creditworthiness severely undermined by a series of regulatory and court decisions.[127] While the merits of these decisions are hotly debated in the country, politics are not far from the surface in each case. Napocor has been a frequent vehicle for the political manipulation of tariffs, and after the Asian financial crisis was burdened with additional costs in order to keep retail prices down during a political transition.[128] Meralco has a long and troubled relationship with the state in the Philippines and is often the victim of unpredictable changes in rules itself, which have caused problems for its IPP payment obligations.[129]

---

affect the project's economics. Although the Fujian Provincial Power Bureau eventually agreed to accept this risk in the PPA and indemnify investors for the cost of adverse regulatory changes, its allocation was far from clear. According to lawyers involved in the negotiations, project sponsors, "while aware that such a promise required some parallel understanding between the Power Bureau and the provincial and central governments, never inquired as to the form of that understanding . . . 'They did something 'internal' that we didn't really want to know about.'" Josh Eagle, *The Miezhouwan Power Project*, Stanford Law School Program in International Law, Business and Policy Case No. 001-99 (1999), at 24.

125. Woo, *supra* note 56, at 27; *see also* Noureddine Berrah, Ranjit Lamech & Jianping Zhao, *Fostering Competition in China's Power Markets* 9 (World Bank, Discussion Paper No. 416, 2001). **R**

126. Woo, *supra* note 56, at 27; Berrah, *supra* note 125, at 9; *The Private Sector and Power Generation in China*, *supra* note 56, at 16. Out of three projects reviewed in this study (Miezhouwan, Shandong Zhonghua, Shajiao C) none has operated pursuant to the terms of the original contract. Tariffs in China are set according to a straight energy payment at a price of fen/kWh to be calculated according to a formula in the power sales agreement—each project has seen this formula disregarded. **R** **R**

127. In late 2002, the Philippine Supreme Court in a hotly debated decision prohibited Meralco from including in its rate base income tax and ordered a refund to customers amounting to more than $500 million dollars. VELASCO, *supra* note 97; Peter Wallace, *When will common sense prevail?*, BUSINESSWORLD, 26 January 2004. On Napocor's roll as *de facto* policy vehicle for the Philippine government, see Woodhouse, *supra* note 64, at 22–23. **R**

128. See *supra* note 97 and associated text. **R**

129. *See, e.g.*, *infra* note 203. **R**

In each of these countries, the challenges of reform for private investors cannot be reduced to getting market design "right" or to establishing a clear legal framework for investment. To be sure, regulatory capacity and the legal framework explain some variation in project outcomes, particularly where risk allocation is incomplete. More often, however, reform efforts take unexpected turns that undermine the political or economic sustainability of existing projects. The awkward implication is that the twin goals of attracting investment and implementing meaningful reform are in tension—all the more so as investors seek higher risk-adjusted returns in the face of regulatory uncertainty. Yet, in an environment of macroeconomic uncertainty, commercial adversity, opaque fuel markets and fickle regulatory and legal rules of the game, some projects have been able to succeed. The next section turns to examine the factors that explain this variation.

B. *Projects: Design, Incentives and Contracts*

As recounted in Part IV.A, a host of exogenous and institutional factors that are beyond the direct control of stakeholders help to explain the observed pattern of outcomes for IPPs. Yet these factors are far from fully determinative. Even where country-level factors contribute to success, they fail to fully explain the outcome. Where country-level factors lead to failure, some projects have succeeded in preserving positive outcomes for investors and hosts alike.

At first, the argument that project design is the ultimately determinative factor may seem intuitive—even mundane. After all, the wave of IPP investment in the 1990s was based heavily on the idea that risks could be managed through project-specific contracts; investment often flowed to countries where (and when) appropriate contracts were offered. This paper goes one step further, by distinguishing two categories of project-level factors. The first is an arsenal of "risk engineering" measures that include legal and financial instruments designed to price and allocate risk precisely, along with the project contracts that codify these arrangements into binding obligations.[130] The second category includes measures designed to anticipate (and manage) risks that are likely to arise and

130. *Id.*

gravitate towards vulnerabilities in a project but are difficult to manage through contracts.[131] This category—"strategic management"—contains instruments and decisionmaking procedures that are intended to make the project a less likely target for government opportunism and less exposed to unintended squeezes, such as from fuel markets. While the first category contains necessary elements for success, such as carefully designed contracts, that animated much of the IPP market through the 1990s, it has failed to satisfy the premise that risk can be managed by identification and allocation. The second category, while somewhat amorphous, has often been a more important determinant of outcomes for IPPs.

1. *Risk Engineering: An Incomplete Solution*

In response to the risks of IPP investment, investors adopted a canon of measures consisting of four main elements: (1) a series of contracts that capture the key commercial bargain between government and investor;[132] (2) payment security arrangements designed to ensure a regular flow of project income; (3) multi- or bilateral partners (as well as lenders and insurers) whose presence is thought to deter contract breach by the host government; and (4) offshore arbitration

---

131. *Id.* A similar distinction is made by Miller and Lessard in an extensive review of success and failure in large engineering projects (including roughly thirty IPPs). Miller and Lessard distinguish between "decisioneering" approaches to risk management, which attempt to calibrate discounted cash flows to predictions about future risk, and "managerial" approaches to risk management, which attempt to "match risks with strategies" in order to "influence outcomes." *See* Donald Lessard & Roger Miller, *Mapping and Facing the Landscape of Risks*, *in* MILLER & LESSARD, *supra* note 69, 76–92, at 85–86. **R**

132. In most cases this documentation revolves around a long-term power purchase agreement signed with a government offtaker that specifies quantities and prices for power over the life of the project. However, in decentralized or privatized electricity markets the power sales may not involve government entities. In these cases, the key bargain offered by government is found elsewhere; in Brazil the "self-dealing" projects were guaranteed full-pass through of costs via associated distribution companies; in Argentina, the pass-through arrangements and dollar-peso currency peg played a similar role. *See generally* Beatriz Arizu, Luiz Maurer & Bernard Tenenbaum, *Pass Through of Power Purchase Costs: Regulatory Challenges and International Practices* (World Bank Energy & Mining Sector Bd. Discussion Paper No. 10, 2004).

designed to circumvent difficulties with local courts and improve the ultimate enforceability of contract terms.

This risk engineering portfolio was developed in the particular institutional setting of industrialized nations and transplanted to new and very different environments in the developing world. Western firms, accustomed to investments for which risks can be evaluated ex ante and captured in prices and contracts,[133] deployed adapted versions of risk engineering methods they knew from home. However, the tools that make such risk evaluation possible are rarely available for an IPP in a developing country. Thus, while necessary for successful investment, many of the tools discussed in this section have introduced new risks of their own or have proved to be of limited value across the IPP experience.

(a) Contracts

For an IPP, contracts capture in excruciating detail the bargains among key project stakeholders, managing risk by specifying precise obligations and responsibilities for counterparties. With such precise boundaries, the durability of contracts and the nature of any changes help to illuminate the investor-government relationship; while an imperfect indicator of overall project success, the simple question of whether contracts hold is a useful starting point to examining project outcomes. Out of thirty-four projects reviewed in-depth for this study, thirteen have undergone mutual or cooperative renegotiation[134] and eight have faced unilateral renegotiation or

133. *See generally* HERNANDO DE SOTO, THE MYSTERY OF CAPITAL: WHY CAPITALISM TRIUMPHS IN THE WEST AND FAILS EVERYWHERE ELSE (2000); Benjamin C. Esty & William L. Megginson, *Creditor Rights Enforcement and Debt Ownership Structure: Evidence from the Global Syndicated Loan Market* (Tuck-JQFA Contemp. Corp. Governance Issues II Conf., June 24, 2002), *available at* http://ssrn.com/abstract=320226. (reviewing the contractual mechanisms deployed to control the particular risks of project finance transactions in developing countries).

134. "Mutual" or "cooperative" renegotiation refers to a renegotiation that is not accompanied by a public dispute and that (in the end) does not appear to have a significant financial impact on the project. These include: Termoceará, Uruguaiana, Shajiao C, GVK Jegurupadu, Lanco Kondapalli, Essar Power, IberAfrica, Pagbilao, Quezon, Casecnan, Eastern Power, and Independent Power. Tanzania's IPTL is also included in this category, as the reduction in capacity charges in that project were the result of a valid arbitration pursuant to the dispute resolution clause in the contract.

non-payment.[135] Only thirteen have held in a strictly formal sense—a group dominated by cases where country factors have shunted any severe stresses away from the projects and where projects have been tailored closely (by accident or design) to the risks of the surrounding power market.[136]

The prevalence of adjustments to contracts illustrates the limits of legal instruments as a means of controlling risk where interpretation and enforcement mechanisms are thin. Stress flows to where terms and expectations are ambiguous or vulnerable. Thus, contracts are necessary, and must be thorough; pressure focuses where gaps are allowed to persist, as in the case of China's annual tariff reviews or India's public gas contracts. But they are not sufficient; contracts cannot always hold the line when fuel is scarce and politicized, when regulators lack the capacity to resolve disputes, when social mistrust of private investors turns to suspicion and protest, or when laws and regulations are changing and uncertain. With time, investors responded to these weaknesses and the gaps in interpretation with more detailed contracting. This paper argues that such efforts may be misguided because of the challenge in anticipating the myriad difficulties and their legal remedies that could arise for a project. More severe systemic stresses are not managed by contractual anticipation; they merely reappear as pressures in a new locus of ambiguities and uncertainties.

135. "Unilateral" renegotiation refers to a renegotiation that is undertaken with substantial government pressure, non-payment or other coercion and which produces a result that has a significant financial impact on the project. These include: Miezhouwan, Shandong Zhonghua, Paguthan, PPN Power, ST-CMS, Cavite, Elcho, and ENS. The two Polish projects (Elcho and ENS) are difficult to place, as pressure to cancel the contracts as part of EU accession is ongoing and has not been resolved yet—they are included here in the expectation that the PPAs will be cancelled. Additionally, although the study did not include detailed examination of specific projects in Argentina, every IPP there has faced unilateral renegotiation in the conversion of their contracts to pesos.

136. These are dominated by projects in Mexico (Monterrey III, Merida III, Rio Bravo), Turkey (Intergen's trio of Gebze/Adapazari/Izmir, Trakya Elektrik), and Egypt (Sidi Krir, Port Said, Suez). Outliers include EDF's Norte Fluminense in Brazil (which sells to a distribution company that is owned by EDF as well), Cana Brava in Brazil (which, as a hydro plant in Brazil faces few risks other than environmental permits), Navotas I in the Philippines (which completed its PPA prior to the 2002 renegotiation), Tsavo in Kenya, Songas in Tanzania.

(b) Payment Security and Official Credit Support

Project stakeholders have relied on a wide array of arrangements to secure the payment provisions in contracts. These instruments include sovereign or corporate guarantees, escrow arrangements, and letters of credit—all designed to bolster confidence around a predictable stream of payments from offtakers whose own financial situation, usually, gives cause for concern about credibility. Such arrangements appear to be necessary conditions—in part for reasons of payment security and notably because commercial lenders demand them. However, the IPP experience reveals no more than a tenuous relationship between the layers of official credit support and capacity to withstand pressure to change a contract.

Sovereign guarantees are prominent on this list, largely because they operate over a long period of time and allocate risk of nonpayment to the host national government—the actor that, in principle, has the greatest capacity to intervene and fix most problems that befall a project. In these settings, the interests of the investor may be favored in multiple ways. Host national governments may feel more obligated than other parties to abide by treaty commitments to submit disputes to international arbitration. The national government is more likely to possess offshore assets on which courts outside the defendant nation may levy arbitral judgments. Host national governments may be more subject to political pressures by the investors' home governments.

However, nothing in the study indicates that these measures have been powerful deterrents or determinants of project outcomes. Many of the countries included in this study have employed such provisions, including Egypt, India, Turkey, and the Philippines. In addition to these cases, the projects in Mexico and Thailand have de facto guarantees because the state-owned utilities that purchase the power (CFE and EGAT) are both supported by the national budget in their respective countries. In these countries, sovereign guarantees are associated with strong country performance, even in the face of macroeconomic stress. However, in light of competing factors at work in these countries, it is difficult to conclude that sovereign guarantees are a significant factor. In assessing the importance of these factors, the experiences of the Philippines and India, which have varied their use of sovereign guarantees across projects, are particularly illuminating; yet none of this variation actually explains the range of project outcomes.

In the Philippines, projects initiated before 1995 had full sovereign guarantees, but after that date the government began limiting its use of guarantees for the state utility Napocor;[137] despite this change, the outcomes for the entire IPP sector reflected primarily the consequences of the country's macroeconomic shock and the subsequent 2002 government review and renegotiation of IPP contracts (discussed *infra*). That review presented a delicate moment in which the fortunes of individual projects could easily have diverged; in fact, the existence of a full guarantee did not lead to observably different results, although it may have helped focus attention from the government in ensuring an amicable result. In India, the government offered sovereign guarantees to the first eight (so-called "fast track") IPPs, including the infamous Dabhol project. In part because of the political controversy that spewed from the Dabhol guarantee, the government scaled back guarantees for subsequent projects; GVK and ST-CMS, for example, only received guarantees for payments on foreign debt. In both cases these payments were met without invoking the guarantee, but it is not clear that the guarantee was relevant; the outcomes for these projects have turned on managing problems that are substantially similar to other projects in the host state that do not have the benefit of a sovereign guarantee.[138]

Investors increasingly view guarantees[139] with skepticism, looking at counterparty solvency to determine whether such a

---

137. INTER-AGENCY COMMITTEE ON THE REVIEW OF THE 35 NPC-INDEPENDENT POWER PRODUCERS (IPP) CONTRACTS, FINAL REPORT (5 JULY, 2002); Study on the Restructuring of the Financial Liabilities of the Power Sector: Final Report, March 2000, at 7–8, tbl. 5.

138. *See* Lamb, *supra* note 58, at 53-64. **R**

139. In addition to sovereign payment guarantees, investors in a few cases have relied on escrow arrangements or letters of credit to ensure payment. Where they are made operational, these mechanisms have a promising record; there is some overlap between escrow arrangements and strong performance in the face of stress. IPPs in Andhra Pradesh (GVK and Kondapalli) and in Kenya (Tsavo) have operating escrow protections, and in each case have seen their basic commercial arrangements preserved in the face of stress. As with other protections, escrow arrangements have their

guarantee is credible. This is evident in Mexico with the growing liabilities and concomitantly declining credibility under the Pidiregas payment arrangements. For investors, the stability of contracts seems more closely related to effective aligning of incentives with key counterparties (discussed *in the next sectioninfra*). Further, governments increasingly view such guarantees skeptically; perhaps necessary to assuage investor fears in the early stages of a novel investment scheme, but essentially keeping liability for the power sector on government books.

(c) Prominent Victims as Political Risk Management

Private investors, particularly foreigners, often try to deter governments from making adverse decisions by involving prominent entities as stakeholders.[140] The hope is that the host government will avoid trampling on big toes.[141] This strategy usually appears in one (or more) of four principal

---

limits—Dabhol has certainly not been saved by the overlapping guarantees it received from state and central government authorities, including a sovereign guarantee for part of the project from the federal government and a series of letters of credit and escrow arrangements.

140. The benefits of international partnering arrangements, as discussed in this section, end up being similar to the benefits of local partnering arrangements, discussed infra in Part B.2. Despite this overlap, international partnering is included in the risk engineering section due to its prominent role in the new international property rights regime that supported infrastructure investment in the 1990s. The hoped-for deterrent effect of powerful partners also fits the risk engineering model more closely, although investors were likely also aware of the strategic advantages such partners might bring, such as expertise in foreign markets, access to key government officials, and credibility in mediating disputes.

141. *See, e.g.*, Wells & Gleason, *supra* note 4 ("A number of foreign investors in developing countries have sought to involve international institutions in their investments. They believe that a government that acts against a project that includes, say, the International Finance Corporation recognizes that it risks being cut off from further funds by the World Bank group."); DELOITTE TOUCHE, SUSTAINABLE POWER SECTOR REFORM, *supra* note 1, at 110 ("Commercial banks generally survived most of the power project failures by recovering the loans due to a strong guarantee and risk insurance framework backed up by MDBs and ECAs."). *See also* Marco Sorge & Blaise Gadanecz, *The term structure of credit spreads in project finance* (Bank for International Settlements, Working Paper No. 59, 2004) (finding that the presence of multilateral or ECA support is far more prevalent in project finance transaction, particularly in developing countries, and can lower credit spreads by almost 30% on average). R

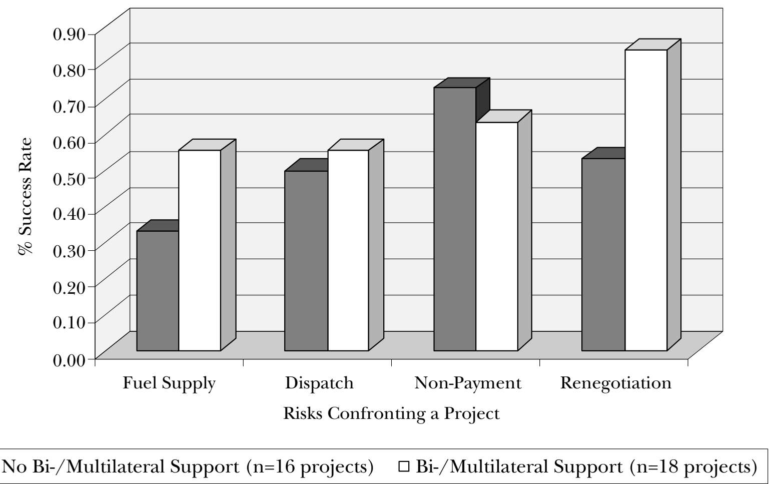
ways: (1) co-investment (i.e., equity) by a multilateral lending institution; (2) lending by international development banks, either directly or as guarantees for commercial loans; (3) risk guarantees or political risk insurance; and (4) reliance on the presence of commercial banks that are critical repeat players in financing governments all over the world. The information necessary to investigate the scope and effectiveness of this strategy is almost impossible to obtain in a systemic and public form.[142] Governments do not want to admit acquiescing to pressure from such entities; multilateral or foreign government entities do not want to appear to be bullying sovereign counterparts; political risk insurers do not want to reveal their methods or settlements for fear that that would affect future claims and premia.[143]

Within these limitations, Figure 2 sketches the risk mitigating role that a subset of "prominent victims"—multi- and bilateral lending agencies or insurers—have played in the IPP experience. This figure shows the relative ability of IPPs with prominent international partners to manage four types of stresses that are often proximate determinants of poor project outcomes: fuel supply, dispatch, non-payment by the offtaker, and renegotiation.

142. In one starting point, the World Bank notes that MIGA has issued 72 guarantees to 39 electricity investments, 32 of which were in the generation sector. Of this number, one claim has been paid ($15 million for a project in Indonesia) and five disputes have been "mediated." World Bank, *supra* note 34, at 23-25. *See also* DELOITTE TOUCHE, SUSTAINABLE POWER SECTOR REFORM, *supra* note 1, at 139 ("In the about 20-year history of the World Bank [partial risk] guarantee, the World Bank has never had to pay out a claim under the PRG. This is ostensibly because the World Bank relies on its 'halo effect' as the preferred creditor, to put strong pressure on the government in order to obtain compliance.") R

143. *See, e.g.*, Gerald T. West, *Managing project political risk: The role of investment insurance*, 2 J. PROJ. FIN. 5, 6 (1996).

FIGURE 2: RISK MITIGATION EFFECTS OF MULTI- AND BILATERAL LENDERS



Source: Author's calculations

Figure 2 captures the risk mitigation benefits of such partnerships, suggesting that they are significant in managing renegotiations, where their connections and influence may facilitate a cooperative resolution. Where conflicts become intense, as in threatened or actual non-payment, the cause is usually severe economic or other crisis, and the myriad other concerns that these entities have may erode their willingness to exert coercive force on host governments. In the case of more mundane operating risks, such as in protecting a reliable fuel supply or dispatch priority, the benefits are significant, yet somewhat more muted, as such matters may in some cases remain beyond the interest or leverage of these partners (as would be expected for a lending or insurance institution).[144]

Political risk insurance presents a similar story. Such insurance has been a prominent aspect of risk engineering in large infrastructure deals both for the benefits of direct insurance coverage and from the perceived value of an endorse-

144. The slight bump in success rates in managing operational risks for projects with prominent international partners, likely reflects the fact that many of these entities focus substantial attention on ensuring commercial viability in projects they lend to, meaning that dispatch and fuel risk is managed in advance.

ment from the public insurers. Leaving aside the benefits of investment facilitation,[145] political risk insurance has played a mixed role in the IPP experience. None of the projects examined in this paper reported reliance (successful or otherwise) on insurance as a significant factor in explaining its project outcomes.[146] This may reflect limitations in available coverage.[147] On the other hand, public insurers play a similar role to other prominent international actors in mitigating host country risk, as detailed in Figure 2, by facilitating successful dispute resolution.

In contrast to the often hidden influence of public lenders and insurers, the involvement of commercial banks appears to be a hard constraint on how far government officials will allow the actual stream of payments to a project deviate from the terms of the original contract.[148] Investors have been correct in their expectation that the involvement of financial

145. This is, of course, not an insignificant omission. Insurers and also the export credit-agencies play a critical role in facilitating (even making possible) investment in difficult circumstances. However, this Article is concerned primarily with the factors that explain successful outcomes, rather than successful capital mobilization.

146. MIGA, for example, has paid out one claim (in Indonesia) out of the thirty-two power projects on which it has issued policies; OPIC has paid out two claims (in India and in Indonesia). This conclusion may also reflect a potential bias in evaluating projects—investment that ends in an insurance claim, given the fact that coverage is primarily for bare expropriation or political violence, would likely be rated poorly for either investors or hosts (or both).

147. By several accounts, the political risk insurance industry was slow to adapt to the challenges of the 1990s. Investors purchased available coverage for expropriation, political violence and currency inconvertibility only to find that their protection did not extend to the most important challenges of infrastructure investment in the 1990s, including government breach of contract that falls short of outright repudiation, regulatory changes that undermine the profitability of a project, and currency devaluation. Kenneth W. Hansen, *Tales from the Dark Side: Lessons Learned from Troubled Investments*, *in* INTERNATIONAL POLITICAL RISK MANAGEMENT: LOOKING TO THE FUTURE 12, 13-14 (Theodore H. Moran & Gerald T. West, eds., 2005) (discussing the mismatch between supply and demand sides in the political risk insurance market during the 1990s); *see also* Frederick E. Jenney, *The Future of Political Risk Insurance in International Project Finance: Clarifying the Role of Expropriation Coverage*, *in* INTERNATIONAL POLITICAL RISK MANAGEMENT: LOOKING TO THE FUTURE 103–15.

148. This theme is a familiar one in the foreign direct investment literature. *See, e.g.*, Wells & Gleason, *supra* note 4, at 50 ("The history of national- **R**
izations suggests that in a crisis, debt obligations are more likely to be

institutions (particularly large international banks) deters host governments from squeezing the IPPs opportunistically to a level that would affect debt coverage.[149] Indeed, every government official interviewed for this study who had been involved in a renegotiation identified debt payments as a hard constraint on their willingness to pressure a project.[150] Even in cases such as in Tamil Nadu—where the government has reduced payments dramatically—ad hoc payments to cover debt service requirements are reportedly commonplace.[151] This result, however, does not suggest a positive outcome; where equity is regularly squeezed out of projects, new investment will be slow to follow.

(d) Arbitration and Dispute Resolution

Aware of the risks posed by weak host country institutions, project participants sought to contract out of host country risk by moving dispute resolution offshore, to a variety of international commercial arbitration panels. The value of international commercial arbitration remains a debated topic. For purposes of this paper, it does not, for example, explain outcomes in the same sense as transparent project selection or cheap and secure fuel. Rather, the contribution of arbitration must be assessed against the principal benefit sought—namely increased enforceability and predictability of contracts when a dispute spins out of control.

In this study, three of thirty-four projects have entered some form of arbitration; a striking figure, considering that

---

honored than equity obligations. This seems to be true even if the debt is held by the same parties that own the equity.")

149. *See, e.g.*, THEODORE MORAN, *Lessons in the Management of International Political Risk from the Natural Resource and Private Infrastructure Sectors, in* MANAGING INTERNATIONAL POLITICAL RISK 70, 78 (Theodore H. Moran ed., 1998).

150. In addition, although not interviewed as part of this study, the Turkish Energy Minister in commenting on the ongoing dispute with BOT projects in that country said, "[w]hile negotiating with a single BOT power plant, you notice that they have twenty lenders. You may persuade one of them, but another just can't be persuaded. If you attempt to push a little harder on the issue, you say good-bye to foreign investors." RADIKAL DAILY, Nov. 11, 2004.

151. Interviews with power sector officials and investors, New Delhi, India, April 19-23, 2005.

twenty-one projects underwent some form of renegotiation.[152] Of these, only one, Tanzania's IPTL, has completed the arbitral process.[153] Additionally, two of the three projects that have been involved in arbitration have also pursued litigation in local courts; in each case the results have favored investors.[154]

Conspicuously, the dismal conclusions that one might draw by looking at the most famous arbitrations in the IPP universe (e.g. India's Dabhol, Pakistan's Hub Power, Indonesia's Paiton and Karaha Bodas) are not borne out in the IPP study. In two of the arbitrations—Tanzania's IPTL, the Philippines' Casecnan—the threat of arbitration (Casecnan) or an actual arbitral decision (IPTL) was part of a broader negotiation in which the project remained viable but was adjusted to clarify key terms for both parties. In the other case (India's PPN Power) ongoing disputes make it difficult to disentangle the role of arbitration in project outcomes thus far.

Generalizing from such a small sample is difficult. The most striking result is, perhaps, the rarity of recourse to arbitration. While offshore dispute resolution provisions seek to bolster the enforceability of contracts, actually exercising those provisions seems to play a role in relatively few cases, while the majority of projects face myriad smaller disputes and undergo some sort of renegotiation. This limited arbitration experience may reflect two substantial challenges facing international commercial dispute resolution. First, across the IPP universe, while most decisions have been favorable to investors, awards have often been reduced, enforcement is uncertain, and the process of pursuing a claim to completion is costly and

152. The arbitrations are PPN – India (*El Paso sells stake in PPN Power to promoter*, THE HINDU BUSINESS LINE, Aug. 31, 2005), Casecnan – Philippines (*CE Casecnan Announces Settlement with Korea First Bank and Hanbo Regarding the Casecnan Project*, PR NEWSWIRE, Apr. 17, 1998) and IPTL – Tanzania (*Tanzanian Industry Divided Over IPTL Ruling*, THE EAST AFRICAN, July 30, 2001).

153. *See* Tanz. Elec. Supply Co., Ltd. v. Indep. Power Tanz., Ltd., ICSID Case No. ARB/98/8 (final Award, July 12, 2001), *available at http://www.worldbank.org/icsid/cases/awards.htm.*

154. The two projects are: PPN Power (India) and IPTL (Tanzania). PPN Power in India remains entangled in litigating a shareholder dispute between United States sponsors and local/Japanese sponsors.

time consuming.[155] While necessary for a project with international players to participate, arbitration has not yet been able to provide predictable enforcement for a large percentage of power projects.[156]

Second, even the substantive law applicable in arbitrations is rather unsettled in comparison to its domestic counterpart. To a significant extent, these difficulties reflect the fact that enforcement authority is fragmented between national and international entities whose interpretation of the law may diverge. These issues are familiar territory in the literature on infrastructure investment,[157] and have played a substantial role

155. For a broad discussion of these problems, see Frederick E. Jenney, *Breach of Contract Coverage in Infrastructure Projects: Can Investors Afford to Wait for International Arbitration?*, *in* INTERNATIONAL POLITICAL RISK: EXPLORING NEW FRONTIERS 45 (Theodore H. Moran ed., 2001); Mark Kantor, *International Project Finance and Arbitration with Public Sector Entities: When is Arbitrability a Fiction?*, 24 FORDHAM INT'L L. J. 1122, 1123-24 (2001). In many high profile IPP arbitration cases, the proceedings have faced obstacles raised by local court injunctions and refusals by host government authorities to pay awards. One classic example: CalEnergy, in the Dieng and Patuha projects, first obtained an award from their Indonesian offtaker, PLN, for over $500 million. Then, upon non-payment by PLN, CalEnergy pursued another arbitration against the government of Indonesia, winning a slightly higher amount. Following non-payment by the government of Indonesia, CalEnergy filed a further suit against OPIC and several private political risk insurers under political risk insurance policies (the insurers contended that the policies did not apply), eventually obtaining payment for the full amount of those policies, $290 million. *See* Julie A. Martin, *OPIC Modified Expropriation Coverage Case Study: MidAmerican's Projects in Indonesia—Dieng and Patuha*, *in* INTERNATIONAL POLITICAL RISK: EXPLORING NEW FRONTIERS 59, 60–61 (Theodore H. Moran ed., 2001). El Paso Corporation is caught in a particularly bewildering situation regarding two of its projects in Brazil. In one case involving El Paso's Araucaria project, protracted non-payment by state-utility Copel under the PPA led to an attempt at arbitration by El Paso, however, the arbitration provision of the PPA has since been invalidated by a local court. At the same time, in the other case involving El Paso's Macaé project, the arbitration claim was filed by state counterparty Petrobras seeking recission of the participation agreement. El Paso Corp., Annual Report (Form 10-K), at 142-44 (Mar. 25, 2005).

156. It is important to emphasize that these results apply only to power projects. Arbitration exists in countless contexts, and observations from the unique scenario of large electricity projects shed little, if any light, on arbitration as a general proposition.

157. For one infamous case see Hub Power Co. Ltd. v. Pakistan WAPDA, Fed'n of Pak. Through Sec'y Water & Power, Ministry of Water & Power Islamabad, 15-7 Mealey's Int'l Arb. Rep. 3 (2000). *See also* Susan Rose-Ackerman & Jim Rossi, *Disentangling Deregulatory Takings*, 86 VA. L. REV. 1435

in arbitrations concerning government attempts to void or alter contracts in the aftermath of macroeconomic shock—most of which turn on some variant of the claim that the dramatic change in circumstances (economic force majeure) provides a defense to strict enforcement of the contract. (Significantly, the two examples of disputes resolved through arbitration in the IPP study were not largely macroeconomic shock cases, but involved myriad other issues). The growing body of case law coming out of the economic crises of the 1990s has taken small steps to clarify the legal landscape. In part, the slow progress is the result of happenstance: a series of claims against the government of Indonesia were simpler because state utility PLN had not negotiated in good faith with its IPPs.[158] The recent ICSID decision and award in a case brought by CMS Energy against Argentina regarding the effect of Argentina's crisis and subsequent emergency measures (including pesification) on CMS's natural gas transmission company provides a recent and clear benchmark in several areas, notably for the narrow view of the necessity defense articulated by the panel.[159]

As a result of these problems, while some investors have managed to enforce their awards, the reliance on arbitration provisions has most often been deployed as a means to gain leverage towards a negotiated settlement. Indeed, in Argentina itself, many of the power generation investors have withdrawn their claims in favor of participating in a collective negotiated deal with the government.[160]

For each of the elements of risk engineering discussed here—strict contracts, prominent partners, official credit support, arbitration protection—the IPP experience reveals little evidence of magic partners or arrangements that mitigate political risk to equity investors in a systematic way. Anecdotal

(2000) (discussing the challenges, in both the United States and in developing countries, of dealing with the problem of stranded costs that result when regulatory regimes change dramatically).

158. Final award of 4 May 1999, Himpurna California Energy Ltd. (Bermuda) v. Persero Perusahaan Listruik Negara (Indonesia), 14-12 Mealey's International Arbitration Reports, 1 (1999).

159. *See* CMS Gas Transmission Co. v. The Argentine Republic, Case No. ARB/01/8, *available at* http://www.worldbank.org/icsid/cases/awards.htm

160. *Argentine generators support gov't project fund in return for rate hikes*, GLOBAL POWER REPORT, Jan. 6, 2005.

evidence abounds, and the halo effect that such measures carry is likely effective in some cases. Yet, projects—in particular, the equity portion of investment—remain exposed without the use of other risk management tools.

2. *Strategic Management: Reducing Risks with Project Planning and Design.*

Factors that operate at the level of countries give rise to stress on projects. Investors and host governments anticipated those problems and sought to manage them through a series of measures built into long-term contracts, their partnerships, and provisions for enforcement and dispute resolution. Those measures are necessary conditions that array rings of defense around the financial and operational terms of a project. However, in changing circumstances, contracts usually do not hold, and many of the stresses are difficult to engineer completely. A broad category of project factors—"strategic management"—plays a large role in explaining final project outcomes. Unlike attempts to account for risk by engineering prices and contracts ex ante, these "strategic risk management" practices assume that instability is inevitable, and seek to structure the project in a manner that reduces vulnerability to particular risks.

This dimension of risk management has been proposed by a range of analysts, yet never fully populated.[161] The IPP experience offers a range of practices that fit this description and are systematically related to successful projects; this section focuses on four factors: (1) tariffs and project cost; (2) balancing counterparty rights and incentives; (3) commercial management; and (4) local partnerships. The last three measures, notably, often depend on intimate knowledge of local political, economic, social and market conditions, as well as possible counterparties, and thus uniquely favor investors able to draw upon such knowledge, a topic that will play prominently in the conclusion to this Article.

161. *See supra* notes 153–54; *see also* Witold J. Henisz & Bennet A. Zelner, *Managing Political Risk in Infrastructure Investment,* (unpublished working paper) *available at* http://www-management.wharton.upenn.edu/henisz/.

(a) Ensuring Competitiveness: Bidding and Cost Management

Project selection through competitive bidding brings a number of benefits—including low prices for power[162] and increased transparency[163]—that bolster the sustainability of projects. Countries that have been successful in creating highly competitive bidding processes have achieved prices among the lowest in the world. Prices in both Mexico and Egypt, expressed in dollars but indexed to local currency exchange rates, reach as low as 2.4 cents/kWh.[164] Prices in Thailand, expressed in baht and converted to dollars, are approximately 4.3-4.8 cents/kWh.[165] In Turkey, the prices for the second round (competitively bid) projects were 60% lower than the first-round negotiated projects, according to some reports.[166]

Where projects are not selected through bidding, governments and investors engage in direct negotiations that often create incentives to select projects that prove costly. In India, the issue generating the most consistent controversy in the IPP sector is costs and cost overruns for early projects that were selected through negotiations rather than bidding, with tariffs set according to a cost-plus system. Such pricing systems often lead to projects with excessive capital expenditures.[167] Moreo-

162. Yves Albouy & Reda Bousba, *The Impact of IPPs in Developing Countries—Out of the Crisis and Into the Future*, *in* PUBLIC POLICY FOR THE PRIVATE SECTOR 6 (The World Bank, 1998).

163. Michael Klein, *Infrastructure Concessions—To Auction or Not to Auction?*, *in* PUBLIC POLICY FOR THE PRIVATE SECTOR 2-3 (The World Bank, 1998).

164. Prices in Egypt refer to the Sidi Krir natural gas-fired project, see Eberhard & Gratwick, *supra* note 57, at 12. Prices in Mexico refer to Iberdrola's Monterrey III natural gas-fired project, *see* InfoCRE, Julio-Agosto 1999 Año 2, No. 4 *available at* http://www.cre.gob.mx/publica/infoCRE/infocre070899.pdf. **R**

165. Thai officials at the National Energy Planning Office (NEPO, now the Energy Policy & Planning Office, EPPO) evaluated project bids on the basis of levelized unit prices (LUP). These figures refer to LUP's normalized for a commercial operations date of 2005.

166. Venkataraman Krishnaswamy & Gary Stuggins, *Private Sector Participation in the Power Sector in Europe and Central Asia: Lessons from the Last Decade* 105 (World Bank Working Paper No. 8, 2003). This figure, reported in the World Bank document above, was repeated by industry participants in interviews.

167. This is the well-known Averch-Johnson effect that has been observed in regulated utilities in the United States and elsewhere. H. Averch & L.L.

ver, direct negotiation intrinsically suffers from low levels of transparency, which left these early Indian projects exposed to the criticism that costs were inflated because these projects were allocated to firms with special connections and over-priced expertise rather than through market discipline.[168] In China, provincial and national government officials often negotiated PPAs in the early 1990s with little regard to cost;[169] the cost of these more expensive plants became vulnerable with the onset of the late 1990s power glut. While there are examples of negotiated deals that have been stable—many of the early Philippine and Kenyan projects, for example—the political heat surrounding these deals has been intense, and outcomes easily could have been worse.[170]

In practice, bidding is not always possible or effective.[171] Much of the variation in bidding outcomes reflects factors that are already widely known to play a significant role in auctions. Notably, auctions vary widely in the number of firms competing,[172] in market conditions,[173] and in market prices for cru-

Johnshon, *Behavior of the Firm Under Regulatory Constraints,* 52 AM. ECON. REV. 1053-69 (1962).

168. For example, suspicion of cost padding the EPC contracts for early "fast-track" projects was a common complaint among industry participants in India. These suspicions were not allayed when the problems in the Spectrum Power project became public with the indictment of the local partner for fraud and mismanagement of the contract with AP Transco. Lamb, *supra* note 58 at 44.

169. Woo, *supra* note 56, at 26. In the early development of the IPP program in China, tariffs were set according to a generous cost-plus rate regime, which provides no incentive for cost or efficiency improvements, instead setting tariffs to provide a given return based on actual costs. *Id.*; *see also* Klein, *supra* note 163, at 2. **R**

170. At the extreme, there is, of course, Indonesia, that essentially allocated projects to companies able to accept "local" partners—usually members or associates of the Suharto family. *See* LOUIS T. WELLS & RAFIQ AHMED, MAKING FOREIGN INVESTMENT SAFE: PROPERTY RIGHTS AND THE PRIVATIZATION OF INDONESIAN INFRASTRUCTURE, (forthcoming 2006).

171. Albouy & Bousba, *supra* note 162, at 6 ("Bidding seems to have reduced PPA prices by twenty-five percentage points on average, but exceptions are numerous and important.") **R**

172. This ranges from Thailand, with fifty bidders and eighty-eight bids in the 1994 solicitation for only seven projects, Woo, *supra* note 67, at 7; Egypt, with fifty firms involved in the Sidi Krir tender, Eberhard and Gratwick, *supra* note 57, at 12; and Mexico, with forty-eight bids for the first eight projects, Nuñez, *supra* note 62; to Malaysia, in which projects were allocated to further the Bumiputra economic policy, Rector, *supra* note 60, at 8;

cial inputs (e.g., concrete, engineering services and steel). Further, a host of pre-existing legal and regulatory issues can affect how investors are willing to bid.[174] Nonetheless, looking at a timeline of successful IPPs solicitations, it appears that absent hard impediments (such as Turkey's constitution), competitive bidding is possible in a variety of circumstances. Argentina in 1992, Thailand in 1994, Egypt in 1996-98, and Mexico and Turkey in 1997–98 have all attracted interest sufficient to achieve low and sustainable prices in very different circumstances (leaving aside, for the moment, the troublesome issue of currency risk).[175]

There is, of course, more to the story. Successful bidding experiences may involve rules that squeeze prices on the front-end (rather than renegotiating after the fact). Thailand created a multi-stage bidding process that was very effective in this respect.[176] Bidding in the 1994 solicitation was aggregated, so that firms bid into a pool from which a number of projects would be selected—rather than soliciting bids for a specific project. Thus, a large number of bidders competed against each other for a number of projects (50 bidders and 80 bids). From the first round, a shortlist was announced in late 1995,

---

the Philippines, where two firms faced off for the Pagbilao project, Woodhouse, *supra* note 64, at 3; and Kenya, where three firms bid for Tsavo, Eberhard and Gratwick, *supra* note 59, at 15.

173. *See* DELOITTE TOUCHE, SUSTAINABLE POWER SECTOR REFORM, *supra* note 1, at Figure 2-10. **R**

174. In Brazil, potential investors in thermal projects were wary of accepting take-or-pay contracts for gas supply when they were not confident that they could match those fuel commitments with power sales. This, and a host of other issues, stalled investment in such plants. Christopher Dymond & Ilse Pineda, *Brazilian Power Project Finance*, 7 J. PROJ. FIN. 29 (2001). In Turkey, the Constitution required any public service concession to be regulated by public administrative law, which was a slow, confusing and discretion-laden regime that discouraged investment. Turkish authorities made several attempts to bypass this requirement, including a ministerial decree that allowed the first BOT program in the face of an electricity crisis. Eventually, the Turkish parliament had to amend the Constitution in order to craft a durable solution. *See supra* note 121. **R**

175. One potentially helpful, though incomplete, indicator of the variation in general risk levels among these cases is the International Country Risk Guide Composite Score during each auction. For these episodes, the ICRG ranges from 52.3 (Turkey in 1998) to 75 (Thailand in 1994), with most falling in the mid- to low 60s.

176. Described in Woo, *supra* note 67, at 17-18, reflecting interviews with government officials and investors in Bangkok, Thailand, April 4-8, 2005. **R**

ranked by tariff; sponsors with the best positions on the list had an invitation to continue negotiating a PPA, during which project particulars would be settled. The first IPP to settle on contract terms, Independent Power, set a blueprint for the sector, particularly by reaching an agreement with EGAT (the offtaker) and PTT (the state gas company) on gas supply. Subsequently, EGAT worked down the auction short list to negotiate terms with additional projects. These projects were often asked to lower their tariff below what had been bid at the auction, using the Independent Power PPA as a benchmark; if EGAT and the sponsor could not agree on terms, a long queue of rivals stood ready to enter the room.

Such a process promises to neutralize the obsolescing bargain. Raymond Vernon's core theory posits that a host government will overreach in seeking to attract needed investment, thus setting the stage for something akin to buyer's regret at a later stage. However, where investors have been squeezed (potentially no less harshly) in the beginning, the process has been accepted as legitimate by investors and the long term outcome has also been considered legitimate by the host government.

(b) Commercial Planning

Governments and investors have found only uneven success in making the long-term commercial projections necessary for a successful private power program. Even if the government believes its own forecasts and makes commitments to IPPs on that basis, such commitments can unravel when the forecasts prove wrong.[177] In particular, governments often es-

177. In practice, these problems are often overlooked because questionable planning decisions have gone untested for prolonged periods of time. In Poland, Enron's ENS operated as the country's only greenfield IPP for several years—with relatively little scrutiny and comparison to other potential projects—before the Polish government began attempting to cancel the PPA when efforts to liberalize the electricity market as part of the EU accession process invited new scrutiny for IPP arrangements. In the Philippines, all of the early fast track projects operated for about a decade until broader troubles in the power sector caused politicians to look more closely at IPPs. Potential problems in Mexico, related to mounting liabilities that have been partially hidden in the Pidiregas program, remain untested by stress. *See supra* note 63. Projects that enter in these early waves often capture high **R** risk-adjusted returns for many years before some stress illuminates flaws in the original arrangements.

pouse goals for IPPs that imply tolerance for IPPs that have higher costs than incumbents; yet, in reality, the host government rarely weighs these benefits heavily when the differences in cost become transparent. Projects that compare favorably with incumbents in raw commercial terms (usually price/kWh) outperform those that do not, regardless of the myriad other benefits such projects may bring.

China, in its aggressive pursuit of foreign IPP investors, was interested in attracting *foreign* capital and *foreign* technology, while also protecting local markets. Thus, most foreign IPPs, such as Miezhouwan, were not allowed access to debt from Chinese banks and were encouraged to bring in technology and fuel from abroad. Today, sponsors in China's electricity market report that only projects able to lower costs by accessing local markets will survive. For the older projects, adjusting has been difficult; under considerable pressure, Miezhouwan has undergone several years of adjustment to change fuel and financing. In Brazil, the government professed the desire for thermal power plants in an effort to boost the reliability of the hydro-dominated electricity system. The new plants built have provided those additional reliability benefits, but those benefits have faded from memory in the face of the cost differential between the must-run thermal plants and surrounding hydro facilities.[178] Meanwhile, privately developed hydro plants operate smoothly in a safely controlled environment (although facing new risks in a new and politicized power generation market pool). Tanzania has perhaps come full circle. There, projects originally contracted in the face of an electricity crisis were long in development and came online during periods of hydrological abundance. After weathering disputes related to costs and perceived high prices, the projects are both running at full capacity and have been crucial in staving off new shortages in the past year.

Thus, while IPPs can play a role in meeting immediate needs, they must remain competitive with the incumbent grid-connected system. This is different in each country. In the Philippines, the coal-fired IPPs that entered service in the late

178. As discussed in Part IV.A.4, this problem is exacerbated by the structure of the gas markets in Brazil which require thermal plants to run at inflexible levels. In other countries, gas fired plants are more flexible and can be dispatched according to the needs of the system.

1990s (including Pagbilao, Sual, and Quezon) came at substantial cost per megawatt of installed capacity.[179] However, these projects also filled an important need to diversify the fuel mix away from expensive oil, particularly when oil prices began rising in the latter part of the decade.[180] In Mexico, the IPPs have largely spearheaded the introduction of natural gas into electricity generation. However, the Mexican government awarded all its IPPs through effective competitive bidding and offered secure repayment terms, which helped to secure competitive prices; in addition, the regulator has actually retired old, dirty, and inefficient plants—especially the costly oil-fired plants—and thus avoided overcapacity and low dispatch that often obscure the potential efficiency of new generators.

Over time, some project sponsors have been able to satisfy emergency needs with short-term projects, but have kept pace with the electricity sector by shifting to more competitive longer term plants. An example is Mirant's profitable[181] portfolio of IPPs in the Philippines, which the firm adjusted in fuel and technology to anticipate important shifts in the private power sector. CEPA/Mirant developed the first IPP (diesel-fired Navotas I),[182] a subsequent emergency expansion project

179. Quezon was approximately $1900/MW, Pagbilao $1268/MW, and Sual $1000/MW of installed capacity. Among other things, this difference likely reflected declining risk premia and more competitive bidding in the Philippines as the 1990s progressed, the reliance of Pagbilao and Sual on sovereign undertakings by the Philippine government, and Quezon's location in a politically delicate area of the country.

180. These three plants comprised most of the increase in coal generation in the Philippines from 6% of total generation in 1996 to 40% by 2001. *See* WORLD BANK, WORLD DEVELOPMENT INDICATORS (1996-2001).

181. Overall, the portfolio generated revenues of roughly $500 million annually from 2002-2004. Mirant has consistently ranked among the most profitable companies in the Philippines; in 2001 and 2002, Mirant was the top earning corporation in the country, and in 2003 Mirant subsidiaries accounted for three of the ten most profitable companies in the country. *See also* Mirant Co., Annual Report (Form 10-K), at 58 (Mar. 15, 2005) ("Our power generation businesses and our integrated utilities in the Philippines and Caribbean continue to provide consistent, stable gross margin and operating cash flows.") [hereinafter Mirant Co. Annual Report].

182. The Navotas projects were intended to address the looming electricity crisis. The PPA terms were relatively short, and the fuel and technology choices reflected the need to build and operate the plants quickly; these diesel plants quickly became commercially obsolete when larger baseload coal and hydro IPPs entered the Luzon grid in the mid-1990s. As a result, the Navotas projects saw low utilization rates for the rest of the decade. For

(diesel-fired Navotas IV), the first baseload coal IPP (Pagbilao),[183] and participated in one of the first natural gas-fired plants (Ilijan).[184] These projects have not gone without criticism; a peaking diesel project like Navotas is bound to appear more expensive than baseload coal or gas, and both Sual and Pagbilao were criticized in a government review of IPP contracts (discussed *infra*) for rapid payback periods.[185] Yet, as mentioned above, the baseload coal plants (Sual and Pagbilao) helped wean the country from expensive oil at a time when oil prices were rising, and Ilijan is contributing to the development of domestic natural gas reserves. With large and stable cashflow, Mirant has proven adept at navigating the turbulent and politically charged waters of the Philippine power sector gracefully; in the renegotiations following the EPIRA review, Mirant was the first company to reach agreement with the government to reduce Napocor's payments.[186] While the

full utilization rates over time in Mirant's Philippine plants, see Woodhouse, *supra* note 64, at 34 (data provided by Mirant, and corroborated in records maintained by the Department of Energy). While costly, these plants were seen by the Philippines government as essential to eliminating the power crisis and also as critical demonstration projects for attracting private investment in the country. R

183. Subsequently, coal-fired Sual Pangasinan also entered service, continuing to diversify the Philippine fuel base from expensive oil to coal—a move that likely prevented further major disruptions in the late 1990s when oil prices began to climb after a decade of decline.

184. Excluding fuel cost, the project was the 7th lowest cost IPP in levelized terms. INTER-AGENCY COMMITTEE ON THE REVIEW OF THE 35 NPC-INDEPENDENT POWER PRODUCERS (IPP) CONTRACTS, FINAL REPORT (5 JULY 2002). Ilijan was also one of the first plants to receive only a partial performance undertaking (under a 1995 government initiative to phase out the use of full guarantees), rather than the full PU that dominated during most of the 1990s. Kepco later paid an annual fee of $800,000 to expand the coverage of this guarantee. *Id.*

185. *Id.* Frontloading cash-flow can drastically reduce the amount of time that an investor must depend on contract stability to earn the expected return. Frontloading in this way is a conspicuous strategy to reduce the dependency of foreign investors on government credibility. In this sense it might be grouped with strategic management techniques discussed in this paper. The distinct aspect, however, is that front-loading returns in the expectation of poor credibility does not reduce the likelihood of problems arising, but only reduces the pain to investors when they do arise.

186. Mirant's agreement with PSALM became effective in March 2003. Mirant Co. Annual Report, *supra* note 181, at 16.

revenue implications of this agreement were not trivial,[187] the settlement appears to have had no pro forma impact on the financial terms of the contracts.[188]

Mirant is not the only company to make such moves. The project sponsor for IberAfrica, a 56 megawatt diesel project in Kenya, voluntarily reduced the capacity payment on its first plant to 59% of its original level, and then signed a second PPA at even lower prices. This has laid the foundation for a more successful experience than the other early IPP in Kenya, Westmont, which has since left the country, largely abandoning its project after failing to negotiate a second PPA.[189]

In sum, the benefits that a particular project may yield to the host electricity sector include a long array of variables. However, for purposes of investment stability, the raw commercial terms of the investment are paramount.

(c) Local Partnerships

Among the most prominent strategies employed by investors operating in a foreign environment is reliance on partnerships with local actors. This is seen as a way to facilitate communicating and operating in a foreign environment; it is also prized as a way to mitigate the political risks inherent in being a foreigner, and in some cases to recruit influential local actors to defend the project from government or other interference. The need to manage these risks is particularly acute when, as in electric power, the investment is prone to a high degree of politicization.

In the IPP study project sample, fourteen of thirty-four projects were wholly foreign-owned and the balance had some local equity partnership. In confronting the most common problems that face IPPs, projects with local partners are somewhat more likely to successfully mitigate that risk than those that are wholly-foreign owned. Figure 3 shows the relative abil-

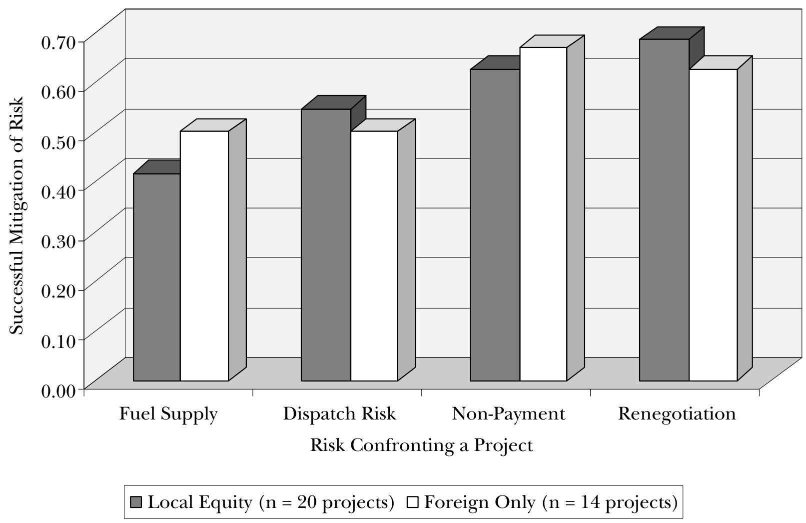
187. Mirant's SEC filings state that revenues at the Pagbilao station decreased by $8 million in 2004 and an additional $3 million in 2003 as a result of the agreement; overall, the net present value of Mirant's contributions reached over $165 million. *Id.*

188. The principal provision of the agreement had been a commitment by Mirant not to exercise its rights under the peculiar "overnomination" clause common in Philippine PPAs. *Id.*

189. Eberhard & Gratwick, *supra* note 59, at 22. R

ity of IPPs with local partnerships to manage four types of stresses that are often the proximate determinants of project outcomes: fuel supply, dispatch, non-payment by the offtaker, and renegotiation.[190]

FIGURE 3: RISK MITIGATION EFFECTS OF LOCAL PARTNERSHIPS



Source: Author's calculations

In most circumstances, even where the partnership is fruitful and harmonious, such partners are most valuable addressing mundane challenges such as helping understand the electricity system so as to avoid transmission constraints and other problems that limit dispatch. In the case of forced renegotiation, the contacts and communication assistance from local partners may also be valuable. Their value is less striking in the classic political risk areas of non-payment, which more often require confrontation or pressure on local officials or a broader political strategy to alter the behavior of central gov-

190. Figure 3 presents the percentage of projects that have encountered and successfully mitigated a given risk. A project is counted as having encountered a risk if other similarly situated projects reported poor outcomes from this risk. "Similarly situated" projects refers to projects subject to the same factors that cause the risk—this definition is used in order to control for the effect of country factors that will produce these risks. A project is counted as having successfully mitigated a given risk if that risk did not have a negative impact on outcomes.

ernment officials. In these settings, the local partner appears less able or less willing to exert leverage. These observations are given further texture by examining the profile of local partners and the role they have played at critical moments in the project lifecycle.

The traditional "political insider" partner—a partner whose connections are so omnipotent that they can fix all problems—has been rare in the IPP experience. Perhaps the closest case is observed in Indonesia, where almost all twenty-seven IPPs had as a partner a member or associate of the Suharto family. These partners were often "allocated" by the ruling family as a kind of prerequisite to securing a project, but also offered political cover and access in a country where such assets came at a premium.[191] With the end of the Suharto regime shortly after the financial crisis had shocked the country's economy (and created stress for IPPs), the new government faced decisions about private infrastructure contracts that were becoming increasingly expensive as the local currency plummeted. In addition to attempting to address the cost of the projects, the new administration under President Habibie set up a commission to investigate widespread popular suspicion of corruption. Although no allegations were proven, the close family ties and non-transparent bidding process for the projects left the IPPs very little leverage in the public eye, while bolstering the position of politicians eager to assume a hard stance. The political insider partners acquired by IPPs were essential when Suharto ruled but quickly became liabilities when the political leadership changed.

The Malaysian IPP sector is sometimes seen as having investments that are politically allocated to influential insiders.[192] However, there are important differences contributing to the relatively positive outcomes in Malaysia. First, the domestic businesses that dominated the IPP sector in Malaysia

191. The author is indebted to Professor Louis T. Wells at the Harvard Business School for discussing early drafts of a forthcoming book on the history of foreign infrastructure investment in Indonesia that includes in-depth treatment of the IPPs in that country. *See* LOUIS T. WELLS & RAFIQ AHMED, MAKING FOREIGN INVESTMENT SAFE: PROPERTY RIGHTS AND THE PRIVATIZATION OF INDONESIAN INFRASTRUCTURE (forthcoming, 2006).

192. Henisz, Witold J. & Bennet A. Zelner, *The Political Economy of Private Electricity Provision in Southeast Asia* 32-34 (Reginald H. Jones Center, Working Paper No. WP 2001-02, 2001).

were all independently viable businesses (although not always in the electricity sector—Genting Berhad, which has continued its IPP investments, was originally a gaming concern). Second, the Malaysian IPP sector was nearly entirely a Malaysian enterprise—with local investors, local capital, local fuel and mostly local construction. Nonetheless, when the state utility Tenaga came under pressure in the aftermath of the financial crisis, there were rumblings about the need to address the "expensive" IPP contracts.[193]

Public information regarding the resolution of the crisis in Malaysia's IPP sector is scant, reflecting the likely reliance on unofficial channels for handling the problem; the ingredients of classic insider governance in the Malaysian sector were all present. First, the government was a controlling shareholder in the publicly listed Tenaga—it appointed the Tenaga board and had final authority over any significant corporate decisions. Second, Tenaga itself held a 10-20% stake in most of the IPPs during the aftermath of the Asian crisis. Third, the principal lenders to the IPPs were state controlled—most of the banks lending to the projects were state banks, while the largest (and sometimes the only) bondholder providing funds to the IPPs was the state pension fund. Finally, most of the IPP deals had been led by investors with close ties to the Malaysian government. Available evidence suggests that the Malaysian IPPs have fared just fine since the crisis.[194]

More common than the "political insider" are partnerships with domestic private companies. In fact, in the sample of countries and projects in this study, it is difficult to find examples of successful projects that do not have a local partner. These partnerships focus on supporting the operations of the project, such as by navigating local input markets or by managing relationships with employees and government officials. While rarely providing raw leverage to resist political pressure, the myriad benefits of local partnerships have often been critical in protecting investors' property rights.

In India, a set of competitively bid projects that signed PPAs with the state utility (the Andhra Pradesh State Electric-

193. Rector, *supra* note 60, at 12; S. Jayasankaran, *Lighting Tenaga's Path: Malaysia grapples with an untenable power market*, FAR E. ECON. REV., Nov. 7, 1996, at 93. R

194. Rector, *supra* note 60, at 12-14. R

ity Board at the time, but now the Andhra Pradesh Transmission Company, or "AP Transco") in 1997 were designed to run on naphtha, with an anticipated shift to natural gas when new gas fields came online. The PPAs included a pass-through provision for fuel costs and an allocation of gas from GAIL, but only for projects that reached financial closure by December 1998. That same year, the Indian government deregulated naphtha prices, which rose sharply and translated into a steep escalation in the cost of power from naphtha burning plants. (And as naphtha rose in price, gas allocations failed to meet targets.) Only one of the competitively bid projects in the pipeline at the time, Lanco Kondapalli, met this deadline.[195] All other projects were required to lower their tariff so that it equaled the lowest fixed cost bid in the original tender.[196] Faced with new power sales arrangements and struggling to secure gas in an unreliable and evolving gas market, these new projects have proceeded slowly, and by 2005 none had reached commercial operations. Lanco Kondapalli, after lowering its tariff somewhat (although by far less than the other plants) and covering the cost of the conversion to natural gas, was commissioned in 2000 and has been performing under the PPA ever since.[197]

What distinguished Lanco Kondapalli from the other tariff-bid projects? The AP government's reluctance to pressure Kondapalli seems to reflect the fact that there was no source of leverage in handling the changing circumstances by pressuring the PPA contract because Kondapalli had secured

195. Notably, Kondapalli reached financial closure during the heart of the Asian financial crisis, which although not substantial in India, did make large scale borrowing difficult.

196. This was Gautami Power's fixed cost bid of $0.06/kWh (foreign exchange component) and 0.69 rupees/kWh (local currency component). The details of this story, repeated in several forms by industry participants in Hyderabad, is available on the website of the Andhra Pradesh government, at http://www.aponline.gov.in.

197. In an interesting twist, the Kondapalli project was also built at a cost lower than projected, which has invited a subsequent disagreement regarding whether those savings should be passed through to consumers by further lowering the tariff bid. Nonetheless, AP Transco payments reflect the full invoices submitted by Kondapalli. Other factors have also played a part—Kondapalli is one of the few projects in India that enjoys an operational escrow arrangement that deducts payments from AP Transco revenues before those revenues reach AP Transco accounts.

financing in advance of the set deadline. Kondapalli's financial close and the start of construction—all aided by a strong relationship between foreign sponsors and local partners who were able to secure project arrangements and financing (in the midst of the Asian financial crisis)—placed meaningful constraints on the government's ability to reduce the tariff. Instead, the government found leverage on the other five plants, which were in a weak position because they had failed to meet the contractual deadline and were facing an inability to get natural gas to fire their plants.[198]

(d) Counterparty Responsibilities and Incentives

IPPs, and any large infrastructure project, depend upon a complex network of stakeholders to operate successfully. The relations between these stakeholders are defined in a laundry list of contracts that do not only allocate risks and rewards, but also rights and responsibilities, in a way that keeps incentives aligned between the disparate parties. Aligning rights and interests to prevent and endure stress is crucial. The traditional project-financed project company has proven resilient and able to operate through substantial uncertainty and revenue instability, but doing so requires committed stakeholders who are willing and able to coordinate collective action efficiently.

Indeed, one of the reasons that the project financing structure has been robust in so many different contexts is that it is highly attuned to any changes in circumstance. This sensitivity plays a key role in keeping stakeholders' attention focused on the project; where it is abandoned, poor outcomes

198. Disputes over deadlines, performance, technical specifications or costs are often the trigger for simmering disputes to boil over. In some cases, they are also seized upon as leverage for those same disputes. In the Miezhouwan case discussed earlier, project sponsors maintain that local government officials had no basis for raising technical objections, other than to delay commercial operations (and full tariff payment). A common (though unverified) account of one episode in the Dabhol controversy has Maharashtra officials reducing dispatch gradually until the plant shut down, then requesting full dispatch in three hours from a cold start. The PPA required a three hour horizon for full availability; project management protested that this provision did not contemplate ramping up from a cold start (a requirement almost any power plant would have trouble with). Despite protests to the contrary (and the fact that a court would likely find such a failure immaterial), the inability to comply with the requirement reportedly eroded the leverage of the Dabhol sponsors in the dispute.

may result, such as in the case of Spectrum Power in Andhra Pradesh.[199] This 200 megawatt project has been a poor experience for most key stakeholders, with severe project cost overruns, time-consuming litigation, and criminal fraud charges all playing a part. On the surface, these outcomes reflect a poor choice of local partner, who by now has been indicted for fraud in connection with the management of the plant. On further examination, however, the project was structured in a way that allowed problems to escape detection. The loan documentation had no trust and retention agreement to govern project revenues—the foreign partner and even the local banks were required to physically investigate irregularities that would have otherwise been more readily apparent. Additionally, unlike other fast-track projects in India, Spectrum did not apply for a counter-guarantee from the government of India. Spectrum's primary lender, the State Bank of India, did not require the counter-guarantee, and Rolls-Royce (the EPC contractor for the project) had coverage from the British export-credit agency. Without additional scrutiny, the project rolled forward with little check from authorities that otherwise would have had a strong incentive to help police the partner's behavior. Alarmed by allegations of fraud against the local partner, and the delicate financial health of the plant due to mismanagement, the lenders eventually declared an event of default and assumed control of the project in 2001.[200]

Nonetheless, such sensitivity comes with a price—with rights and obligations spelled out with such specificity, it is deceptively easy to end up with a contractual web that locks up under stress[201] or that creates problems of its own. Notably,

199. The details of the Spectrum case are related in Lamb, *supra* note 58, at 44, and is based on local Indian media reporting of the ongoing dispute, as well as discussions with project sponsors conducted in Hyderabad, India, March 2005. **R**

200. The government of Andhra Pradesh has since moved to file criminal charges against the local promoter, alleging fraud in the management of the contract.

201. Evidence of the cost that such gridlock imposes on projects has been difficult to obtain because it resides in the most sensitive moments of already sensitive projects. This phenomenon has been noted in some well-documented cases. In Enron's Dabhol plant in India, for example, the project entered technical and real default under various agreements almost immediately upon the MSEB's failure to make payments under the PPA, and lenders resultant suspension of disbursements related to Phase II of the pro-

these include creating a project structure that provides *too much* insulation from uncertainty (as in the case of the Quezon project), or one that provides incentives that work under normal conditions, but diverge quickly in the face of stress (as in the case of Marubeni's operations in the Philippines). Once trouble arrives, the complex process of managing a workout demands counterparties that are able to coordinate action efficiently; this is illustrated most vividly by examining how government authorities have succeeded in managing renegotiations smoothly (as in the cases of the Philippines and Thailand).

In the first example, the Quezon project in the Philippines weathered substantial stress when the plant was unable to meet availability targets during the initial years of operations.[202] In this case, the original agreement called for Meralco (the private utility that was Quezon's counterparty) to purchase all of Quezon's contracted output on a take-or-pay basis, whether or not that output was actually available. Incentive to resolve the growing dispute was hindered in part because the plant was paid its full operating fees regardless of plant availability; additionally, the board of the project company was hobbled because the board seats were evenly divided between key shareholders. With no incentive and limited ability to coordinate decisive action, low availability continued, and Meralco grew increasingly frustrated, eventually precipitating a renegotiation by withholding payment. In the outcome, the parties agreed to limit capacity payments to the actual rated capacity to stiffen the penalty for not meeting contracted availability (both of which were important to Meralco), and to clarify the application of the take-or-pay terms to specify that Meralco must take all contracted energy that is available from Quezon (which was important to project sponsors).[203]

---

ject, which induced an additional default, this time to the project's EPC contractor. From this dismal beginning, in addition to intransigence by Indian government officials, the project company reportedly was also unable to coordinate action among project stakeholders to develop a renegotiation strategy and the project slipped into deeper distress. Piyush Joshi, *Dabhol: A Case Study of Restructuring Infrastructure Projects*, 8 J. STRUCT. & PROJ. FIN. 27 (2002).

202. Woodhouse, *supra* note 64, at 37-44. **R**

203. As with other cases, the Quezon story was complicated by other factors discussed in this paper. For Quezon, the technical issues were com-

In the second example, some projects have come close to crisis primarily because the incentives of the government party had not been planned adequately. Two geothermal BOT projects located on Mindanao in the Philippines, developed by the Japanese firm Marubeni in the late 1990s, weathered the difficulties that follow when interests diverge.[204] Geothermal development in the Philippines runs through the Philippine National Oil Company-Energy Development Company (PNOC-EDC) a state-owned firm that holds a monopoly over geothermal reserves in the country. In this case, the Marubeni projects were to receive steam from PNOC-EDC, convert it to electricity, and deliver the electricity to NAPOCOR on behalf of PNOC-EDC.

However, it was formally PNOC-EDC that held a power sales agreement with NAPOCOR to feed electricity into the Mindanao grid. The overlapping power sales agreements were structured such that PNOC-EDC was caught between two obligations that could, and did, diverge. PNOC-EDC's payments to Marubeni for converting steam to electricity were primarily dollar-denominated and tied to capacity levels based on an annual "nominated" capacity demonstration that could range as high as 104% of the original plant design. This capacity payment was on a "take or pay" basis—as long as the projects were capable of delivering power at nominated capacity levels demonstrated on an annual test basis, PNOC-EDC had to pay—regardless if Napocor accepted delivery of that much power or not. PNOC-EDC's power sales contracts with Napocor were peso-denominated, and these contracts also allowed the utility to limit its annual consumption of electricity to a level in the range of 93% of the plants' design. In the end, Marubeni's projects were efficient, the peso devalued, electricity demand fell, and Napocor limited its purchases of

pounded by the fact that the Philippines regulator had prohibited Meralco from recovering the extra costs associated with the transmission line that had to be built to connect the plant to the national grid. These extra costs had been occasioned by NPC's delay in commissioning the plant, which in turn likely reflected growing oversupply of power and the state utility's poor financial condition. Unable to recover millions of dollars in transmission costs that Quezon was charging, Meralco withheld payment for some time, until the performance issues were resolved. *Id.*

204. This discussion is based on interviews with project stakeholders in Manila, The Philippines, Feb. 19-25, 2005.

power from PNOC-EDC to the minimum levels. PNOC-EDC was stuck paying in US dollars for higher levels of capacity than it was able to sell in pesos to Napocor. This arrangement allowed both the power producer and power purchaser to shift maximum risk to a middleman; while Napocor also would have had trouble managing the rising costs, it would have been easier when bundled into the massive grid sales of the utility. The parties' solution was to limit the projects' annually nominated capacity to the 100% design level—this solution was feasible as demand in the Mindanao grid in the Philippines began outpacing supply and Napocor started taking all the electricity it could.

The third example, perhaps the most critical, focuses primarily on the selection of counterparty in the face of political and social risks of IPP investment. Countries that have vested a central authority with control over the relationship with private generators generally have been more able to manage stresses that arise for IPPs—provided that the stress is not so severe that it jeopardizes the solvency of the entire power sector. The superiority of a central counterparty reflects three factors. First, stresses are more likely to be resolved when critical counterparties are under the control or influence of reformers in the central government. Second, central counterparties have had greater concern for the nation's reputation along with a long-term interest in sustaining private investment. Third, central counterparties have had access to the resources and strategic vision that allow them to devise fair and sustainable cost-sharing arrangements that arise, for example, during contract renegotiations following a macroeconomic shock. These factors played a clear role in the resolution of the Asian financial crisis in Thailand and the Philippines.

In Thailand, renegotiations of the IPP projects began after July 1997 when the government elected to float the baht, which quickly shed half its pre-crisis value before recovering marginally over the next year. Thailand's PPAs were denominated in baht, while the investments were financed in hard currencies; even if EGAT honored the contracts, the private investors would be badly hit by the currency depreciation. In the end, EGAT assumed a large share of the costs of the currency depreciation by indexing part of the capacity payments to a fixed exchange rate (twenty-seven baht per dollar) that was similar to the pre-crisis level.[205]

One version of the negotiations behind this decision points to a change in law clause in the PPAs. Prior to the crisis, the baht had been pegged to a basket of currencies, and had remained stable at twenty-five baht to a US dollar for years. The post-crisis floatation, as opposed to a straight devaluation, arguably constituted a change in law that, if applied automatically, would have required the Thai government to make whole any loss stemming from the change.[206] At the time of the crisis, however, the basic terms of the PPAs had been agreed, but the contracts had not yet been signed; litigation to enforce the change in law clause would have been difficult. Industry participants recall that negotiations faced resistance from EGAT until government officials stepped in to mediate a solution.[207] In the end, the assumption of liability for the currency depreciation by EGAT roughly approximated the actual costs that gas- and coal-fired power plants in Thailand would incur in hard currency,[208] thus virtually eliminating such liability for IPPs—a policy that preserved the program but which could have been far less generous.

The resolution of the crisis within the Thai IPP sector reflects a range of factors discussed earlier in the paper, including the fact that none of the plants was online at the time, strong cost recovery by EGAT, and the transparent and competitive solicitation that led to low prices and broad legitimacy. Nonetheless, without additional government support, the IPP program would have largely evaporated (with the exception of Independent Power—which had secured financing prior to the crisis and had covered the currency liability with forward

205. The fixed rate of 27 baht per dollar was close to the pre-crisis rate of about twenty-five baht per dollar, despite the fact that in early June 1997, just prior to when the renegotiation was conceived, the baht traded at 40-42 per dollar. Gray & Schuster, *supra* note 72.

206. NATIONAL ENERGY POLICY OFFICE, PRIVATISATION AND LIBERALISATION OF THE ENERGY SECTOR IN THAILAND (1999) (note the National Energy Policy Office, or NEPO, is now the Energy Policy & Planning Office, or EPPO).

207. Selected interviews with power industry investors and project advisors, Bangkok, Thailand, May 4–8, 2005.

208. An example of the equation used to calculate the FX cover for the availability payment for gas-fired IPPs is: $APR_{1\ adjusted} = [.90 \times APR_{1\ unadjusted} \times (FXM/27)] + [.10 \times APR_{1\ unadjusted}]$. *See* Woo, *supra* note 67, at 21.

hedges). This support faced resistance from within EGAT; the eventual solution was driven largely by the insistence of reformers within government planning offices at the time.[209]

The Philippines conducted a well-publicized renegotiation of its IPP contracts in 2001. Against a volatile backdrop, the renegotiations succeeded in generating savings for the government and in maintaining the confidence of IPP investors in the country. Concessions were obtained, with some pressure,[210] from companies that agreed to provide them; often, agreements reflected a give-and-take between government and power company. The process began with a 2001 electricity sector reform law (EPIRA) that required the appointment of an inter-agency commission (IAC) to review the IPP contracts. The law also mandated the unbundling of electricity rates in consumer bills.[211] This seemingly innocuous measure allowed Filipino citizens to see for the first time the precise origins of the costs behind some of the highest electricity rates in Asia. What they saw was that the power purchase adjustment that financed the state utility's IPP obligations was almost equal to the cost of the actual electricity consumed.[212] Unlike many other countries facing macroeconomic shock, which benefited from a series of factors that ameliorated the impact of crisis on the IPP sector,[213] the Philippines enjoyed no such buffer. IPP payments were overwhelmingly denominated in hard currency, and in 1997 already 3000 megawatts were online, with an additional 2000 megawatts to enter service by 2001. Further, the allocation of projects, particularly the early "fast track" projects designed to address the severe electricity crisis of 1992-93, had not been transparent or com-

209. This account reflects interviews with industry participants in Bangkok, including officials from EGAT, EPPO, and several IPPs, and echoes a similar account in Chuenchom Sangarasri Greacen and Chris Greacen, *Thailand's Electricity Reforms: Privatization of Benefits and Socialization of Costs and Risks*, 77 PAC. AFF. 517, 523 (2004).

210. Comments by former Secretary of Energy Vicente Perez at "The Experience of Independent Power Projects in Developing Countries" Seminar held at Stanford University, June 2-3, 2005.

211. Electric Power Industry Reform Act, *supra* note 106, at § 36.

212. *The Philippines: the challenge of juggling market reform and expansion*, ENERGY ECONOMIST, Issue 266, Dec. 2003, at 15.

213. Thailand (transparent bidding, low prices, no IPPs online), Egypt (transparent bidding, low prices, low IPP capacity), Malaysia (all local currency inputs).

petitive as compared to subsequent projects. That context put a shadow over the entire sector; public outcry over corruption and incompetence mounted as Napocor's payments to IPPs grew.[214]

The IAC—which was to review the IPP contracts for provisions that were "grossly disadvantageous, or onerous, to the Government"[215]—was composed of representatives of the Department of Justice, the Department of Finance, and the National Economic Development Agency; there were no electric power industry or government energy officials involved in the process. The committee produced a report (IAC Review) covering thirty-five projects—all of Napocor's operating contracts with IPPs. Of these, six were cleared, and the other twenty-nine contracts were found to have issues of various kinds and were targeted for renegotiation.

Upon completing the review, the IAC handed responsibility to the Power Sector Assets and Liabilities Management Corporation (PSALM), which was to implement the findings of the IAC Review and to "diligently seek to reduce stranded costs."[216] PSALM, a state owned corporation that had been tasked with privatizing Napocor's assets, was staffed by electricity sector experts and former private sector bankers and lawyers. While directed to extract concessions from investors in implementing the IAC Review, PSALM had also been directed to attract competitive bids from investors into the power market,[217] a conflicting mandate that would moderate PSALM's approach to the renegotiation process. [218] The renegotiations

---

214. In particular, see a series of reports by the Philippine Center for Investigative Journalism on the IPP experience in the Philippines. *See supra* note 86. **R**

215. Electric Power Industry Reform Act, *supra* note 106, at § 68 (Phil.) (2001).

216. *Id.*

217. *Id.* at § 51 (requiring PSALM to "optimize the value and sale prices").

218. For example, PSALM took steps to diffuse tension, beginning by reiterating that the Philippines would not violate duly executed contracts, and explained the somewhat mysterious rubric of the IAC Review findings. Among other measures, PSALM clarified that findings that contracts were "expensive" or "onerous" or that there were "legal issues" were not basis for legal action or unilateral renegotiation.

began with a lengthy consultation process[219] and ended up producing agreements with most operating IPPs in the country. In many cases, IPPs agreed to bear cost or fee reductions that were not contrary to the terms of the original contract—most commonly the project companies made a collateral agreement not to nominate the full 105% or 110% that the contract allowed,[220] or clarified ambiguous terms in a manner advantageous to the government. In one case, PSALM negotiated a buy-out of ChevronTexaco's San Pascual project.[221] In all, the renegotiations eventually generated substantial savings for the government; roughly $1 billion in net present value by some accounts.[222]

Like the Thai renegotiations, the Philippine process was managed by central government ministry authorities. Addi-

---

219. This description of PSALM's strategy has been adapted from a PSALM presentation to the House Energy Committee of the Philippine Congress, on May 7, 2003, and from conversations with industry participants in the Philippines in February 2005. *See Philippine Government's IPP Contract Renegotiation Plans Under Scrutiny*, ELECTRIC UTIL. WKLY., Aug. 19, 2002, at 20 (discussing fears of IPPs and businessmen over looming renegotiation threat).

220. A peculiar clause in many of the Philippine PPAs provided that an IPP could nominate up to 105-110% of the "contracted" capacity. Woodhouse, *supra* note 64, at 24. This overnomination would provide the basis for calculating capacity payments to the IPP. Capacity payments are the primary source of revenue for projects with a standard two-part tariff—variable energy payments reflect primarily pass-though costs such as fuel and operations expenses. Thus, many IPPs in the Philippines had been earning additional returns from the 5-10% overnomination for several years. As discussed earlier in the case of Mirant, it seems that most sponsors and lenders had not calculated this amount in the original pro forma for the projects, so their elimination did not threaten debt service or expected equity returns.

221. The San Pascual cogeneration facility was to be developed jointly by Chevron-Texaco and Edison Mission Energy. Project development was derailed by the Asian financial crisis, when the project's lenders and insurers faced pressures of their own and began withdrawing capital from Asian markets. At the same time, Napocor found itself with excess power and in need of reducing its liability under IPP contracts. After some negotiation, the San Pascual contract was purchased back by the Philippines for US$6 million, against the consortium's claim for US$20 million in development costs. Jennee Grace U. Rubrico, *PSALM asks DoJ opinion on use of existing power contract for Sucat sale*, BUS. WORLD INTERNET ED., Jan. 7, 2004.

222. Comments delivered by Vicente Perez, former Secretary of Energy, Republic of the Philippines, at PESD Seminar, "The Experience of Independent Power Projects in Developing Countries," Stanford University, June 2-3, 2005.

tionally, the renegotiations were conducted under tight secrecy, which was essential to obtaining proper disclosure from the IPPs. To manage public reactions, Philippine officials essentially announced only the savings generated by securing concessions from the IPPs. While the decision to limit transparency was questionable, in this case, the closed-door talks are often cited as contributing to a swift resolution.[223] Further, it is hard to see that this process could have been orchestrated with such dexterity if authority over the power sector had been fragmented or if the Philippines had had a large number of offtakers beyond the political reach of central government reformers. [224]

Indeed, the countries that have multiple buyers have seen much more variable experience. The Chinese and Indian political systems both delegate authority to central as well as state or provincial authorities. In some of these states and provinces there have been chronic and seemingly unsolvable problems of nonpayment because the incentives within the host governments often diverge just at the moments when critical decisions about IPPs are needed. In China, local authorities exploited annual tariff reviews to squeeze IPPs while protecting local plants—even as the central government feared the harm to the country's reputation for allowing this practice.[225] In India, there are often blurred relationships between state and central government officials on matters of reviewing

223. On the other hand, it has not escaped the notice of civil society in the Philippines. *See, e.g.*, *supra* note 86. **R**

224. This observation is borne out by observing projects that set PPAs with subnational entities such as the export-processing zones or smaller national firms such as the Philippine National Oil Company, which encountered more chronic problems. These projects include Cavite and Magellan, which were developed by CMS Energy and by Edison Mission Energy, respectively, and acquired by Covanta Energy in the late 1990s. Each project is now essentially bankrupt, and has been singled out for particularly harsh criticism in the Philippines government review of IPP contracts. *See* Covanta Energy Corporation, Form 10-K (2005) at 23–24; *see also* INTER-AGENCY COMMITTEE ON THE REVIEW OF THE 35 NPC-INDEPENDENT POWER PRODUCERS (IPP) CONTRACTS, FINAL REPORT (5 JULY, 2002). One of the only arbitrations in the Philippines grew out of CalEnergy's two geothermal plants there, *see CalEnergy International and PNOC Energy Development Corp.*, Global Power Report (June 20, 2002).

225. *See supra* note 125 and associated text. **R**

costs or allocating fuel.[226] Projects in both countries found themselves defending terms they thought had been agreed previously, only to find that other levels of government (where the cost of complying with original agreements often falls) had frustrated the deal.

Both India and China have asserted a greater degree of central control on IPPs, motivated at least in part by these concerns. For example, IPPs in India are eager to secure classification as "mega" projects—which allows them to sell power to the Power Trading Corporation (PTC), a national government entity that controls power sales across state boundaries. Payment from the SEBs to PTC is supported with mandatory letters of credit and senior rights over central government funds to the states.[227] In China, IPPs struggled to operate in local environments where local actors enjoyed powerful advantages in securing dispatch for their plants.[228] Substantial changes in the late 1990s focused on taking the IPPs out of the protected local context, far from Beijing's oversight, and connecting them to larger regional grids. Thus, the offtaker for Shajiao C was changed from the Guangdong Electric Power Bureau to Yudean and Guangdian, entities that sell electricity to the regional South China Grid, and the offtaker for Shandong Zhonghua has been changed from the Shandong Provincial Electricity Company to the China Guodian Group, a national generating company.[229]

Exceptions to this pattern are able to craft stable—if extreme—arrangements in response to unique pressures. Facing a looming electricity crisis in the late 1990s, Brazil was in dire need of additional thermal generating capacity.[230] How-

226. Both projects in Andhra Pradesh (GVK, Kondapalli) have suffered ongoing disputes with authorities regarding project costs (GVK for being over-budget, and Kondapalli for being under-budget), and several projects in Tamil Nadu have seen similar disputes go unresolved because local and national authorities each contend the other is responsible for figuring it out. *See* Lamb, *supra* note 58, at 46-48.

227. *See, e.g.,* INTERNATIONAL ENERGY AGENCY, ELECTRICITY IN INDIA: PROVIDING POWER FOR THE MILLIONS (2002); Press Release, Andrews Kurth LLP, Project Finance India 2005: Overcoming Hurdles to Growth (Mar. 18, 2005), *available* at http://akllp.com/Page.aspx?Doc_ID=2870.

228. Woo, *supra* note 56, at 27. R

229. *Id.* at 42, 56.

230. This point is somewhat debatable. Some critics point out that if Brazil had managed its reservoirs more effectively in the run-up to the crisis, the

ever, the extreme risks of thermal generation in Brazil, discussed in Part IV.A.1.(d), hindered development; neither IPPs nor offtakers nor Petrobras was eager to accept this risk. When hydrological conditions returned to normal (actually above normal), the thermal units again looked expensive and unnecessary; the stability of original arrangements reflects the incentives of the key contract counterparty. While projects that have Petrobras or other state owned distribution companies as counterparties have almost universally run into poor outcomes,[231] the four "self-dealing" projects largely continue to operate smoothly.[232] In analogous fashion, the insider governance that characterized the Malaysian IPP sector contributed to managing the fallout from the Asian financial crisis.[233]

These accounts are vivid, but hardly unique in the IPP experience. Success often demands flexible responses to changing circumstances; projects that have successfully resolved disputes in the sample of countries examined here have generally relied on one or more of the following actions: refinancing project loans, restructuring or changing fuel supply, identifying elements of existing contracts that they would like changed (creating the possibility for a mutually beneficial negotiation), and maintaining open communication with relevant government counterparties. These steps place a premium on the capacity for organizing cooperation and decisionmaking, establishing critical financial or operational flexibility, and managing relationships with key government

---

shortage would have been far less severe. Adilson de Oliveira, *The Political Economy of Brazilian Power Sector Reform*, *in* VICTOR & HELLER, *supra* note 8, at 41, 79-83. R

231. Two of three "quasi-merchant" thermal projects that have a revenue guarantee from Petrobras have ended in arbitration (although the Termoceará project was since acquired by Petrobras outright). Two of four thermal IPPs that have contracts with public distribution companies have been involved in public disputes or arbitration with the offtaker (Manaus, Araucaría). *See* De Oliveira et al., *supra* note 55.

232. The only major disruption among plants in this last category has come for Iberdrola's Termopernambuco—the plant accounts for such a large proportion of generating costs for Iberdrola's distribution company that when the company passed the costs through to consumers retail tariffs rose steeply, prompting a barrage of public interest litigation. *Id.* at 38-39.

233. *See supra* note 193 and associated text. R

and other counterparties.[234] Often, the nexus between contract and reality is blurry—for example, while many projects spend some time in a period of technical default under the loan documentation, lenders have rarely exercised their full rights under the loan documentation, rather allowing time and negotiation to resolve issues. The point is not that contracts should be flexible or more permissive, but rather that they must be arranged in a way that anticipates stress and that success may demand moving past their strict terms.

V. The Future of the Independent Power Project

Although stagnant since the late 1990s, a new round of investment in the power sectors of emerging markets is taking shape. Despite the difficulties with the first round, many investors and hosts alike expect that IPPs will continue to be an important aspect of overseas and infrastructure investment. Indeed, eleven of the thirteen sample countries will look to private investment to play a part in meeting generation needs in the near term.[235] This section sketches the new market and offers a series of recommendations for stakeholders.

A. *New Market, New Players*

In each of the thirteen countries examined in this study, reforms of the electricity sector remain in flux. The most common environment for a private power producer is one of partial reform—a hybrid market that combines elements of market activity with large state dominated sections.[236] Analysts often assume that partial reform is just a brief stopping point *en route* to a more fully restructured power sector—with independent and competitive generation companies and privately

234. Roger Miller and Serghei Floricel, *Building Governability into Project Structures*, *in* Miller & Lessard, *supra* note 69, at 130-50, 137. For a review of the considerations at stake in these restructurings, see Steven T. Kargman, *Restructuring Troubled Power Projects in the Emerging Markets*, 8 J. Struct. & Proj. Fin. 19 (2002), at 19-25. R

235. The exception here, Egypt, reacting in part to the steep escalation of IPP prices in local currency terms following the devaluation of the pound, has returned to state finance for its next round of investment. *See* Eberhard & Gratwick, *supra* note 57, at 6.

236. Victor & Heller, Political Economy of Reform, *supra* note 8, ch. 13. R

owned distributors.[237] Instead, partial and ongoing reform has become a stable endpoint of sorts; meanwhile, the continued churning and uncertainties in power sector reform create political risks that the original IPP firms—namely, wholly private and usually foreign investors—have been unable to manage.

That these difficulties work to the disadvantage of foreigners is most clear today in the Philippines. There, the development of a planned bilateral contract market has been gridlocked as it depends on the participation of hundreds of small, private distribution cooperatives that have never operated in such an environment; in addition to adjusting to a radically different operating environment, they worry, with reason, that they will be stuck with expensive contracts while generators poach large consumers with attractive direct contracts. At the same time, state utility Napocor is barred from signing new power purchase agreements with IPPs.[238] Thus, securing sales contracts sufficient to get a new power plant financed requires navigating the dense local commercial environment of the Philippines[239]—an almost door-to-door sales campaign that new foreign entrants would likely find impossible.

The stasis of reform efforts across countries has large implications for the IPP market. As the pioneers of IPP investment exit the field, a new class of power investors has emerged that are adept at operating in uncertain environments. This changing of the guard reflects, in part, exogenous troubles in Western firms' home markets that have forced the sale of over-

237. The fully restructured power sector was the vision of "textbook" power sector reform; for a summary see *id.*

238. Electric Power Industry Reform Act, *supra*, note 106, at § 47(j) ("Napocor may generate and sell electricity only from the undisposed generating assets and IPP contracts of PSALM Corp. and shall not incur any new obligations to purchase power through bilateral contracts with generation companies or other suppliers.").

239. This portrayal of the business environment for new private power plants in the Philippines in 2005 is based primarily on conversations with investors and regulators in Manila, Philippines, Feb. 20–Mar. 5, 2005. The author is indebted to Anthony Becker at GN Power for extensive discussions regarding the process of marketing a potential new power plant in the new market in the Philippines. *See also* Myrna M. Velasco, *Proposed LNG Power Plant Offers Cheaper Electricity Rate*, MANILA BULLETIN ONLINE EDITION, Aug. 30, 2005, *available at* http://www.mb.com.ph/issues/2005/08/30/BSNS2005083043156.html.

seas assets to cover holes in their balance sheets, or strategic efforts to refocus on core areas of expertise. But it also reflects the fact that Western firms have been unable to manage risks in the ways that they had anticipated. The firms that are taking their place exhibit markedly different risk profiles, both in their appetite for developing country risk and in their ability to manage that risk. At core, where the IPP pioneers excelled at the tools of risk engineering, the new players excel in the game of strategic management in developing countries.

The new players come in quite different shades. First, a smaller class of foreign firms has survived—perhaps even thrived—in part because these "foreign" firms have become "local" in many ways. In some cases, this reflects decisions to operate in countries related by history, such as CLP in China, EDF in Francophone West Africa, or Iberdrola in Mexico. In other cases, wholly foreign companies have embedded themselves firmly in the local culture to the point that they can draw upon local familiarity, expertise, and political and business connections as well as any domestic company. These companies include Mirant or GN Power (a new venture by the original sponsors of Quezon) in the Philippines. While distinctly profit-seeking, the strategic posture of many of these players also sets them apart from their more traditional brethren. CLP has invested in China, partly, because credibility in its home market of Hong Kong requires a presence on mainland China. Globeleq has bought distressed power plants in Africa and is managing them for the long-term in part because their risk profile is distinct from a typical private firm—the UK government-owned firm has a charter to promote development through power infrastructure investment.[240]

The second class includes firms that are laden with the political assets typical of SOEs and necessary to operate in a politicized power market and yet also exposed to market forces that put a premium on good management that is more typical of private ownership and competition. These "dual firms" resist a return to the old integrated state system, but they also resist further imposition of reforms that could erode

240. *See, e.g.,* the interview and discussion of Globeleq's strategy in Africa provided in *Globeleq Unleashed*, AFRICA ELECTRA, Sep. 30, 2004.

their privileged position.[241] One category of dual firms are the state companies that have adopted increasingly sophisticated aspects of private operation, such as NTPC in India, Huaneng in China, or EGCO in Thailand.[242] A second category includes domestic private firms that have grown skilled at managing the political and social expectations of infrastructure investment—Reliance and Tata in India being prime examples.

The question of whether these dual firms include hidden subsidies or other advantages is not uncontroversial. It appears that the new actors do not suffer the extreme problems of economic inefficiency that plagued the SOEs before them. Indeed, their cost of capital, long time horizons, and adoption of modern management techniques allow them to build and operate projects at low cost, and comparable efficiency, often at the world standard set by classic IPPs.[243] At the same time, access to (often) subsidized capital, more permissive account-

241. This is true not only of IPPs, but of reforms generally. *See, e.g.*, VICTOR & HELLER, *supra* note 8, ch. 13 (finding that the process of electricity sector reform often caters to firms that exhibit characteristics of both private business acumen and public ownership); Joel S. Hellman, *Winners Take All: The Politics of Partial Reform in Postcommunist Transitions*, 50 WORLD POLITICS 203, 222 (1998) (finding that the most likely winners from economic reform are similar "dual" entities that are able to position themselves across the public-private divide, and which often impede further reforms in order to protect their special status). R

242. Central received wisdom from the first round of investment is that improving the commercial orientation and efficiency of the host utilities must be an integral part of reform. This is true, but makes these firms more likely to compete against private counterparts, which is a pattern observed in the IPP study. *See* Frank Sader, *Attracting Foreign Direct Investment Into Infrastructure: Why is it so Difficult?* 29 (Int'l Finance Corp. and World Bank Foreign Investment Advisory Service, Occasional Paper No. 12, 1999) (identifying competition from newly independent and commercially oriented state firms as a key challenge for line ministries seeking to expand private sector involvement in infrastructure services).

243. In India, for example, changes in trade policy allowed state firms to access new technology at the same time that IPPs were entering the country with similar technological and financial innovations. Today, in Andhra Pradesh and Gujarat projects developed by new entities—including dual firms and some government-owned enterprises—are among the most efficient and environmentally friendly in each state. P.R. SHUKLA, THOMAS HELLER, DAVID VICTOR, DEBASHISH BISWAS, TIRTHANKAR NAG, & AMEE YAJNIK, ELECTRICITY REFORMS IN INDIA: FIRM CHOICES AND EMERGING GENERATION MARKETS 84 (2004) (reporting the results of a door-to-door survey of all operating power plants in each state for fuel efficiency and carbon intensity).

ing and disclosure requirements, and a strategic posture that includes political as well as commercial considerations, raise the possibility that investment by dual firms may prove unsustainable in the long term. To the extent that such firms do not seek and reinforce good governance practices, which would open the market to new entrants, the limitation of the electricity investment market to a small number of privileged actors may precipitate a fresh round of crises and emergency investment.

In sum, both sets of new actors—the new foreign investors and the largely domestic dual firms—are characterized by the ability to deploy assets unavailable to classic foreign IPP sponsors from industrialized countries. In the near term, these actors will dominate the competitive environment for power investment. There are positive aspects to this shift, particularly the long time horizons and local familiarity of many of these actors. But unless a self-sufficient equilibrium can be attained, the limitation of private power markets to small classes of investors will erode competition and invite investment bottlenecks in the long run.

B. *Elements of a New Model*

These factors—the difficulty of competition where market rules are in flux, the emergence of unique investors—explain why the market for classic IPPs is likely to be smaller in the future. Most developing countries, however, will require investment beyond the capacity of their domestic firms and capital markets to meet demand. In some cases this threshold is imminent (as in the Philippines), while in others it is distant (as in India and China). Thus, while the market will be smaller, classic IPPs can still play an important role. The enormous investment needs for electricity in developing countries outstrip any single source of capital. The International Energy Agency estimate of $2 trillion of investment in generation by 2030 implies annual outlays of roughly $80 billion—almost twice the level of private generation investment at its peak of $46 billion in 1996. Private FDI will have a role to play to help to set a benchmark for performance and promote competition; to ease the introduction of new fuels and technologies; and to provide power when local utilities, for whatever reason, are unable to invest.

In charting a path for future development, a laundry list of specific issues demands attention. This list includes managing currency risk, expanding local capital mobilization for large projects, improving regulatory capacity, and making dispute resolution more predictable. This paper itself has highlighted several specific challenges, including problems flowing from fuel markets, the persistent instability in sector reform efforts, and the implications of counterparty selection and incentives. This section will not recite discrete points from the paper in individual detail. Rather, it aims to identify lessons at a somewhat broader level of abstraction. In particular, the following discussion emphasizes four lessons for governments and investors that, while largely unnoticed, will play an important role in the next round of investment.

The most important factors that contributed to stable property rights are within the control of investors and their hosts. The crucial elements of stability, including competitive bidding, conservative fuel choice, aligning incentives to adjust to changing circumstances (even if contracts do not), and locating counterparties close to central government authorities, are all within the reasonable control of project stakeholders. This is particularly true in comparison to the macro-factors, such as economic stability, legal and regulatory quality, and political and social development, which are difficult to improve in the short term. An important caveat to this conclusion is that the macro-factors mentioned above *do* acutely constrain development outcomes for host countries. The risk allocation that has been necessary to mobilize capital for power investment implies that where contracts hold in the face of economic shock or other systemic risk, the host government and consumers bear enormous cost. The remaining conclusions aim to minimize that cost for key stakeholders, both public and private.

Enter the market slowly and centralize contractual relations. In all, the vulnerability of IPPs to financial trouble in the power sector suggests that except in countries that have created a robust regulatory regime that can accommodate the currency, legal, and other risks of foreign private investment, such projects are likely to be more sustainable when they account for only a small fraction of the country's power. As the fraction of power supplied by IPPs rises, so does the aggregate exposure to any instability in currency value, electricity demand, or fuel costs. As noted earlier, countries that have kept IPPs to a smaller share have found it easier to weather macroeconomic shock, and now have greater freedom in deciding where to source financing for power investment in the future. Egypt is the best example, while the Philippines is an outlier for its ability to manage IPPs shocks despite a large fraction of the sector in IPPs.[244]

Where such stress does (inevitably) arise, the best offtakers are those affiliated with reformers in the central government. Ensuring the close participation of central government authorities has often been crucial because such actors have both the greatest incentive to protect relationships with investors, and because they are most able to coordinate effective responses and policies that allow the offtaker to manage its IPP obligations.

Beware the tension between short- and long-term goals. The goals of implementing meaningful reform or limiting risk assumption by government in the long-term and of securing high-quality investment in the near-term often cut in different directions. Power sector reform, in most cases, involves tinkering with rules and warring with entrenched interests, and demands that efforts be sustained over many years of uncertainty. In contrast, creating an environment for private investors involves attempts to make credible promises that rules will not change, and often requires that governments and consumers assume substantial risk. This tension is particularly evident in single-buyer systems that dominate in most countries. Some analysts have criticized such systems for politicizing the allocation of rents and postponing serious reforms.[245] While not disputing those critiques, the single-buyer system has allowed countries to maximize returns from individual IPPs or small sets of projects, but only with extensive risk assumption by the host government or consumers that would not be sustainable if replicated on a large scale.

Investors too must be realistic about the likely outcomes of reform, and craft private investment in a way that does not depend on the ultimate success of reform. In the first wave of investment, IPPs developed with the expectation of further in-

244. The Philippines, however, has been unable to reap this benefit immediately because is in the midst of a difficult transition to a private electricity market, while Napocor has been sidelined in procuring new capacity.

245. Lovei, *supra* note 31. R

vestment that was dependent on sustained reform (e.g. Egypt's IPPs), trading opportunities (e.g. merchant plants in Brazil), or other development (e.g. natural gas projects in India and Brazil) often left investors disappointed and governments with burdensome liabilities when reforms dissolved.

Get good contracts in form, but be flexible in reality. Precise, durable contracts are important for a range of reasons, including the fact that project finance is impossible without them. Yet, arranging appropriate and clear contractual rights is one thing—enforcing them rigidly is another. Every class of actor in the IPP market has found it necessary or efficient to stretch beyond previously accepted boundaries. Governments have paid enormous sums for contracts that in hindsight were poorly structured. Arbitration panels have lowered damages or have overlooked contractual requirements in order to facilitate restitution. Investors have deferred payments, changed fuels, refinanced debt, and maintained open lines of communication with offtakers in open default. Lenders have overlooked technical default on what seems to be a regular basis. The reality of contract renegotiation has led some to search for a "living and breathing" document, but that in itself is not a solution because formally flexible contracts will inflate the cost of capital, invite harmful changes and, in any case, are not attractive to the financial community.

On the other hand, many investors approach renegotiation with dread and adopt a zero-sum attitude to the process. In fact, abandonment of contracts is rare, and outright expropriation is rarely the driving force for renegotiation. Every case of successful full-blown renegotiation analyzed in this study involved, in practice, a give-and-take between investors and the host government. This process depends on reasonable behavior from both parties, but has been greatly facilitated when each party identifies reciprocal needs that can be met in a renegotiation. The point is not that risks cannot be mitigated; to the contrary, many firms have proven capable of doing so. The problem for the classic, Western IPP is that the tools necessary for doing so are unfamiliar at best, and unattainable at worst.

VI. Conclusion

This study set out to answer a basic question: What explains the variation in outcomes among private power plants built to supply electricity in developing countries? To answer this question, this study has examined a sample of thirteen countries and thirty-four projects that offer variation along a series of key explanatory variables. The aim was to generate conclusions of general applicability in explaining the IPP experience, as well as some visions that can frame the future for such investment.

This Article contributes the following insights to the literature on long-term investment and finance in developing countries. First, this Article has shed considerable light on the ways in which structural and institutional risks (the "country-level factors") propagate to the level of projects to affect outcomes. The importance of these factors in setting the level of risk faced by projects suggests that broad efforts to strengthen public finance, adopt policies that dampen macroeconomic shocks, end corruption, and manage the power sector adeptly are crucial tasks for establishing self-sustaining and efficient electricity sectors. However, these structural factors do not always dictate project outcomes, which is good news in light of the difficulties of long-term reform. Even the factor that explains project stress more than all others—macroeconomic shock—has been weathered with a wide range of ultimate outcomes.

Second, this Article has explored two types of risk mitigation tools. Notably, the risk mitigation arsenal commonly deployed by investors, referred to as "risk engineering" in this paper, performed poorly in the face of stress. These arrangements have been animated by the desire to bind the hands of fickle government officials; in practice, they often do not work because most of these tools depend on a larger institutional infrastructure to be effective. These techniques are important, but excessive attention to them has eclipsed another category of project factors that in fact explain much of the variation in outcomes. These include basic commercial management, careful structuring of incentives to hold up in the face of stress, transparency in project selection and allocation, and selective engagement of local partners.

Third, following on a growing body of literature,[246] the IPP experience suggests that the relationship between reform and private investment may be more antagonistic than originally assumed. In country after country, the winners from early reform attempts benefited from the persistence of an awkward status quo, neither fully private nor within the grasp of government. In areas other than the power sector, these actors have not only earned sizeable rents, but have also tended to be more confident in their ability to navigate the risks of this dual environment than purely private firms.

Finally, the IPP study has unearthed, and attempted to identify lessons from, the successes of the IPP universe. The study is more optimistic than the dismal predictions of an untrammeled obsolescing bargain hypothesis. Although the self-help tools that multinational investors used in other areas—such as control over export markets—are generally not available to the infrastructure investor, a large fraction of the IPPs subjected to severe stresses have nonetheless found it possible to manage the change in circumstances. They have deployed a wide range of strategic risk management tools, and their experiences could be useful in other infrastructure sectors, such as water services and transport, that face similar risks from high capital costs, long amortization periods, a context of uncertain regulation, broad public consumption, and a history of politicization.

Looking to the future, the study suggests that while the niche for classic IPPs may be smaller in the coming years than originally hoped in the 1990s, it appears likely that many of the challenges will remain the same. New investment will arrive with a new generation of lawyers, bankers, and developers ready to solve the challenges of the past. Already investors are looking again at countries that were among the most difficult for investors in the 1990s, such as Pakistan and Indonesia. This paper provides a view to the past in the hope that learning from the troubles and opportunities of the 1990s will lead to greater stability in the future.

---

246. *See* Hellman, *supra* note 241.