

**The Experience with Independent Power
Projects in Developing Countries:
Interim Report**

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The Program on Energy and Sustainable Development at Stanford University is an interdisciplinary research program focused on the economic and environmental consequences of global energy consumption. Its studies examine the development of global natural gas markets, reform of electric power markets, international climate policy, and how the availability of modern energy services, such as electricity, can affect the process of economic growth in the world's poorest regions.

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About the PESD Study: The Experience of Independent Power Projects in Developing Countries

Private investment in electricity generation (so called "independent power producers" or IPPs) in developing countries was a market that grew dramatically during the 1990s, only to decline equally dramatically in the wake of the Asian Financial Crisis and other troubles in the late 1990s. At the same time, the infrastructure needs of developing countries over the near future are enormous and far beyond the apparent capacity of most governments to finance alone -- begging the question of whether there can, or should, be a role for private capital in this industry.

Since 2003, the Program on Energy and Sustainable Development at Stanford University has undertaken a detailed review of the IPP experience in developing countries. The study aims to identify the principal drivers of positive or negative outcomes in the 1990s IPP experience and to set out lessons for any future private investment in electricity generation.

About the Author

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Disclaimer

This paper was written by a researcher (or researchers) who participated in the PESD study *The Experience of Independent Power Investment in Developing Countries*. Where feasible, this paper has been reviewed prior to release. However, the research and the views expressed within are those of the individual researcher(s), and do not necessarily represent the views of Stanford University.

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1 Introduction

This paper presents interim findings of “The Experience with Independent Power Producers in Developing Countries,” a research project being conducted by the Program on Energy and Sustainable Development at Stanford University (“PESD”).¹ As of January 2005, the PESD research team has reviewed the IPP experience and investment context in five countries—China, Mexico, the Philippines, Poland, and Turkey. This paper draws heavily on those country studies, even as work continues on four additional countries in our sample—Argentina, Brazil, India, and Thailand.

Part 2 of this paper presents a brief overview of the IPP market and the structure of the PESD study that is under way, with completion of the full study expected in the third quarter of 2005. The primary goal of this study is to explain variation in two arenas: (1) country performance – in attracting sustainable private investment in electricity generation, and (2) project performance – in meeting the reasonable expectations of critical stakeholders. Part 3 discusses the critical theoretical concepts and definitions that analysts have deployed in evaluating infrastructure investment. We find that theoretical and practical concerns have led analysts to focus exclusively on the stability of contracts as the primary signal of country and project performance. We argue that a better approach is to look at project outcomes—not merely whether original contracts have held (as many do not) but whether the process of renegotiation and adjustment leads to projects that meet reasonable expectations. We also argue that a critical concept in explaining such outcomes is a government’s demonstrated ability to maintain investor confidence through good times and bad is the critical variable in evaluating the suitability of a country for long-term investment. This credible commitment may exist under extremely adverse conditions, and may exist even when legal outcomes (such as contract stability) are not positive.

Parts 4 and 5 present our analysis of the IPP experience to date and reflects the central goal in the PESD study to offer a systematic analysis of the factors that explain the legal and financial outcomes in IPP projects, rather than ad hoc and anecdotal accounts that dominate the existing literature. Part 4 describes variation in the IPP investment experience across countries, and draws upon differences in the characteristics of the host countries in exploring this variation in country performance. We find that existing theories about the factors that explain country performance do not, in fact, capture important variation across countries. For example, we show

¹ The research methodology for this study is set forth in an earlier paper by PESD. See Victor, David G., Thomas C. Heller, Joshua C. House, Pei Yee Woo, The Experience of Independent Power Projects (IPPs) in Developing Countries: Introduction and Case Study Methods, PESD Working Paper #23 (2003), available at <http://pesd.stanford.edu/publications/20528/>.

that while the economic context for IPP investments—which includes factors such as macroeconomic shock—does appear to explain when and where IPPs are under stress, it does not actually explain why some countries appear to be able to manage such stresses well while others fail.

Part 5 turns from country characteristics to project characteristics, an area where our research is just in its infancy. Even where we have been able to control for country factors, we observe a striking degree of variation in the experience for specific projects—suggesting that project management, contracts, and other project-level factors are important explanators of the IPP experience.

At the project level, among the factors we examine are the implications of a fundamental characteristic of IPP finance—the incorporation of maximum amounts of debt finance in the project company capital structure. We suggest that this arrangement often leads to brittle legal and financial structures that may be partly to blame for reversals of fortune that have plagued some IPPs. Highly leveraged projects lead to excessive attention on the need for “bombproof” contracts with high-strung payments systems; such arrangements may be especially unable to accommodate changing circumstances—despite the fact that decades of experience in private investment has illustrated such circumstances aplenty.

Part 6 draws upon the previous sections and emerging trends in project structuring to offer preliminary observations regarding the ways in which the future IPP market may (or may not) develop. Finally, Part 7 concludes the paper by summarizing the key propositions of the paper.

2 The IPP Experience and the PESD Study

2.1. Overview of the IPP Market, 1984-2004

Private investment in IPPs in developing countries was a lucrative market for private investors in the 1990s—the total value of deals closed in 1998 alone was almost \$14 billion.² However, by 1999, this market had collapsed in both quantitative and qualitative terms. Private investment in IPPs sank to \$3 billion dollars in 1999.³ Private investors began fleeing markets from China to India and Argentina—countries that, only years earlier, had been prized attractions. Spectacular implosions such as the Dabhol project in India, the Hub project in Pakistan, and the entire IPP sector in Indonesia, dominated the headlines. Despite its prominence in the pantheon of private investment, this collapse in the IPP market and its implications for future investment remain poorly understood.

The existing literature on IPP investment suffers from one central deficiency: the lack of systematic attention to the factors that explain cause and effect. Much of the publicly available analysis has focused on a few projects, such as India’s Dabhol, and proffered a range of anecdotal and tailored hypotheses for why particular projects fail. Indeed, the pathologist’s

² Frank Sader, *Attracting Foreign Investment Into Infrastructure: Why is it so Difficult?*, Foreign Investment Advisory Service Occasional Paper, No. 12 (World Bank & International Finance Corp., 1999).

³ *Id.*

attraction to grim failure has obscured the full scope of the IPP experience. Failures are usually more visible and easier to dissect with publicly available information than are the myriad of projects with different outcomes—many of them quite lucrative for investors and hosts alike. Overall, almost forty countries have had experience with IPPs, and the total number of individual projects is in the hundreds.⁴ The relative success and failure of projects within this global sample is not known with precision—the vast majority of IPPs are financed privately, meaning that information providing a meaningful measure of success is difficult (and often impossible) for detached scholarly observers to obtain. Some projects have been cancelled, most have been renegotiated, and there has been significant equity turnover; yet most are also still generating electricity.

Complicating matters, this decline in IPP investment also coincided with the rash of corporate scandal in the United States (including Enron, a major IPP investor)⁵, the Asian financial crisis of 1997 to 1998 and its global repercussions, the bursting of the dot-com bubble and domestic recession in the United States, and somewhat later, the attacks of September 11th and an increasingly uncertain global security environment. All of these exogenous factors have affected the market for foreign direct investment in infrastructure; yet it has proved difficult to disentangle the relative significance of these factors and factors that are internal to the power sector. Despite the importance of the sector, there has been scant attention paid to exploring the systematic relationships between various factors and project outcomes in a way that can account for the variation in outcomes across projects, countries and regions.

2.2. *The classic IPP model and its relevance for infrastructure investment*

The classic IPP is a privately sponsored power plant that sells electricity under a long-term contract. Typically, the offtaker is a state-owned electric utility, although occasionally offtakers have included private distributors or large private users. The plant is generally financed on a project basis, with a project-specific company established for the purpose. The company draws equity from a number of foreign and domestic investors and secures debt from a syndicate of banks on the basis of expected revenues. Most projects are highly leveraged, with debt accounting for as large a share of project finance as the bank syndicate will tolerate.⁶

In an earlier study, PESD found that the decision to attract independent power investment is often a first step in the process of reforming electric power markets.⁷ This reflects both the difficulties of electricity reform and the perceived benefits of private investment in generation

⁴ Estimation based on calculations from the World Bank Private Participation in Infrastructure Database, available at <http://ppi.worldbank.org>.

⁵ 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).

⁶ We explore the attraction to high leveraging later, but one attraction to debt is rooted in the fear of expropriation. Many investors think that host countries are less likely to expropriate assets under the watchful eye of important banks, whereas they are more ready to offend the sensibility of risk equity. 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). We

⁷ DAVID G. VICTOR AND THOMAS C. HELLER, *Major Conclusions*, in THE POLITICAL ECONOMY OF POWER SECTOR REFORM: THE EXPERIENCES OF FIVE MAJOR DEVELOPING COUNTRIES (David G. Victor & Thomas C. Heller, eds., forthcoming 2005).

capacity. Vertically integrated, state owned electric power utilities have enormous institutional inertia—they are important sources of political patronage, closely tied to critical constituencies such as labor unions, financially both massive and costly, and offering services critical to the entire population. Introducing *any* reform in this system is extremely difficult, if not impossible; the difficulties compound where institutions are weak and the ability of policy makers to pursue massive reforms is blocked by myriad political interests. In such a climate, the path of least resistance is often followed.

Thus, politicians carve out a specific legal space for private investment as IPPs. Such projects promise lower generation costs, the prospect of limited competition (or at least a competitive benchmark) in the sector, and they ease the burden on governments that, in the absence of IPPs, would be expected to finance new capacity through usually cash-poor (often bankrupt) state-controlled power corporations. For their part, investors, justifiably nervous about the unstable investment climate and poorly managed electricity sector in developing countries, require a range of concessions, including sovereign guarantees and other incentives, before responding favorably to government invitations for IPP investment. Thus, both government officials and investors (for different reasons) take steps to insulate the project from country risk.

This classic IPP model presents an important area for research on government and investor behavior in infrastructure investment. The relationship between a host country and IPP is focused primarily on a specific set of contracts that involve a limited number of key actors. (By contrast, a distribution company must manage relations with thousands of power suppliers and customers.) These contracts exist in a wide variety of economic, legal, political and social circumstances, offering the prospect that careful research can uncover which factors best explain outcomes. For lawyers, especially, the central role of the contract (PPA) is particularly attractive because the many different factors that affect IPPs are likely to become funneled through the contract and become visible to the analyst as changes in contractual terms, arbitrations, and other identifiable challenges.

2.3. *The PESD Study on the IPP Experience*

The PESD study seeks to understand the experience of the recent round of IPP investment in developing countries.⁸ We examine two primary areas: the performance of each country in attracting sustainable private power investment, and the performance of various projects to deliver expected goals to key stakeholders. These research goals are reflected in Table 1, below:

⁸ Our study focuses exclusively on greenfield IPPs. The process of greenfield development is likely to exacerbate the challenges of operating in a foreign or uncertain legal environment. (By contrast, brownfield assets usually arrive in the investors' portfolios along with established procedures for power dispatch and handling other potential risks. In Brazil, for example, the owners of privatized brownfield generators have not faced as many difficulties in assuring revenues for their plants as have those who have attempted to build profitable greenfield plants.)

TABLE 1: IPP STUDY RESEARCH GOALS

Goal	Dependent variable (“outcomes”)	Indicators
#1. <i>To explain variation in country performance</i>	The success or failure of a <u>country</u> in attracting and maintaining private investment in the power sector	Investor behavior: <i>level of investment</i> Investor evaluation: Country behavior: Financial sustainability: Effective electricity sector:
#2. <i>To explain variation in project performance</i>	The success or failure of a <u>project</u> to meet the reasonable expectations of key stakeholders (investors, host country policy makers, etc).	Financial returns to investors: Technical performance: Adaptability under stress: Consistency with strategic goals:

In pursuing both of these research goals, we have reviewed relevant literature and held preliminary discussions with investors and regulators to identify the characteristics of host countries and of individual projects that experts think are likely to explain country and project performance. We aim to test whether the experts are correct and, where they fall short, what other factors may better explain the variation in outcomes that we observe in the real world.

The “country factors” that we examine are: the incidence of macroeconomic shock, the existence of a dominant incumbent fuel in electricity generation, the overall investment context, and the state of the electricity sector reform. The “project factors” that we examine are: the composition and experience of the investor, the nature of the specific regulatory framework, fuel and technology choices, and a variety of contractual protections. As with any scientific endeavor, we have aimed to select countries and projects that exhibit variation in these characteristics—through analysis, we explore the relationship (if any) between that variation and actual performance.

To explore country performance, we have carefully selected a set of nine countries for in-depth examination. These countries are: Argentina, Brazil, China, India, Mexico, the Philippines, Poland, Thailand and Turkey.⁹ These countries were selected for variation on critical explanatory factors, not for the size or high-profile nature of their IPP experience.¹⁰ We have generated preliminary conclusions regarding the IPP experience in China, India, Mexico, the Philippines, and Thailand.

To explore project performance, we select projects within each country for variation on the critical project factors that appear to explain, or contribute to, outcomes. Currently, we are reviewing preliminary project studies for a few cases in China, India, and the Philippines. The bulk of the project level work will occur through country visits and field research in the coming months.

⁹ Additionally, we will draw upon two additional sources of experience. First, the study of Thailand will invest some time in comparing that experience to the IPP experience in Malaysia. Second, colleagues at the University of Cape Town are undertaking an examination of the IPP experience in Africa (focusing primarily on Tanzania, Kenya and Egypt) that proceeds according to the PESD research methodology.

¹⁰ This is why, for example, well-known cases such as in Pakistan and Indonesia are excluded, at least formally, from the study.

The current paper presents a set of interim conclusions that are based on the status of our research to date. Our work thus far has focused primarily on country performance, and we have evaluated this performance primarily from the point of view of the investor. Additionally, while the observations that we present here are drawn from our country selection, we are not blind to other relevant experiences, and in the current paper draw upon other countries and projects as appropriate.

3 Context: Key Theoretical Concepts and Definitions

For thirty years scholars have analyzed the peculiar risks that arise with capital-intensive investments—particularly those in developing countries—through the lens of the ‘obsolescing bargain.’ This theory reflects the observation that an investment, once sunk, is vulnerable to expropriation through changing rules and circumstances. To manage such risks the investor, in part, relies on the credibility of the host country’s commitment to refrain from such arbitrary or opportunistic action. We argue that the hypothesis, although broadly insightful, has led analysts astray in creating an excessive focus on the stability of contracts as the main signal of country performance. In fact, a government’s demonstrated ability to maintain investor confidence through good times and bad—whether or not contracts formally hold—is the critical variable in evaluating country performance with respect to its IPPs. Contract stability has proved easy to measure and thus has attracted analysts and observers of the scene; the credibility of underlying commitments is much more difficult to codify and observe, which may account for why it has attracted less attention.

3.1. The obsolescing bargain

The obsolescing bargain model is based on the basic observation that negotiating leverage in a large private infrastructure project shifts during the project life cycle.¹¹ Initially, the government faces a need (e.g., more power generating capacity) that it is unable to satisfy efficiently on its own, and thus it offers attractive terms to private investors who will arrange, construct and operate a power plant. Once operational, the investors face an amortization period of anywhere from 5 to 20 years to earn their full expected return. At the same time, the government finds itself in a position in which it has what it needs (infrastructure) and can exert pressure to change the terms of the original deal. The original bargain has become obsolete, and theory predicts that the host government will enjoy the opportunity to expropriate the benefits of the project to itself, either by outright nationalization or by diverting revenue streams away from the investors. The original theory and its more recent embellishments have also underscored the role of expectations—bargains tend to become obsolete quickly for “one shot” investments, but ongoing ventures have a longer shadow of the future that (in principle) will dampen the incentives to expropriate an investment.

As shown in Table 1, in fact a wide array of adjustments have been made to the original contractual arrangements that govern IPPs—from outright cancellations, to official

¹¹ The obsolescing bargain was originally proposed by Raymond Vernon in 1971. See VERNON, RAYMOND, SOVEREIGNTY AT BAY: THE MULTINATIONAL SPREAD OF U.S. ENTERPRISES (1971).

renegotiations, to various other types of pressure. The thesis of the obsolescing bargain has primed analysts to assume that these changes in deals will disfavor the investor and are evidence that attempts of expropriation are at work.¹² In fact, as discussed in the next section, fundamental characteristics of investment in public utilities (including IPPs) refute a blanket condemnation of the adjustments reflected in this table.

TABLE 2: ADJUSTMENTS TO CONTRACTS AND EXPECTATIONS IN THE IPP EXPERIENCE

Government Action	Examples
<i>Cancellation</i>	Indonesia (several contracts cancelled) India (Dabhol)
<i>Renegotiation</i>	Philippines, Thailand, Malaysia, China (most contracts renegotiated) Poland (renegotiations announced recently) Argentina, Brazil (renegotiations incomplete, ongoing disputes)
<i>Refusal to honor contract</i>	Argentina, Brazil (refusal to raise tariffs) India (refusal to honor state guarantee of Dabhol project)
<i>Regulatory or other expropriation</i>	Pakistan (delaying commissioning/permits, imposing new taxes, slowing fuel delivery) Indonesia (artificially pegging exchange rate for indexed IPP payments)
<i>Otherwise altering leverage</i>	China (hiding existence of competing plant from Miezhouwan investors) Philippines (unbundling rates and passing through full IPP costs to consumers)

3.2. *The regulated public utility investment context*

Although the obsolescing bargain model has been applied in examining the IPP experience, its direct transfer to the context of IPP investment is problematic. The original model was developed the 1960s to account for widespread nationalizations of natural resources projects in the developing world, particularly in Latin America.¹³ While the basic observation that the leverage of the parties to the original agreement changes is readily transferable to the public infrastructure context, there are some key differences in the power sector.

First, for IPPs structured according to the dominant model in the 1990s, with long-term contracts that unambiguously allocate risks, nearly any change in circumstances will create pressure for a change in contract; such changes may appear as obsolescing bargain phenomena when, in fact, other primal causes are at work. For example, consider the case of macroeconomic shock, which has effects on prices (through exchange rates, among other factors) and typically dampens demand, if temporarily, for electric power. Under the “take-or-pay” provisions of typical PPAs, the macroeconomic context for a power plant presumably makes no difference—if the contract is enforced, project revenues do not depend on the actual level of power consumed.¹⁴ Yet it is often impractical—especially when macroeconomic shocks create systemic trouble for state finances and political opponents demand that macroeconomic pain be

¹² This emphasis is not limited to academic analysis, but is reflected in behavior by project sponsors and lenders. See, e.g., Wigmore, Gary S. and Susan E. Turner, *The Disappearing PPA: Moving to Merchant Power in Asia*, 19 J. OF ENERGY & NAT'L RES. 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”).

¹³ See VERNON, *supra* note 11.

¹⁴ This is because the host government, offtaker or consumers (depending on the arrangements) absorb market and currency risk under the terms of most PPAs.

spread to all, without exemption for those protected by contract—the host government is left with little choice other than renegotiation. If payment schedules must change then contracts must be re-opened.

In contrast, in the natural resources projects of the 1970s (the original reference for the phenomenon of the obsolescing bargain), companies did not attempt to manage market risk by allocating it to the government through offtake arrangements. Copper mines sold their product into international markets that, often, were controlled by the very companies that owned the mines—the company could either hedge such risks themselves or were used to absorbing them as part of the normal business of trading in global commodities. For such classic mineral projects, a collapse in demand for the output of the project will look like a collapse in demand; in contrast, for IPPs structured through PPAs a collapse in demand creates pressure to renegotiate or cancel the project and thus looks like the obsolescing bargain.

Second, investment in the electricity sector is an activity that incurs high political visibility—much more so than most private investments in factories or other activities that yield only private goods. Tariffs and service become part of a larger “social contract” implicit in electricity service,¹⁵ and often such issues are highly politicized. Thus investors in IPPs may find additional unexpected obligations and changes in contractual terms that reflect the fact that social contracts are political goods without clear boundaries that can be neatly specified in legal contracts such as PPAs. Such changes may be driven by a range of pressures—from reasonable financial need, to pure political opportunism.

Third, the regulation of electricity services is an extraordinarily complex and delicate process, requiring real time monitoring and response to conditions. Providing these functions in an objectively predictable manner requires strong institutions that operate according to codified norms—a tall order. Often key rules that govern power systems—such as dispatch and the handling of congestion—are invented “on the fly” in ways that even the most elaborate PPA could not anticipate or codify. Yet the aspiration for full description of risk sharing in PPAs—a key demand of investors, it appears—assures the need that original contractual terms will face pressure as the host country “learns” new rules for managing its power system.

Thus, the dominant raw outcome observed in IPP investments, renegotiations, is arguably not evidence of the obsolescing bargain that Vernon wrote about in the early 1970s while examining oil and minerals projects and which investors feared in the wake of nationalizations in the 1960s. The obsolescing bargain posits that governments will take advantage of their superior bargaining position once an investor has poured concrete and bolted turbines and other costly equipment to the ground. In the IPP sector, we find that, in fact, adjustments are numerous and, in many cases, investors and hosts seem to prefer this outcome—contractual inconsistency is not simply cynical opportunism.¹⁶ This may explain why, for example, investors themselves often

¹⁵ See Thomas C. Heller, David G. Victor and Henri Tjong, *Electricity Restructuring and the Social Contract*, PESD Working Paper No. 15 (2003), available at <http://pesd.stanford.edu/publications/20203/>.

¹⁶ A recent study released by Standard & Poors, Citibank, ABN AMRO, Deutsche Bank, and Societe General found that, contrary to popular assumptions, project finance loans generally perform better than corporate loans—demonstrating lower default rates, and higher loan recovery rates post-default (“default” in this case encompasses any change in the contract, even mutual renegotiation). Beale, Chris et al., *Credit Attributes of Project Finance*, 8 J. OF STRUCT. & PROJ. FIN. 5 (2002). One explanation for this finding would punctuate one of the main propositions of

initiate renegotiation,¹⁷ or are willing to work with the government to find solutions when there is an obvious mismatch between contractual conditions and prevailing conditions.¹⁸ Industry participants interviewed in the course of this study often indicated a pragmatic acceptance of the fact that renegotiation can be reasonable and necessary at times. For example, power sector investors continue to rate the Philippines favorably even after the government initiated renegotiations of twenty-nine of thirty-five contracts.¹⁹ Similarly, in Thailand investors seem to be relatively comfortable with the renegotiations that followed the Asian financial crisis.²⁰ On the other hand, investors have left (or are trying to leave) Malaysia²¹ and Argentina²² with decidedly bitter memories following crisis and renegotiation.

3.3. *Defining relevant outcomes in IPP investment.*

The almost universal occurrence of contract renegotiations means that evaluating country and project performance requires looking beyond whether contracts “hold.” Among the countries in our sample, only in Mexico have the IPP contracts been universally (or even largely) enforced without revision.²³ Thus, in the PESD research, we have distinguished two outcomes: “legal outcomes” and “project outcomes.” This distinction is illustrated in the following chart.

this paper—namely that instability and renegotiation are implicit in infrastructure investment, and that they are not equivalent to naked opportunism on the part of the host country. The sample was the entire project finance portfolio of Deutsche Bank, Citibank, ABN AMRO, and Societe Generale—24% of global project finance market for 1997-2002—although this sample does not distinguish developing country finance.

¹⁷ Guasch, J. Luis, Jean-Jacques Laffont and Stéphane Straub, *Renegotiation of Concession Contracts in Latin America*, World Bank Policy Research Working Paper 3011 (April 2003), at 2.

¹⁸ This statement reflects a common theme in our conversations with industry participants.

¹⁹ Lamech and Saeed (2003). *What International Investors Look for When Investing in Developing Countries*, Energy and Mining Sector Board Discussion Paper #6, May 2003, at 7.

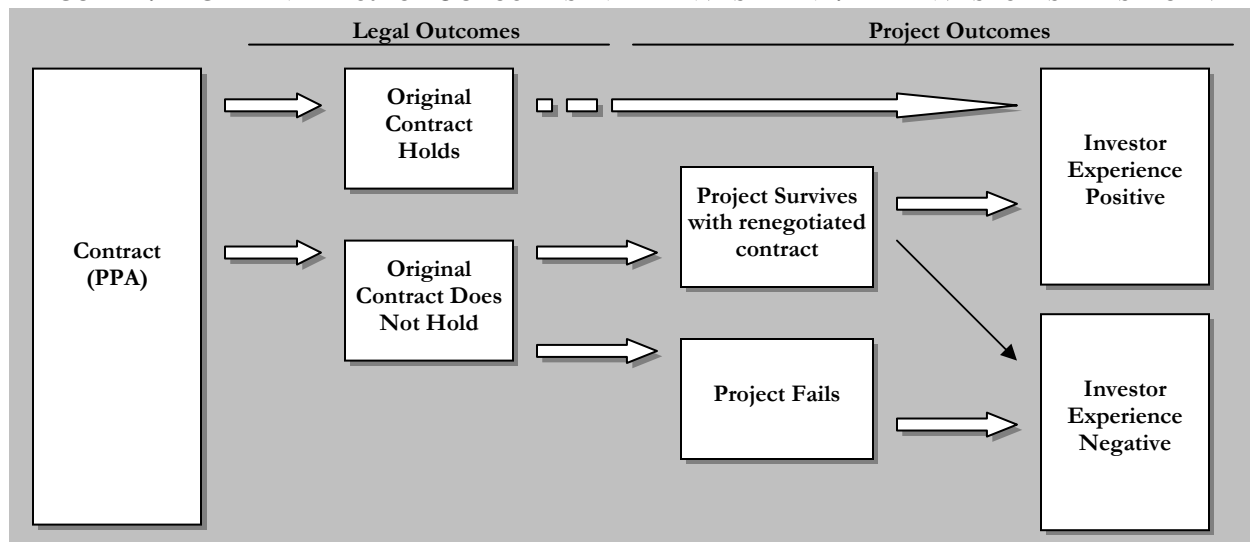
²⁰ *Id.*

²¹ Henisz, Witold J. and Bennet A. Zelner, *The Political Economy of Private Electricity Provision in Southeast Asia*, A Working Paper of the Reginald H. Jones Center, WP 2001-02 (2001), at 32–34.

²² Lamech and Saeed, *supra* note 19, at 7.

²³ However, this outcome has rested thus far upon a payment regime known as PIDIREGAS that appears to be increasingly unsustainable, suggesting the potential for looming troubles in the sector.

FIGURE 1: LEGAL AND PROJECT OUTCOMES IN IPP INVESTMENT: THE INVESTOR'S PERSPECTIVE



What really matters are project outcomes—the far right hand side of Figure 1. In this arena, we have found that there not a direct relationship between legal outcomes (contract stability) and the quality of the investment experience. Contracts that are strictly enforced according to their original terms are often “successful,”²⁴ while projects that disintegrate into mothballed disasters are clearly failures. However, these categories describe only the extremes of experience. In Figure 2 below, significant experience is clustered in the lower left hand corner—where the legal outcome is negative (the contract is changed somehow) while the project survives, and project outcomes (whether measured by financial returns or investor evaluation) are positive.²⁵

²⁴ Although even this proposition is dubious. Projects can fail even when contracts work as intended.

²⁵ This pattern is not limited to developing markets. Timothy Faber, *Progress in Privatizing Infrastructure in Emerging Markets*, in *MANAGING INTERNATIONAL POLITICAL RISK*, *supra* note 6, at 109–110 (describing renegotiations of power plants in New York state).

TABLE 3: LEGAL AND PROJECT OUTCOMES IN THE IPP EXPERIENCE

	Project Outcome Positive	Project Outcome Negative
Legal Outcome Positive	Mexico (all IPPs): all of the IPPs in Mexico are operating according to their original contracts, and investor interest remains relatively strong. Turkey (all IPPs): to date, we are aware of no renegotiations in Turkey, but most plants are quite young.	Projects can fail for reasons other than contract failure. China (Shajiao C): the PPA was renegotiated, but this plant would have had poor performance anyway, because of technical problems. Thailand (all IPPs): many contracts were renegotiated, but if the original terms had held the project companies would have been devastated by currency exposure.
Legal Outcome Negative	India (GVK): despite having the PPA renegotiated three times, this plant has generated enough profit to justify recent plans to expand the capacity. Philippines (<i>tentatively all</i>): despite common renegotiation, investors rate the Philippines highly. Thailand (<i>tentatively all</i>): despite common renegotiation, investors rate Thailand highly.	India (Dabhol plant) Pakistan (Hub plant) Indonesia (Paiton and many others) China (Miezhouwan)

For the purposes of this paper, we focus on necessarily simple definitions of project outcome.²⁶ The conclusions set forth in the following discussions are based on a combination of objective indicators (such as the extent of renegotiation, the settlement of disputes, or ongoing private investment), subjective indicators (such as investor evaluation of their experience) and analysis by the PESD research team.

4 Goal 1: Explaining Variation in Country Performance

The model IPP structure that became dominant during the 1990s focused on using contracts to allocate risks. Where possible, investors sought to push all country risks to the host country itself while leaving project-related risks (e.g., cost management, on-line performance, etc.) to be borne by the investor. If this strategy had been successful then the variation in performance in the IPP sector would be explained primarily by project level factors—better structured and managed projects would be successful, and their weaker brethren would suffer Darwinian failure in the global market.

This has not been the case. Even a brief glance across the global IPP investment record reveals a wide variation in country performance. In this section, we ask, “what factors make a country more or less able to successfully manage its IPP commitments such that projects survive and investor confidence is maintained?” The answer to this question is to be found in the characteristics of the host country (so-called “country factors”). We begin by summarizing the actual performance with IPPs across our country sample (Section 4.1). Next, we continue by examining the primary explanations that have been advanced to account for the variation in country performance. These are the quality of the host country investment climate (Section 4.2),

²⁶ Defining “success” and “failure” in IPP investment is extremely difficult. Identifying what critical stakeholders (host government, investors, etc.) wanted from the project is difficult enough, and obtaining information that would support a reasonably precise determination of whether those goals were satisfied is even more problematic. These goals will be pursued through in-country field research during Spring 2005.

the macroeconomic context (Section 4.3), and the management and financial health of the host country electricity sector (Section 4.4).

4.1. Preliminary Scores: Country Performance in the IPP Sector

The best performers among our country sample are Thailand, the Philippines, and Mexico. Renegotiations of PPAs in Thailand and the Philippines have been largely concluded, and each country exhibited clear efforts to protect the interests of investors. In Thailand, the government decision to float the Baht in response to the Asian financial crisis triggered a clause in the IPP contracts to force renegotiation. In these renegotiations, the Thai government actually assumed some of the foreign exchange liability that investors faced (the Thai IPP contracts had originally required the project companies to bear currency risk). If the Thai government had simply devalued the currency and not triggered the renegotiation clause, the contracts would have remained closed and currency risk would have been left with the investors.²⁷

In the Philippines, all of the IPP contracts were honored consistently through the financial crisis, even though in some cases the take-or-pay provisions resulted in generators being paid even when they produced no electricity. When renegotiations finally arrived, Congress created an interagency review committee to review all of the IPP contracts together, a process that took more than a year. Based on this review, all but six of the contracts were renegotiated. However, despite the fact that enormous political attention has focused on the IPP issue in the Philippines, with intense public criticism of external investors, the entire process appears to have been well-insulated from political pressure. Indeed, the government's public statements on the renegotiations are dominated by boldfaced pronouncements of the large savings generated. The renegotiations were concluded in early 2004. Despite early investor apprehension about this process, no dispute resolution or public confrontation has appeared, and the limited information available indicates that the government handled the process in a measured manner, essentially asking investors for concessions in light of extreme financial difficulty.

The Mexican case is unique, as this is the only country in which IPP contracts have been uniformly enforced as originally agreed. Every IPP that has reached commercial operation is still operating and paid according to the terms of its original PPA. Additionally, and no doubt reflecting the perceived stability of Mexico's contracts for IPPs, there has been very little equity turnover—investors are not exiting this market as they have other countries. Power sector investors interviewed regarding their experiences in Mexico rate the country highly. Whether this is sustainable is a different matter, and on that dimension we give Mexico a low score. In essence, a scheme known as PIDIREGAS has allowed the government to encourage private infrastructure investment by absorbing currency and payment risk. However, the state-owned utility's exposure to PIDIREGAS payments is quickly becoming one of the largest items in the national budget, hinting at probable troubles in the future. Significantly, since the IPP program took off, Mexico has not experienced macroeconomic shock comparable to that in many other countries in our sample.

²⁷ This positive evaluation of the Thai management of its IPP obligations has been reflected in interviews conducted for this study, and by other commentators. See, e.g., Turner and Wigmore, *supra* note 12, at 75–76.

The poor performers are China, Argentina, and India. In China, there has been no single episode of renegotiation or cancellation, but investors have found enforcing contracts in China is like running through quicksand. Yearly tariff reviews and easily abused administrative processes provide ample opportunity for local governments to alter the terms of the original bargain. Instead of following the terms of the PPAs, investors find themselves in a sort of quasi-political market, struggling to muster the political resources they must apply to get their plants dispatched. Although research into the situation in Argentina is ongoing, private power sector investors weathered a series of disputes in the mid-1990s, and have been locked in an unresolved dispute over payment schemes that date to a severe currency devaluation and a collapse in demand associated with Argentina's 2001 crisis. The Argentine government reportedly waited months before announcing a policy with regard to its troubled private infrastructure sectors—then imposed a range of aggressive measures such as freezing tariffs, and converting payments to pesos. Private investors in more than 30 infrastructure projects in Argentina have filed claims against the government through the ICSID.²⁸ A recent World Bank survey of power investors concluded that both China and Argentina received powerfully negative evaluations from investors.²⁹

India presents a variety of experiences. The meltdown of the Dabhol project is well known, but other IPPs have had a tough time as well. Modest successes such as the GVK plant in Andhra Pradesh depend primarily on innovative and flexible project design to protect their financial position. The federal system in India divides authority over electricity services between national and state governments, a fact that complicates private investment considerably. We have observed variation between states in the IPP experience, and comment on these variations where appropriate. However, countries in which project success appears to depend primarily on project specific variables (primarily in China and India) have not demonstrated any commitment to their IPP investors on a national level, and we rate those countries poorly at this stage of the study.

For the remaining countries—Malaysia, Turkey, Brazil, and Poland—even broad conclusions are difficult to pinpoint currently. Poland recently announced the renegotiations of its IPP contracts. This appears to be driven by demands linked to Poland's accession to the European Union. However, the political situation in Poland also suggests that a change in policy preference at the national level has played a part—as in China, private (particularly foreign) investors in electricity may no longer be welcome. We have been unable to determine more regarding the nature of the IPP situation as it unfolds. Turkey has an interesting IPP experience, including three InterGen plants that make up almost 14% of its national generation capacity. We are aware of no renegotiations of IPP contracts in the Turkish experience. However, most of the IPP contracts in Turkey are too young to allow detailed analysis from afar.

Malaysia has received widely conflicting reports regarding the status and management of its IPP sector.³⁰ Because ninety percent of the financing for Malaysian IPPs is local, information

²⁸ Ada Karina Izaguirre, *Private Infrastructure*, Public Policy for the Private Sector Note No. 274 (World Bank, Sept. 2004).

²⁹ Lamech and Saeed, *supra* note 19, at 7.

³⁰ Differences in opinion regarding the Malaysian IPP experience emerge in both PESD research, and in investor surveys. As opposed to Thailand, which power investors rated highly in one survey, the responses concerning

in this respect is unusually difficult to obtain. One account indicates that the renegotiation process in Malaysia was initiated unilaterally and confrontationally—essentially, the state utility suspended payments for 3 months, demanded a reduction in payments, and cancelled all plants not yet in operation. In this account, investors have come away from the experience with bitter memories, emphasizing the importance of nepotism and patronage in the process. In another version, the response to the financial crisis was actually quite moderate (despite publicly aggressive demands, which is common to most other countries as well), and the terms of the PPAs were not renegotiated officially until 2001. Investors from the first wave of IPPs continue to sign agreements for more plants, indicating that despite the turmoil there is some measure of satisfaction with their experience.

Now we turn to three factors—the investment climate, macroeconomic shock, and the status of the electricity sector—that experts typically identify as the main explanations for variations in country performance. For each, we examine whether the evidence in our project, so far, is supportive.

4.2. *The Investment Climate*

The “investment climate” refers to a menu of familiar variables—such as, the rule of law and enforceability of contracts; political, regulatory and social risk; transparency and corruption; and a predictable macroeconomic environment. Countries have been evaluated for the quality of their investment environment in two principal ways: broad commercial and scholarly ratings that evaluate the country conditions as a whole, and, secondly, through the profusion of anecdotal accounts of nightmare experiences in particular countries. We examine each of these in turn.

The investment climate of a country is most 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, World Bank Investment Assessments, or the Heritage Foundation rule of law index). Countries can feel the effect of these evaluations and assessments quite acutely when investors demand higher risk premia for IPP projects (e.g., higher interest rates, shorter debt maturity, increased cost of political risk insurance, demands for more costly sovereign guarantees, etc.).

The available literature has explored this question extensively with respect to the relationship between investment climate and aggregate levels of FDI in infrastructure;³¹ to a

Malaysia were mixed. East Asia & Pacific Private Investors in Infrastructure: Perception Survey, Report of Findings (The World Bank, June 2004), at 14.

³¹ See, e.g., Weder and Schiffer (1999), “Catastrophic Political Risk versus Creeping Expropriation: A Cross-Country Analysis of Political and Regulatory Risks in Private Infrastructure Investments in LDCs,” Paper presented at the World Bank conference “Private Infrastructure for Development: Confronting Political and Regulatory Risks,” September 8-10, 1999, Rome, Italy (finding that investors weigh catastrophic risk—nationalization—more than creeping expropriation risks when deciding whether to invest in a given country); Brunetti, Aymo and Beatrice Weder, *Investment and Institutional Uncertainty: A Comparative Study of Different Uncertainty Measures*, International Financial Corp. Technical Working Paper No. 4 (1997) (presenting quantitative analysis of a menu of

lesser degree, analysts have examined the relationship between investment climate and the structure and management of investment.³² Those studies show that, on an aggregate level, foreign investors behave as expected—higher levels of foreign capital flows to areas with better investment scores. Further, countries with higher investment scores are more likely to sustain foreign capital inflows, suggesting some relationship between these objective measures and the outcomes of investment. Despite this broad pattern, the relationship between the investment climate and the outcomes for investors (whether legal or financial outcomes) has not been explored with anything approaching the same degree of rigor. Often, this is because in many sectors of the economy (including electric power) information regarding what actually happens to foreign direct investment of various types is extremely difficult to obtain.

In explaining country performance with regard to IPP investment, these aggregate measures of country risk are of minimal value.³³ Investors in both Argentina and (possibly) Malaysia have had very negative experiences attempting to renegotiate their deals in those countries, despite the fact that both scored quite highly on some objective measures of country risk during the 1990s. Argentina was arguably the star among developing countries during this time, while Malaysia enjoyed the highest average ICRG rating among our sample countries during 1990-2003, along with the best score on the Corruption Perceptions Index. On the other hand, countries such as Thailand, Turkey, and the Philippines—which are not noted for strong rule of law or particularly comforting investment climate—have nonetheless provided an environment where investors have done systematically better than in countries with markedly better country risk scores.³⁴

Anecdotal evidence that links IPP project outcomes to country factors such as the rule of law and political risk abound. While these accounts are possibly helpful in understanding how disputes regarding IPP investment work in the combustible social and political arena of many developing countries, they do not generate lessons that have general application across countries and projects. Primarily, this is because such anecdotal accounts disproportionately examine failure—indeed, we have come across no widely available account of successful project outcomes or country performance.

investment climate indicators, and finding that weak rule of law, high corruption, volatility in real exchange rates have the strongest negative correlation with investment rates).

³² See, e.g., Guy L. F. Holburn, *Political Risk, Political Capabilities and International Investment Strategy: Evidence from the Power Generation Market*, mimeo (2001) (finding that the decision to invest in electricity infrastructure in a given country is driven primarily by investor experience in similar countries and projects); Esty, Benjamin C. and William L. Megginson, *Creditor Rights Enforcement and Debt Ownership Structure: Evidence from the Global Syndicated Loan Market*, draft working paper, June 24, 2002 (finding that political risk is positively correlated with debt ownership structure).

³³ Our critique of the inadequate predictive value of broad measures of political risk, macroeconomic stability, rule of law and other variables to explain outcomes relevant to investors is not new. In fact, except for the correlation between various basket indicators (such as the ICRG index) and aggregate levels of FDI inflow, we are aware of no 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 and Bennet A. Zelnar, *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).

³⁴ One measure that may offer traction in explaining this variation is developed by Simeon Djankov, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Schleifer. Djankov, et al., “Corporate Theft.” Both Thailand and the Philippines scored highly in their capacity to protect investors. The results of these and similar studies are reported at: <http://rru.worldbank.org/DoingBusiness/ExploreTopics/ProtectingInvestors/CompareAll.aspx>.

This failure of broad and anecdotal measures of country risk to explain performance in the IPP context is not surprising. As described previously, IPPs do not operate in the host country in a manner akin to other private investment. Electricity generation is a highly specialized type of private investment. The size and political visibility of IPPs make them amenable to a series of special arrangements and “one-off” deals that are often impractical to arrange for smaller investments. Moreover, investors in the IPP sector appear to pay little attention to broad country scores; rather, project-specific protections and the overall sophistication of the contractual terms provided are the primary factors in attracting investment.

4.3. *Macroeconomic Shock*

The most prominent single explanation for the sudden collapse of the IPP market around 2000 is a succession of macroeconomic shocks—notably the Asian financial crisis, the related devaluation of the real in Brazil, and the Argentine meltdown in 2001-02. While macroeconomic stability is often included as part of the investment climate, we examine it separately due to its supposed importance in the IPP experience. We find that macroeconomic shock has a large impact on legal outcomes (e.g., forced changes to original PPA contracts), this factor does not explain country performance. (In addition, one reasonably expects that it impacts project performance, although that part of our study is not yet far enough advanced to allow durable conclusions.)

To illustrate the effects of macroeconomic shock, we examine the aftermath of the Asian Financial Crisis on IPPs in several South-East Asian countries. A series of World Bank studies³⁵ have related project structure to this macroeconomic event—among the attributes of the shock that those studies have identified as important are the severity of the crisis, the origin of fuel supply, the currency denomination of wholesale tariff, the extent of domestic financing, and amount and timing of IPP contracting, and the relationship between wholesale and retail tariffs. The results of these studies are summarized in Figure 4 below.

³⁵ See, e.g., 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); Thierry Lefevre and Jessie L. Todoc, *IPPs in APEC Economies: Issues and Trends*, Paper Presented at “The Clean and Efficient Use of Fossil Energy for Power Generation in Thailand,” The Joint Either APEC Clean Fossil Energy Technical Seminar and Seventh APEC Coal Flow Seminar, APEC Clean Fossil Energy Experts’ Group, Bangkok, Thailand, October 30-November 3 (2000).

FIGURE 4: EXPOSURE TO FOREIGN EXCHANGE RISK OF IPPs IN SOUTH EAST ASIAN COUNTRIES

	<i>Indonesia</i>	<i>Malaysia</i>	<i>Philippines</i>	<i>Thailand</i>
<i>Severity of economic crisis</i>	Rupiah dropped 80% value. Market index fell by 40%.	Market index fell by more than 50% during 1997-1998.	Market index fell by 30% in the same period	Market index fell by 40% in the same period
<i>FX exposure through origin of fuel supply</i>	LOW Indigenous	LOW Indigenous	HIGH Imported	HIGH Imported
<i>FX exposure through currency of IPP payments</i>	HIGH Hard currency	LOW Local currency	HIGH Hard currency	LOW Local currency
<i>FX exposure through foreign project debt</i>	HIGH 14% local	LOW 90% local	HIGH 3% local	LOW 75% local
<i>Exposure to market risk via proportion of domestic power supplied by IPPs</i>	HIGH 2,329 MW total	HIGH 7,121 MW total	HIGH 3,676 MW total	LOW 2,419 MW total
<i>Exposure to payment problems from adequacy of retail tariffs</i>	HIGH. Retail tariffs not adequate to provide margin for high wholesale IPP tariffs	LOW. Retail tariffs provide adequate margin for wholesale IPP tariff.	HIGH. Retail tariffs not adequate to provide margin for high wholesale IPP tariffs.	LOW. Retail tariffs provide adequate margin for wholesale IPP tariff.

Source: Adapted from Lefevre and Todoc (2000), and IFC (2004).

Based on the factors in Figure 4, the World Bank studies concluded that Thai and Malay IPPs were relatively more sheltered from macroeconomic shock than IPPs in the Philippines or Indonesia. However, most (if not all) of the IPP contracts in each country were changed in some way. Indonesia cancelled several IPP projects in the aftermath of the crisis, demanded renegotiation of the PPAs for the rest, and has faced ongoing and acrimonious arbitration proceedings in several cases. The Philippines waited until the 2001 when it reviewed all contracts and renegotiated all but 6 of the IPP arrangements (as opposed to outright cancellation). Thailand and Malaysia both renegotiated most of their IPP contracts.

Significantly, our own conclusions regarding each country's performance in protecting investors produces more varied results. Malaysia faced perhaps the least severe impact of the crisis within its IPP sector, yet left many foreign investors with a bitter evaluation of their experience. Indonesia faced perhaps the most severe impact of the crisis within its IPP sector, and managed to create a disaster—several bitter disputes have arisen from this case, offering a rich array of morbid stories of opportunism, dishonesty, corruption, and political manipulation.

On the other hand, Thailand (with a less severe impact) and the Philippines (with a more severe impact) display similar experiences with the severity of actual impact of the crisis on their

IPP sector, yet both managed to demonstrate commitment to their private investors and emerged distinctly better from the crisis. The difficulty of equating legal with project outcomes is especially clear in the case of Thailand—no one decried the rule of law or sanctity of contracts when the Thai government accepted additional currency risk that had been explicitly accepted by the project companies in valid contracts. Again, as in the case of the general investment climate above, the factors that explain country performance must be found elsewhere.

4.4. *The Electricity Sector*

The electricity sector comprises variables related to the market profile, management and reform status of the domestic electricity industry. It seems logical that these factors would affect investments in independent power projects—indeed surveys of international investors active in the power sector consistently report that electricity sector specific concerns are predominant in investors' minds,³⁶ and this advice has been part of the standard World Bank wisdom on power sector restructuring for years.³⁷ However, in many cases, IPP investors have nonetheless invested heavily even in countries whose underlying electricity sector was in shambles. We find that several elements of the electricity sector—particularly relating to the financial health of the sector as a whole—are significant determinants of legal outcomes. However, like the factors of investment climate and economic shock discussed above, these elements do not fully capture country performance.

Financial Health of the Electricity Sector. A financially weak electricity sector is often the catalyst that delivers other problems, such as macroeconomic shock, directly to the doorstep of IPP investors. When expected demand for electricity is strong (as it usually is when IPPs enter a market), IPPs are generally viewed as affordable—particularly when compared with the losses that can stem from severe electricity shortages. However, downturns in electricity demand or currency devaluation can quickly make IPPs extremely expensive for the host government or consumers. This implies a potentially troublesome adjustment somewhere along the way (by consumers paying more, or by financially fragile state utility offtakers). This adjustment often drives renegotiations or other attempts by the government to alter the original contract—in five of our sample countries (Argentina, India, Malaysia, the Philippines, Thailand) the inability of the government or consumers to bear the costs of the IPP program seem to have been the principal drivers of the renegotiations.

This phenomenon will appear differently, depending on who is paying for the IPP costs. Normally, it is the (often already bankrupt) state utility that covers the shortfall between revenues (sales to customers or distributors) and costs (payments to IPPs under relevant PPAs). However, most of the countries in our sample turned to reform precisely because of poor

³⁶ Lamech and Saeed (2003), What International Investors Look for When Investing in Developing Countries, Energy and Mining Sector Board Discussion Paper #6, May 2003; Andersen, Christina, *Equipping IPPs*, INDEPENDENT ENERGY, v. 29 p. 31 (1999).

³⁷ Interestingly, a common recommendation with respect to IPPs is that they should arrive relatively late in a reform process, which is exactly the opposite of the pattern in most countries. See R.W. Bacon and J. Besant-Jones, *Global Electric Power Reform, Privatization and Liberalization of the Electric Power Industry in Developing Countries*, 26 Annual Rev. Energy Environ. (2001) at 14; GLOBAL ENERGY SECTOR REFORM IN DEVELOPING COUNTRIES: A SCORECARD, Joint UNDP/World Bank Energy Sector Management Assistance Programme (July 1999), at 18.

performance by the state utility. In these cases, the capacity for state-dominated electricity offtakers to pay for IPP generation is limited.

These adjustments can also be borne by consumers if offtakers are authorized to pass through IPP costs. However, most developing countries have unreformed and heavily subsidized retail tariffs, and passing through IPP costs is viewed as politically infeasible—if such tariff reforms were practical then the state electricity sector already would have raised rates to boost its own financial viability. In the Philippines, the government in the late 1990s sought to ease the burden on the state utility (Napocor) by authorizing a pass through of IPP costs to consumers. This caused electricity prices to skyrocket, leading to public outcry against the IPP program, despite the fact that IPPs had only years earlier been instrumental in ending a severe electricity crisis. Public criticism only intensified with the passage of the 2001 electricity sector restructuring law, which unbundled electricity prices and allowed consumers to see exactly how much they were paying for private electricity. Although the Philippines offers a particularly egregious example, the inability to generate appropriate revenue from consumers is endemic in developing countries and exacerbates the problems of excessive reliance on IPPs.³⁸

On the other hand, in some cases the management of the electricity sector or the financial terms of IPP arrangements can limit the severity of the adjustment required by increased reliance on private power. Where government commitment is relatively strong, this may allow the state to protect foreign investors. For example, IPP arrangements in Thailand (distinct from most other countries) left foreign exchange risk with the project sponsors. Additionally, the original project tenders had generally been highly competitive, and the resulting IPP tariffs were low compared to other countries in our sample. These factors facilitated the state-owned offtaker's response to the Asian crisis. In the renegotiations that followed, the government's assumption of currency liability from its IPPs was a carrot that made it easier to smooth other aspects of the contract renegotiations. However, where government commitment is weak, the IPP experience may still turn out poorly. In China, the government was able to raise tariffs without the political challenges common in other countries because of the authoritarian state apparatus.³⁹ However, the lack of political or legal constraint meant that contractual provisions literally dissolved into the opaque Chinese business climate. In this context, the fortunes of China's IPPs closely mirror the supply-demand situation—when power is scarce the IPPs fare well, while during a supply glut the IPPs struggle to sell electricity.⁴⁰

³⁸ Again, the Mexican PIDIREGAS case is a qualified exception. Mexican tariffs still reflect substantial subsidization that will make rationalization a politically difficult, perhaps impossible, process. Residential users pay only 39% of their electricity consumption, and agricultural users only 26%, while the government pays for a third of the electricity in the country, and often allows state employees free electricity in their homes, yet does not pay for its own electricity use. In this case, the contract stability has been supported by the extremely costly PIDIREGAS payment scheme that appears increasingly suspect as it consumes more of the government's budget.

³⁹ Both Malaysia and Thailand also had retail prices that were sufficient to cover costs, but mismanagement of the state electricity utility squandered this money. See Gray and Schuster, *supra* note 35; Lefevre and Todoc, *supra* note 35.

⁴⁰ In Poland, by the time IPPs entered the scene, electricity tariffs had already been rationalized. There, the recent announcement of renegotiations seem to be driven at least in part by the demands of the European Union accession process. A bare shift in policy preference by the national government seems to have played a part in this process as well. Most proposals to cancel the PPAs have involved compensation for investors; the most recent of these was rejected by EU regulators, who argued that such compensation is illegal state support for companies because it compensates companies beyond the level of actual losses.

The Reform of the Electricity Sector. The factor that is common to all developing countries, and which both investors and scholars have also weighed most heavily, is the status of reform. Much ink has been spilled on the question of optimal design and sequencing of reforms. Some level of reform to the electricity sector is a necessary condition for IPP activity—space must be carved into a state-controlled industry to allow room for private investment. Here we comment on two principal aspects of the electricity sector: first, the legal framework for private investment in generation; and second, the overall status of reform.

The quality of the host country legal framework for private investment in infrastructure is clearly important to investors. In several cases the entry of private investment has been sluggish because of problems in the legal framework. This was the case in Turkey, which was unable to attract investment for ten years because the constitution deemed electricity a public service subject to administrative law, not private law. This subjected potential IPPs to a dizzying array of approvals and precluded the neat isolation from general country context that has characterized most IPP investment. In the Philippines, investment was sluggish until Congress granted fast-track authority to the President—a pattern echoed in India, whose own “fast-track” program allowed for quick deals, but little long term success.

There are some positive experiences with legal reforms that, it appears, have led to improved country performance. For example, the Philippines’ long experience with its BOT Law (which was passed in 1990) has been identified as contributing to its measured response to crisis in the late 1990s.⁴¹ Perhaps, after several years of wrangling between the executive and the judiciary, the Turkish government has finally arranged its legal foundation properly with a constitutional amendment making electricity subject to private law. On the other hand, investors went into China despite the fact that applicable laws provided opaque tariff reviews and other ways to divert profits from private investors—which is precisely what happened. Further work in this area is necessary, particularly in Argentina, whose supposedly credible legal and regulatory framework failed to deliver according to expectations.

Globally, independent power investment has occurred in electricity markets along the full spectrum of reform, from IPPs that truly comprise an island of private generation in the midst of an un- or slightly reformed electricity industry (China, India, Mexico), to countries further along the reform path (Argentina, the Philippines). Many of the most common, and highly visible, elements of the standard reform package—including the establishment of a new regulatory authority, the vertical unbundling of the state utility, and sometimes the establishment of a competitive bidding framework—do not appear to explain much of the variation in country performance across our sample. Most of the countries in our sample implemented these steps long after inviting private participation (if at all). IPP investors are often better off selling to large unreformed state enterprises which have the government support and soft budgets necessary to cover the costs of the IPP program. This is the case in Mexico, where the state offtaker (CFE) is a massive and lucrative business, closely linked to the government of Mexico, and which has been able to move many IPP obligations “off book” with the PIDIREGAS

⁴¹ Henisz and Zelner, *supra* note 21.

payment scheme. On the other hand, Brazil and Argentina,⁴² both countries with more decentralized and privatized electricity sectors, have been unable to provide a credible environment for foreign investors.

The lack of a clear connection between electricity sector reform and country performance in its IPP investment is likely due to the unique nature of the investor-government relationship in these projects. The destabilizing process of sector reform often introduces new risks that the government is unable to control—new “independent” regulators and courts can be unsympathetic to the special position of IPPs, tariff reform focuses public criticism on available targets (including foreign investors), privatized former state utilities compete with new private companies yet often continue to enjoy enormous advantages. Even positive changes in a country’s governance may turn out poorly for investors—in Poland, government attempts to compensate IPPs for losses stemming from electricity sector liberalization have been rejected by E.U. regulators as illegal support to domestic companies.

4.5. *New Thinking on Country Performance*

The IPP experience that we seek to explain here—the country performance detailed above (Section 4.1)—is unique. Positive outcomes are observed in conditions that otherwise appear to be adverse to sustaining private investment. They even exist where more tangible indicators—such as contract stability—are absent. Conversely, negative outcomes have defied textbook reform efforts and seemingly healthy investment environments. Although continuing research may reveal some aspect or measure of the broad country conditions or of the electricity sector that explains this variation, we are doubtful of this prospect. Broad evaluations of what is going on in a country have little to do with how the government manages a specific set of high profile and unique relationships, such as IPPs.

This pattern is not uncommon in other sectors of private infrastructure investment. Strong country performance (as measured by sustained high levels of investment) have been observed in telecommunications infrastructure in conditions that otherwise confound traditional analysis.⁴³ Building from this work, in this section we identify the most prominent explanations and contributing factors for a number of countries that we have studied. Across our country sample, the most important factors appear to be: (1) some kind of constraint on government

⁴² A 2001 World Bank study that ranked countries according to the quality of reform sequencing (the order in which critical reform tasks were implemented) found that Argentina had sequenced its reform almost perfectly. Recently, the experience of private investors has been notably painful. R.W. Bacon and J. Besant-Jones, *Global Electric Power Reform, Privatization and Liberalization of the Electric Power Industry in Developing Countries*, 26 Annual Rev. Energy Environ. (2001) at 14; GLOBAL ENERGY SECTOR REFORM IN DEVELOPING COUNTRIES: A SCORECARD, Joint UNDP/World Bank Energy Sector Management Assistance Programme (July 1999), at 18.

⁴³ Levy, Brian and Pablo T. Spiller, *The Institutional Foundations of Regulatory Commitment: A Comparative Analysis of Telecommunications Regulation*, 10 J. OF L. ECON. & ORG. 201 (1994). In the current literature and industry “best practices” guides there is no framework to evaluate government credibility in the power sector. The beginnings of such an approach have been mapped (incompletely) in some recent studies. See, e.g., Holburn, Guy L.F. and Pablo T. Spiller, *Institutional or Structural: Lessons from International Electricity Sector Reforms*, in *The Economics of Contracts* 463–502 (Eric Brousseau and Jean-Michel Glachant, eds., 2002) (using Levy and Spiller’s credible commitment model to explain government effectiveness in managing IPPs selling into competitive generating markets); Henisz, Witold J. and Bennet A. Zelner, *The Political Economy of Private Electricity Provision in Southeast Asia*, A Working Paper of the Reginald H. Jones Center, WP 2001-02 (2001).

behavior stemming from domestic institutions, (2) more developed *domestic* legal framework for private investment, and (3) some factors that sustain the government's financial viability (either relatively less severe economic crisis, a financially viable electricity sector, or project factors that reduce government exposure to currency and other economic risk). We expect that a meaningful account of country performance in the IPP experience will rest upon the interaction of these variables (and perhaps others)—none sufficient alone, yet collectively sufficient to bind the government's hands with respect to its private investors.

When stress hit its IPP sector, the Philippines had large question marks regarding its investment climate (corruption, poor rule of law, weak public finance), a bankrupt state utility off-taker, and an IPP sector extremely exposed to currency crises. Additionally, political risk seemed to cast a shadow over the sector, stemming from widespread allegations of corruption during the fast-track era, deep dependence on private power, and growing public criticism of the IPPs.⁴⁴ In these circumstances, several factors may have contributed to the government's positive performance. First, the legal framework for private investment was well designed and relatively mature. The Philippines BOT law was passed in 1990 and had been adjusted through experience several times since. Second, despite the lack of traditional constraints on government action (like credible courts), several related factors may constitute a credible equivalent, including the reliance on coalition government in Congress, and a judiciary (though ineffective according to normal standards) willing to rule against the government.⁴⁵ Finally, the impact of macroeconomic crisis, although severe, was not as devastating as in Indonesia, Thailand, or (later) Argentina, a fact we cannot ignore.

On the other hand, the Malaysian government approached renegotiations following the crisis in a distinctly unilateral manner—canceling pre-operational projects and deferring two months of payments. In Malaysia, the government is dominated by a single political party, and apparent diversity in the political landscape and independence of the courts is questionable in light of the ruling party's support, patronage or nomination of the majority of actors within government. Despite these facts, favorable reports of the IPP experience in Malaysia may reflect the fact that underlying conditions (such as extensive reliance on local finance and adequate retail tariffs) insulated the IPPs from the brunt of the crisis. In Thailand, on the other hand, the IPP sector was similarly less vulnerable to the effects of macroeconomic shock, while the government faced constraints similar to those in the Philippines. Additionally, the PPA contracts were competitively priced and left currency risk with investors, providing room for the government to assume some of that liability once the crisis hit. Both Malaysia and Thailand had almost bankrupt state utilities, a variable that will require more analysis as the study proceeds.

Critically, the differences in policy noted among the South East Asian countries are not explained by mere policy preference or political pressure. Officials in Malaysia were aware of the costs of forced renegotiation of their IPPs.⁴⁶ In the Philippines, various government and non-

⁴⁴ The Philippines currently ranks 102nd in the Transparency International Corruption Perceptions Index (this statistic is punctuated by the storm of allegations of corruption in the IPP contracts inked by the Ramos administration), and is commonly criticized by investors generally for having poor rule of law.

⁴⁵ Henisz & Zelner, *supra* note 21, at 18.

⁴⁶ See, e.g., Henisz & Zelner, *supra* note 21, at 26.

government entities called for aggressive policies reminiscent of the disasters in Pakistan and Indonesia. However, these threats remained as such, and did not become policy.⁴⁷

In China, private power investment was not disrupted by significant macroeconomic shock, and the commercial viability of the electricity sector appeared to be solid. However, notoriously weak rule of law and lack of transparency is complemented by a national government facing no constraints at all from political opposition or the judiciary. Additionally, the legal framework provided several specific avenues for the government to change the rules of the game. In this context, the fate of IPPs rests only on the support emanating from Beijing (or in some cases from the local government authorities) at a particular moment. With respect to private, and foreign, investment in infrastructure, this support has ebbed and flowed continually since the first IPP in the mid-1980s, according to the prevailing fiscal position of the Chinese government and the electricity supply-demand situation. Due to lack of any meaningful constraint, the relation between the IPP experience and these two factors has been clearer in China than in the rest of our sample.⁴⁸

During the 1990s, there was perhaps no more “credible” market reformer than Argentina. They had enacted a widely admired electricity sector reform, and were one of the first developing countries to support a competitive generating market. However, the macroeconomic crisis exposed the underlying weakness of the political and economic arrangements underlying Argentine reform.⁴⁹ A strong executive led the economic reforms under Carlos Menem’s leadership in the early 1990s, with marked success during that decade. However, with the 2001 crisis the executive was suddenly struggling to survive (during one span, Argentina went through four presidents in a matter of months), and the institutional basis for the country’s economic policy (and contractual commitments to IPPs) dissolved just as quickly. With a corrupt bureaucracy and ineffective courts, the devastating impact of the 2001 crisis left investors in extremely treacherous waters—suggesting that the macroeconomic crisis was not the sole driver of policy, but rather political and institutional weakness that was unable to constraint the government’s more opportunistic tendencies. Although there were signs that Argentina’s economic health was delicate by the late 1990s, no one anticipated the savage reversal of policy that led to recent expropriations. The government there is still embroiled in an ongoing dispute with power sector investors over tariff increases.

In Mexico, a strong executive has maintained policy stability with respect to the IPPs, but has done so in part by establishing the PIDIREGAS scheme that obscures IPP payments in the national balance sheet, and has introduced substantial liabilities to the government that hint at a potentially difficult adjustment sometime in the future. This adjustment will test the ability of the Mexican government to manage its obligations to foreign infrastructure investors effectively (possibly offering a valuable real-world case against which to test the conclusions of the

⁴⁷ *Id.* at 31–32.

⁴⁸ While infrastructure investors have continued to rate China highly as a destination for investment, this rating is explicitly linked to the size and importance of the Chinese market, and not to the quality of the Chinese investment experience. East Asia & Pacific Private Investors in Infrastructure: Perception Survey, Report of Findings, June 2004 (Asian Development Bank, 2004), at 10–12.

⁴⁹ Argentina has been criticized specifically for failing to establish policy credibility with respect to private investors before. See generally, Levy and Spiller, *supra* note 43.

completed PESD study). At the same time, Mexican IPPs are competitively priced and well structured.

Further research into the precise conditions and history of country performance in these cases will undoubtedly refine our understanding of how these factors work together. The challenge will be to generate a systematic analysis that can be applied usefully across countries, in different contexts.

5 Goal 2: Explaining Variation in Project Performance

The IPP experience varies not only across countries but also across projects. The second major goal of PESD project on IPPs is to explore the causes for this variation in project performance. Thus, we ask, “what factors make a project more or less able to operate in an investment climate of uncertainty, political risk, and endemic renegotiation?” The answer to this question is to be found in the structure and composition of specific projects (so-called “project factors”). Despite the apparent dominance of country level factors, both systematic and anecdotal evidence suggests that project factors affect performance substantially.

As with the country level, we have organized our research by testing whether the factors that are most often cited as important—such as in the published literature and in interviews with key stakeholders—do, in fact, explain the variation in performance. We have focused on a range of these factors, including: (1) the nature of the investor (local and foreign participation, experience, role in the project structure), (2) the financial structure (participation by multilaterals, use of project and balance sheet finance), (3) the fuel and technology mix, and (4) the structure and specific provisions of the PPA and other relevant contracts. Because we have not been able to assemble a dataset providing appropriate detail on a sufficient number of projects, our discussion in this section is not systematic. Thus, we focus on outlining the impact of project factors by referring to some of the more interesting cases we have encountered thus far (Section 5.1), and discussing what we see as an underlying tension in the financial terms common to most IPPs (Section 5.2).

5.1. The significance of project structure and management

Projects can be structured in ways that mitigate or exacerbate particular substantive risks. For example, increasing the debt and equity drawn from local markets reduces the mismatch between project revenues and capital costs. This was the case in the discussion of macroeconomic shock above, in which the structure of projects either insulated or exposed the IPPs to the economic instability. Contracts can be written in a way that protects private or foreign parties. This is the case in the Shajiao C plant in China, discussed below, in which the joint venture agreement required the government-owned equity holder to compensate the foreign investor for losses stemming from changes in the tariff. In some cases, plants that burn new fuels find it difficult to compete in a system dominated by an entrenched incumbent fuel. This is the case in Brazil, where thermal IPPs found themselves at a persistent disadvantage to the dominant hydro plants.

In addition to managing specific substantive risks, variation in project outcomes within countries indicates that project structure seems to help in mitigating country risk. India, for example, offers both the Dabhol episode and the apparently successful GVK plant in Andhra Pradesh. Although the PPA for the GVK plant has been renegotiated three times, the plant continues to generate returns for its equity holders sufficient to justify an expansion in capacity. Ostensibly, this is because the offtake arrangements are such that the contracted minimum offtake (68%) is sufficient to cover debt service and operating costs. Since operations began in 1996, the GVK plant has averaged a 94% load factor, meaning that more than one-third of its electricity sales (the difference between its contractual requirement of 68% load factor and actual delivery of 94%) become pure profit. A full explanation for how GVK is able to cover debt service and operating costs at such low offtake levels is not yet available, however, it likely flows from the fact that GVK constructed the project on balance sheet, absorbing all of the construction risks itself. Furthermore, the plants sponsor and principal equity holders have strong local connections; the lone foreign sponsor, CMS Generation, exited the project in 2001. The impetus or circumstances of this exit are also not known currently. In addition to these factors, GVK has operated under a strong reform-minded electricity regulator and sells power into a system with a good track record for paying the subsidies needed to cover the shortfall between actual retail tariffs and the true cost of generating and delivering power; the regulatory context for the Dabhol project is quite different. At the same time, the course of successive renegotiation of the PPA suggests that local authorities have attempted to regulate project returns by limiting the load factor incentive payments.

China also ranges the gamut, from the troubling experience in Intergeren's Miezhouwan plant, to relative successes such as Mirant's Shajiao C plant in Guangdong. In the case of the Shajiao C plant, the project offtaker (Guangdong Electric Power Bureau), the relevant regulatory authority (Guangdong Provincial Price Bureau), and the majority equity holder (Guangdong Shajiao, a corporatized state owned entity) were all connected to the Guangdong provincial government. When the Price Bureau began demanding price reductions from IPPs in Guangdong, the renegotiation triggered a clause in the joint venture agreement between Guangdong Shajiao and Mirant that required Guangdong Shajiao to "make whole" any loss suffered by the foreign investor. Thus, the money saved by the province in lowering offtake costs were reimbursed out of the pocket of the equity share of a government-owned entity. On the other hand, Shajiao C has been plagued by very low availability, due mainly to technological failures.⁵⁰

5.2. *Is project financing too brittle for the developing country context?*

Earlier sections of this paper discussed the factors that lend credibility to government commitments in the IPP sector. Specifically, we focused on the government willingness and capacity to resolve disputes effectively, even in the face of political pressure and macroeconomic crisis. Are investors able to make a similar commitment? The question is likely to be

⁵⁰ In the construction phase, the project company missed a lucrative early completion bonus owing to turbine problems. Once operational, the plant suffered a series of extended forced outages in 1996-8 and 2000-1, affecting its generation output and availability. In October 2000, the main transformer of Unit II of the plant failed and did not resume operations until mid July, resulting in a significant drop in the generation output and a net profit contraction.

provocative, as investors tend to feel that it is host governments who more often breach contracts and violate agreements. However, there are several ways in which a highly leveraged project finance structure seems to be poorly designed to sustain long term investment in unstable environments.⁵¹

First, project financing structures are sensitive to any instability in revenue. High debt service requirements result in less flexibility to absorb changes in income over the term of the debt. The popular term “cashcade” refers to the pre-determined allocation of project revenues to particular accounts dedicated to particular purposes or lenders. Virtually every dollar of revenue is already allocated before it comes in; even small changes register loudly in the contractual structure that governs this allocation. The debt holders who bear most of the downside risk are extremely cash flow sensitive because of the limited recourse nature of the project company.⁵² One study examined 210 projects in 37 countries, and found that low debt-service coverage ratio (“DSCR”) is correlated with project default, but that this relationship is significantly stronger when combined with other factors (country risk, economic contagion) that impact project viability.⁵³ Thus, a project with low DSCR may run perfectly well, but the same project will be less able to withstand or adapt to changing circumstances on the ground. The obvious explanation for this is a liquidity crisis in the project company, however, even absent a true liquidity crisis the nature of project lending may make a project less able to successfully manage the inevitable turbulence that confronts developing country investment.

This is because project financing structures seem poorly designed to adapt to changing circumstances. The commercial and financial restructuring of an IPP is a delicate negotiation between host country authorities, project managers, equity holders and debt holders. Although commercial restructuring occurs officially between the project company and the host government, in reality the equity- and debt-holders monitor the process carefully, and may hold a veto by refusing to accept a financial restructuring sufficient to achieve agreement with the host country. The relations between these parties are largely governed by the relevant contracts and their dispute resolution provisions—an interlocking regime of reporting and consent obligations and contractual remedies that seems ill-suited to the delicate process of renegotiating contracts in the uncertain legal and business environment of a foreign country.

⁵¹ Concerns about leverage are shadowed extensively in the literature, but never fully articulated. *See, e.g.*, Ada Karina Izaguirre, *Private Participation in Energy, Public Policy for the Private Sector Note No. 208* (World Bank, Washington, DC, 2000), at 4 (“[t]his frenzied approach to lending ‘resulted in lenders downplaying the role of sponsor equity through overleveraging of projects, the loosening of project structure, and a failure to adequately assess the fundamentals of long-term country risk and to take a sufficiently long-term view of the nature and values of such assets’”). In addition to the factors discussed below, there are also probable second-order elements in the finance structure of an IPP that relate specifically to the rigidity/brittleness in project structure, and that are more fine-grained than simply debt levels—for example, the manner in which project income is allocated and flows through the financial structure, what rights the equity and debt-holders have, when they are exercised, and others.

⁵² Albouy, Yves and Reda Bousba, *The Impact of IPPs in Developing Countries—Out of the Crisis and Into the Future*, *Public Policy for the Private Sector Note No. 162*, The World Bank (Dec. 1998), at 7 (“In contrast to balance sheet financing, project finance can mobilize little equity. And since it offers lenders mostly downside risks, they subject it to a minute assessment and allocate these risks conservatively”).

⁵³ Klompjan, Richard and Marc J.F. Wouters, *Default Risk in Project Finance*, 8 J. OF STRUCT. & PROJ. FIN. 10, at 10, 20 (2002).

These characteristics are exacerbated in the developing country context. First, because of the limited recourse nature of project finance, restrictive loan covenants common to all lending tend to be stricter in these deals.⁵⁴ In developing countries these requirements are even more expansive, for example, often containing “institutional environmental provisions” that trigger redemption or take-over rights when there is a change in the underlying regulatory or legal environment.⁵⁵ In addition to the terms of loan documentation, the structure of lending syndicates may be different as well. Banks respond to developing country risk by arranging larger and larger lending syndicates—with each bank holding a smaller share of project debt.⁵⁶ This suggests that it will be more expensive and difficult to restructure a project because there are more debt holders involved.⁵⁷

These observations inspire a series of questions that can likely only be explored fully through detailed studies of actual renegotiations. Some of these questions are presented below.

- *Are debt-holders really more sensitive to changes in the project structure than equity-holders?* It is not clear whether equity-holders are more sensitive to revenue instability because of their more vulnerable position, or are more tolerant of revenue instability because of their potential for long-term gains.
- *Are debt-holders more likely or able to hinder renegotiations, either intentionally (by refusing to approve tariff adjustments) or unintentionally (by triggering contractual remedies quickly)?* The trend towards more diverse lending syndicates for projects in countries with higher perceived legal risk would seem to make restructuring more costly. However, in addition to a theoretical basis and empirical support, we would need to find evidence by tracing an actual restructuring process.

6 Visions for the Future: Where does the IPP market go from here?

The first part of the PESD study on the experience of IPP investment aims to understand and explain the past—with two specific research goals to guide the effort. The second part of the study will draw from the lessons of the past in order to identify likely futures for the IPP industry and also key strategic and policy issues for host country governments and investors alike. We do not view the IPP industry as a dead enterprise—visions and policies for the future may be needed. Indeed, demand for private investment in infrastructure, particularly electricity

⁵⁴ Dailami, Mansoor and Robert Hauswald, *The Emerging Project Bond Market: Covenant Provisions and Credit Spreads*, World Bank Policy Research Working Paper 3095 (July 2003), at 10.

⁵⁵ *Id.* at 9.

⁵⁶ Esty, Benjamin C. and William L. Megginson, *Creditor Rights Enforcement and Debt Ownership Structure: Evidence from the Global Syndicated Loan Market* (draft working paper, June 24, 2002) at 18.

⁵⁷ *Id.* Additionally, as country risk deepens beyond the point of commercial viability, many sponsors and lenders turn to multilateral credit enhancements (such as guarantees from MIGA or OPIC) to increase the debt capacity of a particular project. One study finds that the availability of credit enhancements is the most significant variable associated with higher levels of debt in countries with weak institutional environments. Devapriya, K.A.K. and H. Wilhelm Alfen, *Role of Institutional Arrangements in Financing Project Companies in Asia* (draft working paper, Oct. 2, 2003). As uncertainty increases, multilaterals step in and allow projects to become more leveraged. The problem is that if the above observations are true, this leverage also makes the project more brittle, and does so precisely in circumstances likely to breed instability.

generation, remains strong, and with the passage of time activity is likely to grow—despite a general slowdown, new IPPs have continued to close every year from 2001-2004.⁵⁸

We have not yet begun this forward-looking part of our study, and thus for now we simply outline a series of possibilities for the future for the industry—each implicitly includes some advice for policy. We welcome the opportunity to discuss this aspect of the study in more detail.

6.1. The IPP market deteriorates.

A distinct possibility is that the IPP market simply continues to deteriorate due to a lack of enthusiasm on the part of investors or lenders. Negative perceptions of the power sector investment experience in developing countries are not uncommon. The problem with this trajectory is that both governments and at least some investors still demonstrate an appetite for infrastructure investment generally and power investment in particular. While the global market for private infrastructure investment shrank by 13% in 2004, private activity in electricity investment grew by 46% in the same time period.⁵⁹ The IPP model could disappear as more firms engage in broader investments in the electricity sector. We think this outcome is unlikely—given the huge estimates for needed investment in infrastructure and the extreme difficulties in implementing extensive reforms in the power sector, some institution similar to IPPs is likely to exist as a vehicle for attracting investment.

6.2. The legal response—better contracts.

The previous boom in FDI in developing countries during the 1960s and 70s ended with a rash of expropriations and other egregious government conduct. The investors of the 1990s, particularly IPP investors, responded to this experience by adopting a variety of measures, such as long term PPAs, sovereign guarantees, offshore arbitration provisions, and other elements of the “legal paradigm.” In fact, some commentators have joked of a cottage industry of lawyers committed to designing the bombproof PPA for independent power investment. In some cases legal strategies have indeed worked—a good example being the Shajiao C plant in China, in which the joint venture agreement provided a means for a corporatized state entity to compensate the foreign investor for adverse regulatory changes.

The precise effects of the various legal measures popular during the last wave of IPP investment remain poorly understood. However, the experiences detailed in this paper underscore the critical observation that risk allocation is not risk elimination. The almost universal experience of contract renegotiation suggest that the legal paradigm, at least, did not achieve its supposed goal—to improve contract stability. Although improving the legal basis and enforcement in future projects will undoubtedly be important, we expect that effective

⁵⁸ The power sector is the only infrastructure sector in which private activity grew (by 46%) in 2003. In 2003, regional sponsors secured financing for a US\$2 billion plant in Malaysia, and a US\$1.3 billion plant in Thailand. Overall, private participation in infrastructure investment included deals closing in 2003 worth US\$50 billion—a 13% decrease from the previous year, but still roughly equal to 1994 levels. Ada Karina Izaguirre, *Private Infrastructure*, Public Policy for the Private Sector, Note No. 274 (Sept. 2004) at 1, 4.

⁵⁹ *Id.* at 2.

project design in the future will need to include more sophisticated schemes for anticipating and managing risks—not simply more elaborate legal instruments for allocating risk.

6.3. *The strategic response—better projects.*

If projects will be more successful when they reduce risks, how can they do so? Our research suggests three broad arenas in which adaptation and learning has already clustered—the participants in the IPP industry, the flexibility of contract terms and offtake arrangements, and inclusion of local content in project structure.

The participants in the IPP industry are likely to change. During the 1990s, one of the most marked shifts in the industry was a profound diversification in the types of companies sponsoring or investing in IPPs.⁶⁰ In the early 1990s, IPPs were the province of a small club of generating companies, but even by 1994 the market comprised fuel companies, equipment manufacturers, construction companies, and others. It seems likely that after the experience of the late 1990s, the group of companies with an appetite for long term country and project risk such as that involved in IPPs will once again be limited to specialist firms with the resources and experience to evaluate and manage projects effectively.

A related point is that the local content in the IPP market may increase. By “local content,” we mean domestic sourcing of debt, equity, fuel supply, equipment, and other inputs. Indeed, sponsors and lenders have consistently indicated a desire for greater access to local capital markets.⁶¹ This avenue is attractive because increasing local content reduces the currency mismatch between project revenues and project costs such as debt service or fuel payments. Already we can observe the growing significance of regional participants, particularly in India and South-East Asia. However, there is thus far no reason to believe that local participants are more able to evaluate project risks than experienced international investors. Additionally, only a few developing countries have demonstrated a consistent capacity to supply feasible domestic inputs (Malaysia, Thailand, China, India).⁶² Demand for investment will not wait for the full development of local inputs.

Additionally, the contractual structure of IPPs may become more flexible. In the classic IPP formula, everything rested on payments from a single offtaker, and there was no established mechanism to coordinate stakeholder response to changes in circumstance. Several IPPs around the world are beginning to structure themselves in ways that address this limitation. For example, there may be a growing reliance on balance sheet finance (e.g. GVK in India, Monterrey III in Mexico), or on structuring deals in a way that provides a large debt-service coverage ratio (e.g. the GVK plant in India). The horizon of PPAs may be reduced with pre-scheduled tariff renegotiations (particularly once the debt is paid off). Alternately, the project may divide its output among different consumers, thus diversifying counterparty risk and

⁶⁰ Babbar and Schuster, *Power Project Finance: Experience in Developing Countries*, RMC Discussion Paper Series No. 119, The World Bank (1998), at 5–6.

⁶¹ See, e.g., Andrew Aldridge, *Choice Solutions*, Project Finance Power Report (Sept. 2000).

⁶² This capacity may be augmented by recent programs by the IFC and ADB to lend in local currency. Currently, these local currency programs are available in a wide array of countries, including all of the countries in the PESD study sample.

ensuring revenue flows. This is happening in Mexico, where several plants have contracted part of their energy to captive industrial offtakers, part to the state utility, and part to be sold competitively (e.g. Monterrey III). IPPs in the United States have adapted several innovative means of spreading risk more thinly among project participants—such as fuel agreements that subordinate some payment to debt service.⁶³

Finally, we note that governments seeking to incorporate private investment must do a better job managing their electricity sector. Overreliance on IPPs, the inability to produce reliable demand estimates, and the failure to reform (raise) retail prices are all common problems that have magnified the stresses on private participants in the energy sector. Investors thus far have relied upon contracts to allocate away the risks of government mismanagement—unsuccessfully it seems. In the future, investment will likely flow to those countries best able to implement cost recovery pricing and other reforms throughout their electricity sectors.

7 Conclusion

This paper has reviewed the experience of private investment in greenfield IPPs in a sample of developing countries with a wide array of political, economic, social and electricity sector characteristics. The outcomes of IPP investment have been similarly diverse. The PESD research aiming to explain the critical factors affecting the success and failure of specific projects is a work in progress. While still preliminary, our research has begun to coalesce around a series of key propositions that we have described in this paper.

- (1) **The economics of infrastructure investment are important determinants of legal outcomes.** A combination of macroeconomic instability, currency crises, and financial constraint in the electricity sector is the most important driver of contract instability. In five of our sample countries, these factors appear to be paramount—Argentina, India, Malaysia, Thailand and the Philippines. If the economic fundamentals are out of line, individual projects will likely face a renegotiation process in which the quality of the government's commitment to its IPP obligations will be put to the test.
- (2) **However, legal outcomes (contract stability) are not an effective way of evaluating country or project performance.** We make this argument for two reasons. First, almost all IPP contracts are altered in some way, and these alterations do not preclude a positive outcome for the project as a whole. Second, government commitment to refrain from arbitrary or opportunistic expropriation should not be measured by raw legal outcomes, but by the overall ability of the government to manage IPP commitments credibly.
- (3) **Positive country performance can exist in seemingly adverse conditions.** Broad evaluations of a country have little to do with determining how that country will be able to maintain commitment to private investors through economic instability and political change. Instead, it seems to flow from combinations of political or institutional constraint, the quality of the legal framework for private investment, and the ability of relevant entities to afford their IPP commitments in a wide variety of circumstances. These factors may combine in very different ways across countries.

⁶³ Turner and Wigmore, *supra* note 12.

- (4) **Project structure may in some cases maintain positive project performance in the face of adverse country performance.** Some projects have been structured in ways that allow viable outcomes even when the country is unable to provide any credible environment. While in some cases legal protection can work (such as in the indemnification mechanism in the Shajiao C case), the most effective strategies are to *reduce* risks, not simply to allocate them. In some cases, project related factors can ensure success in an adverse country context (such as in the case of GVK). Continuing research will also produce more robust observations regarding the impact of project structure on country performance—for example, the significance of multilateral involvement or other commonly cited methods for constraining host government behavior.

In the coming months, the PESD research team will be focusing on the experience of specific projects. This investigation will hopefully allow us to define a more accurate definition of “outcomes” for investors—currently neither we, nor anyone else that we are aware of, has access to credible information on the financial performance of a broad selection of IPPs (other than investors and lenders with respect to their own projects). This process will also examine the dynamic relationship between host government and private investor when the IPP sector comes under stress. The hypotheses we have put forth in this paper will undoubtedly be questioned and refined as they are tested against individual cases.

The world faces an enormous need for investment in public infrastructure, a need that governments in the developing world are categorically unable to meet. Both investors and governments emerged from the downturn in the late 1990s wary of the other. In this study we hope to bridge that divide, and to lay the foundation for mutually beneficial public-private collaboration in the coming years.