Political Risk and Infrastructure Investment

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Abstract:
Investors contemplating entry into an infrastructure industry need to consider not only the current policy regime in a host country but also the likelihood that the policy regime will be stable in the future. Policy stability is typically analyzed by examining macroeconomic indicators or measures of risk based on managerial perceptions. We argue, however, that analyzing the credibility of the government’s own promises regarding the future policy environment—by examining the feasibility of policy change—provides additional important information to investors. Furthermore, investors should also consider the extent to which a change in policy, should one occur, will be inimical or favorable to their interests. The importance of these extensions of typical risk analysis is greatest in sectors characterized by large sunk costs, substantial economies of scale and highly politicized pricing, such as telecommunications and electricity generation.

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Introduction

While anecdotal evidence that political risk influences infrastructure investment abounds, little systematic evidence demonstrating the strength of the relationship between risk and investment exists. Political risk is likely to be greatest for investments in sectors characterized by large sunk costs, substantial economies of scale and highly politicized pricing, such as telecommunications and electricity generation. However, because managers undertaking such investments presumably act with foresight and therefore take measures to safeguard against political risk, the issue of the magnitude of the observed relationship between the level of political risk and investment in a country’s infrastructure sectors is non-trivial. If managers can implement safeguards against political risk easily and at low cost, patterns of investment across countries should not bear any relationship to variations in political risk. On the other hand, if safeguards are difficult or costly to implement, or if the level or nature of the risk is difficult to ascertain ex ante, then we should indeed observe a relationship between the level of political risk in a country and the level of infrastructure investment. In this paper, we present evidence in support of such a relationship. This evidence should interest investors, policymakers and academics alike.

Investors

Annual spending on infrastructure in developing countries currently exceeds $200 billion (equal to four per cent of aggregate gross domestic product or 20 per cent of aggregate gross domestic investment) and is expected to expand rapidly in the future (World Bank, 1994). However, a recent consulting report by Merchant International Group, a UK-based risk
consultancy service, surveyed 7,500 multinational corporations and found that 84 percent of operations initiated in emerging markets in the past three years have not met their financial targets. Unconventional risks in these immature and fast-changing markets—the same ones in which large, pent-up demand for infrastructure projects is likely to exist—cost multinational companies an estimated $24 billion in 1998 alone, or between eight and 10 percent of total corporate expected returns. The Merchant report states that, “A huge amount of financial resource and management time is lost each year as a result of inadequate research and analysis prior to embarking into a non-domestic market.” It stresses that the techniques employed for “identifying and evaluating hidden risks will need to become more sophisticated.” (Maitland, 1999)

The evidence that we present on the relationship between political risk and infrastructure investment should assist investors in increasing the sophistication of their political risk analysis. Specifically, we augment the traditional emphasis on macroeconomic accounting measures and subjective risk ratings with information on (1) the structure of the political system and consequent credibility of policymakers’ commitment to a given policy regime, and (2) the likely extent of lobbying by affected consumer groups, which in turn affects the probability that any change in policy will be inimical or favorable to the investor. Our analysis of political risk is thus rooted not in observations of recent behavior of policymakers, but rather in a more prospective analysis of how those policymakers are likely to behave in the future. In brief, we offer a model of political risk analysis that looks forwards rather than backwards. This model provides investors with crucial information to assist them in differentiating between a country that has untapped potential for infrastructure investment, and one that instead offers a substantial risk of a
souring political climate.

**Policymakers**

As the sophistication of political risk analysis improves, policymakers who seek to satisfy industrial, commercial and residential demands for infrastructure services will need to provide investors with credible policy commitments. These commitments do not entail simply granting preferential deals to foreign investors and then dividing the spoils with these investors. Rather, they have their roots in systemic regulatory, legal and related institutional reforms whose objective is to constrain current and future policymakers from reneging on the terms of investment contracts that equate the returns on an investment with the costs and risks of that investment. This paper concludes with a set of speculative policy implications that emerge from our analysis.

**Academics**

Rather than attempt to measure the sources of political risk directly, academics have recently turned toward using two main types of risk ratings: (1) macroeconomic accounting measures and (2) “perceptual” ratings based on the risk assessments of investors. By setting aside objective measures of the structure of the political system, these measures sever the explicit link between politics and economic outcomes such as investment levels.

Severance of this link creates several problems. First and foremost, these measures are by their very nature retrospective, or backward-looking, rather than prospective, or forward-looking. As a result, they are weak predictors of the future investment climate. Moreover, macroeconomic accounting measures suffer from the additional problem that they are subject to manipulation by
political actors whose capricious behavior may ultimately lie at the root of a country’s problems in the first place. Perceptual measures, on the other hand, are both tautological, capable of revealing only that investors do not like to invest in countries that they perceive as risky; and potentially misleading if managers currently rely on models of political risk that lack the necessary sophistication.

Academic studies that attempt to analyze crises with important political components, understand their implications and assist investors in avoiding future crises should therefore not rely on macroeconomic accounting or perceptual measures of risk. Instead, academics should note the success of the objectively derived measures of the political environment discussed below and attempt to develop a richer understanding of the links between the structure of a nation’s political institutions, the preferences of the political actors that inhabit them, the level of political organization of relevant interest groups, and most importantly the manner in which these forces interact to determine the stability of the policy environment and the likely direction of any changes in that environment.

Untapped Potential or Potential Trap?

Potential investors in infrastructure who seek to identify suitable host country candidates observe a tremendous disparity in existing infrastructure penetration across nations. Figures 1 and 2 illustrate this disparity by plotting the observed values of infrastructure stock and infrastructure investment per capita in 126 (telecommunications) and 112 (electrical generating capacity) countries during the period 1990-94. The key question that investors need to ask themselves is whether countries exhibiting low existing penetration levels signify untapped
potential or potential traps.

The potential for high returns to investment in countries with low existing penetration levels results from two main factors. First, the initial infrastructure investments in a given country tend to be made in dense urban areas where demand is greatest and the costs of deployment are lowest. Subsequent investments in less industrialized and densely populated regions can be expected to yield lower returns. If a country has a low overall penetration rate, then it is more likely that there are still investment opportunities available in “high-return” regions.

Second, countries that have low existing penetration levels enjoy certain cost advantages relative to “leader” countries in which widespread infrastructure investment took place at an earlier point in time. These cost advantages result from technological advances that have taken place as well as the diffusion of knowledge gained from “learning-by-doing” in leader countries. Moreover, countries with low existing penetration levels may be more easily able to “leapfrog” to newer, more efficient technological configurations that promise higher profits for investors than countries with larger existing commitments to older generations of technology can.

Figures 1 and 2 suggest that investors are aware of the potential high returns from infrastructure deployment in countries with low existing penetration levels. These countries do, in fact, enjoy higher levels of investment (or growth in the stock of their infrastructure) than countries with higher levels of penetration do. However, for a group of countries exhibiting a given level of infrastructure penetration, there still exists substantial variation in investment rates. For example, Morocco and Swaziland have nearly identical levels of telecommunication infrastructure stocks in 1990 (1.66 and 1.73 phone lines per 100 population respectively) as do
Slovenia, Paraguay and Peru (2.42, 2.60 and 2.61 phone lines per 100 population respectively). However, the investment rates in these nations diverge substantially during the following five years. The penetration of telephone lines surged 126% in Morocco and 72.7% in Slovenia, while growing only 18.5% in Swaziland, 18.5% in Paraguay and 26.8% in Peru. Similarly, Chile and Mexico had similar levels of generating capacity per capita in 1990 (0.31 and 0.34 megawatts of generating capacity per 1,000 inhabitants) as did Singapore and Paraguay (1.26 and 1.39 megawatts per 1,000 inhabitants). Yet these countries also diverged substantially in their infrastructure growth rates over the following five years (26.3% vs. 15.5% growth in the former pair and 22.5% vs. 5.3% in the latter). To adapt a question asked by Nobel prize winner Robert Lucas (Lucas, 1988), is there something about Swaziland, Paraguay, Peru and Mexico that makes them fundamentally different from Morocco, Slovenia, Chile and Singapore, and in particular that poses a threat to investment? If so, what?

Investors are continually asking these questions in order to separate those nations that offer untapped potential for infrastructure investment from those that offer a potential trap in which the returns on infrastructure investment end up being insufficient to cover the opportunity cost of the capital employed. Similarly, policymakers and academics ask the analogous question of “What could be done to Swaziland, Paraguay, Peru and Mexico to make them appear more like Morocco, Slovenia, Chile and Singapore to international investors?”

One obvious candidate for differences in investment patterns among countries with similar existing penetration levels is differences in the levels of economic output among these countries. It is intuitive that wealthy, industrialized economies should demand higher levels of infrastructure services. However, figures 3 and 4 demonstrate that the level of GDP per capita in
a country does not by itself separate out those laggard countries that can be expected to catch up in infrastructure penetration from those that do not. Countries with above average per capita GDP levels appear in the figure as circles, while those countries with below average per capita GDP levels appear as squares. If, for a group of countries with similar existing levels of infrastructure penetration, income were the main factor separating those with rapid infrastructure growth from those with slow growth, the circles would, on average, be above the squares. However, while income levels are a good predictor of existing infrastructure stocks—on average the circles are to the right of the squares—they are not, at least in this simple graphical representation, sufficient to distinguish fast growers from slow growers.

**Credible Commitments and Political Risk**

The writings of Aristotle, Montesquieu, Madison and Smith all share the prediction that another important element in determining investment levels is the government’s ability to craft a credible commitment not to expropriate the returns on an investment. More recently, Nobel prize winner Douglass North has argued that “efficient economic organization is the key to growth” (North and Thomas, 1973). North argues that one of the central questions of modern economics should be

> How have economies in the past developed institutions that have provided the credible commitment that has enabled complex contracting to be realized; and what lessons can we derive from that experience that will of value today in the ongoing process of building or rebuilding economies? (North, 1993:11)

North adds that attaining efficient economic organization requires

> a well-specified legal system, a well-specified and impartial third party of government to enforce [markets], and a set of attitudes towards contracting and trading that encourage people to engage in [markets] at low cost. (North, 1986:236)
North’s subsequent writings highlight the “time consistency problem” faced by governments that would be better off in the long-term if they could commit not to expropriate investment returns, but face short-term incentives to do so.

The commitment problem is especially severe in the context of infrastructure investment. When the lifespan of an investment is measured in decades, any variation in future pricing, taxation or regulatory policies has a tremendous impact on the projected rates of return for investment. Furthermore, because operating costs are a relatively small percentage of total costs, operators of infrastructure assets rationally continue to operate even when their revenue falls short of a fair economic return. This willingness to operate in the face of a noncompensatory revenue stream creates tempting opportunities for politicians that may gain favor with various political constituencies through expropriation of the investor’s revenue stream. Such incentives are heightened as economies of scale typically lead to a small number of infrastructure service providers that can easily be labeled as extortionary monopolists. Furthermore, because infrastructure services are widely consumed, reallocations of the revenue stream from investors to consumers are sure to be popular in the short term and may significantly affect the level of popular political support for the government. The combination of the economic opportunity to expropriate a revenue stream and the political benefits from doing so lead to an inherent commitment problem in government pledges regarding the stability of the current policy regime.

Given this commitment problem, government pledges regarding the future policy environment will only be believed to the extent that they are credible. As the ease with which the government may alter its policies increases, investors become increasingly wary. In addition to the possibility that the government will expropriate the revenue stream of the infrastructure
investor for its own purposes, other interested parties—e.g., consumers of infrastructure services, competitors, upstream suppliers or downstream buyers—may also compete in the political arena for any profits obtained by the investor. Competition for these profits necessarily impose costs on the investor and further disadvantages countries whose governments are unable to make credible policy commitments.

The Problems with Existing Measures of Political Risk

While the arguments supporting the link between a government’s ability to commit to a stable policy environment for investment and the level of investment undertaken are uncontroversial, empirical evidence bearing on this link is scarce. In fact, the commonly used measures of political risk in a country fare little better than do the income levels discussed previously in explaining the disparity in infrastructure growth rates among countries with similar initial levels of infrastructure penetration. As noted earlier, these measures are of two types: macroeconomic accounting measures used as indicators of a likely downturn in the overall economic climate, and perceptual measures based on investors’ or country experts’ perceptions about the likelihood of substantive policy change.

While these are the best available measures of political risk, they have not performed well in sophisticated analyses seeking to predict currency crises, banking crises, devaluations or expropriation events. For example, work by Jeffrey Frankel and Andrew Rose of the University of California, Berkeley, (Frankel and Rose, 1996) uses macroeconomic accounting measures to predict currency market stability. Although these measures correctly predict 99.4 percent of periods (months) of tranquility in the foreign exchange market for a given currency, they
correctly predict only 7.2 percent of periods in which a currency crash occurs. There also exists little statistical evidence to date that subjective risk ratings carry any additional information beyond these macroeconomic statistics (Cosset and Roy, 1991). And yet another striking example of the inadequacy of conventional political risk measures involves the recent East Asian financial crisis. To the surprise of many members of the corporate, policymaking and academic communities, neither accounting nor perceptual measures provided substantial warning of impending crises in Thailand, Indonesia, Malaysia or South Korea in 1998.

There are several reasons for the failure of the traditional political risk measures. The first reason is their retrospective nature. By examining macroeconomic accounting measures or investor perceptions of risk, these measures are all guided more by recent trends than by the fundamental probabilities of interest to investors. If the growth rate in a country increases in the absence of substantive political reform, has the underlying probability of a deleterious policy shift during the next decade or two necessarily changed as well? Moreover, if relatively high growth continues for several years and foreign investors flock in to take advantage of the growth “miracle,” leading to a reduction in the perceived riskiness of the country, has the true risk exposure of the infrastructure investor actually decreased? We suggest that the answer to each of these questions is “no,” and that the commonly used macroeconomic and perceptual measures are likely to bear little correlation to the underlying political risk that an investor in a country will actually face in the future.

A second problem, associated primarily with the macroeconomic accounting measures, is that they are subject to manipulation by political actors whose capricious behavior may lie at the root of a country’s problems in the first place. For example, looking ahead, how are we to predict
whether the current South Korean recovery is sustainable? Has growth increased because the reforms implemented to date have addressed charges of “crony capitalism,” or does it represent a short-term boom engineered by the government that obscures the remaining long-term dangers?

A third problem, associated primarily with the perceptual measures, is their tautological nature. It is hardly surprising that less investment occurs in countries that managers perceive to be risky. However, this finding tells us nothing about the fundamental sources of risk. Moreover, perceptual measures can be misleading if managers currently rely on models of political risk that lack the necessary sophistication. For example, private sector investors updated their perceptions of the levels of risk in the East Asian countries discussed earlier based on the magnitude of the initial downturn and the speed of the arrival of the first signs of recovery. It is not at all clear that such indicators have much to say about the actual long-term prospects for investment.

We believe that most of the problems with conventional political risk measures ultimately stem from their lack of focus on the political systems that they purport to measure. A true prospective measure might examine past trends in macroeconomic accounting measures and managerial perceptions of risk, but rather than extrapolate from these trends directly, would interpret them in the context of a nation’s underlying political and regulatory structures. If a boom is underway and risk perceptions are falling in the absence of credible political guarantees that the policies responsible for the boom will continue in the future, investors should be seriously concerned. In the context of the East Asian crisis, for example, an analysis of the structure of the political systems in the affected countries demonstrates substantial potential for arbitrary and capricious policymaking.
Building a Better Measure of Political Risk

Having identified the shortcomings of traditional measures of political risk and suggested the basis for a better measure, we now address the practical issue of how to construct such a measure. That is, how should we characterize underlying political structures in a consistent fashion and, more to the point, measure their ability to support credible policy commitments?

Past efforts at co-opting measures of interest to political scientists, such as the level of democracy (versus autocracy) or “political instability” have met with little success. While at first glance it seems reasonable to expect democracies and stable polities to attract higher rates of investment than their less stable or autocratic counterparts do, the reason for the failure of such measures should be apparent when one considers specific cases. Do Lesotho, Russia, Mongolia or Benin, all which score eight or above (as of 1994) on a commonly used 10-point scale of “democracy”, truly provide better investment climates than do Singapore or Taiwan, which respectively scored a 2.0 and a 4.8 on the same scale? Or does Zaire, which from the time that it became independent in 1967 until 1994 had no change in the identity of its executive, provide a more attractive investment climate than does Italy, which had twenty-one leadership changes in the same period?

Rather than co-opt an existing measure of questionable validity, we therefore propose the adoption of a measure that is objectively derived with the explicit goal of measuring the likelihood of changes in the policy regime. Construction of the political constraint index developed in (Henisz, 1998) begins by identifying the number of independent veto points in a country’s political system (executive, lower and upper legislative chamber, judiciary and sub-federal institutions). Simplifying assumptions regarding the distribution of the preferences of the median actor in each of these institutions are then imposed allowing for the computation of a
first-stage measure of the feasibility of policy change based solely on the number of existing veto points. This initial measure is then modified to take into account the extent of actual preference alignments across the various branches of government using data on the party composition of the executive and legislative branches and the appointment history of the High Court. Alignment across veto points increases the likelihood that a policy will be altered. The measure is then further modified to capture the extent of preference heterogeneity within each legislative branch which increases (decreases) the decision costs involved in overturning policy for aligned (opposed) government branches.

This political constraint index thus captures the feasibility of a change in policy given the structure of a nation’s political institutions (the number of veto points) and the preferences of the actors that inhabit them (the partisan alignment of various veto points and the heterogeneity or homogeneity of the preferences within each branch). It has been calculated for virtually all countries in the postwar period (1945-1994) and efforts are ongoing to extend the sample backwards to 1800 and forward to 1999. The average values over the period 1990-1994 of this index for 130 countries are provided in Table 1 while a sample calculation is provided in Appendix 1.

**Results**

*Political Constraints*

Figure 6, which is taken from Henisz and Zelner (1999), provides a simple illustration of the performance of the index in the context of telecommunications infrastructure penetration during the period 1960-1994. The horizontal axis of the figure measures a country’s initial level
of telecommunications infrastructure penetration, measured as main lines per 10,000 inhabitants, and the vertical axis measures the average annual percentage growth rate of infrastructure penetration. Countries signified by triangles have high political constraints index values (in the top third of the sample), while those signified by circles have low political constraints index values (in the bottom third of the sample). Even in this simple figure, the relationships are striking. The clear downward-sloping trend of the triangles indicates that investors in countries that have low initial penetration rates take advantage of high potential returns, resulting in faster growth in these countries. In contrast, despite the low initial levels of infrastructure penetration in the countries with weak political constraints, the subsequent penetration growth rates in these countries are much more widely dispersed than and infrequently exceed those of the countries with low existing penetration levels and strong political constraints. Thus, in contrast to the commonly used measures of political risk, the objectively-derived political constraints index helps substantially in separating countries with real growth potential from those that are potential traps.

A more sophisticated statistical analysis using annual data, also reported in Henisz and Zelner (1999), permits quantification of the relationship between initial penetration level, the objectively-derived political constraints index and the growth rate of telecommunications infrastructure penetration. In addition to incorporating the combined effect of the former two variables on the latter, the statistical analysis also takes into account other factors that influence penetration growth, such as growth in aggregate economic output (GDP), the fraction of economic output constituted by service industries, and the size of the telecommunications budget. The results of the analysis are best understood in the context of a hypothetical example.
Consider a country with a low initial level of infrastructure penetration (specifically, one standard deviation below the sample mean) and average values of the other country-level characteristics that influence penetration growth (i.e., values equal to the relevant sample means). The results of the statistical analysis imply that, if this country had weak political constraints (one standard deviation below the sample mean), it would exhibit an annual penetration growth rate of 7.03 percent. If the country had average political constraints (a political constraints index equal to the sample mean), it would exhibit an annual penetration growth rate of 8.51 percent. Finally, if the country had strong political constraints (one standard deviation above the sample mean), it would exhibit an annual penetration growth rate of 9.99 percent.

**Considering the Level of Political Competition**

An important extension to the above analysis considers not just the probability of policy change, but also the extent to which a given policy change is likely to be favorable or inimical to the interests of the investor. Assessment of the latter factor requires information on the level of “political competition” that an infrastructure investor faces from market competitors, upstream suppliers, downstream buyers and consumers—in short, any interest group that might persuade political actors, through lobbying and other influence-seeking activities, to implement policies that redistribute wealth from the investor’s business enterprise. Because we are interested in infrastructure sectors, we restrict our discussion here to political competition posed by the consumers of infrastructure services, who typically represent the main source of political competition in these sectors.
Our analysis of political competition shares with research on the economic theory of regulation (Stigler, 1971; Peltzman, 1976) and interest group theories of politics (Olson, 1971) the view that political actors maximize political gain by choosing policy that effects an optimal tradeoff between the votes, contributions and other electoral benefits received from various interest groups. Interest groups whose members are concentrated and enjoy high per capita benefits from a favorable policy are better able to organize themselves for political action than more diffuse groups are. As a result, more concentrated groups typically wield greater influence over political actors, and therefore over policies.

Consider in this light the political competition that takes place between an infrastructure provider and the consumers of infrastructure services. If the provider is a private sector firm, it may attempt to obtain favorable policies from political actors by offering them campaign contributions or by making jobs available to voters. If the provider is a state-owned enterprise, it may not be able to make direct contributions, so its primary method of influence is the expansion of employment.

The consumers of infrastructure services are heterogeneous and may attempt to influence political actors by offering votes, campaign contributions, or jobs. The specific nature of potential influence-seeking activities depends on the identity of the consumer, who may fall into one of three main classes: residential, small business or industrial. The most significant distinction among these three groups in the context of political competition is the greater level of political organization among industrial consumers. In general, industrial consumers represent a substantially more concentrated interest group, each of whose members stands to reap higher per capita benefits from any given “pro-industrial” policy. Industrial consumers are also more likely
to be “pre-organized” through their affiliations with industry trade groups, and in many cases are heavier consumers of infrastructure services. As a result, industrial consumers are more likely to monitor the prices of infrastructure services actively, and lobby political actors for favorable policies when they perceive prices to be “too high.”

Thus, from the perspective of an infrastructure investor, a consumer base characterized by a larger proportion of industrial consumption poses stronger political competition than does a consumer base characterized by more residential and small business consumption. Increased political competition, in turn, implies that a given policy change is likely to be less favorable to the investor’s interests and therefore led to reduced investment, all else being equal. Table 1 reports the average value of the fraction of industrial consumption of electricity for 112 countries during the period 1990-1994.

Incorporating political constraints into the analysis of political competition and investment behavior separates our work from more traditional research examining interest group influence and yields additional conclusions to those discussed in the previous section. First consider an infrastructure investor operating in an environment with strong political constraints. In this case, the investor is relatively insensitive to the level of political competition because the likelihood that policy will change in the first place is fairly remote. As political constraints become weaker and the feasibility of policy change increases, however, the investor must pay more heed to the level of political competition, an increase in which implies a less favorable policy outcome should a policy change occur.

The nature of the relationships between political constraints, political competition and investment is most easily seen graphically, as in figure 7. The horizontal axis measures the level
of political competition faced by the infrastructure investor and the vertical axis measures the level of investment. The two schedules depict investment behavior when political actors are perfectly constrained by “rigid” institutions, and also when they are less constrained by more “flexible” institutions. Investment behavior in the former case is insensitive to political competition, so that the investment schedule is flat. Because the probability of a policy change is low in this case, the extent to which a given change is likely to favor or be inimical to the investor’s interests does not have a strong effect on investment behavior. In contrast, investment behavior in the latter case is more sensitive to the level of political competition because the probability of a policy change is higher. The downward-sloping investment schedule reflects this increased sensitivity and illustrates the expected negative effects of increased political competition on investment. Although not depicted explicitly in the figure, one can also imagine an environment with even more flexible institutions, in which the investment schedule would have a steeper negative slope.

In addition to illustrating that the sensitivity of investment to political competition varies inversely with the level of political constraints, figure 7 also illustrates how the extent to which political constraints are strong or weak affects investment under different levels of political competition. First consider the relationships depicted on the right side of the figure, as denoted by line segments B and C, which correspond to moderate and strong political competition scenarios. In both cases, infrastructure investment is greater in the presence of stronger political constraints, but the difference between the level of investment under strong and weak constraints is greater when political competition is stronger, as denoted by the greater length of line segment C. The infrastructure investor values strong political constraints that the reduce the probability of
a policy change more in this case because, should a change occur, it is likely to be more inimical to the investor’s interests.

When political competition is low, on the other hand, the direction of the relationship between the level of political constraints and investment reverses. In figure 7, this reversal occurs at point A, which is where the infrastructure investor’s political competitors shift from being the politically dominant constituency (right side of the figure) to the politically subordinate one (left side of the figure). The reason for the reversal is that it is now the investing firm which has the “upper hand” with political actors relative to its political competitors, so a given policy change is likely to benefit the investor. Political constraints, which reduce the probability of a policy change, therefore work against the investor’s interests in this case. As a result, the relationship between the level of political constraints and the level of investment becomes negative; i.e., the investor invests less in the presence of stronger political constraints, and more in the presence of weaker constraints.

In support of the hypothetical relationships depicted in Figure 7, Figure 8 provides empirical evidence based on data from the electric utility sector in 77 countries during the period 1970-1994. This evidence is based on a sophisticated statistical analysis reported in detail in Zelner and Henisz (1999). (The relationships in this case are too complex to display in the form of a simple scatterplot, as in the previous section.) The horizontal axis measures the fraction of industrial consumption of electricity and thus corresponds to the horizontal axis measuring political competition in figure 7. The vertical axis measures investment as the five-year percentage growth rate in megawatts of generating capacity per capita. The three schedules on the figure depict the average sensitivity of infrastructure investment to the level of political
competition under three different levels of the political constraints index, after taking into account other relevant factors such as the initial level of infrastructure penetration and demand growth.

The figure provides strong support for the hypothesized relationships. When the political constraints index is high (one standard deviation above the sample mean) and the feasibility of policy change is therefore low, the schedule for investment behavior is flat—i.e., the level of political competition faced by infrastructure investors on average has no statistically distinguishable effect on investment. On the other hand, when the political constraints index is low (one standard deviation below the sample mean) and the feasibility of policy change therefore high, the schedule for investment behavior slopes downward—i.e., more political competition leads to reduced investment. Moreover, at higher levels of political competition, investment under strong political constraints exceeds that under weak constraints, implying that infrastructure investors value policy stability in this case. The magnitude of the difference in the level of investment under high and low political constraints grows with the level of political competition. Conversely, at lower levels of political competition, investment under strong political constraints is less than that under weak constraints, implying that infrastructure investors value policy flexibility rather than policy stability in this case.

In order to make these results more concrete, consider again a hypothetical country that is “average” in all respects except that its political constraints index is low (one standard deviation below the mean). The results of our analysis imply that the five-year cumulative percentage growth rate of generating capacity in this country declines as political competition, measured by the fraction of electricity consumed by industry rises. Specifically, the five-year cumulative
percentage growth rate of generating capacity declines by over 10 percentage points for each 10 percentage point increase in the fraction of electricity consumed by industry.

Now consider a second hypothetical country that is also average in all respects except that its political constraints index is high (one standard deviation above the mean). In this country, the effect of political competition on the five-year cumulative percentage growth rate of generating capacity is negligible. Moreover, when political competition is fairly strong (the fraction of electricity consumed by industry is one standard deviation above the mean), the five-year cumulative percentage growth rate of generating capacity in this country is more than percentage points higher than it is in the first hypothetical country with weak political constraints. In contrast, when political competition fairly weak (the fraction of electricity consumed by industry is one standard deviation below the sample mean), the five-year cumulative percentage growth rates of generating capacity in the two hypothetical countries are roughly equal. When political competition is even weaker (the fraction of electricity consumed by industry is equal to the sample minimum of zero), the five-year cumulative percentage growth rates of generating capacity in the country with weak political constraints is actually almost 35 percentage points higher than it is in the country with strong political constraints.

**Policy Implications**

*Reducing the Risks Faced by Managers*

Three specific policy implications emerge from our analysis. First, in conjunction with more detailed empirical work presented in (Henisz and Zelner, 1999; Weder and Schiffer, 1999; Zelner and Henisz, 1999), the evidence summarized here indicates that managers face
difficulties, bear substantial expenses and struggle with residual uncertainties in their attempts to safeguard their infrastructure operations against political risk. Therefore, efforts to reduce the political risk faced by managers with control over infrastructure investment can provide substantial increases in infrastructure penetration per capita, especially in countries with low initial stocks of infrastructure investment.

**Attaining Policy Credibility**

Second, the evidence summarized here, in conjunction with case studies presented in other recent work (Gilbert and Kahn, 1996; Heller and McCubbins, 1996; Levy and Spiller, 1996; Ramamurti, 1996; Henisz, 1999), also offers some guidance to policymakers on how to reduce the level of political risk that these managers face. In many cases, reform efforts should be focused on improving the credibility of relevant policies by making them difficult for current or future governments to alter. The modeling approach used in this paper supports the results of the case studies noted above by providing strong support for the efficacy of creating multiple overlapping veto points, of which several types are possible. One type is an independent and well-respected judiciary with the authority to overturn government policy. Devolution of some regulatory authority to states or regions within a broad national framework also reduces the probability of policy change, as does the avoidance of a concentration of policy authority in a single regulatory agency or department. The use of broader antitrust statutes or multiple industry regulatory bodies where appointment to the relevant policymaking agencies involves a complex balancing of various constituent interests further enhances the probability that a policy, once announced, will survive future shifts in government preferences.
There are other possibilities as well. For example, while not discussed in detail in this paper, the qualitative evidence presented in Heller and McCubbins (1996) speaks to an alternate mechanism for crafting credibility. In the absence of an independent judicial authority, governments may have to rely upon executive decrees with complex administrative procedures to ensure policy stability. The lesson that emerges from their analysis is that countries that are unable to rely upon an independent judiciary may still attract substantial investment by using the best means at their disposal to arrive at the desired end of regulatory stability. A host of other internal and external devices may also enhance the credibility of relevant government policies. Participation in relevant multilateral accords, the presence of an IMF or World Bank program, or a legal system which recognizes and enforces supranational or multinational decisions may all enhance the perceived credibility of a given policy environment. Each of these devices to some extent raises the cost to the government of reneging on present policy and thus enhances the predictability of the policy environment for investors in infrastructure.

**Factoring in Political Competition**

The third, and perhaps most important, policy implication that emerges from our analysis is that the impact of regulatory reform that enhances policy credibility on infrastructure investment varies by country. The broader non-market context in which reform is embedded, especially the level of non-market competition faced by the infrastructure investor, has a strong impact on the relationship between enhanced credibility and additional investment. Where political competition is high, efforts to improve policy credibility yield substantial gains in investment. Where political competition is low, the same effort may actually yield reductions in
infrastructure investment. However, in both cases, the changes are “efficiency enhancing”: in the
case of high political competition, underinvestment is overcome, while in the case of low
political competition, overinvestment is curtailed.

While beyond the scope of the preliminary analyses that we have summarized here, other
country-specific factors also affect the relationship between policy credibility and infrastructure
investment. For example, even where political competition is strong—suggesting the need for
strong political constraints that enhance policy credibility—a rigid policy framework that locks
in inappropriate or dated policies can still have a negative impact on the investment climate.
German labor law and Brazilian fiscal policy are clear examples where too many veto points
create “policy gridlock” that harms the investment climate.

An analysis that takes into account the intervening effect of political competition on
infrastructure investment can help to separate out the negative effects of gridlock from the
positive influence of credibility by considering the likely direction of a policy shift in the
presence of weak political constraints. Additional information on the policymaking apparatus,
such as the existence of elected vs. appointed regulators, the electoral laws for policymakers at
the various veto points, the identities of the parties with agenda power, and the assignment of
last-mover rights, can enhance such an analysis because these factors all combine to influence
the likely nature of any policy change. We believe that the manner in which we have
operationalized political risk lends itself to the incorporation of these features and thereby
enhances our ability to predict which countries will gain relatively more—or even suffer
losses—by adopting institutions that enhance policy credibility.
A More Sophisticated Perspective on Political Risk and Infrastructure Investment

In this paper, we have presented evidence supporting the use of an objective measure of the political environment over more traditional macroeconomic accounting or perceptual measures. We have also argued that the structure of a nation’s political institutions and the preferences of the actors that inhabit them should be analyzed in tandem with the level of political competition posed by consumer groups, competitors, upstream suppliers or downstream competitors. The empirical evidence that we have presented, while still preliminary, underscores the value of adopting this perspective.

The lessons for investors are clear. Firms in general, and especially those operating in sectors characterized by large sunk costs, substantial economies of scale and highly politicized pricing—such as telecommunications and electricity—should craft strategies that take into account both the economic and political environments in which they operate. Failure to do so may lead investors to confuse potential investment traps for untapped investment potential.

Policymakers seeking to attract private investment in the infrastructure sectors commonly viewed as vital for economic development and growth should also draw lessons. In particular, they should note that reducing the risks faced by infrastructure investors will have a substantial impact on investment levels in their country. However, reducing these risks requires policymakers to move beyond providing stable macroeconomic policy environments to undertaking more micro-level reforms of economic and especially political and regulatory structures. For example, ambitious policymakers might consider constitutional reforms that
create a system of overlapping veto points along with an independent and impartial judiciary, thereby ensuring some measure of policy stability. Furthermore, independent regulatory agencies or, where possible, antitrust authorities, in each case with appointment procedures that balance competing constituencies, are likely to be an important component of a credible policy regime.

Additional insights that emerge from our analysis when extended to consider the level of political competition are that the construction of such a regime can help to alleviate problems of both underinvestment (when political competition is high) and overinvestment (when political competition is low), and also reduce the magnitude of expenditures by infrastructure providers and other interest groups on political rent-seeking intended to influence the policymaking process. Our analysis can also be extended to incorporate other important features of the institutional environment. These include but are not limited to electoral rules and institutions and procedures for the appointment of justices, regulators and senior bureaucrats as well as procedures for policymaking (agenda setting rights, the magnitude of veto-proof majorities, the identity of the last-mover, and the role of committees and the like).

Finally, academics seeking to understand the process of strategy formulation and policymaking should note the predictive power of our prospective, objectively-derived measures of political constraints and political competition. We believe that the analytical approach that we advocate, which is grounded in recent developments in positive theories of political economy, has the potential to reinvigorate the relatively moribund field of political risk analysis.
Appendix 1: Deriving the Political Constraint Index for Guyana in 1990 and 1993

Guyana has two veto points (an independent executive and a single legislative chamber, but no independent judiciary or sub-federal units of power). Given the difficulty of mapping all of the parties in all of the countries in each year to specific policy “ideal” points, we assume, at least initially, that preferences as well as the relevant status quo policies are drawn randomly from a uniform distribution. This leads to six possible preference orderings that are plotted in Figure 5. In the first ordering, no change in the preferences of the executive that retains the initial ordering yields a change in policy. The executive prefers all policies between 1/2 and 0 to the status quo policy while the legislature prefers all policies between 1/2 and 1. As the executive and legislature cannot agree on a change in the status quo policy, that policy is stable and the feasible range of policy change is equal to zero. The same argument is true by symmetry for ordering (2). In the remaining orderings, both the executive and the legislature agree on a direction in which policy should move relative to the policy.

In the absence of knowledge of the structure of policymaking, the size of the range of policies over which all relevant veto players can agree to change the status quo policy is used as a measure of political risk. As the size of this range expands, the government's pledges to maintain the status quo policy lose their credibility. In ordering (3), the executive prefers policies between 1/4 and 3/4 to the status quo while the legislature prefers and policy greater than 1/4. Both the executive and the legislature prefer the range of policies between 1/4 and 3/4 to the status quo. The feasible range of policy change is equal to 1/2. The same is true for orderings (4), (5) and (6). The average feasibility of policy change across the six orderings is therefore (0 + 0 + 1/2 + 1/2 + 1/2 + 1/2)/6 = 1/3. The initial value for the index of constraints is equal to one minus
the average feasibility of policy change, or 2/3.

Next, in order to account for cases in which the constitution may state that political actors have veto power but the political reality is that the same party controls both veto points (as is always the case in Westminster parliamentary democracies like the United Kingdom or New Zealand, or may also be the case in presidential systems where the electorate supports the same party in elections to the presidency and one or more legislative chambers), data on partisan alignment of various branches of government are used to adjust the preliminary measure to represent the number of *de facto* rather than *de jure* veto points. Finally, because not all majorities are equal (for example, one party may control all seats in the legislature or be part of a ten-party coalition that controls 51% of the seats), data on the heterogeneity of preferences within legislative chambers are used to adjust the measure further in order to create a political constraint index.

Turning back to the case of Guyana in 1990, we note that the same party (the People's National Congress) controlled the presidency and held 42 of the 53 legislative seats, with the remaining seats distributed among three other parties. The probability that two random draws from the legislature would be from different parties (a commonly used measure of heterogeneity from the political science literature (Rae and Taylor, 1970)) was 35.4 percent. As a result, the initial constraint measure of 2/3 was scaled downwards to 0.237 to take into account the (imperfect) alignment of the legislative chamber with the executive branch. (Specifically, the final measure of 0.237 is 35.4% of the distance between the measure with no veto points or perfect alignment (0.000) and the value of the measure with one veto point and perfect opposition (2/3)).
In 1993, Guyana held an election in which the People’s Progress Party won the Presidency and the majority in the legislature. The new distribution of seats was 35 for the People’s Progress and 27 for the People’s National Party, with the remaining parties’ seat totals unchanged. In this case, the probability that two random draws from the legislature would belong to different parties increased to 54.5 percent, making it relatively more difficult for the new governing party to steamroll the legislature in comparison to their immediate predecessor (i.e., their majority was slightly more tenuous). The political constraint measure thus rose from 0.237 to 0.365 (or 54.5 percent of the distance between the value with no veto points or perfect alignment and the value with one veto point and perfect opposition).
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Figure 1: Investment Higher in Countries with Lower Stocks of Telecommunications Infrastructure

![Figure 1: Investment Higher in Countries with Lower Stocks of Telecommunications Infrastructure](image1.png)

Figure 2: Investment Higher in Countries with Lower Stocks of Electricity Infrastructure

![Figure 2: Investment Higher in Countries with Lower Stocks of Electricity Infrastructure](image2.png)
Figure 3: Income Related to Stocks of Telecommunications Infrastructure

Figure 4: Income Related to Stocks of Electricity Infrastructure
Figure 5: The Six Possible Preference Ordering of the Game \( \{X_E, X_{L1}\} \)

(1) \[
\begin{array}{cccc}
0 & 1/4 & 2 & 3/4 & 1 \\
X_E & X_0 & X_{L1} & \\
\text{E E E E E E E E E} & \\
\text{L L L L L L L L} & \\
\end{array}
\]

(2) \[
\begin{array}{cccc}
0 & 1/4 & 2 & 3/4 & 1 \\
X_{L1} & X_0 & X_E & \\
\text{L L L L L L L L} & \\
\text{E E E E E E E E E} & \\
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(3) \[
\begin{array}{cccc}
0 & 1/4 & 2 & 3/4 & 1 \\
X_0 & X_E & X_{L1} & \\
\text{L L L L L L L L} & \\
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(4) \[
\begin{array}{cccc}
0 & 1/4 & 2 & 3/4 & 1 \\
X_0 & X_{L1} & X_E & \\
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(5) \[
\begin{array}{cccc}
0 & 1/4 & 2 & 3/4 & 1 \\
X_E & X_{L1} & X_0 & \\
\text{L L L L L L L L} & \\
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(6) \[
\begin{array}{cccc}
0 & 1/4 & 2 & 3/4 & 1 \\
X_{L1} & X_E & X_0 & \\
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Note: E indicates the range of outcomes preferred by the executive to the status quo \( X_0 \)
L indicates the range of outcomes preferred by the legislature to the status quo \( X \)

Figure 6: Political Constraints Influence Infrastructure Investment

![Political Constraints Influence Infrastructure Investment](image-url)
Figure 7: Political Constraints, Political Competition and Investment

Figure 8: Total Effect of Political Competition at Different Levels of Political Constraints
REFERENCES


