Investing in Infrastructure: Factors Affecting Sector Performance

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The international financial crisis and global downturn will influence prospects for infrastructure investment, particularly in developing countries where income growth will be significantly affected. Likely policy changes (based on short-term political considerations) result in a riskier environment for investment. Furthermore, citizens will be particularly concerned with price increases in those network sectors that government agencies are supposed to be supervising.

Thus, it is a good time to examine the factors that affect infrastructure performance—to assist businesses in fine-tuning their investment strategies and to help political leaders appreciate the importance of providing predictable policy environments if they are not to damage these key sectors—energy, water, telecommunications, and transportation. Therefore, the purpose of this paper is to help investors assess trends in these sectors regardless of the nation under consideration.

Assessing long-term commercial prospects requires analysts to characterize the policy environment, including regulatory systems. Given the complexities associated with evaluating past performance and likely developments, investors need to be able to examine key features of a country. Some analysts emphasize the design of regulatory institutions, some focus on the regulatory process (including adherence to announced schedules, transparency, and citizen participation), and others highlight regulatory incentives and links to sector performance.

Figure 1 from Berg (2000) identifies factors affecting infrastructure performance and citizen perceptions—especially (a) the legitimacy of regulatory institutions from the standpoint of investors, multilateral banks, and donors, and (b) the credibility of the agency in the eye of citizens (both those receiving service and those as yet un-served). The earlier article outlined how organizational resources, the legal mandate, and core agency values affected regulatory decisions that determine structure, behavior and performance in regulated industries. Actual performance, in conjunction with national priorities (promised performance), affects the legitimacy and credibility of the regulatory system. Note the many factors other than regulatory governance that affect sector performance.

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In the case of Latin America for example, most regulatory systems are more than a decade old, but they are still potentially fragile. When they were created, the new agencies had different agendas than the politicians in government ministries and managers in state-owned enterprises. So this has been a period of sorting out responsibilities and jockeying for position. This paper identifies questions an investor must ask to understand trends in service quality, network expansion and cost containment. Thus, the questions help identify links between institutional constraints, regulatory policies, and sector performance. They assist external analysts (and regulatory leaders) in evaluating regulatory systems. The questions recognize the many factors that affect infrastructure performance, so they provide a framework for identifying features of the current situation: otherwise, analysts are not in a position to identify historical trends, determine current baselines (actual performance), and establish realistic targets for the future. The following sequence of questions (in italics) is designed to guide infrastructure analysts through a structured evaluation process. The descriptive material sets the context for each question. Questions are collected under 12 major areas (or factors from Figure 1). To make prudent decisions regarding long-term investments, these background questions must be answered. Otherwise, the forecasts of cash flows will be based on hopes and wishful thinking rather than reality.

1. **Basic industry conditions**

Basic conditions include production technologies, input prices (capacity, chemicals, and labor), demand patterns (and growth), and ownership patterns. When the scale economies are large relative to the market size, a natural monopoly may exist: having a single supplier can be least-

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2 Jordan and Levi-Faur (2005) explore the factors influencing the creation of regulatory agencies within a nation and across nations.
cost. Such a situation leads to a market structure with a single (often vertically integrated) infrastructure firm. Common property resources (water resources and the radio spectrum) create situations that invite government intervention. Private and public ownership is another factor affecting downstream activities. Changes in basic conditions affect public policy.

(a) What are the basic industry conditions for each sector in the nation under consideration?
It would be useful to ascertain what conditions led to the creation of the first regulatory commission. Was private participation (which represents a change in ownership/operation patterns) being considered, leading to the perceived need for an agency that had some distance from the ministry? If the sector is characterized by rapid technological change and rapid demand growth (as in telecommunications) were these changes instrumental in creating pressure for greater professionalism within the associated oversight agency? Information is another element of basic industry conditions: to what extent did perceived information asymmetries stimulate interest in the creation of new institutional arrangements, creating an agency with the expertise needed to provide oversight for the sector?

(b) What issues are currently most difficult to address?
This question is designed to identify the key sources of uncertainty related to fundamental developments in the industry. Each nation and each sector has its own unique issues that are unresolved. Understanding potential binding constraints means that businesses are in a better position to make more realistic projections and to incorporate risks into cash flow forecasts. For example, the timing of the (expected) global recovery will have a substantial impact on the profitability of new infrastructure projects.

2. Market structure
Market structure for infrastructure products and services can be characterized in terms of entry conditions, degree of vertical integration, and other factors. Government policies greatly influence the number and size distribution of suppliers through merger policy and the creation of franchise territories. Municipal operation characterizes some nations, while others have a single national utility (generally focusing on urban areas).

(a) What are the characteristics of the market structures of the infrastructure sectors under examination?
Without knowledge of market conditions, the analyst has no context for evaluating a regulatory system. For example, in telecommunications, spectrum policy will affect the value of mobile phone operators: Are new entrants expected or likely to be allowed?

(b) What elements are in need of reform?
Early on, it is important to identify potential limitations of current market arrangements. The evolution of a regulatory system can provide clues as to likely developments and policies that might need to be changed to make markets attractive for outside capital (whether via equity investments or via bonds issued by state-owned enterprises). Infrastructure sectors are politically important, but politicians find it easier to make promises than to deliver on them.
(c) **What has kept those changes from happening?**

Even when sector performance is very poor, someone is benefiting from the current arrangements. It is important to understand who benefits from the status quo. This question requires analysts to dig deeply into the forces that constrain change. Can these groups benefiting from the current situation be identified and their needs be more directly addressed?

3. **Corporate behavior**

Public policy also creates incentives involving behavioral restraints. These incentives are related to price, quality-of-service requirements, and mandates for system expansion. Sector regulators use cost of service (or rate of return regulation), price (and revenue) caps, and other mechanisms for constraining prices. In some cases, revenues do not even cover operating costs, which requires national subsidies or results in deferred maintenance.

(a) **Is a sound approach to pricing utilized by infrastructure firms?**

Each infrastructure sector will have different cost-drivers and pricing methodologies. The question attempts to determine the extent to which a regulator and service providers have agreed upon a way to achieve financial sustainability. Different types of concession arrangements are likely to be associated with different pressures for cost-recovery. Are there lessons for one network industry based on experience with another (or those in a neighboring country)?

(b) **To what extent is infrastructure network expansion an issue?**

Citizen access (service coverage) tends to be a highly political issue. To what extent is network expansion a national priority—and if it is, does this tend to result in legislation and institutions that are accountable for performance improvements? If the service is priced below cost, from where would funds for investment come? (The only sources would be taxes, cross-subsidies from other customer groups, donor agencies, and private capital.) Do citizens understand the problem of obtaining funds for capital formation?

(c) **What are the prospects for expansion in infrastructure coverage?**

The analyst needs to evaluate the likelihood of network expansion in the near future. The question also provides another perspective on those benefiting from the status quo. If budgets are being balanced, very poor countries will need to reduce expenditures on education and health if they give priority to infrastructure. If investors are pulling back from infrastructure, there may be opportunities for those able to screen potential projects in a way that eliminates projects which are sensitive to factors beyond management’s control.

4. **Sector performance**

Public policies affect sector performance. In the case of water, government ministries and/or regulators may mandate quality requirements and network expansion targets. Meeting targets is often encouraged through performance-based ratemaking—PBR. PBR fits into a broad category of rate-setting mechanisms that links rewards to desired results or targets by setting rates (or rate components) for a given time according to external indices rather than a utility’s actual cost of
service. This type of regulation gives utilities better cost-reduction incentives than cost-of-service regulation. However, for state-owned enterprises, the application of appropriate incentives can be established. In developing performance standards for a PBR plan, a regulatory agency attempts to understand the utility’s historic performance in order to develop an appropriate baseline for yardstick comparisons; determine those areas where cost savings may be realized and quality may be approved; and begin collecting information on service quality and develop measures to be used for benchmarking performance.

(a) **What are the dimensions of performance that are most important for the nation?**
This question calls for a judgment but provides the analyst with a sense of national priorities. While no individual’s view on this issue should be taken as “the” answer, information on the distribution of weights can help outsiders understand the degree to which conflict is likely to arise.

(b) **How do current institutions reflect citizen participation, transparency, benchmarking, and incentives for good performance?**
A number of surveys consider these factors when evaluating good governance, although few identify incentive issues. If oversight for some sectors remains with government ministries, is participation, transparency, and benchmarking activity less (or more) prominent than where autonomous agencies have oversight responsibilities? Customer involvement might occur via consumer advisory boards, non-governmental organizations (NGOs), or other institutions. Is there evidence that one approach has been particularly effective in educating citizens and providing feedback to service providers and regulatory agencies?

(c) **What are the greatest shortcomings of current infrastructure sector performance?**
A nation may be successful in achieving high performance in some areas (efficiency and fairness—through access policies). However, the remaining gaps (like environmental stewardship or pension-funding) need to be identified, since these represent tasks (and potential liabilities) for the future.

5. **Objectives and priorities**
Broad economic and social objectives of citizens include freedom, equality, justice, high living standards, and technological advancement. In the context of infrastructure, political leaders attempt to discern (and shape) what citizens want from these sectors.

(a) **To what extent do social values reflect a consensus or is society deeply divided? (Is there a serious political risk that a future government will overturn the infrastructure reform process?)**
This question identifies the extent of social conflict present in a nation. Without some social consensus, it is difficult to fund investments with long-term impacts. Regional differences, urban-rural dissimilarities, income disparities, and other factors create tensions that delay policy implementation. In some cases, policy development is complicated by jurisdictional disputes (national, state, municipal) regarding priorities or political authority.
(b) **Who are the infrastructure reform champions in the sector or nation?**

Without prodding from political or business leaders, the press, or from NGOs, the status quo will be difficult to change. Citizen awareness of issues is partly driven by the political environment. If a business is contemplating investment in a nation, executives will first need to determine whether the playing field is level or filled with potholes that benefit particular incumbent operators.

6. **Institutional conditions**

The institutional conditions represent the starting point for policy development. These conditions (mediated by the press and political leaders) create the context in which agencies are created and “reformed.” The institutional conditions can be characterized by (i) the extent to which there is a consensus between the legislative and executive branches of government, (ii) the judicial capabilities (and consistency in legal decisions), (iii) agency administrative capacity, (iv) informal norms, and (v) formal rules. Informal rules are the customs that mold day-to-day behavior. Similarly, formal rules are illustrated by the legal framework in which organizations operate.

(a) **What is the institutional capacity of the nation?**

Are decisions made by professionals or are they driven by political considerations? Clearly, technical skills are necessary (but not sufficient) for a sustainable regulatory system. Do agencies have strategies for recruitment and retention of infrastructure professionals? Are universities preparing engineers, lawyers, and other professionals for careers in the industries and in oversight agencies?²

(b) **To what extent does lack of an independent judiciary or the presence of corruption raise the cost of doing business and/or create a climate that rewards opportunistic behavior?**

This question addresses the sensitive issue of the roles of supporting institutional systems (the judiciary) and pervasive cultural values. Since 1995, Transparency International has published an annual Corruption Perceptions Index (CPI); the early surveys gauged public opinion, but now experts are surveyed.⁴ These types of surveys provide additional information that helps managers gauge the likely range of costs associated with different investment patterns.

7. **Historical and international experience**

History provides evidence regarding institutions and policies that have failed or been successful. Experience from other countries (or states within a nation) represent “natural experiments” regarding impacts of alternative policies, providing lessons for policymakers. Thus, infrastructure performance across jurisdictions and over time provides a yardstick for determining whether performance is sub-normal.

(a) **Do decision-makers seek lessons regarding best practice?**

The answer to this question helps donor groups that are considering support for capacity building. The answer also provides an indication as to whether decisions tend to be

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predictable or are dependent on who last spoke to the executive director of the agency. The basic issue is whether infrastructure agencies are vulnerable to regulatory capture by powerful special interests (including incumbent firms and associated government ministries. Do agencies show a willingness to cooperate, or are investors likely to find themselves caught in the cross-fire between entrenched bureaucracies?

(b) **What laws or regulatory procedures would investors like to see adopted (or adapted) from other nations?**

No setting is ideal. Forecasted cash flows will have patterns (and risk profiles) that influence the cost of capital. External investors have some leverage in determining the rules under which they are to operate, since infrastructure expansion and quality improvements can have significant impact on citizens. Political leaders need to be aware of how current procedures (and expected rulings) affect risk perceptions.

**8. International risk perceptions**

International perceptions tend to be beyond the control of sector regulators, but they affect investor attitudes and thus, the cost of capital (reflecting required interest rates on bonds and expected returns on equity investments). One area where public policy does affect international perceptions is the predictability of government policies and regulatory rules. Generally, broad risk perceptions are beyond the control of national regulators—since they are driven more by global developments.

(a) **To what extent are the rules of the game continually changing, making investors less willing to commit substantial funds to projects whose cash flows depend on a stable regulatory environment?**

Risk perceptions and techniques for risk mitigation are important for those nations seeking private investment in infrastructure. The very poorest nations are not likely to have income levels that can support substantial network expansion. Realistic investment targets must be communicated to citizens.

(b) **Has sovereign risk increased corporate risk or the risk of sub-sovereign entities?**

Private participation via the issuance of commercial grade bonds by municipalities represents one way to expand network coverage for some services. This is a relatively new area, but is likely to become more important, especially for the water sector.

**9. Regulatory governance**

Stepping back from how basic conditions affect the structure, behavior, and performance of an industry, investors need to recognize the important role of the features characterizing the agency responsible for implementing public policy. Regulatory governance includes the legal mandate given to a government agency, resources available for policy implementation, the organizational design of the agency, and the processes adopted by the agency all affect regulatory activities.

(a) **Is there clarity in terms of which agency is responsible for implementing particular policies?**

If several agencies have overlapping responsibilities, they may impose conflicting rules on operators. For example, in one African nation, one commission is responsible for
siting electricity generation and another regulates the price of electricity. Clearly, both agencies influence the final price that consumers face.

(b) *Are there intra-governmental rivalries?*
This question seeks a little more nuanced look at the issue. Predictability is affected by inter-governmental conflicts. For example, the water sector is affected by the water resource management system, the environmental protection agency, the public health authorities, and by the sector regulator. In some cases, rivalries might be harnessed to a shared interest—with leadership.

10. **Regulatory incentives**
Policy incentives can include taxes and subsidies; incentives discourage and encourage a variety of activities. The significant policy issue involves designing incentives that promote cost-cutting, service quality, and network expansion.

(a) *Which regulatory incentives have the greatest impact on the cash flows that can be obtained from operating productive assets (for example, non-revenue water and uncollected bills)?*
Private-public partnerships or privatization both require those making capital investments to understand current challenges. Current managers may (or may not) make data easily available.

(b) *Does the regulator have adequate information to evaluate corporate performance? To what extent is benchmarking data available to help analysts evaluate the relative performance of infrastructure service providers?*
The extent of information asymmetry affects the types of incentive mechanisms that are feasible. The legal framework affects the ability of regulators to obtain data. State-owned enterprises can be particularly difficult since they report to ministries that may have different agendas than the regulator. Operating performance and basic financial indicators are absolutely essential if external evaluations of the sector are to yield insights into trends and feasible targets.

(c) *Does the regulator have adequate rewards and penalties to provide incentives for firms (via rate of return regulation, price caps, and hybrids)?*
Sometimes legal constraints limit the ability of the regulatory agency to design effective incentive systems. Privately owned enterprises are usually in a better position to translate external incentives (returns) to performance-related rewards for internal purposes.

11. **Corporate governance**
For best performance, activities internal to a firm should not be micro-managed by regulators. Corporate governance includes the allocation of decision rights within the firm (hierarchical vs. team decision-making) as well as incentive systems that reward good managerial performance.

(a) *Have managers been encouraged to design pay plans that compensate people for high levels of effort and performance?*
This factual question provides useful information to an outside analyst. The question underscores the importance of designing internal incentives that reward performance improvements. Part of the recent problems within financial institutions stemmed from poor incentive schemes that rewarded managers for doing “deals” rather than for carefully evaluating the risks associated with new financial instruments. Infrastructure firms are also susceptible to poor corporate governance and misplaced incentives.

(b) Do performance evaluation mechanisms monitor internal reward systems?
This question seeks information on internal incentives, whether for privately owned or state-owned enterprises. Agencies need to avoid micro-management, but monitoring internal incentives is certainly within the purview of regulation. Does the sector agency in the nation under consideration tend to promote targeted incentive mechanisms?

(c) Are reports widely disseminated, transparent, and audited?
The issue of transparency is central to a number of methodologies that emphasize “process” such as the World Resources Institute Good Governance Indicators. When there is transparency, nations can be compared, via annual reports, Web pages, and the quality of decisions. The World Bank also has information on governance.5

(d) To what extent does the economic power of public employees, the role of unions, corruption, or political patronage limit efficiencies?
This issue is extremely sensitive, yet it represents a challenge for state-owned (or municipally owned) service providers. Some argue that multi-sector agencies are more insulated from political pressures than single-sector agencies.

12. Legitimacy and credibility
Citizen acceptance of public policies, sector outcomes, and the political processes that lead to those policies depends on how well industry performance matches shared national objectives. Without a political consensus, the legitimacy of the system is continually called into question—as policies become unpredictable. Private investment is a voluntary activity: investors will shy away from projects, companies, or nations whose returns are low relative to the risks. Public investment (through legislative budget outlays or through cash flows to municipal utilities) and donor funds are also affected by utility performance.

(a) Does lack of consensus stem from disagreement regarding “facts” (such as whether the utility is performing well)?
Conflict resolution would depend on obtaining and disseminating information if this is the source of citizen disagreement. Groups are entitled to their own opinions, but not to their own “facts.” Political representation depends on citizen understanding of the situation “on the ground” and on feasible outcomes under different policy scenarios. Operators can only manage what they measure. Agencies can only regulate what is measured.

(b) Does lack of consensus among stakeholders lead to conflict (providing low-income citizens with access to water vs. keeping prices low for those with service)?

The lack of consensus might reflect differences in “interests” or differences in “personal values.” Whatever the source, disagreements tend to lead to delays and/or political infighting.

(c) Do the sector regulators in the nation under consideration have strategies for addressing technical issues (that uncover facts)?

Processes that involve workshops can resolve technical issues. However, much depends on the time horizons of decision-makers.

(d) Do the sector regulators have a strategy for addressing adaptive issues (those requiring that leaders identify challenges, disclose threats, expose real conflicts, and challenge existing norms)?

The focus of this question is on leadership. It may be that selection/appointment processes and government priorities are the major determinants of the types of individuals serving as commissioners and executive directors. In fact, the organizational structure issues warrant greater analysis. Is there evidence of excessive hierarchical structure for the agency or agencies under investigation?

This list of questions is not offered as a shopping list from which an analyst could pick and choose. Each item sheds light on the many factors affecting an operator’s ability to achieve financial sustainability. Hopefully, these questions will provide some guidance to those responsible for making international investment decisions.

Figure 1 comes full circle when comparing actual infrastructure sector performance against the expected performance articulated by political leaders. Absent quantifiable goals and prioritized objectives, it would be difficult to create performance scorecards for regulatory systems. Clearly, if the targets associated with policy objectives are unrealistic, the regulatory process will be perceived as having failed. Thus, identifying and communicating key objectives is an important task for policymakers. The vision should stretch capabilities—but not be unrealistic. If visions are not grounded in reality, rhetoric rules the day—ultimately leading to disappointment and to a denial of legitimacy for regulatory commissions. Panizza and Yañez (2006) document citizen discontent with reforms in Latin America, where surveys find that people tend to associate economic downturns with recent policy initiatives. In their role as educators, regulators must interact with the various stakeholders—setting realistic objectives, explaining how policies have been designed to promote good sector performance, and monitoring the degree to which goals are achieved.

When important social objectives are realized, policymakers, managers, and consumers are likely to be content with the outcome. A record of accomplishment yields broad support for industry, government, and the regulatory system that devised efficiency-enhancing incentives. With improved performance, stakeholders gain confidence in the regulatory system. They trust the agency that promotes higher levels of service penetration and improves prospects for other sectors that depend on energy, telecommunications, water, and transport. A sound regulatory
system can instill confidence within the international investment community: the resulting initiatives give citizens hope and move nations forward.

References


