ECARES

Infrastructure and Corruption: a Brief Survey

Antonio Estache
SBS-EM, ECARES, Université Libre de Bruxelles and CEPR

ECARES working paper 2014-37

ECARES
ULB - CP 114/04
50, F.D. Roosevelt Ave., B-1050 Brussels BELGIUM
www.ecares.org

Infrastructure and corruption: a brief survey

Antonio Estache

ECARES, Université libre de Bruxelles

CEPR, London

April 2014

This short paper takes stock of our collective knowledge on the importance of corruption in the infrastructure. It covers the measurement, the effects on the sector performance and the interactions with other sectors. It concludes with a few recommendations for the international community.

1. Introduction [1]

Infrastructure services and investment represent an exceptionally large share of any economy. Infrastructure related expenditure add up to 12-15% of GDP in most countries of the world. This is 50% to 100% more than what countries spend on average on health or on education for instance. Over 80% of this amount is on average public and it is closer to 90% in many of the poorest countries. These are very significant amount.

Between 20% and 50% of infrastructure expenditures (depending on the level of development) are spent on investment projects while the rest is to operate and maintain the assets. Transport investment alone represent 1-2% of GDP for instance on average. Much of this investment takes place in the form of high cost projects which add up to much large amounts than almost any other sectoral project. The numbers involved and the nature of the projects are likely to make the sector an easy target for unethical actors in countries with weak governance. This is not news..

The paper reviews how much things have improved in the last 10 years which is the last time the international community tried to point to the risks in some structured way in an effort coordinated by the World Bank but associating most of the key international stakeholders (Kenny (2008)). To take stock of the improvements in our collective knowledge about the facts and their consequences, the paper covers the key dimensions of corruption in infrastructure--defined here as the sum of the activities covering the provision of utilities and transport services. All of these activities include a significant construction component and corruption in construction is thus also covered. The discussion is organized around a set of key themes:

(i) The measurement of corruption in infrastructure
(ii) The sector specific governance distortions resulting from corruption
(iii) The interactions between infrastructure corruption and other explanatory factors?
(iv) To what extent is sector performance distorted by corruption?

[1] The paper has benefited from discussions with Estelle Cantillon, Nastassia Leszczynska, Richard Schlirf and Tina Soreide. Any mistake or misinterpretation is however my responsibility only.

2. Measuring corruption in infrastructure

There are many ways of corrupting infrastructure related decision. Stansbury and Stansbury (2008) provide quite an impressive and exhaustive list of tricks of the trade. Many of these are not really being monitored. But many are picked up by the large number of indicators covered by international datasets and academic researchers. There is, however, no single way of classifying the long list all indicators or proxies that can be identified in the literature to characterize corruption. The following may be a useful one in the context of utilities and transport services. It is based on a review of the datasets commonly used in the academic and policy literature suggests. Datasets can relatively easily be categorized into at least ten broad types of indicators of corruption:

(i) perception indicators, by far the most widely quoted (Transparency International or the World Bank Governance indicators, see also Kaufmann and Kraai (2006) for instance)
(ii) indicators based on surveys/questionnaires focusing on direct experience with corruption (e.g. Svenson (2003), for what may be the first high profile evidence of the importance of these indicators which have since been collected more systematically by the World Bank Enterprise survey (WBES) and the Business Enterprise Economic Surveys (BEES))
(iii) indicators extracted from legal cases records or from audits by national accounting offices (e.g. Ferraz and Finan (2008))
(iv) indicators generated from experimental evidence generated in laboratories (e.g. Abbink and Serra (2012))
(v) indicators from experimental evidence generated in the field (Duflo et al.(2012), Olken and Baron (2009), Sequeira and Djankov (2010), Sequeira (2013))
(vi) indicators generated from the benchmarking or the assessment of incoherencies in public data on cost or production (e.g. from measures of the degree of inefficiency generated from benchmarking exercises for regulated companies) (e.g. Dal Bo and Rossi (2008))
(vii) indicators generated from incoherencies in administrative expenditure (e.g. Olken (2007), Reinikka and Svensson (2006))
(viii) indicators generated from incoherencies in asset sales data (e.g. Fisman and Wang (2011))
(ix) indicators derived from the benchmarking of private or public procurement data (e.g. Estache and Iimi (2011) for developing countries and Coviello and Galiarducci (2011) for a developed country (Italy) and Cole and Tran (2011) for a creative comparison of public and private procurement)
(x) indicators derived from more institutional assessment of cross-ownership of assets or biases in contracts equivalent to those conducted by competition agencies to identify risks of collusion. (e.g. Faccio (2006), Faccio et al. (2006) or Ziebrowski et al. (2004))

Note that the efforts to generate relevant data on the sector reflect efforts to monitor corruption or governance issues at three different levels: the macro/sector level, the firm level or the project level. Most perception indicators are reported at the macro/or sector level. This is true for global data sets such as those produced by Transparency International as well as for the growing number of subjective performance indicators generates by OECD countries, and in particular by the European Commission and the European Parliament. For

developing countries at least there a growing number of countries for which information is collected and reported at the firm level for a growing number of countries.

To get a sense of whether we are collectively improving our knowledge, it is useful to start with a first stock taking exercise that took place in the mid-2000s at the World Bank. Kenny (2008), then working in the Infrastructure Vice-Presidency of the World Bank, undertook one of the 1st high profile inventories of corruption indicators in infrastructure. Even if it did not include some of the dimensions of the above list, for the most widely quoted indicators, it was quite a thorough diagnostic which provides a useful and robust benchmark.

The update and broadening of his list suggests that coverage and precision have not improved much. This is indeed a sector for which a detailed measurement of the extent of corruption continues to be dominated by subjective indicators and not that many of them to begin with. Exceptions include efforts by the European Commission to document more systematically some dimensions of corruption in the sector, in particular in the context of public sector procurement with and without EU financing. But most of this information is confidential and only available in a digested synthetic way to researchers, analysts and watchdogs. The same observation applies to the procurement data for all major multilateral and bilateral donor agencies that tend to be big players in the financing of infrastructure in developing and transition economies. Enterprise surveys are the other novelty since the initial benchmark paper. In practice, for anyone interested only in infrastructure, they are quite a disappointment. Sector coverage is spotty and quite often infrastructure activities are not picked up by the survey.

There is however enough data to be able to provide a reasonable assessment of the state of matters. Overall, three characteristics stand out. They deal with coverage, confidentiality and the sector specificity of the characteristics picked up by surveys.

First, indicators continue to be dominated by the concerns of investors rather than by those of consumers and taxpayers. There is some illusion of a broadening awareness that results from the fact that many international watchdogs are happy to report some of the popular subjective indicators as part of their global datasets. Indeed, a quick overview of data availability identifies at least 18 datasets that claim to provide international comparisons of corruption in infrastructure (Daxbek and Estache (2014)).[2] This is misleading because most simply recycle the two or three main perception datasets and repackage them to meet their own agenda.

Second, key information continues to be highly confidential. This is due to the high political sensitivity of the information. In many countries, there are a few national companies responsible for the delivery of infrastructure services and any concern for corruption has an impact on the international image of these companies and hence on their market access potential. It is also due to the fact that it is very likely that many of the perception or factual surveys conducted would enjoy a much lower response rate if there was a possibility that the information could be used to identify specific companies. The

[2] Bertelsmann, Brookings (with World Bank), Democracy barometer, Doing Business, Economist Intelligence Unit, Enterprise BEEPS Survey (World Bank), European Commission - Central Exclusion Database, Global Insight, Global Integrity, Inter American Development Bank, OECD – Bribery, OECD - Fighting corruption in the public sector, Open Budget Index, Transparency International, World Economic Forums, Worldwide Governance Indicator.

concern is all the more serious that there is some evidence that corruption perceptions can be good indicators of corruption realities even if there are obvious possibilities of biases in both perception and measurement of corruption (Olken (2009)).

Third, the information collected is not really tailored to the characteristics of the sector. It is puzzling for instance to see how naïve a lot of the users of cost data continue to be at a time our collective understanding of the importance of creative accounting. It is as if Enron had never happened. It is as if the information collected by National audit office at the firm or contract level was irrelevant. Because competition is quite limited in key infrastructure activities, information asymmetries happen and are not just an interesting theoretical concepts. Firms underinvest or under-maintain. Firms, overcharge for investment or provide the wrong investment quality. These are contract violations which are well known and yet widely tolerated. They are often related to corruption or at least breaches of ethical behaviour but can only be identified in an ad-hoc way as a result of case specific audits rather than from systematic documentation of comparable cases. This may be why there is so little academic research and why so many costs indicators being monitored by regulators or procurement agencies need to be significantly more precise to be able to distinguish between corruption and incompetence when costs are too high or supply insufficient.

3. What sector governance decisions and services are distorted by corruption?

Governance failures that can be tracked to corruption are quite common in infrastructure (Benitez et al (2012)). The main challenge is to try to classify them. One approach to identify the main set of governance decisions potentially distorted by corruption is to track the equivalent of the life cycle of an infrastructure service. Somewhat simplifying the real process, five main stages can be identified:

(i) the market structure design, including the institutional support for the sector supervision
(ii) the decisions on the financing of the sector
(iii) the procurement of investment, maintenance and operational needs
(iv) the construction stage
(v) the actual delivery of the services.

The first door to corruption is as basic as the design of the sector. In many countries, infrastructure sectors have been restructured to increase the scope of competition in the delivery of services. In that process, the planning and regulatory functions have also been redesigned. Planning has largely been phased out as a result of fears for excessive government intervention in the investment process. This is clear for telecoms, energy and to some extent to transport infrastructure. It is much less clear for water and sanitation where national and subnational governments are still very present (e.g. Bardhan and Mookherjee (2006), Asthana (2008, 2012). Regulation is now widely seen as the responsibility of new institutions, separated from the sector ministry. In many countries as well, an additional institutional change has been the increased decentralization of key decisions.

The three institutional dimensions (planning, regulating, and investing) can be associated with corrupt distortions of the decision-making process. Overinvestment or misguided investment that favour easily identifiable construction companies have long been known characteristics of the sector (white elephants or roads to no-where). Bel et al. (2013)

document the extent of the problem in Spain for instance. Flyvbjerg et al. (2003, 2012) have documented a much broader set of cases in their assessments of the failures of mega-projects. If many of these cases are related to incompetent or failed planning, many can also be tracked to collusion between politicians concerned with re-elections, concerned with campaign financing or simply with cash payments to a Swiss Bank account and construction companies or service operators keen to expand markets.

The second stage is the financing stage. This may be the least well studied and the least well understood of the stages in terms of its potential source of corruption in the industry. It is however relatively well known that various sources of public and private financing have their preferences for partnerships in the delivery of public infrastructure projects under various types of PPP arrangements. Biases in the packaging of financial arrangements to support national champions may be seen as reasonable forms of industrial policy in some countries, but from the viewpoint of consumers or taxpayers, they could just as easily be perceived as high risk potentially corrupt strategies when these result in higher than needed costs to users and/or taxpayers. For developing countries, this is one of the ways in which the old fashion tied aid continues to live.

The third stage is the procurement stage. Of particular interest is the process and technique adopted to award contract. In this case also, there is an ample literature on how these markets can be distorted by corrupt practices. Many of these distortions are recognized by the national audit offices. The French and the Belgian public auditors have for instance recently made it to the headlines in the media for identifying distortions in the award of contracts. Competition agencies in many countries have also been quite effective at raising concern with collusion between key actors to minimize competition. Piga (2013) for instance summarizes many of the key issues in the context of OECD countries. Estache and Iimi (2011) raise equivalent issues for developing countries and Nag (2013) provides a fairly detailed country specific case study of Indian railways. Auriol and Blanc (2009) provide the equivalent for water and energy in SSA. Kenny (2010) provides a useful discussion of how much the construction phase of any public investment is open to corrupt practices. Kenny and Musatova (2011) also show how often procurement issues can be used as red flags for risks of corruption in infrastructure. The mechanics are simple. They boil down to inflating cost and somehow sharing the cost mark-up. The victims of the trick tend to be users, taxpayers and excluded potential entrants.

An additional subtle dimension connected to corrupt practice is the renegotiation of contracts. The relevance of strategic bidding in the sector in the context of the assessment of procurement processes is well documented in the academic and policy literature (see Estache and Iimi (2011) for an overview). But there is also a lot of evidence that this strategic bidding leads to renegotiations which can also be connected to corrupt practice (eg. Guasch and Straub (2009), Gassner et al. (2007) or Andres et al. (2013)). The problem is particularly serious in the water and sanitation sector and in the context of toll roads. In both cases, they end up costing significantly to the taxpayers rather than to users since renegotiations are often related to increased subsidies in the sector.

The fourth is the construction stage. Kenny (2007) has been one of the first to raise the issue of construction processes and contracts. Flyvbjerg (2003, 2012) and his co-authors have also significantly contributed to our collective knowledge on the size and the mechanics of the corruption of processes. Most recently, Cole and Tran (2011) added useful insights with new empirical research techniques, showing how corruption masked by

creative cost accounting could lead to a doubling of real profits in their study of a series of contracts for a construction firm.

The final stage of the "infrastructure life-cycle" is the actual delivery of the service. This is where perception indicators and surveys focus most of the evidence. Transparency International bribery surveys for instance are quite revealing of the importance of the problem in the sector. It is a lot more obvious to the general public than the other three stages and is hence a lot better recognized and appreciated. But there are many more field experiences that make similar points in country and sector specific cases. (e.g. Olken and Barron (2009))

4. How well can we distinguish between corruption and other explanatory factors?

Besides the obvious econometrics issues which go well beyond the scope of this note, there are a number of possible sources of confusion when it comes to distinguishing between corruption and other factors in the context of infrastructure services. This is particularly the case for the segments of the industry not subject to competition. Three stand out. The first is the large scope for creative accounting. The second, to some extent related, is the scope for manipulation of transfer pricing. The third one is the incompetence or limited capacity of the regulators.

Creative accounting is not illegal as long as it is not constrained by regulations. Creative accounting allows regulated companies to inflate costs or optimize cost allocation rules between regulated and non-regulated parts of an industry when costs are hard to monitor by regulators. When tolerated, it leads to inefficiency and unfair treatments of users (and often taxpayers) equivalent to those observed when corruption takes places. Unfortunately, even if cost allocation games are well known techniques in any industry in which there is scope for internal cross subsidies, few countries have adopted regulatory accounting guidelines for their regulated industries. The main exceptions are a few OCED countries (e.g. UK, Australia, Canada, and New Zealand) across infrastructure sectors and a few African (e.g. Mali) or Latin American countries (e.g. Brazil, Chile, Colombia or Peru) for some specific sectors. [3]

Creative transfer pricing is a particular form of creative cost accounting that deserves a specific mention in the context of a discussion of corruption like behaviour which is not really viewed as corruption by many observers. A bit of understanding of the nature of the business is useful here. Consider the water and sanitation sector. Two of its "inputs" are of particular interest in view of the fact that their costing can relatively easily be subject to transfer pricing or comparable tricks. The first are the chemicals typically used in the production process of water. The second is the software used to generate customer related information. Both inputs can be produced in-house or outsourced. When outsourced, both can be sold to the operator by affiliated companies with which they sign long term contracts. As long as the pricing is competitive, there is no issue. When it is not, the water users end up paying too much. In the case of the software for instance, it is not uncommon to see the companies bill over and over again an R&D component that has already been

[3] The adoption of improved accounting guidelines in the case of Mali has allowed a detailed post-mortem assessment of the cancellation of the concession in that country. It also allowed an estimation of the rent generated by the reform and of its distribution between the various stakeholders (see Estache and Griffell-Tatje (2013) for details.

amortized but never considering an alternative more cost effective supplier. This is not corruption indeed as long as it is tolerated by the authorities. But the outcome is the same.

This brings to a discussion of incompetence and/or limited capacity. As suggested in Estache and Wren-Lewis (2012), corruption is the outcome of an inability of institutions to come up with corruption proof service delivery. Creative cost accounting and transfer pricing are the outcome of a failure to introduce proper accounting guidelines in which the margin for cost gaming is relatively large and possibly larger than in many other industries. The size of projects and of business operations is quite large and little twist go a long way. Little twist are just as important as the red flags that have been put in place since the late 2000s in the sector. They probably deserve more attention than they currently do. Otherwise, incompetence or limited ability will continue to be easy to blame, where the real problem is corruption and the manipulation of the public interest for private profit at the expense of users and taxpayers.

5. To what extent is sector performance distorted by corruption?

Conceptually, the main distortions introduced at each stage influence 8 main variables:

(i) the degree of competition i.e. the number of potential participants in the market)
(ii) the quantity of output
(iii) the quality of the output
(iv) the cost of the output
(v) the price of the output
(vi) the profit of the provider
(vii) the sector's distributional characteristics (i.e. the fairness of access and consumption levels)
(viii) the fiscal consequences.

The expected size and sign of the effect of corruption on each of these variables depends on the specific design of regulation and on the effectiveness of the regulatory agencies in enforcing the regulation. On average however, the literature expects corruption to increase prices, costs and profits margins and to close the door to potential entrants in the market (see Estache and Iimi (2011) for instance for evidence in the context of distortions in procurement processes in developing countries). One of the most policy relevant results of this research is that the limits to entry tend to penalize relatively more small and/or local potential providers.

The effects of corruption on quality and output level and their effects on equity are less predictable even conceptually (see Estache and Wren-Lewis (2009) for instance for a review of the theory). Both quantity and quality can be over or under supplied. For the output level, overinvestment is what characterizes roads with excess capacity to nowhere or airports without no traffic for instance. White elephants are indeed a typical example of oversupply or overinvestment. At the other extreme, underinvestment is what characterizes the recurrent postponing of service coverage in areas perceived by operators to be high commercial risks areas or the tolerance for abnormal service failures. Conceptually, rationing in quantity and in quality can indeed just as likely be the outcome of corruption just as white elephants are if the regulatory environment allows corruption to distort incentives. Both types of outcome can have dramatic social consequences. Slowing down

investments tends to slow improvements in access rates and since access gaps tend to penalize the poor, corruption that slows investment leads to inequitable results. Alternatively, when corruption leads to gold-plating, it can make services unaffordable for the poorest users.

The theoretical fiscal effects are more subtle but just as predictable. If incentives allow over charging and the costs is passed on to the taxpayers, the fiscal effect of corruption is likely to be positive. At the other extreme, when corruption leads to a transfer of responsibilities to private operators who manage to create a rent without relying on subsidies, the fiscal payoff may be positive and simply translate from a switch from taxpayers to users are a source of rent for the operators.

Empirically, the theoretical expectations tend to be validated. The contributors to Estache (2011) provide a broad set of illustrations of cases in which corruption or collusion reduce the level of competition in network industries. The website of most competition agencies across the OECD provide ampler evidence. Infrastructure corruption cases happen and are increasingly covered by the media. Infrastructure corruption is also increasingly well covered by academic research but is significantly constrained by data availability. A lot of the research relies on proxies which allow for a sense of the importance but no real robust evidence. For instance, Estache, Goicoechea and Trujillo (2009) provide evidence of correlation between corruption and a number of variables of interest across utilities but they do not really establish causality and show in particular that corruption leads to undersupply of core services. Anbarci et al (2009) confirm the results for the water sector. Del Bo and Rossi (2009) and Wren-Lewis (2013) provide robust evidence of the undesirable effects of corruption for the Latin American energy sector. Promising thorough assessments of specific case studies based on experimental or quasi-experimental methods are starting to validate many of the early assessments. Sequeira and Djankov (2010) and Sequeira (2013) cover the transport sector in Africa for instance.

A growing source of evidence is being generated by large consulting firms relying on less technical approaches to assess the size and the costs of corruption. Increasingly these firms have started to generate country risks assessments which cover corruption and infrastructure (most of the time recycling information from other sources). Increasingly also, they are starting to generate widely quoted estimations (however, unfortunately not always based on very transparent methodologies which impede the equivalent of peer reviewing quality achieved by academic publications). A good example of useful policy oriented empirical work conducted by these growing actors of the knowledge economy is the recent study conducted by PwC and Ecorys (in collaboration with Utrecht University) to size the corruption problem in Europe's procurement between 2006 and 2010 (PwC (2013)). The approach is a multistage approach that identifies red flags which can then be used to assess the odds of corrupt practices.

Despite some limitations (e.g. 45% of corruption remains unexplained), the approach provides useful orders of magnitude to increase awareness of the importance of corruption risks in infrastructure. For instance, they estimate an 11-21% probability of corruption in public procurement of construction work for motorways, 9-18% in railway track construction materials and supplies, 28-43% in waste water treatment plants and 37-53% in runway construction works. The cost of corruption would be around 2.9% and 4.4% of the

total value of procurement based on a sample of 5 sectors of the 8 EU states covered by this diagnostic (including mostly infrastructure related activities).[4]

To conclude, the discussion of the effects of corruption, it is necessary to make some comments on the recurrent reference to the greasing hand role of corruption in the literature. Even if, to my knowledge, there is not real detailed academic study of the assumption in the context infrastructure, there is a lot of anecdotal evidence that suggests that paying bribes can be used to speed up service. The launch of the liberalization of the telecoms sector in Argentina to end a very ineffective public monopoly in the early 1990s was often credited to a breach in desirable governance practices with high payoffs to the country for instance. However, Aidt (2009) shows why most of this anecdotal evidence and occasional academic supportin evidence is not consistent with the long run sustainability of growth policies. The debate is clearly not over and with some direct relevance to the infrastructure sectors in which the quality of instittutions matters so much to ensure the fair protection of users, investors and taxpayers. Recently, Meon and Weill (2010) argued that in the context of extremely ineffective institutional environments, there is the possiblity that corruption is less detrimental and maybe helpful to efficiency in countries where institutions are quite ineffective. More is clearly needed to settle the debate even if the case, if any, for greasing is becoming increasingly narrow as our collective understanding of the consequences improves.

The best indication of the strength of this conviction is reflected in the inclusion of questions on corruption in most types of investment climate surveys. The odd fact, however, is that even if the unhappiness with corruption is identified in the questionnaires, the data generated is often not available. This is done to preserve confidentiality and to avoid legal conflicts with the operators of monopolies responsible for energy or water distribution for instance, the information on these specific industries is never available to the users of these data sets. Digging into the BEEPs for instance reveals very few countries for which the details are available for infrastructure related companies as providers. There is thus little that can be discussed that is really specific to infrastructure.

There is however one type of international projects that deserves some mention here. Project funded under some type of project finance agreement involve financial institutions which since 2003 have been asked to adhere to what are known as the Ecuador Principles (EP). These principles define a framework used by these financial institutions to assess and manage the environmental and social impacts of projects. based on the International Finance Corporation ("IFC") Performance Standards and World Bank Environmental Health and Safety Guidelines. For now, they have been voluntarily adopted by around 80 financial institutions which are key players in the business. The framework has enjoyed its 3rd upgrade in 2013 and deals with both environmental and human rights. To the extent that underpeforming on both grounds are easy ways of reducing costs, they are very likely to be tempting for corrupt interference. The growing number of affiliates to the Ecuador Principle are thus likely to reduce corruption in high profile PPPs. [5]

[4] Note that I tried to get access to the data but the EU and PwC both rejected the request to share the core data to protect the privacy of their sources. This is a major drawback as compared to the requirements imposed by academic standards to share data. Moreover, it is a bit out when considering that this is research that is supposed to increase transparency of undesirable practices and considering that it was generated using public money. *(It is hard not to be temped to establish the parallel with the idea of using public resources for a private interest…)*

[5] Specifically, this concerns project finance transactions with total project capital costs of US $10 million or more and oject-related corporate loans with a tenor of at least two years where the majority of the loan is related to a single project over

Environmental NGOs continue to calling for a broader scope of the EPs for some time. If this were considered, it could be interesting to look at how explicitly governance and corruption concerns could be adressed as well. It is a real possibility since EP now also concerns project finance advisory services (defined as the provision of advice on the potential financing of a development where one of the options may be project finance) where total project capital costs are US $10 million or more. Including corruption in an explicit reporting requirements check list of these services could help. At this stage, EP includes that the financial institutions have to require their borrowers to publish the environmental impact assessments and the environmental and social management plans for projects online and report in accordance with new minimum reporting requirements. There is however no requirements on costs accounting that accounts for the specificity of regulated industries when the PPP are associated with a regulated activity.

6. Concluding comments

Although a lot has already been achieved in terms of identifying sources of corruption and minimizing the risks of corruption taking place, a lot still remains to be done in the context of infrastructure. The brief survey points to at least 5 areas in which the international community could do better at relatively low cost:

(i) Increasing and broadening the efforts to measure both subjectively and objectively infrastructure specific corruption
(ii) Modernizing procurement practices adopted by international organizations to make the most of competition and reduce the scope for protection of national champions, incumbent and other traditional actors with long records of established links to politicians and/or parties
(iii) Defining and imposing international accounting rules that are specific to regulated public services (and which could then be tailored to meet specific contractual requirements); these need to make the most of our understanding of common practice in cost accounting, cost allocation and transfer pricing
(iv) Broadening the coverage of international ethical responsibility efforts such as the Ecuador Principles to encourage efforts to behave ethically in PPPs or alternatively, develop an equivalent international principle to include financial agencies, construction companies and large international infrastructure service providers.
(v) Continuing the efforts to form inclusive multi-stakeholder approaches to monitor the sector including regulators, operators, users and civil society organizations.

which the borrower has effective control (the aggregate of the loan must be US $100 million or more and the financial institution's individual commitment at least US $50 million)

References

Abbink, K., and D. Serra, 2012, Anticorruption policies: Lessons from the lab. Mimeo, Available from http://faculty.smu.edu/dserra/AbbinkSerra_Final.pdf

Abe, K. and J.S. Wilson, 2008, "Governance, Corruption and Trade in the Asia Pacific Region", World Bank, Policy Research Working paper, 4371

Aidt, T.S, 2009, "Corruption, institutions, and economic development," *Oxford Review of Economic Policy*, vol. 25(2), pages 271-291, Summer.

Alby, P., J.-J. Dethier and S. Straub, 2013. "Firms Operating under Electricity Constraints in Developing Countries," *World Bank Economic Review*, World Bank Group, vol. 27(1), pages 109-132

Anbarci, N. , M. Escaleras and C. A. Register, 2009, "The Ill Effects of Public Sector Corruption in the Water and Sanitation Sector,"Land Economics, University of Wisconsin Press, vol. 85(2), pages 363-377.

Andres, L.A., J. Schwartz and J. L. Guasch, 2013, Uncovering the Drivers of Utility Performance : Lessons from Latin America and the Caribbean on the Role of the Private Sector, Regulation, and Governance in the Power, Water, and Telecommunication Sectors, The World Bank

Angelopoulos, K., A. Philippopoulos, and V. Vassilatos, 2009, "The social costs of rent seeking in Europe", *European Journal of Political Economy,* 25, Page 280-299

Asthana, A., 2012, "Decentralisation and corruption revisited: Evidence from a Natural Experiment", *Public Administration and Development*, 32, 27-37

Asthana, A., 2008, " Decentralization and corruption: evidence from drinking water sector", *Public Administration and Development* 28(3) 181-189

Auriol, E. and A. Blanc, 2009. "Capture and corruption in public utilities: The cases of water and electricity in Sub-Saharan Africa," *Utilities Policy*, Elsevier, vol. 17(2), pages 203-216, June.

Baksi, S., P. Bose and M. Pandey, 2009, "The impact of liberalization on bureaucratic corruption", *Journal of Economic Behavior and Organization*, 72(1), 214-224

Bardhan, P. and D. Mookherjee, 2006, "Decentralization and accountability in infrastructure deliverey in developing countries", , *Economic Journal*, 116 (January), 101–127

Bel, G. , A. Estache and R. Foucart, 2013, "Transport infrastructure failure: mismanagement and incompetence or political capture", in T. Søreide and A. Williams (Eds.) *Corruption, Grabbing and Development: Real World Challenges.* Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing

Benitez, D., A. Estache and T. Søreide, 2012. "Infrastructure policy and governance failures," CMI Working Papers 5, CMI (Chr. Michelsen Institute), Bergen, Norway

Berg, S.V., J. Liangliang and L., Chen, 2012. "Regulation and corporate corruption: New evidence from the telecom sector," *Journal of Comparative Economics*, vol. 40(1), pages 22-43.

Berg, S. V., J. Liangliang and C. Lin, 2011. "Universal service subsidies and cost overstatement: Evidence from the U.S. telecommunications sector," *Telecommunications Policy*, vol. 35(7), pages 583-591, August.

Berg, S.V., L. Liangliang and C. Lin, 2011. "Incentives for cost shifting and misreporting: US rural universal service subsidies, 1991–2002," *Information Economics and Policy,* vol. 23(3), pages 287-295

Brollo, F., 2008. "Who Is Punishing Corrupt Politicians - Voters or the Central Government? Evidence from the Brazilian Anti-Corruption Program," Boston University - Department of Economics - The Institute for Economic Development Working Papers Seriesdp-168, Boston University - Department of Economics

Bromley,D. and J. Folrz, 2011, "Sustainability under siege: Transport costs and corruption on West", *Natural Resources Forum*, 35, 32–48

Bucciol, A., O. Chillemi and G. Palazzi, 2013. "Cost overrun and auction format in small size public works," European Journal of Political Economy, vol. 30(C), pages 35-42.

Cole S. and A. Tran, "Evidence from the Firm: A New Approach to Understanding Corruption," 2011, in Rose-Ackerman and Soreide eds. *International Handbook on the Economics of Corruption (Volume II),* 408-418

Coviello, D. and S. Gagliarducci, 2010. "Building Political Collusion: Evidence from Procurement Auctions," *IZA Discussion Papers*, 4939, Institute for the Study of Labor (IZA).

Czernich, N., Falck, O., Kretschmer, T., Woessmann,L., 2011. "Broadband infrastructure and economic growth", *Economic Journal* , 121, 505-32.

Dal Bo, E. and M. Rossi, 2007, "Corruption and inefficiency: Theory and evidence from electric utilities", *Journal of Public Economics,* vol. 91(5-6),

Davis, J. , 2004. "Corruption in Public Service Delivery: Experience from South Asia's Water and Sanitation Sector." *World Development Report,* 32(1): 53–71.

Daxbek, V. and A. Estache, 2014, How well do we really measure corruption in infrastructure?, mimeo, ECARES, ULB

De, P., 2012, "Does governance matter for infrastructure development? Empirical Evidence from Asia", *Journal of Infrastructure Development*, 4(2), 153-180

De la Croix, D. and C. Delavallade, 2009, «Growth, Public Investment and Corruption with Failing Institutions, *Economics of Governance*, 10(3), 222-239

Dreher, A. and M. Gassebner, 2013, "Greasing the wheels of entrepreneurship? The impact of regulations and corruption on firm entry", *Public Choice*, 155(3-4), 413-432

Duflo, E, F. Devoto, P. Dupa, W. Pariente and V. Pons, 2012, "Happiness on Tap: Piped Water Adoption in Urban Morocco" , *American Economic Journal: Economic Policy*, Vol.4 No. 4: 68-99, November.

Estache, A. and E. Grifell-Tatje, 2013, "How (un)even was the distribution of the impacts of Mali's water privatization across stakeholders?" (2013), *Journal of Development Studies*, Volume 49 (4), April, pages 483-499

Estache, A. and L. Wren-Lewis, 2012, "What anti-corruption policies can learn from regulation theory" , in S. Rose-Ackerman and T. Soreide, *The International Handbook of Anti-Corruption Economics (Vol. II),*, pp269-298

Estache, A. and A. Iimi, 2011*, The Economics of Infrastructure Procurement: Theory and Evidence*, CEPR, London

Estache, A., ed., 2011, *Emerging Issues in Competition, Collusion, and Regulation of Network Industries*, CEPR, London

Estache, A. and L. Wren-Lewis, 2009, *"Towards a Theory of Regulation for Developing Countries: Following Jean-Jacques Laffont's Lead",* (2009), **Journal of Economic Literature,** (With L. Wren-Lewis), September 47(3):729-70

Estache, A., A. Goicoechea and L. Trujillo, 2009. "Utilities reforms and corruption in developing countries," *Utilities Policy*, vol. 17(2), pages 191-202, June

Estache, A., V. Foster and Q. Wodon, 2002, *Accounting for Poverty in Infrastructure Reform – Learning from Latin America's Experience,* World Bank Institute Publications, Studies in Development Series

Faccio, M., 2006, "Politically connected firms", *American Economic Review*, 96(1), 369-286

Faccio, M., R.W. Masulisand J.J. McConnell, 2006, "Political connections and corporate bailouts", *Journal of Finance*, 61(6): 2597-635

Ferraz, C. and F. Finan, 2008, "Exposing corrupt politicians: Evidence from the audits of local governments!", *The Quarterly Journal of Economics*, 123, 703-745

Fisman, R. and Y. Wang, 2011, "Evidence on the existence and impact of corruption in state asset sales in China", mimeo

Flyvbjerg, B. And E. Molloy, 2012, Delusion, Deception and Corruption in Major Infrastructure Projects: Causes, Consequences, Cures, in Susan Rose-Ackerman and Tina Soreide, eds*., International Handbook on the Economics of Corruption, Vol II,* pp. 81-107

Flyvbjerg, B., N. Bruzelius, and W. Rothengatter, 2003*, Megaprojects and Risk: An Anatomy of Ambition*, Cambridge, UK: Cambridge University Press.

Fung, K. C., A. Garcia-Herrero, and F. Ng., 2011, Foreign Direct Investment in Cross-Border Infrastructure Projects, ADBI Working Paper 274, Asian Development Bank Institute

Gassner, K., Popov, A. and N. Pushak, N., 2007, *Does Private Sector Participation Improve Performance in Electricity and Water Distribution?* Washington DC: World Bank

Guasch, J.L. and S. Straub, 2009. "Corruption and concession renegotiations.: Evidence from the water and transport sectors in Latin America," *Utilities Policy*, vol. 17(2), pages 185-190, June

Halpern, J. , C. Kenny, E. Dickson, D. Erhardt and C. Oliver, 2009. "*Deterring Corruption and Improving Governance in the Urban Water & Sanitation Sector,"* World Bank Other Operational Studies 11737, The World Bank.

Halpern J., Kenny C., Dickson E., Erhardt., Oliver C. 2009, *'Deterring Corruption and Improving Governance in the Electricity Sector: A Sourcebook'*, World Bank, USA

Hawkins, J., 2013, *Reducing corruption in infrastructure,* U4, available at file:///C:/Users/Labo/Downloads/Infrastructure-Anti-Corruption-How-to-Note-June-2013%20(1).pdf

Kaufmann D. and A. Kraay, 2008, "Governance Indicators: Where Are We, Where Should We Be Going?" *The World Bank Research Observer*, vol. 23, no.1, Spring

Kenny,C., 2011. " Publishing Construction Contracts as a Tool for Efficiency and Good Governance - Working Paper 272," Working Papers 272, Center for Global Development.

Kenny, C. and M. Musatova,, 2011. "'Red flags of corruption'in world bank projects : an analysis of infrastructure contracts," in Rose-Ackerman and Soreide, p499-527

Kenny, C. and T. Søreide, 2008. "Grand Corruption in Utilities," *Policy Research Working Paper Series 4805*, The World Bank.

Kenny, C., 2007. "Construction, corruption, and developing countries," *Policy Research Working Paper Series* 4271, The World Bank.

Kenny, C. 2009. "Measuring Corruption in Infrastructure: Evidence from Transition and Developing Countries," *Journal of Development Studies*, , vol. 45(3), pages 314-332.

Kenny, C. 2008. "Transport Construction, Corruption and Developing Countries," *Transport Reviews,* vol. 29(1), pages 21-41, March.

Kirkpatrick, C., D Parker, Zhang, Y F., 2006, "Regulation and Foreign Direct Investment in Infrastructure in Developing Countries: Does Regulation Make a Difference?" *Transnational Corporations* 15(1). pp 143-171

Martimort, D. and S. Straub, 2009. "Infrastructure privatization and changes in corruption patterns: The roots of public discontent," *Journal of Development Economics,,* vol. 90(1), pages 69-84, September.

Méon, P.-G. and P. Weill, 2010. "Is Corruption an Efficient Grease?," *World Development*, vol. 38(3), pages 244-259, March.

Nag, B., 2013, Combating Corruption in Public Procurement - A Case Study of the Indian Railways, . Available at SSRN: http://ssrn.com/abstract=2270030 or http://dx.doi.org/10.2139/ssrn.2270030

Nissanke, M. 2008, Aid effectiveness in infrastructure: a comparative study of East Asia and Sub-Saharan Africa, JBIC, mimeo

Olken, B.A. and P. Barron, 2009. "The Simple Economics of Extortion: Evidence from Trucking in Aceh," *Journal of Political Economy*, vol. 117(3), pages 417-452

Olken, B.A. 2009, Corruption perception vs corruption reality, *Journal of Public Economics*, 93(7-8), pages 950-964

Olken, B.A. 2007. "Monitoring Corruption: Evidence from a Field Experiment in Indonesia," *Journal of Political Economy*,, vol. 115, pages 200-249.

Pearlman, S., 2014, "Officials vs. Thieves: Is Public or Private Expropriation More Harmful to Small Firms", *Journal of Development Studies*

Piga, G.. 2011, " A fighting chance against corruption in public procurement", in Rose-Ackerman and Soreide, pp 141-184

PWC, 2013, Identifying and Reducing Corruption in Public Procurement in the EU, available at
http://ec.europa.eu/anti_fraud/documents/anti-fraud-policy/research-and-studies/identifying_reducing_corruption_in_public_procurement_en.pdf

Raballand, G., S. Refas, M. Beuran and G. Isik, 2012, *Why Does Cargo Spend Weeks in Sub-Saharan African Ports?* Directions in Development Series, Washington DC: The World Bank.

Reinikka R. and J. Svensson, 2006, "Using Micro-surveys to Measure and Explain Corruption", *World Development, 3*4, 2

Rose-Ackerman, S. and T. Soreide, ed., 2012*, International handbook on the economics of corruption, volume two,* Northampton, USA and Cheltenham, UK: Edward Elgar Publishing

Stansbury,C. and N.l Stansbury, 2008, Examples of corruption in infrastructure, Global Infrastructure Anti- Global Infrastructure Anti---Corruption Centre

Seneviratne, D. and Y. Sun, 2013, Infrastructure and Income Distribution in ASEAN-5: What are the Links?, *IMF Working Paper,* WP/13/41

Sequeira, S., 2013, "Tariffs and corruption: evidence from a tariff liberalization program," The London School of Economics and Political Science, London, UK.

Sequeira, S. 2012, Advances in Measuring Corruption in the Field, in Danila Serra, Leonard Wantchekon (ed*.) New Advances in Experimental Research on Corruption* (Research in Experimental Economics, Volume 15), Emerald Group Publishing Limited, pp.145-175

Sequeira, S. snd S Djankov, 2010. "An Empirical Study of Corruption in Ports," *MPRA Paper* 21791, University Library of Munich, Germany.

Serra, D. and L. Wantechekon (eds), 2012*, New advances in experimental research on corruption*, Emerald Publishing Limited

Stansbury,C. and N.l Stansbury, 2008, Examples of corruption in infrastructure, Global Infrastructure Anti- Global Infrastructure Anti---Corruption Centre, available at http://www.waterintegritynetwork.net/index.php?option=com_mtree&task=att_download&link_id=154&cf_id=61

Straub, S. 2011. "Infrastructure and Development: A Critical Appraisal of the Macro-level Literature," *Journal of Development Studies,* , vol. 47(5), pages 683-708.

Svenson, J. , 2003, "Who must pay bribes and how much? Evidence from a cross-section of firms", The Quartely *Journal of Economics,* 118-207-230

Tondel Seim, L. and T. Søreide, 2009. "Bureaucratic complexity and impacts of corruption in utilities," *Utilities Policy,* , vol. 17(2), pages 176-184, June

Trans, A. , 2011, Which regulation reduce corruption?, mimeo, Indiana University

Transparency International, 2008, Global Corruption Report – Corruption in the Water Sector, Cambridge University Press

Vaglisasindi, M., 2011, "Public vs. private governance and performance: evidence from public utility service provision", in Rose-Ackerman and Soreide, pp 185-206

Wells, J., 2012, 'Evidence Review of Corruption and Transparency in Infrastructure Sectors', Department for International Development

Wren-Lewis, L., 2013. "Do infrastructure reforms reduce the effect of corruption ? Theory and evidence from Latin America and the Caribbean," *Policy Research Working Paper Serie*s 6559, The World Bank.

Wei, S.-J. 2000. "How Taxing is Corruption on International Investors?" *Review of Economics and Statistics* 82(1): 1-11.

Ziebrowski, A.J., P Cheng, J.W. Boyd and B.J. Ziebrowski, 2004," Abnormal returns form the Common Stock Investments of Members of the United States", *Journal of Financial and Quantitative Analysis,* 29(4), December, 661-76