

# Emerging-Market Infrastructure Investors: *New Trends for a New Era?*

KASSIA YANOSEK, GREGORY KEEVER, AND RYAN J. ORR

**KASSIA YANOSEK** is a recent graduate of Stanford University, MBA Program, and Harvard University, MPA Program, currently at BP Plc in London, U.K.  
[kassia.yanosek@uk.bp.com](mailto:kassia.yanosek@uk.bp.com)

**GREGORY KEEVER** is partner of Akin Gump Strauss Hauer & Feld, LLP in Los Angeles, CA.  
[gkeever@akingump.com](mailto:gkeever@akingump.com)

**RYAN J. ORR** is an executive director at Collaboratory for Research on Global Projects, Stanford University in Stanford, CA.  
[rjorr@stanford.edu](mailto:rjorr@stanford.edu)

Private-sector investment in emerging-market economies played a central role in infrastructure development during the 1990s. However, the end of that decade saw many major foreign investors reduce their exposure to infrastructure in developing-country markets.<sup>1</sup> The World Bank estimates that approximately 40% of project investment agreements were renegotiated and 160 projects were canceled or became distressed between 1990 and 2004.<sup>2</sup> While private investment in emerging-market infrastructure has decreased over this period, this has hardly brought development to a halt. There are indications that emerging-market investment has increasingly been provided by new players, many of them local or regional developing country investors referred to as “South-South investors.” An important implication of this apparent shift in the investor landscape is that conventional multilateral lending institutions may be disintermediated from the emerging-market infrastructure. As a result, investment and loan conditions associated with and imposed upon developing countries by such multi-lateral institutions could be absent from the investment arrangements made by these new funding sources.

This article examines three research questions:

1. What information is available to describe changes in developing country infrastructure investment since 1990?

2. Does this information suggest changes in trends?
3. Can these trends, if they exist, be characterized on the basis of this information?

The article begins by reviewing changing patterns in infrastructure investment and published evidence that indicates a growing role of South-South investors in emerging-market infrastructure. Problems with private infrastructure during the 1990s—particularly investor-influenced problems—are then assessed and several hypotheses are posited concerning how contemporary projects may offer improvements over those of the 1990s. Next the article draws upon data from the World Bank Public-Private Infrastructure (PPI) database from 1990–2004 to examine two hypotheses: a trend towards increasing involvement of local and regional investors, and a trend towards increasing public-private co-ownership structures. Finally, the article presents a set of anecdotally-based trends concerning the characteristics of the new South-South investors, including cultural aspects and the trading of infrastructure improvements for access to natural resources. These anecdotally-based trends are the basis for a number of research questions that provide opportunities for future researchers to carry this work forward.

## BACKGROUND AND HYPOTHESES

### Global Infrastructure Development During the 1990s

Throughout the 1990s, a wave of deregulation, structural reforms, and privatization policies in many developing nations spurred a flurry of foreign direct investment (FDI) originating in the West, along with hopes for economic growth—as well as solid returns to investors. During the decade, developing countries enjoyed investment commitments of \$755 billion in at least 2,400 infrastructure projects.<sup>3</sup>

However, investment in emerging-market infrastructure had declined by the late 1990s. From 1997 to 2001, investment in privatizations fell by almost 80% and investment in new projects fell by 40%.<sup>4</sup> According to one World Bank study, 41% of infrastructure investment contracts in Latin America and the Caribbean had been or were under renegotiation by 2002.<sup>5</sup> Furthermore, during the period 1990–2004, 160 projects in developing countries were canceled or financially distressed.<sup>6</sup>

### Emerging Players? The Role of South-South Investment

While much attention has been given to the investment and development practices of Western investors, less attention has focused on a major source of investment in emerging-market infrastructure in recent years: the developing countries themselves. Between 1998 and 2004, more than 40% of total investment in emerging-market infrastructure projects originated in developing

countries. Exhibit 1, with data from 1998 to 2003, shows that, while investment from developed country firms has declined slightly since 1998, developing country local investment (in-country investment) has increased from 23% to 40% of total investment in emerging-market infrastructure.

In transportation projects, the large share of South-South investment reflects investment from local contractors. Telecom investments reflect the activities of major firms such as American Movil and the Carso Group (both based in Mexico), and MTN, a company based in South Africa. The energy sector continues to be dominated by utility firms from developed countries. Exhibit 2 illustrates these trends.<sup>7</sup>

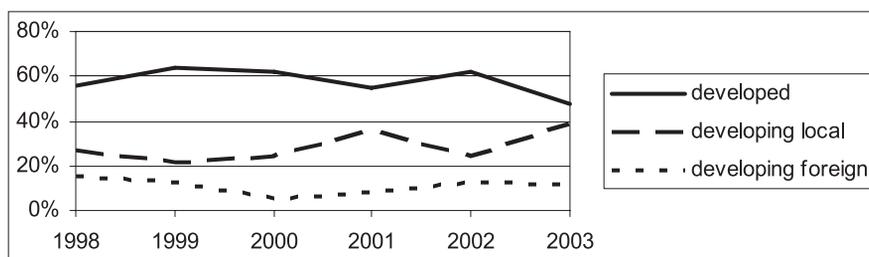
World Bank data are not available for determining how the level of South-South investment during the 1998–2004 period compares with the level of investment during the early to mid 1990s. Therefore, it is difficult to ascertain from these data whether increased South-South investment is a trend beyond the snapshot of activity between 1998 and 2004.

### Evidence of Increasing Lead Investor Roles by Developing Country Sponsors

Evidence suggests that within the period 1998–2004, developing country sponsors have increasingly taken the lead investment position in infrastructure projects. In a 2005 study, the World Bank found that by dividing the 1998–2003 period into two three-year periods, 1998–2000 and 2001–2003, the share of primary sponsors from *developed* countries fell from 57% in the first period to 50% in the second period. The 7% decline was taken up by both

## EXHIBIT 1

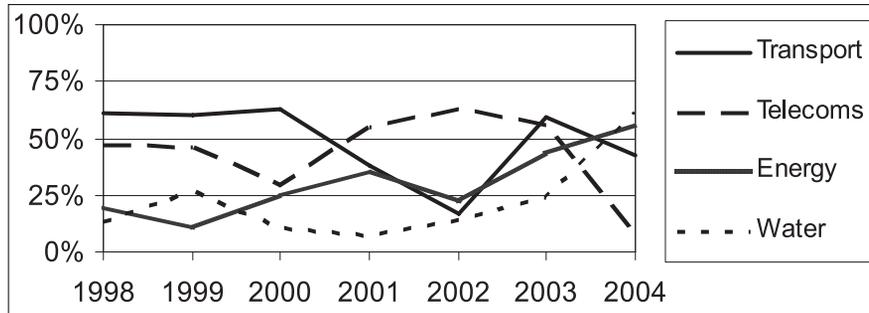
### Private Investment in Developing Countries Infrastructure, by Investor Type, in Percentage



Source: Ettinger, S., Hahn, S. and G. Dallacha. "Developing Country Investors and Operators in Infrastructure." *World Bank Trends and Policy Options Series*, n. 3, May 2005. [hereinafter Ettinger et al., World Bank]

## EXHIBIT 2

### Developing Country Investors' Share of Private Investment in Developing Countries Infrastructure Projects, by Sector, by Percentage of Total



Source: Ettinger et al., World Bank.

local investors (whose share increased from 33% to 36% from the first period to the second period) and developing-country foreign investors<sup>8</sup> (whose share increased from 7% to 12%).<sup>9</sup>

In the period 2001–2004, half of the top ten emerging-market sponsors originated in developing countries, including Reliance (India), Malakoff (Malaysia), America Movil (Mexico), and Gazprom (Russia). South-South investors have recently dominated the telecommunications sector. Out of the ten top telecom projects implemented during this period, nine were sponsored by developing-country investors.<sup>10</sup> Also during this period, four out of the top ten energy investors originated in developing countries: China Light and Power (China), Malakoff (Malaysia), Banpu (Thailand), and Sasol (South Africa).<sup>11</sup>

#### Old Players Leaving the Market, New Players Entering

In the late 1990s and early 2000s, several developed-country players left the market and new investors entered, a phenomenon particularly manifest in the energy sector (see Exhibit 3). Players leaving the energy market included Intergen, El Paso, PSEG, and Enron—many of them leaving foreign emerging markets due to their distressed assets in these regions, corporate decisions to realign balance sheets to favor less-risky domestic markets, or both. New players entering the emerging market IPP sector in the late 1990s and early 2000s include Reliance and Tata (both India), China Light and Power (China), and Globeleq (U.K. government-backed firm formed in 2002

with a charter to invest in emerging-market infrastructure).<sup>12</sup> For a comprehensive review of 68 new players, classified both by sector and by region, see the excellent review by Stephen Ettinger and team.<sup>13</sup>

#### A Review of Problems of the 1990s

Next this article briefly reviews problems occurring in emerging-market infrastructure projects during the 1990s, as analyzed by Collaboratory for Research on Global Projects (CRGP) at Stanford University. Problems heavily influenced by project sponsors are reviewed, and an attempt is made to determine whether new investors are approaching these issues differently than past investors have.

Exhibit 4 offers a compilation of the problems that plagued infrastructure projects during the 1990s. The problems are synthesized from the collection of article prepared in conjunction with CRGP's General Counsels Roundtable<sup>14</sup> and are presented in a matrix format that shows whether the government sponsor or the private sponsor had greater control over the issue at hand. The problems circled are examples of investor-influenced issues.

#### Hypotheses Concerning Changing Patterns of Investment in Response to the 1990s

Here we develop two hypotheses concerning how investors may be taking a different approach in the resolution of two of the investor-influenced problems of the 1990s.

## EXHIBIT 3

### Major Investors in the Emerging Market Power Sector

<u>Old players leaving</u>	<u>New players entering</u>
<ul style="list-style-type: none"> <li>■ Enron</li> <li>■ El Paso</li> <li>■ Intergen</li> <li>■ AEP</li> <li>■ PSEG</li> </ul>	<ul style="list-style-type: none"> <li>■ China Light and Power</li> <li>■ Reliance</li> <li>■ Tata</li> <li>■ Malakoff</li> <li>■ Globeleq</li> </ul>

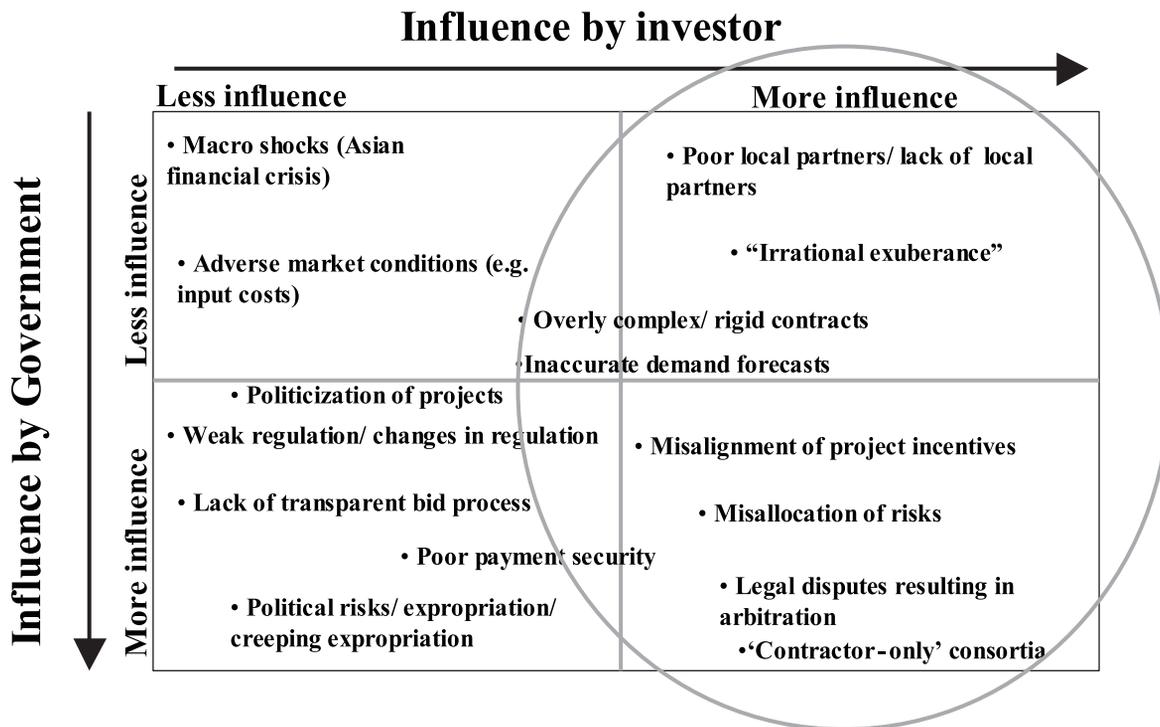
*Adapted from research data from the Stanford PESD program.*

*Misalignment of project incentives*, while broadly defined, can be summarized for this purpose as a project structure that gives the government stakeholder less than sufficient incentive to aggressively pursue the success of the project after financial close. Practitioners and some researchers have conjectured that projects wholly-owned

by private sponsors could be less stable after financial close, as there is no co-ownership incentive to the government sector to help revive the project in the event that it becomes distressed; whereas projects that involve hybrid private and public co-ownership arrangements and co-governance structures could create conditions for a true

## EXHIBIT 4

### Problems of the 1990s: Influence by Government vs. Investors



partnership between the public and private parties with the possibility for more information-sharing, trust, and co-destiny.<sup>15</sup> The key idea here is that if the government is a participant in the project with a direct and material economic interest in the project's returns, than that government—even after elections and extensive changes in political leadership—is more likely to support the private sector in ensuring the success of that project, and is less likely to “let the private sector hang” when there are criticisms from the public about how the project is being managed or when there are shifts in attitudes within the government about the merits of privatization. Equally important, co-ownership would set the stage for more amicable renegotiation of some project terms and conditions after unexpected changes in circumstances, a reality that is inevitable in long term infrastructure investment agreements.<sup>16</sup> Finally, there is always the opposing view that co-ownership complicates decision-making and leads to conflict between the parties, which if true, may counterbalance the positive benefits of co-ownership posited here.

As to *local partner deficiencies*, previous research has identified the importance of capable local partners, particularly in projects where project-related decisions by the local stakeholders occur, often unavoidably, in the context of local and regional politics.<sup>17</sup> Furthermore, a project's ability to succeed can depend on a local partner's understanding of local business culture, idiosyncrasies, and dynamics; local demand and supply markets; and relationships with local businesses and government agencies.

Based on these arguments, we draw two hypotheses. During 1990–2004—and particularly over the past five years, infrastructure projects 1) increasingly involved local or regional sponsors and 2) increasingly were structured with co-ownership between public and private sponsors.

These hypotheses are based on the view that over the past decade-and-a-half, as investors have accumulated the lessons of the large number of projects that were initiated during the first half of the 1990s, they have incrementally adapted their approaches to setting up new projects so as to avoid committing the same mistakes that befell many of the projects set up toward the beginning of this period.

Finally, it may be the case that the two hypotheses are interlinked. Local and regional investors within the emerging markets may be more comfortable entering

into public-private co-ownership arrangements for infrastructure because they are familiar with the structure, policies, and preferences of these host governments, and thus the trend towards hypothesis (a) may actually strengthen the trend towards hypothesis (b).

## DATA AND METHODS

The two hypotheses were examined with time-series data from the World Bank PPI database, in two regions identified by World Bank research article as emerging areas for South-South investment: Africa and East Asia (China, Thailand, Philippines, Malaysia).

All projects achieving financial close between 1990 and 2004 were included in the sample. This time period was selected to provide a trendline that comprised the full 1990s decade—the period when failures occurred and problems became evident—in order to contrast the recent post-1990s data against the 1990s decade.

### PPI Database

The PPI database is the most comprehensive of its kind. Projects listed in the PPI database are collected by a team of five staff researchers via searches on Factiva (similar to Lexis Nexis), followed by searches on Google. The team also examines the annual reports of listed companies and searches in relevant journals not included in Factiva. The team focuses primarily on publicly available information sources to avoid confidentiality issues. If they cannot find anything in public sources, they occasionally contact project personnel, in-country World Bank staff, or in-country regulatory staff (in that order) to gain additional information.

The team collects information on new projects as well as updates past projects. Both World Bank and non-World Bank projects are included, including 100% private projects, as long as information is publicly available. The database does not, however, capture how many times a project has changed hands or who owned it previously. It does keep track of cancelled projects.

Thus, while the PPI database is an excellent resource for tracking trends, it can only give orders of magnitude on actual dollars spent. This is because the team tracks only initial contractual commitments; actual dollars spent may be higher or lower based on downstream changes in project scope and budget.

For purposes of this article, “local investment” is defined as investment by a sponsor based in the country in which the project is physically located. “Regional investment” is defined as investment by a sponsor based in a developing country in the East Asian and African regions, respectively.

## FINDINGS

### Local and Regional Investment: East Asia and Africa

Are projects increasingly sponsored by local or regional investors? For the period from 1997 to present, Exhibit 5 indicates an increasing percentage of East Asian projects with local or regional sponsors. Exhibit 6 shows that compared to the pre-Asian Financial Crisis highs, the total investment in East Asian infrastructure has been both low and non-increasing (i.e., level or decreasing). With respect to the proportion of the total investment coming from developing-country investors, Exhibit 7 indicates considerable oscillation since 2000 and no discernible trend. This is partly due to the fact that project investments are fairly lumpy. For example, in 2002 a massive \$1.3 billion investment from British Petroleum in a natural gas pipeline project in Vietnam made up more than 50% of total East Asia investment, and this partly explains why the proportion of investment coming from local and regional investors appears to have fallen off so dramatically in that year.

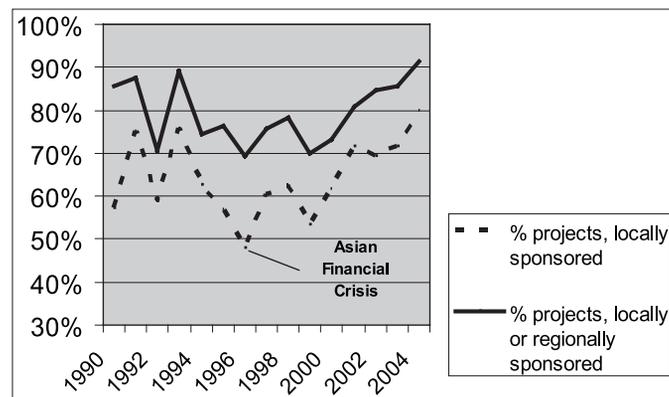
Trends from the PPI database for local or regional investment in Africa are also quite erratic. Exhibit 8 shows a substantial upward trend—though lumpy—for the percentage of *projects* with local or regional sponsors thru the year 2001, but then a sharp falling off in the period from 2002–2004. Much of the 2001 spike in local/regional sponsorship relates to the telecom boom. During this timeframe, the majority of local and regional investor-led projects in Sub-Saharan Africa occurred in the telecom sector. Exhibits 9 and 10 display the total U.S. dollar amount of African infrastructure investment, and the percentage of local and regional investment in African infrastructure, respectively.

### Co-ownership: East Asia and Africa

Is there a trend in private projects of increasing equity sharing between private investors and the government sponsor? Exhibits 11–14 show the percentage of projects during the period 1990–2004 that were co-owned by private investors and government sponsors. In East Asia, there is a slight trend of increasing co-ownership—from 50% of projects in 1990 to 65% of projects by 2004; while in Africa co-ownership appears to have decreased markedly—from 50% of projects in 1990 to 25% of projects by 2004 (Exhibits 11 and 12). Exhibits 13 and 14 show that, after breaking East Asia projects further down by sector, the power sector after 1997 has increasingly reflected co-owned projects, and water sector even more so.

## EXHIBIT 5

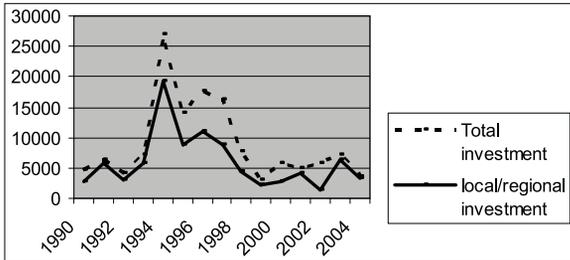
### Infrastructure Investment in East Asia, 1990–2004: Share of Projects with Local or Regional Sponsors



Source: Author's calculations based on data from World Bank PPI Database, East Asia projects 1990–2004.

## EXHIBIT 6

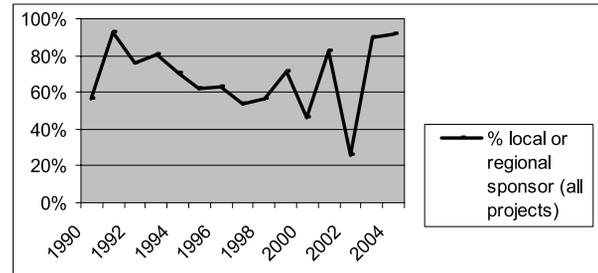
**Infrastructure Investment in East Asia, 1990–2004:  
Investment Dollars (\$US M) from Local or Regional  
Sponsors**



Source: Author's calculations based on data from World Bank PPI Database, East Asia projects 1990–2004.

## EXHIBIT 7

**Infrastructure Investment in East Asia, 1990–2004:  
% of Total Investment Dollars from Local or  
Regional Sponsors**



In Africa, the trend of decreasing public ownership in part reflects the increasing number of telecom projects in Africa since 2001. Out of 122 African telecom projects reaching financial close between 1990 and 2004, 70% were wholly owned by private investors.<sup>18</sup>

## DISCUSSION

Our findings confirm partial support for hypothesis (1). The support is only partial because, while it is true that the relative number of projects involving local or regional sponsors appears to be on the rise both in East Asia and in Africa (see Exhibits 5 and 8), it is not necessarily the case that the share of funds committed from

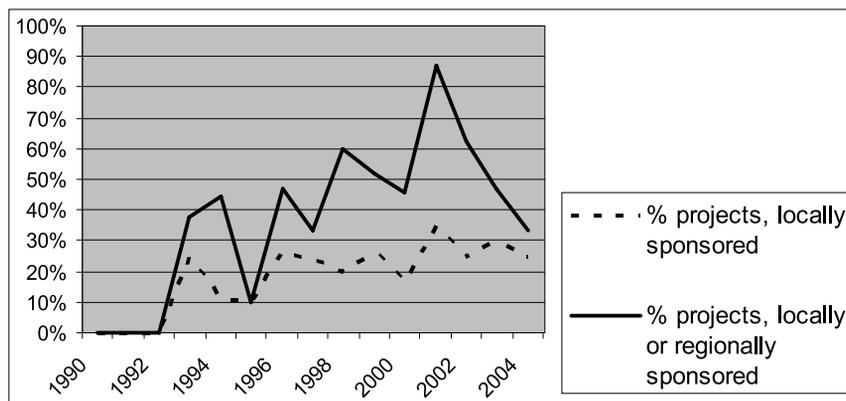
regional and local sources has grown relative to that from international sources (see Exhibits 7 and 9).

Our findings also confirm mixed support for hypothesis (2). The second hypothesis is supported in the Asian region where the data indicate that co-ownership is an increasing trend (see Exhibit 11, 13 and 14). However in the African region, the evidence implies that co-ownership, partly due to the disproportionate influence of the growth in telecom as a project class, has steadily fallen out of favor. Thus in the African region, the second hypothesis is overturned.

Note that the tests we have performed are not sufficient for determining if local/regional ownership or co-ownership lead to better project outcomes. Other factors

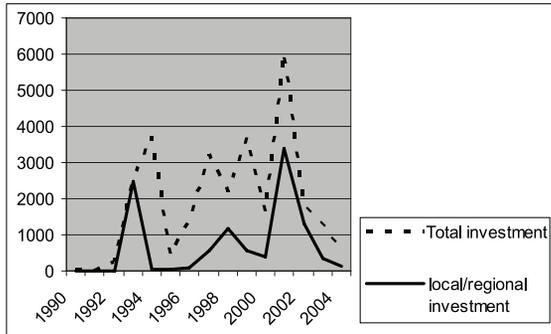
## EXHIBIT 8

**Infrastructure Investment in Africa, 1990–2004: Share of Projects with Local or Regional Sponsors**



## EXHIBIT 9

**Infrastructure Investment in Africa, 1990–2004:**  
Investment Dollars (\$US M) from Local or Regional Sponsors



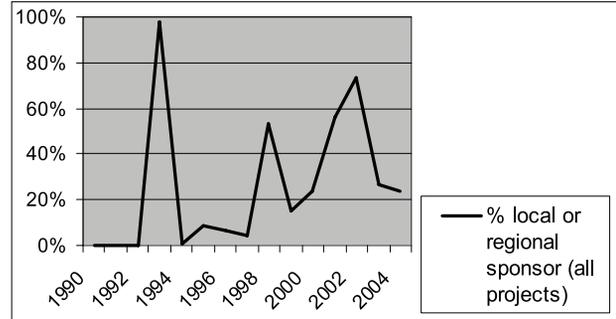
may contribute to what small trends have been observed. For example, the rising levels of government co-ownership evidenced in Asia may indicate that international investors have learned from the mistakes of the 1990s. Alternatively, it could suggest that the new South-South investors are more comfortable having an equity partnership with the host government. Or, this trend could be reinforced by increasing GDP levels and richer governments. Further work is necessary to untangle these different effects and overcome the limitations of the basic analysis undertaken in the present study.

### What Next?

While providing informative data, the PPI database for East Asia and Africa explains relatively little about the

## EXHIBIT 10

**Infrastructure Investment in Africa, 1990–2004:**  
% of Total Investment Dollars from Local or Regional Sponsors



characteristics of emerging investors in these regions or general trends in project structuring since the fallout of the 1990s.

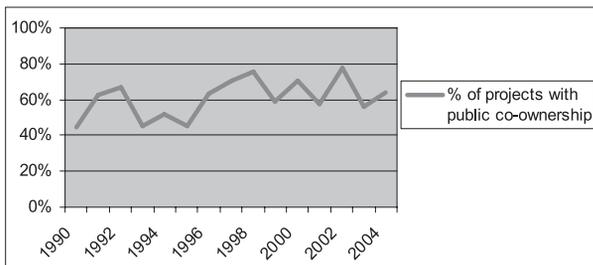
The next section discusses select anecdotally-based hypotheses on additional characteristics of these new players not yet captured in a well-defined data set. These, we believe, present future research opportunities.

### Emerging Investor Characteristics: Anecdotally-based Trends

The following section describes characteristics of new investors in emerging-market infrastructure based on anecdotes from practitioners. It tends to focus on Chinese investors, whom practitioners generally single out as “game changers.”<sup>19</sup>

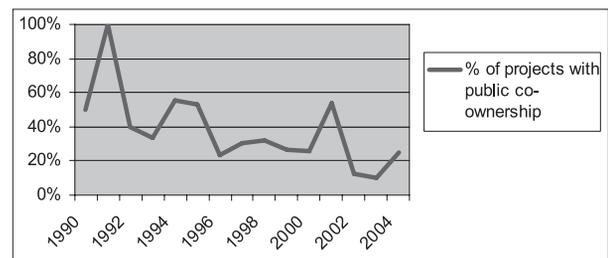
## EXHIBIT 11

**East Asia Infrastructure: % of Projects with Public Co-ownership, 1990–2004**



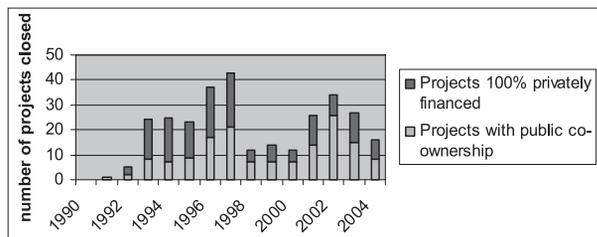
## EXHIBIT 12

**Sub-Sahara African Infrastructure: % of Projects with Public Co-ownership, 1990–2004**



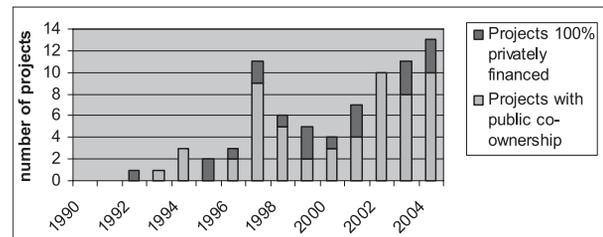
## EXHIBIT 13

### East Asia Power Projects: 100% Privately Financed vs. Co-owned, 1990–2004



## EXHIBIT 14

### East Asia Water Projects: 100% Privately Financed vs. Co-owned, 1990–2004



- ◆ **Infrastructure exchanged for access to natural resources.** Developing countries such as China and India face an increasing demand for oil, gas, and other resources. The scramble for access to these resources has motivated arrangements where infrastructure development is exchanged for access to natural resources, particularly in African nations. Examples of such arrangements include the following:

- *Oil and National Gas Corporation (ONGC)* of India has partnered with Mittal Steel to offer a range of services to Kazakhstan in return for oil rights.<sup>20</sup>
- *Korea National Oil Corporation* has obtained oil rights in Nigeria in an arrangement under which Daewoo will build a shipyard and railway link.<sup>21</sup>
- *Chinese interests* obtained chrome supply from Zimbabwe in a 2006 arrangement where China will build three thermal energy plants with a value of \$1.3 billion.<sup>22</sup>
- *China National Petroleum Corporation* obtained first refusal rights in 2006 for oil drilling in the Niger Delta and Chad basin in connection with a \$4 billion agreement by Sinopec and the Nigerian government to invest in downstream oil and infrastructure projects.
- *Exim Bank of China* extended a \$500 million export credit for infrastructure development in Nigeria.
- *TurboEngineering* (Russia) is discussing with Zimbabwe financing the development of the Condo hydro-electric plant, Gairezi power plant, and the Batoka hydro-electric project on the Zambezi River.<sup>23</sup>

- ◆ **Risk-return profile: different from Western standards.**

The Western infrastructure investment community generally believes that Chinese investors do not think in terms of the time value of money. However, the rights to develop natural resources are basically options contracts, which clearly have additional value. The question is whether this option value is explicitly calculated when Chinese investors evaluate the worth of investments in these politically-risky climates, and if so, how?

- ◆ **Government benefits and incentives to promote investment abroad.** Chinese investors appear to be benefiting from new Chinese government policies that provide favorable lending, capital contribution, and guidance for firms investing abroad.<sup>24</sup> Yet many questions remain about the extent of Chinese government support and about the underlying objectives, which may include access to resources, opening new export markets, creating trade opportunities for China's poorer regions, growing China's political influence, and expanding China's international prestige.

### Potential Implications of Investor Characteristics

Arrangements where China and India obtain access to raw materials or commodities in exchange for long-term financial commitments or in-kind infrastructure improvements have potentially extensive implications. China, in particular, tends to have an agnostic approach to its arrangements and does not impose its value system on the recipient governments as part of the arrangement.

These arrangements by developing countries are likely contributing to the economic rise of China and India and, in some cases, correlate with the redirection of trade and other relationships from their traditional OECD partners to China and India (see Exhibit 15).<sup>25</sup>

One result of these arrangements that has attracted considerable notice and interest is the increasing presence of Chinese contractors and their labor forces in Africa. In order for Chinese investors to access the desired natural resources, they must first invest in building roads, railroads, ports, power plants, water treatment facilities, and other basic infrastructure.

Because of long-standing Chinese foreign aid programs targeting Africa, the African construction market has been a traditional territory for Chinese contractors, most famously for the construction of the Tazara railways linking Zambia's copper mines to ports on the Indian Ocean, as well as government buildings and stadiums, often financed by China itself. Over the past few years the number of contracts awarded to Chinese firms has seemingly expanded along with increasing financial amounts and technical complexities in a broadening range of countries and sectors. The scale of Chinese official development assistance (ODA) to Africa has also increased, and Chinese firms have demonstrated competence in winning open tenders. For example, South African water

utility TCTA recently awarded China National Overseas Engineering Corporation (or Covec), in alliance with black economic-empowered (BEE) company Mathe Construction, a R425 million contract to construct civil structures and mechanical, electrical-instrumentation, and piping works. The Chinese bid was reportedly 25% (approximately R100-million) lower than bids submitted by two local construction consortia. The award was made in December 2005 and is reportedly the largest contract ever awarded to a Chinese contractor in South Africa, although Covec has reportedly done far larger projects in Asia, more specifically Malaysia and Indonesia.<sup>26</sup> In Sudan, Chinese firms completed a \$341 million expansion that doubled the capacity of the main refinery, and they now operate it in partnership with the Sudanese government; these firms are among the lead contractors on a \$4 billion business complex intended to make Khartoum a commercial hub for eastern Africa. In the summer of 2006, the Chinese contractor Wuyi secured a \$37 million deal to renovate the international airport in Nairobi, Kenya's capital.

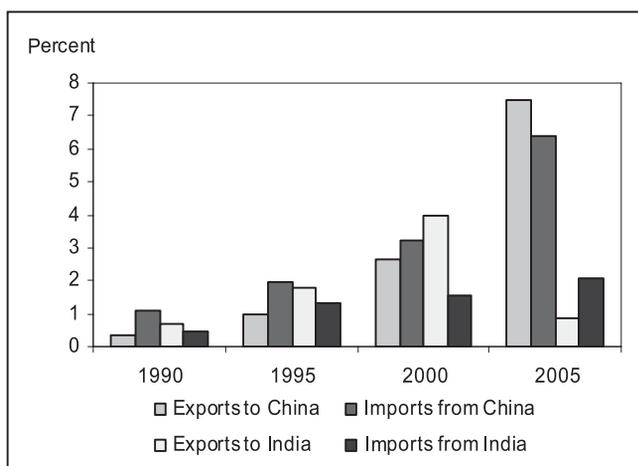
The emergence of the Chinese as investors and contractors comes at a time when construction companies are building up inventories and workforces in anticipation of a greater workload. China, for instance, granted a huge \$2 billion credit line to Angola earmarked for reconstruction and development projects following almost three decades of civil war. The terms of the agreement favor China, with 70% of projects to be allocated to Chinese contractors. The risk that Chinese contractors may scorn good governance practices and not observe labor and human rights has also been discussed.<sup>27</sup>

Finally, within China, the Ministry of Construction has long seen the need to comprehensively evaluate Chinese contractors' performance in foreign markets and to develop improvement strategies at the policy level.

### Questions for Further Research

More work is necessary to *quantitatively map* the presence of Chinese, Indian, Arabian and other emerging investors in Africa. One also might *qualitatively profile* these investors to explore their characteristics and work practices, including their approach toward corporate social responsibility, human rights, environmental safeguards, training of local labor, technology transfer, and the consequences of the foregoing.

## EXHIBIT 15 Africa's Rising Trade with India and China



Source: IMF Direction of Trade Statistics.

Among the questions to be asked are the following:

- ◆ Is a compilation of Chinese infrastructure investment in Africa, Asia and other emerging markets regions being captured anywhere?
- ◆ What (if any) is the nature of the risk/reward analysis undertaken by new investors? Is the risk–return profile different from Western standards or is it just calculated differently? E.g., do the Chinese put a higher price on natural resource access and figure that into their risk/return calculations, if they do these calculations at all?
- ◆ Are these new players better equipped to navigate emerging markets than their rich-world competitors? Is there evidence that indicates this is because they originate from, and better understand, these markets and their inherent political risks?
- ◆ Do these new players receive government subsidies to expand abroad? If so, in what form? How does this affect their risk–return profile? And their perceived cost of capital?
- ◆ Do these new players attract the same level of opposition from Western NGOs? Or are they less susceptible to such opposition?
- ◆ Are there firm economic factors, such as lower wages, that make these emerging players more competitive than their Western counterparts? Or are these factors negligible?

## CONCLUSION

This article offers three modest contributions upon which we hope other researchers will build. First, it offers a new framing of published evidence concerning the changing patterns of global infrastructure investment. On the margin, these changes appear to represent the future direction and movement of the sector in the aftermath of the Asian Financial Crisis of 1997. Second, the study presents a fresh interpretation of the PPI dataset that yields a new set of insights regarding the role of local investors and the incidence of public–private co-ownership structures. Finally, the research contributes a set of anecdotally-based observations which may serve as the basis for future investigation into the behavioral profile of the new South–South investors now taking a larger role in the provision of emerging markets infrastructure.

## ENDNOTES

<sup>1</sup>Wells Jr., L.T. and Ahmed, R. “Making Foreign Investment Safe: Property Rights and National Sovereignty.” Oxford University Press, 2006.

<sup>2</sup>Shur, M. “The Role of Developing Country Firms in Infrastructure.” *Gridlines: World Bank Public-Private Infrastructure Facility (PPIAF)*, April 2006. [hereinafter Shur, *PPIAF*]

<sup>3</sup>Ibid.

<sup>4</sup>Metzger, B. “The Legacy of Failed Global Projects: Testing the Legal Paradigm.” *CRGP Working Paper Series*, Stanford University.

<sup>5</sup>Guasch, J.L. “Granting and Renegotiating Infrastructure Contracts: Doing it Right.” *World Bank Institute Studies*, 2004, pp. 34.

<sup>6</sup>Statistics from Shur, *PPIAF*.

<sup>7</sup>It is difficult to determine trends as some of the sectors are dominated by a few massive projects. For example, the sharp reduction in the developing country investors’ share of telecom investment in 2004 is explained by acquisitions by two developed country investors from Kuwait and the UAE, which account for 70% of the total investment in the sector from 1998–2004.

<sup>8</sup>The World Bank defines “developing foreign” investors as investors from developing countries who invest in developing countries other than their own, e.g., a Chinese investor in a Thailand power project.

<sup>9</sup>Ettinger et al., *World Bank*, pp. 19.

<sup>10</sup>Izaguirre, A.K. “Private Infrastructure: Emerging Market Sponsors Dominate Private Flows.” *World Bank Viewpoint Note*, October 2005.

<sup>11</sup>Ibid.

<sup>12</sup>Data from the Stanford PESD program. Note that some “new” players had early investments, but have only recently made major plays in developing country infrastructure outside their own country. For example, China Light and Power (CLP) first invested in Thailand power assets in the mid-1990s (PPI Database). See Woodhouse, E.J. “A Political Economy of International Infrastructure Contracting: Lessons from the IPP Experience.” *Program on Energy and Sustainable Development Working Paper Series*, 2005, pp. 73. [hereinafter Woodhouse, *PESD*]

<sup>13</sup>Ettinger et al., *World Bank*, pp. 28, 29.

<sup>14</sup>This collection of article is to be published as a special issue of *Transnational Dispute Management*, in late 2006 or early 2007, under the working title “The Legacy and Lessons of Infrastructure Investment Agreements in the 1990s.” The collection of article is also available for download on the CRGP website at: [http://crgp.stanford.edu/events/general\\_counsels\\_roundtable.html](http://crgp.stanford.edu/events/general_counsels_roundtable.html)

<sup>15</sup>Orr, R.J. *Living Agreements for a Risky World*. *Harvard Business Review*, March/April Issue, 2006.

<sup>16</sup>Stodder, S. and Orr, R.J. Understanding Renegotiation and Dispute Resolution Experience in Foreign Infrastructure Investment. *Journal of World Investment and Trade*, Autumn, 2006.

<sup>17</sup>Woodhouse, *PESD*, pp. 73.

<sup>18</sup>Author's calculations from PPI data.

<sup>19</sup>There are other interesting developments in new investor characteristics, such as the U.K.-government sponsored firm Globeleq, which was formed in 2002 with a mission to invest in emerging-market infrastructure. This article, however, is limited to developing country investors, in particular the Chinese.

<sup>20</sup>Macalister, T. "Scramble for Oil: Race to the World's Energy Hotspots: Money No Object as the Big Players Grab What Is Left of a Diminishing Resource." *Guardian Financial Pages*, 7 July 2006.

<sup>21</sup>Ibid.

<sup>22</sup>Hawkins, T. "Scepticism Pervades China's Trade Finance Deals with Zimbabwe." *The Financial Times*, 28 June 2006.

<sup>23</sup>"Russian Firm to Finance Zim power projects." *Mail & Guardian Online*, 17 July 2006.

<sup>24</sup>Silk M. and Malish, R. "Are Chinese Companies Taking over the World?" Unpublished article received by author, July 2006. See article for more detailed descriptions of new Chinese policies that promote Chinese investment abroad.

<sup>25</sup>For an extensive analysis see: Goldstein, A., Pinaud, N., Reisen, H. and X. Chen, "The Rise of China and India—What's in it for Africa?" *OECD Development Centre*, May 2006.

<sup>26</sup>"Shock as Chinese Contractor Snaps Up Big SA Water Contract." *Engineering News*, 27 January 2006.

<sup>27</sup>"A New Bazaar." *The Hindustan Times*, 26 April 2006.

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