Infrastructure Finance Initiative

Project Overview
Luxembourg, 2 February 2012

CEFS-Infrastructure Finance Initiative –
sponsored by the European Investment Bank
www.cefs.de/ifi
## Recap: Our research project

### Motivation

**Huge infrastructure funding gap**
- New infrastructure needs due to population growth, technological development, climate change, urbanization
- Maintenance of existing infrastructure
- But: Governmental budget restrictions

**Increasing demand for infrastructure assets**
- Pension funds and insurance companies seeking alternative investments with long duration and liability-matching
- Hypothesis: Infrastructure offers low-risk returns and low correlation to markets
- Rise of infra funds and listed infra firms
- However, increasing critique against private infrastructure finance (governance issues, high leverage, increasing user costs)

### Research topics

**Economic characteristics of infrastructure**
- Development of taxonomy for infrastructure investments
- Empirical evidence of appropriateness of characterization of infrastructure

**Market & drivers for private infra finance**
- Description of private infrastructure development
- Direct equity investments: risk characteristics, inflation hedging property
- Listed and unlisted fund investments: risk and return, asset characteristics, fund governance
- Analysis of the impact of regulatory regimes for private infrastructure returns in different sectors and countries
Listed Infrastructure Funds

Background

- Liquid investment opportunity in illiquid and capital intensive assets
- New and innovative way to raise private capital for infrastructure investments

But recently:

- Three funds delisted in the past two years
- Recent critiques against: Corporate governance, high leverage, dividends exceeding cash flows

Data Sample

- **Infrastructure Investment Vehicles** = managed and exchange-listed vehicles that are established with the purpose to directly invest in infrastructure projects at time of issuance
- **Investment Companies** = internally managed vehicles
- **Investment Funds** = externally managed vehicles

(see also Davis, 2008; Lawrence/Stapledon, 2008)
Unlisted Infrastructure Funds

- Most common way for private infrastructure investing in terms of market volume and track record
- Data available for direct investments made by unlisted funds (provided by project partner CEPRES)

(Sub-) Sample 1 – All infrastructure deals

Direct investments in infrastructure companies by funds with an infrastructure or mixed investment focus

Investment into one of the following CEPRES industry classifications:
- Natural Resources & Energy*, Alternative Energy*
- Transportation*
- Telecom – Infrastructure
- Waste / Recycling*
- Health Care Providers

* Remain to be re-classified into network-based infrastructure

1877 deals (deal level)

(Sub-) Sample 2 – Infrastructure deals of infrastructure funds

Funds with an explicit focus on infrastructure

Criteria for identifying such funds:
- Matching with other sources on Infrastructure funds
- Denomination as Infrastructure fund by the Investment Manager
- Explicit focus on infrastructure sector

27 funds (fund level), 584 deals (deal level)

NOTE: all results are preliminary and subject to change as the sector reclassification has not been completed yet
A world wide data set on listed companies focusing on infrastructure activities has been assembled. Data was collected from the Thomson Financial Database.

<table>
<thead>
<tr>
<th>Infrastructure Firms</th>
<th>North America</th>
<th>Latin America</th>
<th>Western Europe</th>
<th>Eastern Europe</th>
<th>Africa-Middle East</th>
<th>Asia-Pacific</th>
<th>World</th>
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</table>
# Research line infrastructure funds

## Project

### Definition and characteristics of infrastructure

- Numerous definitions of infrastructure in existing literature
- Introduction of infrastructure as physical networks
- Distinct economic characteristics such as network effects, economies of scale and scope motivate distinct regulation, financing and investment conditions

### Risk, return and cash flow characteristics of infrastructure fund investments

- Infra fund investments offer low default risk and no correlation to macro-economic development
- They do not exhibit e.g. longer-term and more stable cash flows than non-infra fund investments
- Other findings point to a large influence of leverage and regulation amongst others

### Do investors value stable cash flows of listed infrastructure funds?

- Infrastructure funds show significantly lower volatility of operating cash flows than comparable non-infrastructure funds
- However, more stable cash flows are not valued positively by investors
- Negative premium on earnings management
- Evidence that investors punish opaque and complex financial structures

## Key findings
## Research line listed infrastructure firms

<table>
<thead>
<tr>
<th>Project</th>
<th>Key findings</th>
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</table>
| Is infrastructure really low risk? An empirical analysis of listed infra firms | • Infrastructure exhibits lower market risk than non-infrastructure, but similar total risk (volatility)  
• Therefore, high share of idiosyncratic risk due to lack of diversification, construction risk, operating leverage and regulatory exposure  
• Large variations of risk within the asset class |
| Infrastructure as inflation hedge – Fact or Fantasy?                   | • No empirical support for the hypothesis that infrastructure generally is a natural inflation hedge (due to monopolies, fixed costs, regulation)  
• However, infrastructure with high pricing power (vertical integration, entry barriers, little competition) with slightly enhanced hedging properties |
| Price regulation and risk – the relevance of regulatory independence    | • Price regulation reduces market risk affirming Peltzman’s buffering hypothesis  
• Incentive regulation entails higher market risk relative to cost-based regulation, but only if jointly implemented with autonomous regulator (as reg. capture is avoided)  
• Regulatory independence reduces market risk due to less political opportunism and credible regulatory commitment |
Activities and conference contributions

Select activities

• Infrastructure Finance Roundtable in Munich in 2011
• Two researchers visiting Harvard University and MIT in 2011
• Tutoring of various bachelor and master theses on infrastructure finance
• Tutoring of two projects on infrastructure finance in cooperation with Unicredit and BCG

Select conference contributions (speaker)

2011
• Midwest Finance Association Conference, Chicago, USA (Bitsch)
• European Financial Management Symposium on Alternative Investments, Toronto, Canada (Bitsch)
• Transatlantic Infraday, Washington D.C., USA (Rothballer, Rödel)
• MIT Energy Night, Cambridge, USA (Rothballer)

2010
• EIB Conference in Economics and Finance (Kaserer)
• ERSA Summer School on Productivity and Financing of Regional Infrastructure, Stockholm, Sweden (Bitsch)

2009
• Conference on Applied Infrastructure Research, Berlin, Germany (Bitsch, Kasper)

ongoing
• EIBURS Meetings 2009, 2011, 2012 (Bitsch, Kaserer, Kasper, Rothballer)
Publications


Thank you for your attention!

Comments and questions are welcome:
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www.cefs.de/ifi