The Economics of Public-Private Partnerships

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A research partnership

Talk based on:

Eduardo Engel — Ronald Fischer — Alexander Galetovic:

The Economics of Public-Private Partnerships: A Basic Guide.

Cambridge University Press, forthcoming.

Motivation

This book:

- public-private partnerships in infrastructure

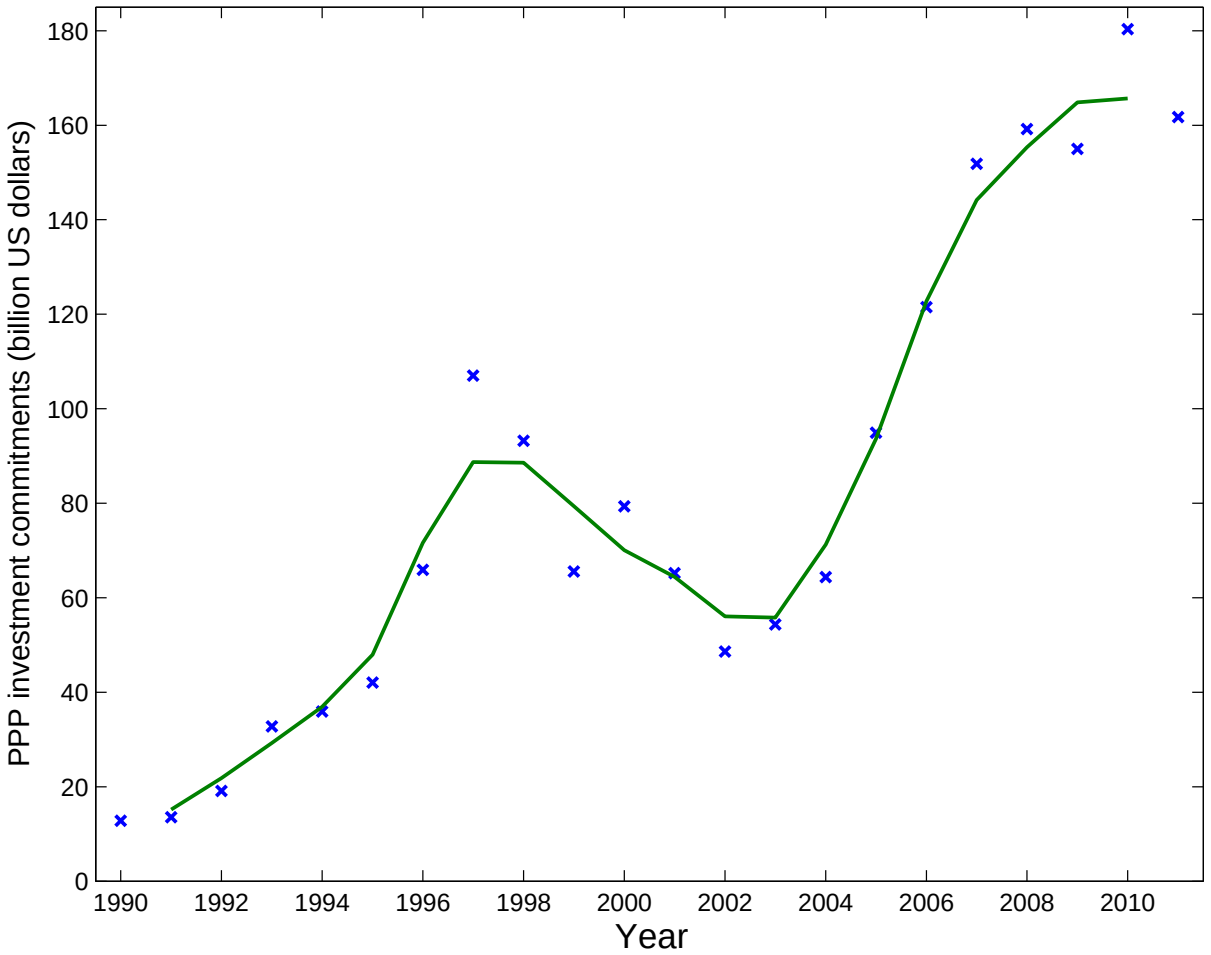
Public infrastructure:

- long-lasting and irreversible investment used to provide a public service

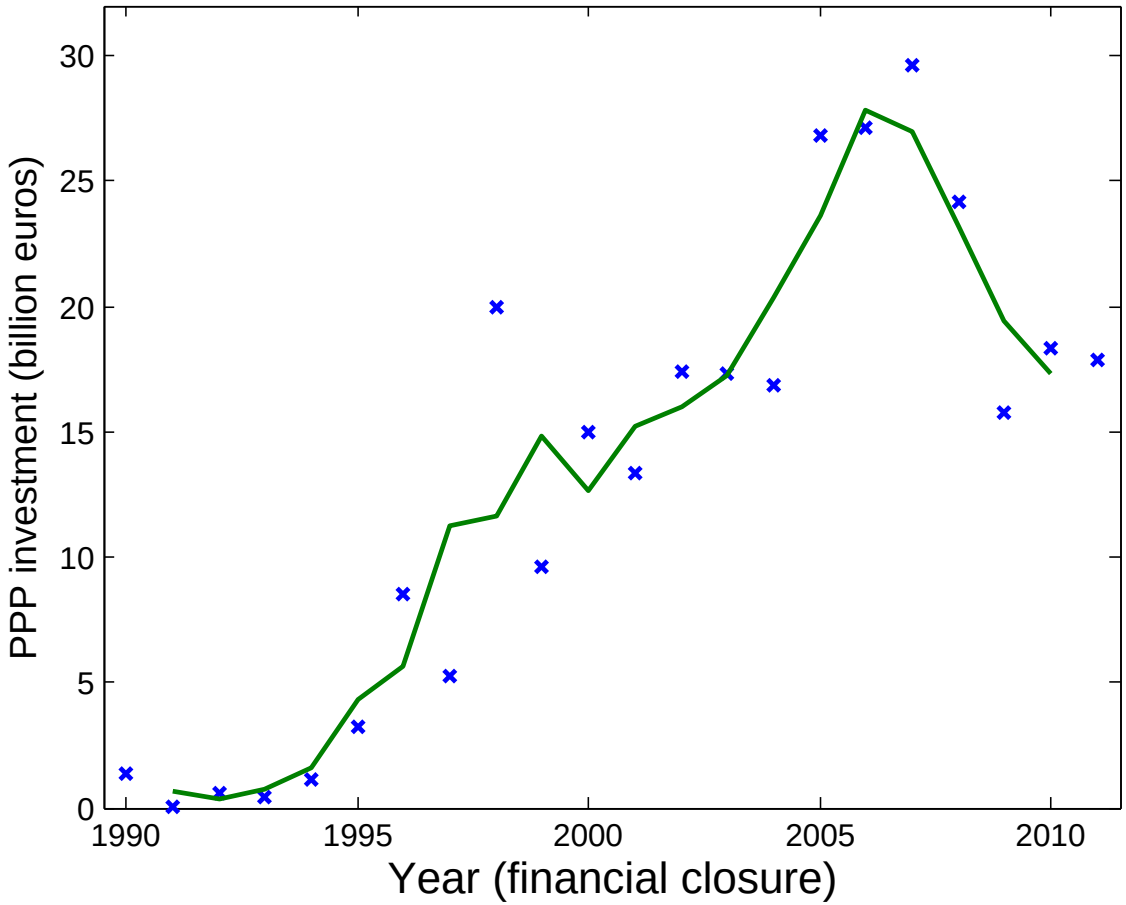
PPP projects:

- highways, water and sewer plants, power plants, bridges, seaports and airports, hospitals, jails, schools

Inv. in PPPs: low-middle inc. ctries. 1990–2011



Investment in PPPs: Europe 1990–2011



Options for infrastructure provision

Three organizational forms:

- public/traditional
- privatization
- public-private partnerships (PPPs)

Generally private firms

Differences in:

- incentives
- political economy

This presentation: public provision vs. PPPs

Contracting under public provision

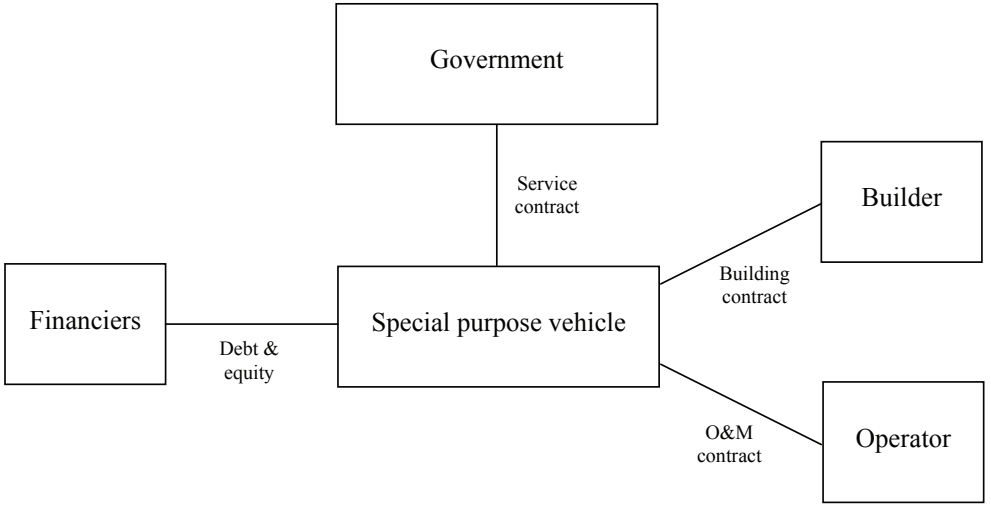
- Government directly finances the project with public debt
- Government hires:
  - a builder
  - an operator

Contracting under a PPP

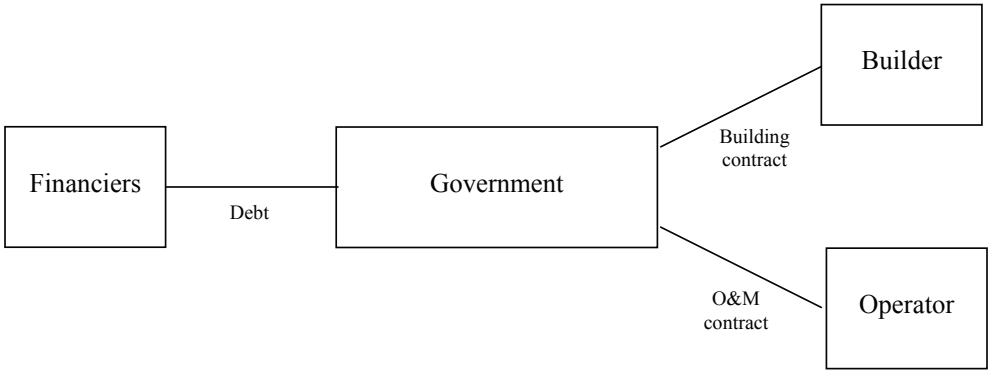
- Bundling of finance, construction and operation in a single long-term service contract between the procurement authority and a stand-alone private firm (SPV)
- Self-contained project: legally and economically
- Cash flows of the project pledged to pay the project's debt
- SPV compensation: user fees and/or government transfers
- Government payments may be contingent on certain events

Contracting under public provision and PPPs

(a) PPPs



(b) Conventional provision



Motivation

- Two decades of experience with PPPs:
  - mixed reviews
  - time to take stock
- Arguments in favor of PPPs:
  - invalid
  - valid
  - magnitude?
- Arguments in favor of public provision:
  - invalid
  - valid
  - magnitude?
- Taking stock:
  - when is a PPP the best option?
  - how should PPP's be done?

Highways

Main type of infrastructure with PPPs (by value)

Book considers other types as well

Top 10 Low-Middle Inc. Ctries. (MM USD 1990–2011)	
China	47,449
Brazil	32,142
Mexico	25,374
India	24,766
Malaysia	16,552
Argentina	14,094
Chile	8,876
Turkey	8,170
South Africa	5,374
Colombia	5,164

The case of Chilean highways: 1990

The case of Chilean highways: 2005

After 2010 Earthquake

Physical Characteristics of Highways

- Investments:
  - large, sunk upfront, long lived asset
  - usually a natural monopoly (interurban) or part of a network (urban)
- Operation:
  - excludable, rival (congestion an issue)
- Deterioration (and therefore maintenance):
  - highly nonlinear in axle weight
  - proportional to usage
  - apparent long after it is optimal to restore the road

Physical Characteristics of Highways

- Quality of service is contractible:
  - state of road can be verified by independent parties
  - can measure quality of service (e.g.: time needed to remove broken cars)
- Demand:
  - high (and mainly exogenous) uncertainty
  - example: Dulles Greenway
- Why public intervention?
  - network planning
  - intensive use of public space and rights-of-way
  - monopoly requires toll regulation

Problems of Public Provision

Poor choice of projects

- Brazil, 1979–1984
- built 6,000 kms of new roads ... while 8,000 kms of existing roads went from fair or good to bad quality

Enforcing projects that are built fulfill service obligations

- insufficient and untimely maintenance, too little, too late
  - three times the cost
  - lower quality of service on average

Excessive cost of projects chosen

- cost overruns
- delays
- capture and corruption

Promises of PPPs

Relieving strained budgets

- obviously not true if financed via government transfers
- yet also not true when financed via user fees

Efficiency gains:

- advantages of bundling ... when service contractible
- incentives for appropriate maintenance

Introducing competition

- Chadwick vs. Williamson

Charging appropriate user fees

- Indiana Toll Road example

Filtering white elephants

- market test ... if financed via user fees and no major government guarantees

Adam Smith and White Elephants

"When high roads are made and supported by the commerce that is carried on by means of them, they can be made only where that commerce requires them. [. . .] A magnificent road cannot be made merely because it happens to lead to the country villa of the intendant of the province [. . .]"

Typical contract

- Fixed term: e.g., 30 years
- Firm chosen via competitive auction
- Bidding variable: lowest toll, shortest concession term, highest annual payment to the government (cannon), lowest subsidy
- Minimum income guarantees
- Fiscal accounting: poor or totally absent

Governance

- Typically the same agency in charge of planning, adjudicating, monitoring and regulating the concession contracts
- Leads to poor monitoring and lax regulation
- Argentina's General Comptroller Report of 2003

Soft Budgets

PPPs allow off-budget spending.

Useful for politicians/government.

In the UK, only 23% of capital cost of 599 PFI projects up to April 2009 are on balance sheet.

> *"Cynics suspect that the government remains keen on PFI not because of the efficiency it allegedly offers, but because it allows ministers to perform a useful accounting trick."*
>
> *The Economist*, July 2nd, 2009.

Renegotiations and Spending Anticipation

While sometimes necessary, they are problematic

Often lead to additional works unrelated to original project

- circumventing budgetary controls
- paid by future administrations
- Santiago water collectors example

Guasch (2004), Guasch, Laffont and Straub (2007, 2008): analyze 1000+ PPPs in Latin America

Efficiency Costs of Renegotiations

- Lack of competition for additional works may increase cost substantially
- Adverse selection of inefficient firms good at lobbying
- Moral hazard problem: government becomes careless
- Bad project selection: white elephants more likely

Evidence from Chile

- 50 concessions (28 highways)
- 147 significant renegotiations (avge.: every 2.5 years)
- Upfront investment: US$ 8.4 bn
- Renegotiations: US$ 2.8 bn
- How: Bilateral renegotiations: 83% (remainder by arbitration)
- When: 78% during construction phase — incomplete contracts?
- What: 84% involves additional investment.
- Who pays: 65% of bilateral paid by future administrations.

How should it be done

1. Avoiding bad faith renegotiations
2. Improving public accounting
3. Improving contract design

PPP legislation in various countries in Latin America have been reformed along these lines.

How – Improving governance of renegotiations

Independent specialized agency reviews and approves projects, reducing space for renegotiations.

Use service and not input standards in the PPP contract.

Additional works should be publicly tendered, if possible.

Independent agency ensures that contract value does not change after renegotiation:

- filters "bad faith" renegotiations
- avoids adverse selection problem
- does not avoid anticipating spending

How – Improving budgetary accounting

Improve budgetary accounting of future capital costs, and of demand guarantees (tolled highways).

Including future liabilities in current budget not enough:

- increase in investment resulting from renegotiations must affect current budget one-for-one

Intertemporal budget $\Longrightarrow$ PPP = public provision

How – Flexible Term Contracts

Flexible term contracts:

- reduce demand risk (beyond the control of the firm)
- reduces need for guarantees and renegotiations

Particular case — PVR contract:

- government sets user fee and discount rate
- firms bid on present value of toll revenues (PVR)
- contract lasts until winning bid collected:

How – Flexible Term Contracts

Properties of PVR:

- fair compensation is easy to calculate
- sizeable reduction in risk premium
- improves political economy of the contract
- easy to adjust tolls to demand: urban highways
- avoids winner's curse (cost-oriented bids)

First used in the UK: Queen Elizabeth II bridge at Dartford

Portugal's Litoral Centro: Eurofinance project of 2004

Experience with Flexible Term Contracts: Chile

Experience with Flexible Term Contracts: Chile

Project	*Month/year auctioned*	*Winning bid (million USD)*
Ruta 68 (Stgo-Valparaíso-Viña)	02/1998	513
Ruta 160, Coronel-Tres Pinos segment	04/2008	342
Airport access road	07/2008	56
Melipilla-Camino de la Fruta connection	08/2008	46
Ruta 5, Vallenar-Caldera segment	11/2008	288
Ruta 5, Puerto Montt-Pargua	05/2010	31
Concepción-Cabrero highway	01/2011	318
Alternative access road, Iquique	01/2011	167

How – Financing

- Project finance commonly used
- Is there a PPP premium?
  - PPPs: higher cost of financing than under public provision
  - public financing costs don't incorporate implicit government guarantee
  - observed PPP premium may reflect faulty contract design: fixed term vs. flexible term
  - incentives may be essential to realize efficiency gains and often involve larger risk for the firm

Summary – Conceptual

- Incentives and efficiency:
  - PPPs closer to privatization
- Public finance – accounting for PPPs:
  - PPPs closer to public provision
- Private finance:
  - PPPs closer to privatization
- Contract design and risk sharing:
  - PPPs fundamentally different from privatization and public provision: can use contract length when allocating risk

In favor of PPPs

Suspect:

- Saves public resources

Valid:

- Better and cheaper maintenance: bundling or political economy?
- Filter white elephants
- Easier to collect user fees and reduce distortionary taxes
- Avoid public agencies

Huge potential gains: 20 - 50% of upfront investment for three of the above

In favor of public provision

Suspect:

- Lower financing costs

Valid:

- Expropriation risk less important
- Cannot be used to anticipate public spending
- Fewer opportunities to renegotiate

Conclusion

- Potentially large welfare gains under PPPs for highways
- Three out of four advantages of PPPs rely on user fees being a major source of revenue for the concessionaire
- Contractible quality of service also important
- Case for PPPs less clear for other types of infrastructure (schools, hospitals)
- We now know the policies to handle some of the main pitfalls under PPPs
  - avoid bad faith renegotiations
  - appropriate fiscal accounting
  - flexible term contracts

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The Economics of Public-Private Partnerships: A Basic Guide