The Economics of Public-Private Partnerships

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The Topic

The topic:

- public-private partnerships in infrastructure

It is about providing public infrastructure:

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

PPP projects:

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

Options for infrastructure provision

Three organizational forms:

- public ≡ traditional
- privatization
- public-private partnerships (PPPs) ≡ concession

Generally private firms

Differences in:

- incentives
- political economy

Contracting under public provision

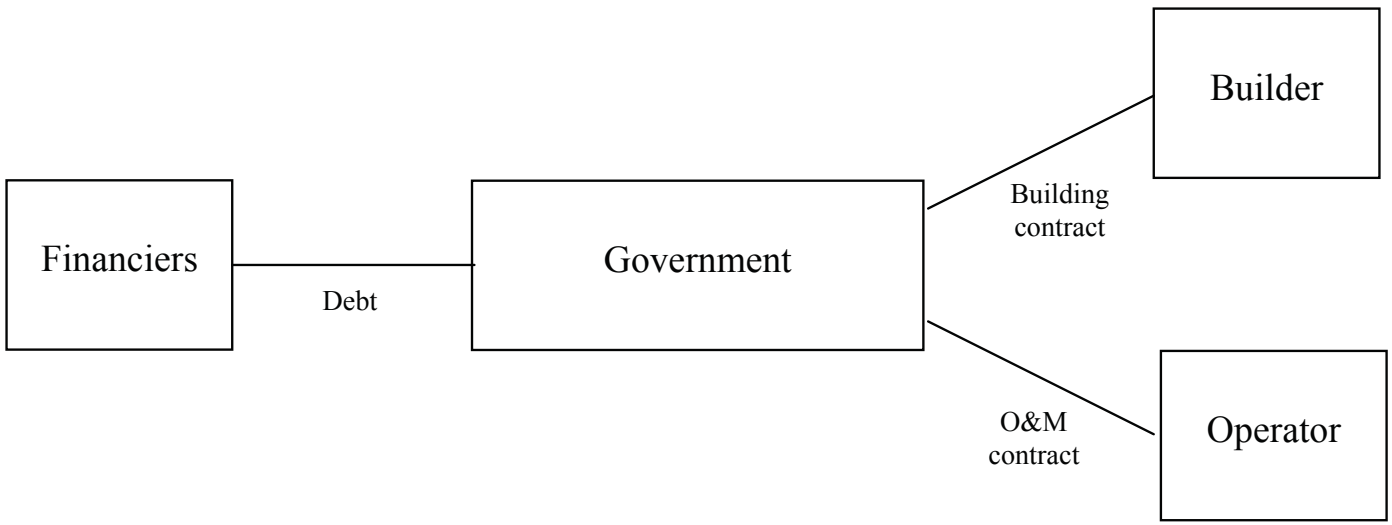
Government:

- directly finances the project with public debt
- hires one firm to build the project
- hires another firm for operations and management (O&M)

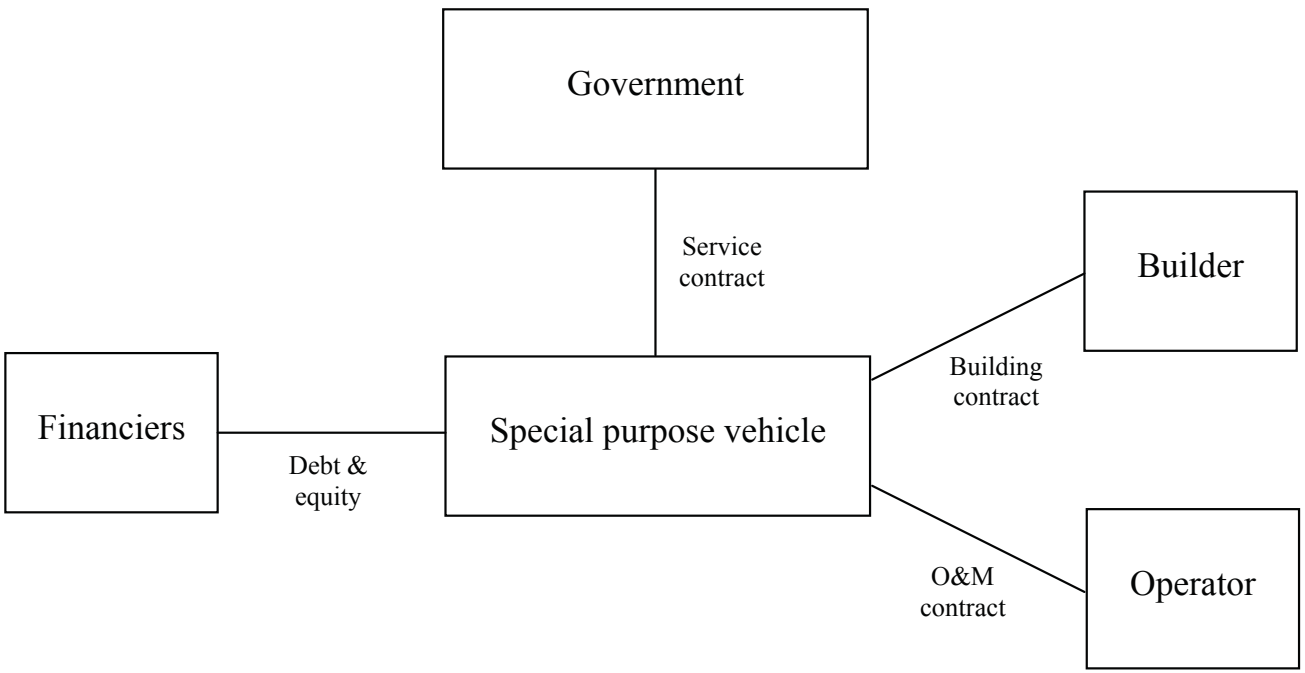
Contracting under a PPP

- Bundling: same firm finances, builds and operates the project
  - stand-alone private firm ≡ SPV ≡ concessionaire
- Compensation of concessionaire:
  - user fees: high demand tollroad
  - government transfers: school or hospital under availability contract
  - a combination: low demand tollroad

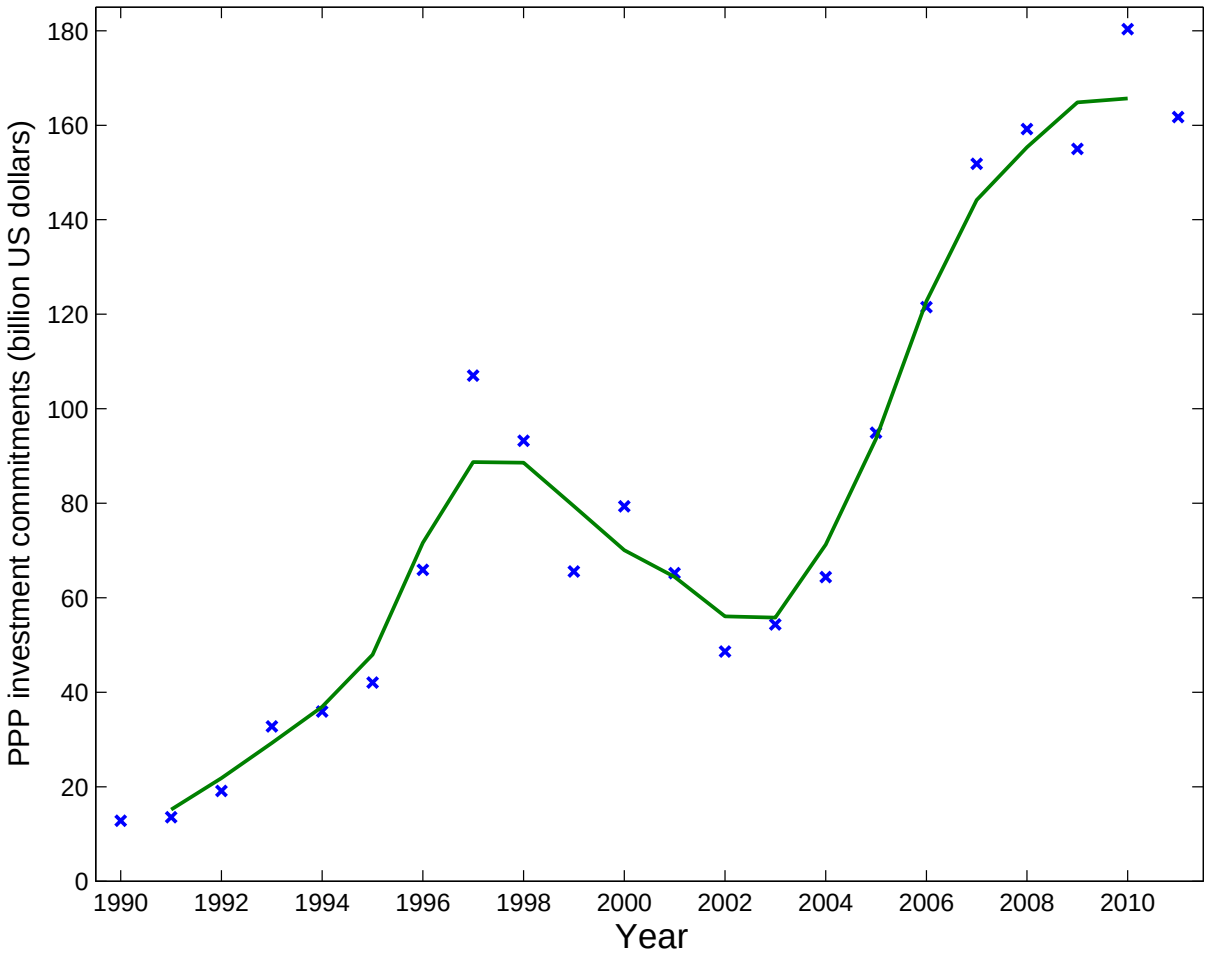
Contracting under public provision



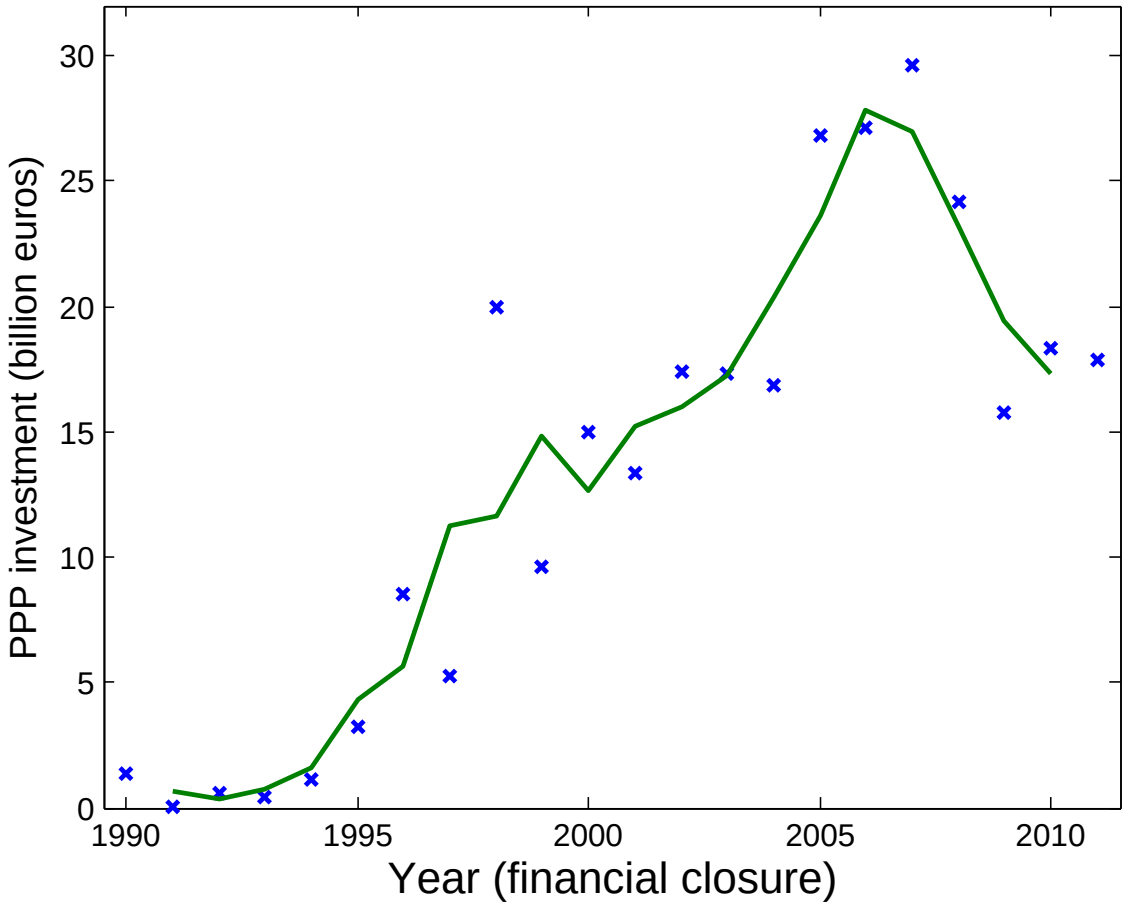
Contracting under PPP



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



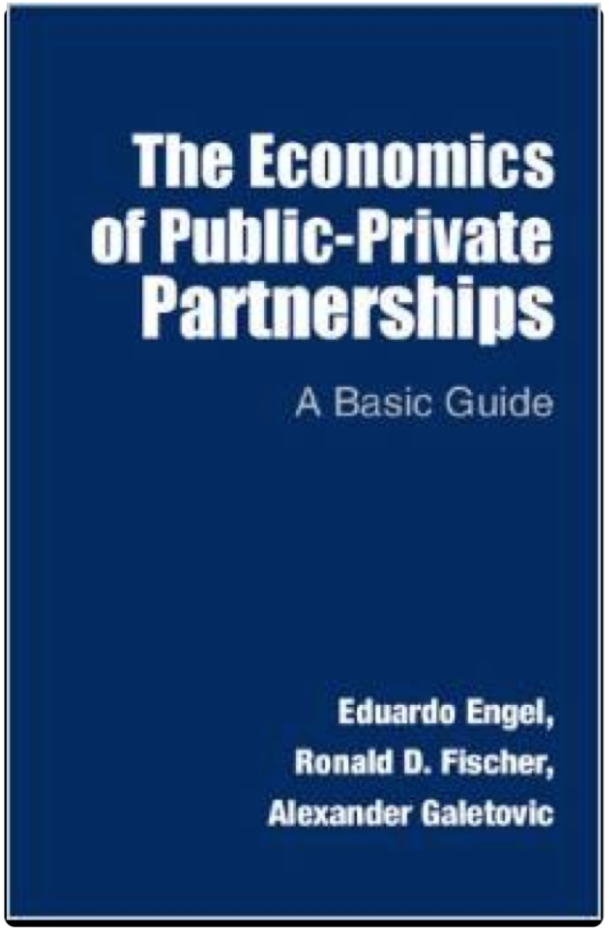
Investment in PPPs: Europe 1990–2011



Motivation

- 25 years of (the most recent wave of) PPPs:
  - mixed reviews
  - time to take stock
- Arguments in favor of PPPs:
  - invalid
  - valid
- Arguments in favor of public provision:
  - invalid
  - valid
- Magnitudes?
- Taking stock:
  - PPPs: when and how

A Summary of


The Economics of Public-Private Partnerships
A Basic Guide
Eduardo Engel,
Ronald D. Fischer,
Alexander Galetovic

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 and state of road are 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 uncertainty, most exogenous
  - example: Dulles Greenway
- Why public intervention?
  - network planning
  - intensive use of public space and rights-of-way
  - monopoly requires toll regulation

Motivation

Highways

Problems

Promises

Experience

How

Taking Stock

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

Weak enforcement that projects 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

Motivation

Highways

Problems

Promises

Experience

How

Taking Stock

Promises of PPPs

1. Relieve strained budgets
   - obviously not true if financed via government transfers
   - also not true when financed via user fees
2. Efficiency gains:
   - ~advantages of bundling ... when service contractible
   - √incentives for appropriate maintenance

Promises of PPPs

3. Introduce competition
   - Chadwick vs. Williamson
4. Charging appropriate user fees
   - Indiana Toll Road example
5. Filter white elephants
   - market test ... if financed via user fees and no government guarantees

Promises of PPPs: Summary

1. × Relieve strained budgets
2. √ ~ Efficiency gains:
3. ~ Introduce competition
4. ~ Charging appropriate user fees
5. ~ Filter white elephants

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.

Despite more stringent accounting standards introduced in April 2009, PFI projects remain excluded from public sector net debt calculations (NAO, 2011).

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

First intuition — no cost:

- more aggressive bids if expect to make money renegotiating

Second intuition — potentially high cost:

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

Post-renegotiation contracts not publicly available in most countries (e.g., France).

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

Recent reforms of PPP legislations point in this direction.

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:

The above institutional reforms:

- filter "bad faith" renegotiations
- avoid adverse selection problem
- do not avoid soft budget problem

How – Improving budgetary accounting

No user fees:

	Public provision	PPP
Now:	issue 100 in debt	"save" 100 in debt
	spend 100 in infrastructure	spend 100 in infrastructure
Tomorrow:	raise 100 in taxes	raise 100 in taxes
	pay 100 to private firm	

User fees:

	Public provision	PPP
Now:	issue 100 in debt	"save" 100 in debt
	spend 100 in infrastructure	spend 100 in infrastructure
Tomorrow:	collect 100 in tolls	relinquish 100 in tolls

Intertemporal budget $\Longrightarrow$ PPP analogous to public provision

How – Improving budgetary accounting

PPP Investments should count as public debt

Also include demand guarantees.

Including future liabilities in current budget not enough:

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

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
- competitive auction: firms bid on LPVR

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 PVR contract: Queen Elizabeth II bridge at Dartford, 1990

First PVR auction: Chile, 1998

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
- 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
- Filter white elephants
- Easier to collect user fees and reduce distortionary taxes
- Avoid public agencies

Gains can be large: 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
- Important assumption: quality of service contractible
- Case for PPPs less clear: schools, hospitals
- We now know how to handle the main pitfalls under PPPs
  - avoid bad faith renegotiations
  - appropriate fiscal accounting
  - flexible term contracts

Table of Contents