# Public Private Partnerships - an overview of the issues

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# A Research Partnership

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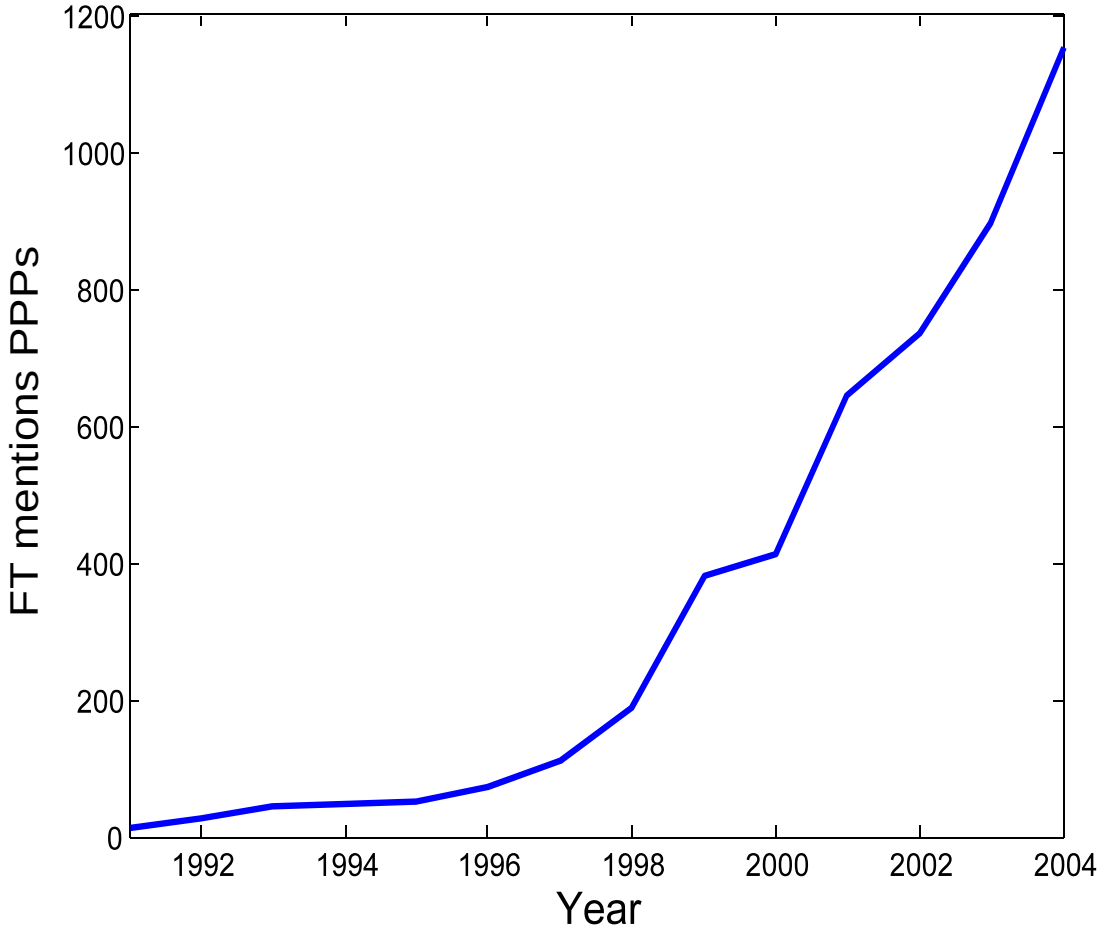
# Introduction

In this crisis,

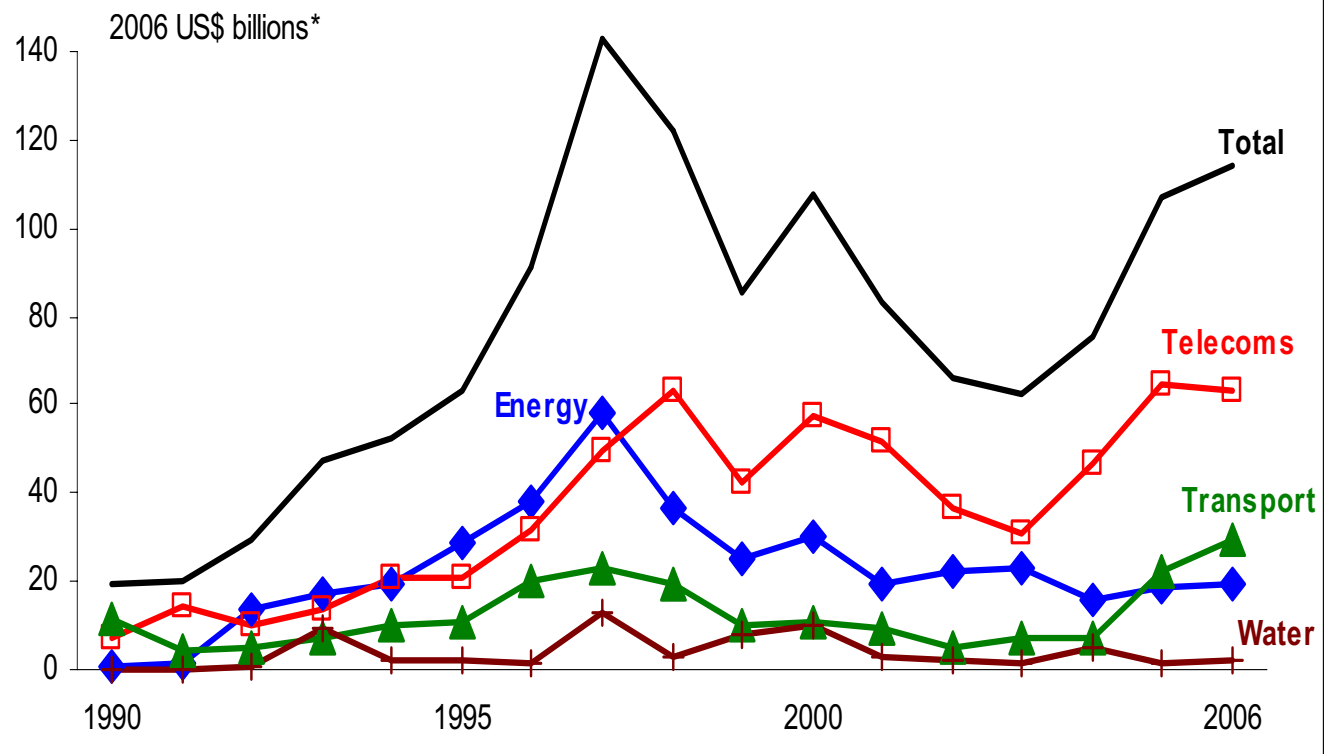
- Privatization is increasingly unpopular...
- ...while Public-Private Partnerships are (were?) on the rise
- Are PPPs really a “third option”?

# PPPs articles in the Financial Times



# Investment in PPPs in Developing countries

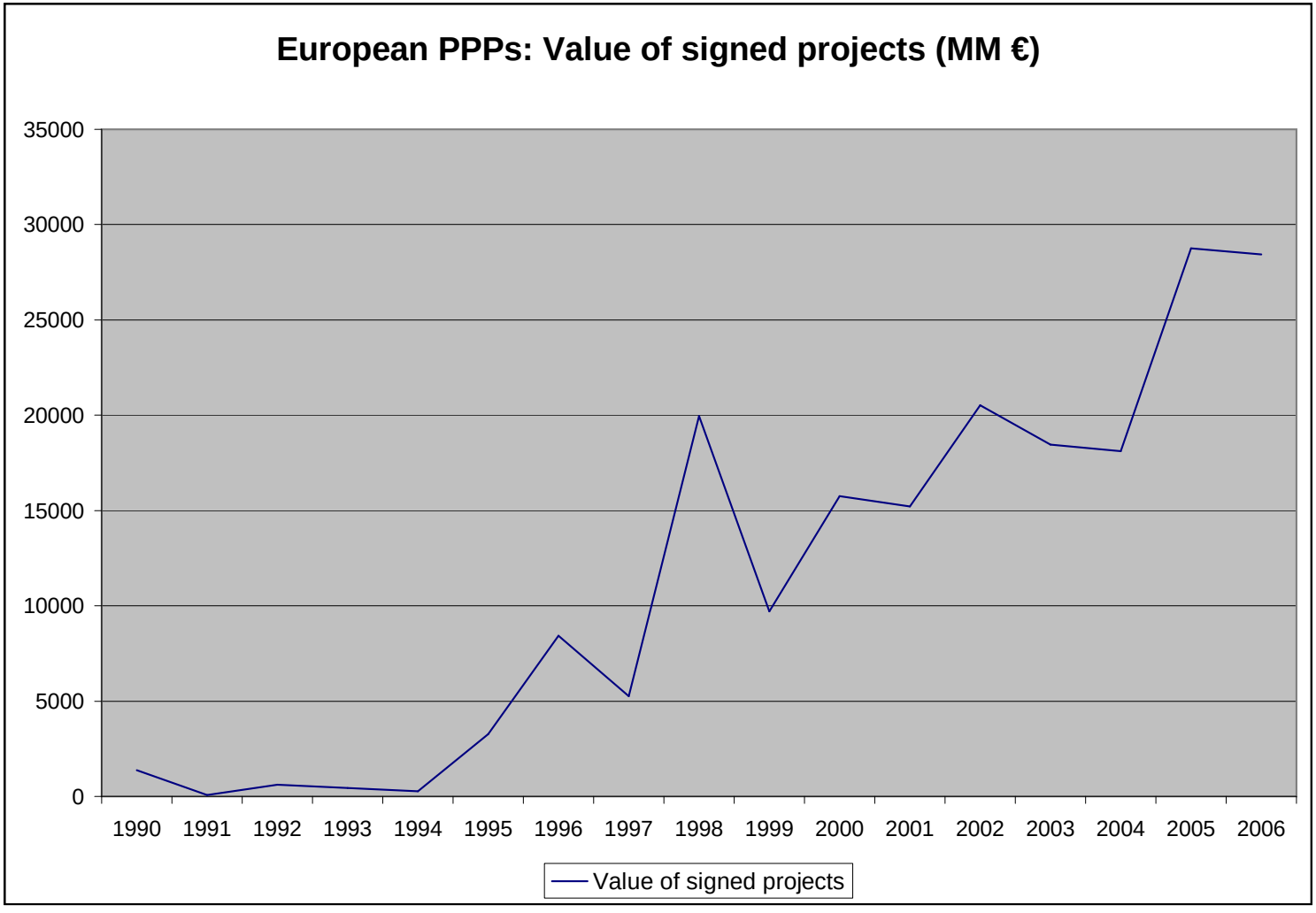
**Figure 1 Investment commitments to infrastructure projects with private participation in developing countries by sector, 1990–2006**




Source: World Bank and PPIAF, PPI Project Database.

* Adjusted by the 2006 US CPI.

# Investment in PPPs in the EU



# An evaluation of the experience with PPPs

- The recent wave of PPPs from the late 80s
- Hard to evaluate, because

compared to what?

- Overall: under certain conditions good results, but disappointment can occur
- What are the lessons we've learned?

# Talk Outline

1. What is a PPP?
2. Why PPPs?
3. How it has been done
4. Contract design
5. Public finance
6. Governance and political economy
7. Conclusion

# 1. What is a PPP?

- PPPs lie somewhere between public provision (the "traditional model") and privatization
- What are the essential and non essential characteristics of public provision and privatization?

# Public provision: Essentials

- Assets are owned by the public sector (national government, state, municipality)
- Public budget is residual claimant
  - construction risk
  - maintenance risk
  - demand risk
- Planning by the public sector

# Public Provision: Non-essentials

- User fees may or may not be charged (e.g., tolled public roads vs. free hospitals)
- Components or everything can be contracted out to private firms (e.g., construction, maintenance, toll collection)

# Private Provision: Essentials

- Assets are owned by the private firm forever
- User fees are usually the exclusive source of revenue
- Planning by private firms
- Shareholders are residual claimants
    - construction risk
    - maintenance risk
    - demand risk

# Private Provision: Non-essentials

- Prices may be regulated (e.g. electricity distribution)
- "Quality" may be regulated (e.g. banks, securities markets)
- There may be relationships with the state (e.g., food stamps, free prescription drugs distributed through a private retailer, per-unit subsidies, rural telephony auctions)

# PPP: Essentials

- Assets are temporarily owned by the private firm
- State and private firm are both residual claimants, in ambiguous terms
    - construction risk
    - maintenance risk
    - demand risk
- Substantial public planning

# 2. Why PPPs?

1. What's wrong with the traditional model?
2. The supposed virtues of PPPs

# 2.1 What's wrong with the traditional model?

- Time and cost overruns are common
- Conservative or over-engineered designs
- Optimistic demand estimates

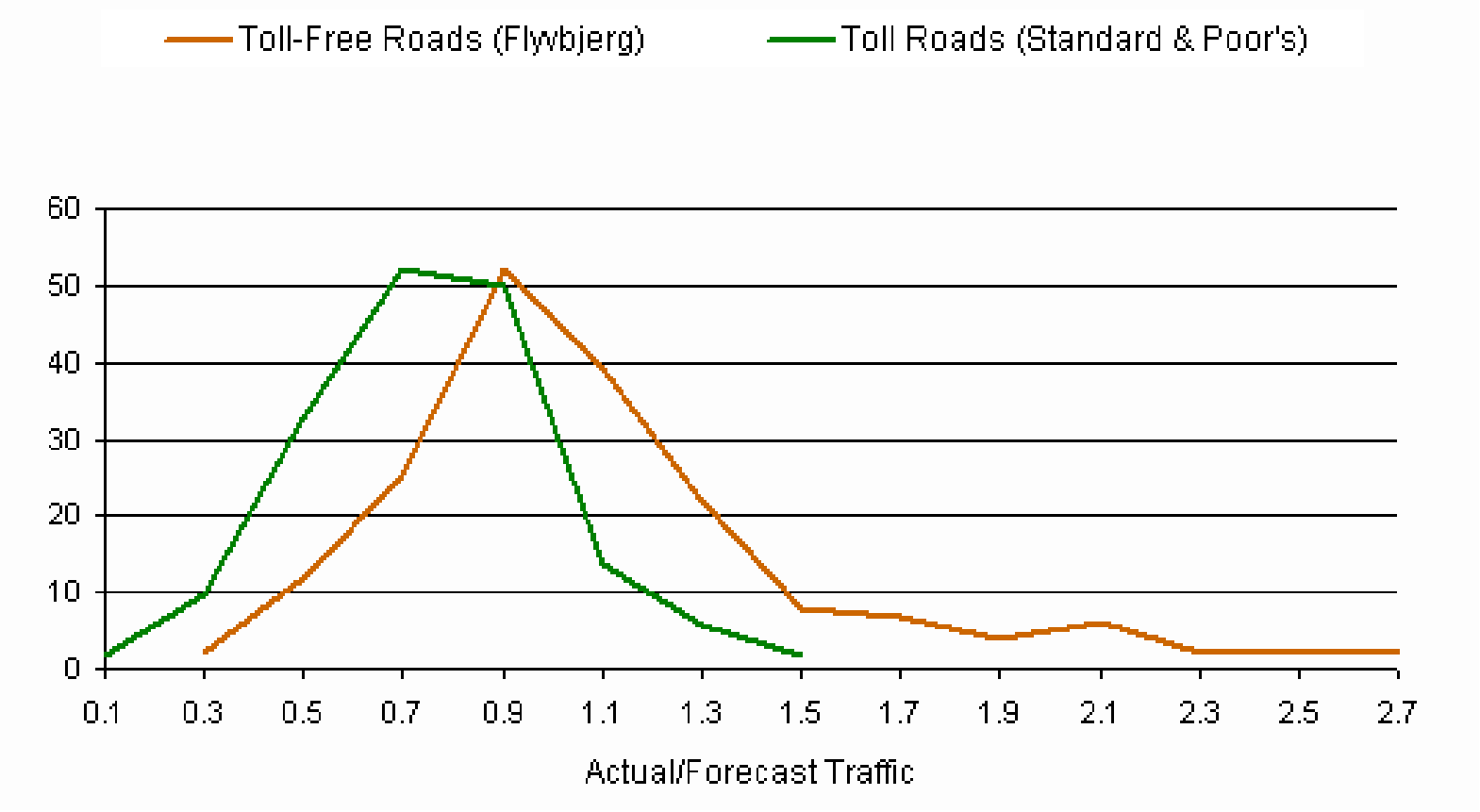
# Evidence of Cost Overruns in traditional model

Table 1. Average cost escalation for rail, fixed links and roads, respectively (constant prices). For all project types, the average cost escalation is different from zero with extremely high significance.

| Type of project | Number of cases ($n$) | Average cost escalation (%) | SD | Level of significance, $p$ |
|---|---|---|---|---|
| Rail | 58 | 44.7 | 38.4 | $<0.001$ |
| Fixed links | 33 | 33.8 | 62.4 | 0.004 |
| Road | 167 | 20.4 | 29.9 | $<0.001$ |
| All projects | 258 | 27.6 | 38.7 | $<0.001$ |

Source: Flyvbjerg et al 2003

# Evidence of Traffic Prediction Inaccuracy




Source: Traffic Forecasting Risk: Study Update 2004

# 2.2. The supposed virtues of PPPs

1. Private firms are more efficient
2. Bundling of building, maintenance and operations
3. Relieve strained public budgets
4. Distributive considerations
5. Auctions for PPPs brings us closer to the competitive outcome.
6. Political economy considerations:
   - 6.1 Easier to introduce user fees
   - 6.2 Help to avoid *white elephants*

# Adam Smith on white elephants

"The greater part of public works may easily be so managed, as to afford a particular revenue sufficient for defraying their own expense, without bringing any burden upon the general revenue of society [. . . ] When high roads [. . . ] are in this manner made and supported by the commerce that is carried on by means of them, they can be made only where that commerce requires them. Their expence too, their grandeur and magnificence, must be suited to what that commerce can afford to pay. [. . . ] A magnificent road cannot be made [. . . ] merely because it happens to lead to the country villa of the intendant of the province, or to that of some great lord to whom the intendant finds it convenient to make his court."

Adam Smith. *The Wealth of Nations*. V.1.III.1.

# Shortcomings of PPPs

- High contracting costs $\Rightarrow$ only for large projects
- Second best pricing induces distortions: price $\neq$ marginal cost
- Williamson's critique: competition $\longrightarrow$ bilateral monopoly
- Soft budget constraints:
  - governments provide minimum income guarantees
  - poor budgetary accounting of contingent liabilities
  - pervasive renegotiations of contracts
- Government temptation to spend.

# PPPs or Full Privatization?

**In favor of privatization:**

- Larger efficiency gains, no incentive problem at end of contract
- Larger bundling advantages
- Relation to budget is severed (later)

**In favor of PPPs:**

- Competitive auction substitutes for regulation
- Facilitates adaptive, sequential decision making
- Smaller risk premium when privatizing

# Contract characteristics/deficiencies

- Fixed term contracts (e.g. 15 or 30 years)
- Assigned via auctions (and bilateral negotiation)
- Government minimum-income guarantees
- No (or poor) fiscal accounting
- A single agency in charge of
  - planning
  - procurement
  - enforcement
  - regulation

# Renegotiations vs. Flexibility

- PPPs: essentially incomplete contracts
- ex-post renegotiations may generate welfare gains
- “Good faith” (truly unforeseen circumstance) vs. “bad faith” (e.g., opportunistic) renegotiations
- Would prefer flexible contracts immune to opportunistic renegotiations

# Renegotiations make life easier for firms

| *Renegotiation outcome* | *Percentage of renegotiated concession contracts with that outcome* |
|---|---|
| Delays on investment obligations targets | 69 |
| Acceleration of investment obligations | 18 |
| Tariff increases | 62 |
| Tariff decreases | 19 |
| Increase in the number of cost components with an automatic pass-through to tariff increases | 59 |
| Extension of concession period | 38 |
| Reduction of investment obligations | 62 |
| Adjustment of canon—annual fee paid by operator to government | |
| Favorable to operator | 31 |
| Unfavorable to operator | 17 |
| Changes in the asset-capital base | |
| Favorable to operator | 46 |
| Unfavorable to operator | 22 |

Source: Guasch (2004)

# Why are "bad" renegotiations pervasive?

- Careless government:
  - faulty contract or project design
  - defective regulation
- Opportunistic government (expropriation)
- Opportunistic firms
  - firms aware that profits made in renegotiations
- Corruption

# Do Renegotiations Decrease Welfare?

**Perhaps they do not:**

- All firms know they'll renegotiate ex-post
- In the competitive auction they all bid more aggressively
- The same outcome as without renegotiations
- Also: renegotiations are about distribution, as long as they don't affect productive decisions...

**Maybe they do:**

- Transaction costs
- Hold-up leads to inefficient ex-ante decisions
- Renegotiations undermine public support for PPPs
- Renegotiations select inefficient firms

# Income guarantees and renegotiations

**In favor:**

- Reduce risk premium needed to attract firms
- Reduce incentives to renegotiate

**Against:**

- Weaken the market test for white elephants (requires social evaluation)
- Often, poor budgetary accounting:
  - current government can sidestep the normal budgetary process
  - guarantees are a means by which governments anticipate spending

# 4. Contract Design

- Incentives to build the infrastructure in time
- Incentives for maintenance and service toward the end of the contract
- Variable term concessions

# Variable Term Concessions

Many PPPs have the following characteristics:

1. High demand uncertainty, most of which is beyond the control of the firm
2. Despite demand uncertainty, it is clear that if the concession lasts long enough, eventually the project will be profitable

# A Simple Variable Term Contract

- The regulator sets the toll and discount rate (e.g., EUROBOR$+x$)
- Firms bid (or negotiate) the present value of user-fee revenue they want to collect from users
- The contract is awarded to the lowest bid
- The contract lasts until the firm collects user revenue equal to the winning bid
- A Present-Value-of-Revenue (PVR) contract/auction

# Example

- Two firms
- Firm A:
  - **Cost**: 100, **Bid**: 120.
- Firm B:
  - **Cost**: 110, **Bid**: 125.
- Firm A wins and operates the franchise until PV of user fee revenue is 120

# Advantages of PVR Contracts I

Reduction in demand risk:

- contract lengthens when demand is lower than anticipated
- shortens when it is higher than expected
- lowers the risk premium (by up to 30% EFG-JPE-2001) ...
- ... and reduces the demand for guarantees
- ... and excuses for opportunistic renegotiations

# Advantages of PVR Contracts II

Fair compensation easily defined $\Rightarrow$ more adaptable:

- fast demand growth requires additional lanes
- adjustable congestion tolls in urban toll roads
- in certain dimensions the government can act 'as if' the contract did not exist, without affecting the firm's value
- the winning bid minus the PV of user-fee revenue collected is a sufficient estimate of the residual value of the contract

# Experience with PVR Contracts

# Experience with PVR contracts

- UK, 1989: PVR contract (no auction): Queen Elizabeth II Bridge at Dartford
- Chile 1998, Santiago–Valparaíso highway (US$ 400 M)
- Chile 2008, Route 160 betwen Tres Pinos and coronel, PVR = US$ 300 M
- Portugal, Litoral Centro: 98.4km highway along the Atlantic coast, PVR = €784 M.
- Portugal planning to use flexible term franchises for all future highways.

# Why hasn't PVR been used more often?

- Opposed:
  - firms: difficult to renegotiate
  - public works authority: concessionaires do not like it
- In favor:
  - fiscal authority: avoids government guarantees

# 5. Public Finance

Do PPPs relieve strained public budgets?

- not good economics
- not true in present discounted terms
- PPPs are essentially a public finance problem

# A Useful Benchmark

Assume:

- risk neutral firm
- no economic rents for the firm
- no efficiency advantage for private providers

Then public provision and PPP have the same intertemporal impact on the government budget.

# A Useful Benchmark

**Public Provision:**

$$\text{EPDV}(\textsf{Gov Income}) = \text{EPDV}_0^{\infty}(\textsf{Fees}) - \text{Inv}.$$

**PPP:**

$$\begin{aligned}
\text{EPDV}(\textsf{Gov Income}) &= \text{EPDV}_T^{\infty}(\textsf{Fees}) - \text{EPDV}(\textsf{Gov Transfers}), \\
\text{EPDV}(\textsf{Firm Profits}) &= \text{EPDV}_0^{T}(\textsf{Fees}) + \text{EPDV}(\textsf{Gov Transfers}) - \text{Inv}.
\end{aligned}$$

Could incorporate maintenance and operations costs as well.

# A Useful Benchmark

And since:

$$\text{EPDV}(\textsf{Firm Profits}) = 0,$$

we also have:

$$\text{EPDV}(\textsf{Gov Income}) = \text{EPDV}_0^{\infty}(\textsf{Fees}) - \text{Inv}.$$

**The future revenue lost by ceding income flows to the private sector exactly offsets the investment savings made by the government early on in the relationship.**

How to account for PPPs in fiscal accounting?

# 4. Governance and Political Economy

- How should a guarantee be accounted for in the current budget?
- How should a renegotiation and the foregone future income be accounted for?
- How should you design the PPP unit?

# Institutional Design

- Typically the unit in charge of enforcing the contract (and eventual renegotiations) is the same unit that granted the contract in the first place
- Hence incentives to hide its mistakes...
- ...and to be careless when designing the contract
- Separate planning from regulation/enforcement of contracts

# PPPs Help Governments Anticipate Spending

Via guarantees:

- A guarantee is a contingent subsidy, likely to be paid out by future administrations.
- The current administration has incentives to provide more guarantees than is socially optimal.
- Could even finance projects that cannot pay their way and require subsidies in all states of demand.

Via renegotiations:

- A renegotiation allows you to increase current expenditure, in exchange for additional future cash flows for the firm

# 6. Conclusion

- How should it be done?
- Ideally: economic characteristics of the infrastructure should determine how the service is best provided (the 'normative approach')
  - natural monopoly $\longrightarrow$ price regulation
  - constant returns to scale $\longrightarrow$ competition
  - public infrastructure $\longrightarrow$ ?
- We focus on highways
- Recall the economic characteristics of highways ...
- ... before we review our main results

# Economic Characteristics: Investments

- Large upfront investments
- Long-lived assets
- Usually a natural monopoly (intercity) or part of a network (urban) or both

# Economic Characteristics: Operation

- Comparatively "low" operation & maintenance costs, that are function of use
- Excludable
- Electronic tolling feasible
- Highways are subject to congestion

# Economic Characteristics: Demand characteristics

- Substantial, exogenous demand risk
- Traffic projection studies are bad predictors of actual traffic
- Risk sharing is an essential part of the problem

# Public, private or PPP?

- Private participation difficult to justify because the relieve strained public budgets
- Private participation is warranted when private firms' productive efficiency is higher

# The shape of the contract

- Fixed-term concessions are inappropriate
- Variable term concessions are appropriate

# Governance

- Planning–procurement-enforcement–regulation should not be in one hand
- PPP agency may plan and procure, but social cost-benefit appraisals should be performed or at least evaluated by independent agency
- Regulation and enforcement should not be in the hands of the PPP unit

# Fiscal accounting

- Subsidies should affect the cash flow available to the current administration (one-for-one in present discounted terms)
- Contingent liabilities should be accounted for in the budget and be publicly available
- PPP assets should count as public assets

# The Future of PPPs

- They are here to stay ... and likely to become increasingly important in many countries
- Major improvements in contract design, auction mechanism and governance are possible
- Countries are learning from their mistakes, when undertaking a second wave of PPP contracts
- Can countries that are beginning to use PPPs avoid these mistakes?