

An Introduction to Public-Private Partnerships (PPPs)

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Overview

- What are PPPs?
- PPP Structures
- Mega-Projects
- Successful examples

Public-Private Partnerships

- Long-term contract between public and private sector where private sector performs service delivery
- Payments made over life of contract to private sector (by public sector or users)
- Design, construction, financing, and operation of public infrastructure by private sector

Benefits

- PPPs leverage of public dollars with private capital to finance and/or deliver service
- May shift cost burden away from general taxes on public to specific user fees for those receiving benefit
 - Example: public funded freeway vs. privately financed toll road

Typical Public Sector Project

- Design-Bid-Build typical public sector procurement
- Public sector funds full costs, including overruns
- Public sector specifies design or bids design and then bids for construction based on design

How is PPP different?

- Public sector specifies desired “outputs” or public service the facility will provide
- Private sector design-finance-build-operate facility to meet those public service needs
- Private sector receives payments over life of PPP contract to repay financing costs and yield returns to investors
- Shifts risk from public authority to private sector (i.e. project company).

Common PPP Models

- Design Build : private sector responsible for design and construction at fixed price; cost overruns risk transferred
- Operation-Maintenance: Private sector responsible for operation and maintenance. Public retain ownership.
- Design-Build-Finance-Operate: private sector owns project and controls service delivery for fixed period of time (~25 years) before transferring asset back to public sector
- Build-Own-Operate: private sector retains ownership of asset in perpetuity, but gov. purchases services for fixed length of time.

Project Finance

- Project finance key to understanding PPPs
 - Highly leveraged, nonrecourse debt
 - Lending occurs against cash-flow generated by project
 - Concession allows private sector to collect user fees
 - SPV (special purpose vehicle) created with no liability beyond project or recourse to sponsor

Project Finance for Road Concession

- Project company owned by private investors
- Financed through shareholder equity and project-finance debt
- Concession agreement with public authority. Allows for collection of tolls from road users, but does not usually involve payment by or to public authority
- Cash flow after operating expenses (operating and maintenance contracts) goes first to debt service and then to investors.

Subcontracts: Road Concession

- Design and build contract—contractor agrees to design and construct the completed road and related works (toll booths) to required specs at fixed schedule and price
- Operating contract—toll operation company provides services such as manning toll booths, minor repairs, accident management
- Maintenance contract—maintenance company provides road maintenance services

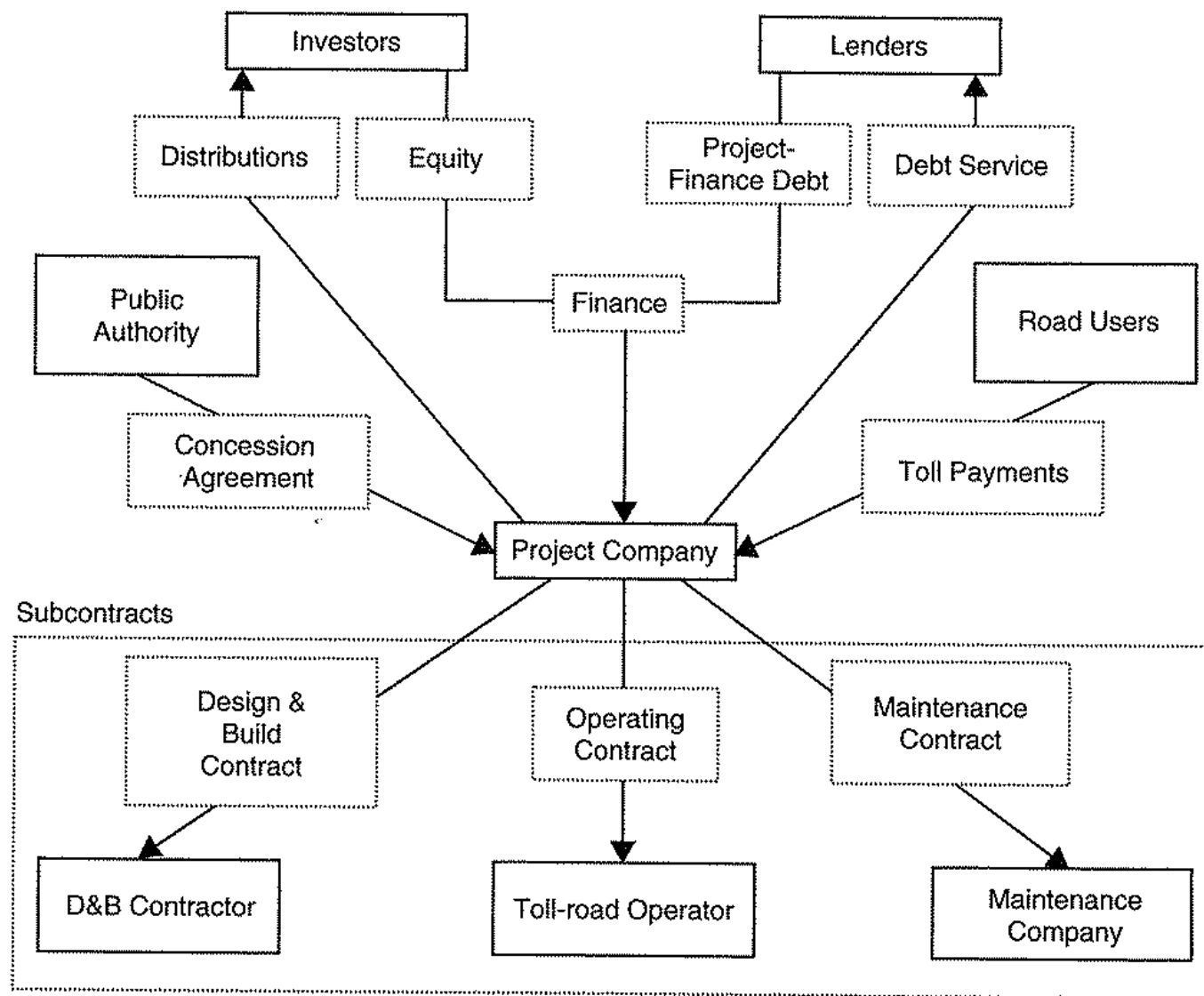


Figure 1.2 Project finance for a road Concession

Risks

- Construction period
 - Technological risk
 - Environmental risk
- Operation period
 - Market risk (price fluctuations)
 - Political risk

Technological Risk

- Project may be unique and not easily replicated in other places
- Engineering and design failures
- Lead to delays in construction and cost escalation

Environmental Risks

- Adverse environmental impacts and hazards
- Delay project and lead to cost escalation
- Require costly mitigation
- Discover of important archaeology or fossils on site

Market Risk

- General operating risks related to higher operating costs or maintenance costs than projected
 - Due to price fluctuations or miscalculation
- Revenue risks with volatility in price and demand
- Change in interest rates or inflation

Political Risk

- Projects in emerging markets have higher premiums on borrowers due to political risks
- Involvement of multilateral development banks (MDBs) or export credit agencies mitigates this risk
- MDBs are “institutions that provide financial support and professional advice for economic and social development activities in developing countries” (World Bank)
 - Typically World Bank Group and its regional development banks.
- Change in laws or leadership change

Risk Management Strategies

- Risks retained by public authority/government
- Risks transferred to and retained by project company
- Risk transferred to project company, which tries to reallocate to subcontractors, use insurance, or sponsor guarantees
- Risk transferred to end users in concession agreement by having right to impose higher fees

Principles of Risk Transfer

- Maximize VfM (Value for Money). Transfer risk to those best able to control them at the lowest cost
- Public authority/gov retains risk private sector cannot contain cost effectively
- Those that retains risks should benefit from upside as well.

Concessions in Transportation

- In concession model, usage risk usually taken by project company
- Yescombe, a British project finance expert, estimates 10% of road concessions are financial failures (Flyvberg—has worse estimates).

Road failures

- Too optimistic view of traffic forecasts
- Difficult valuing time saved by drivers
- Lower use by higher tolled vehicles like trucks
- Slower than projected growth in traffic
- Competing connecting roads not considered in projections

Usage Risks

- In models where public authority pays service fee based on availability for use, then usage risks may occur
- Example: contract to pay to use a school facility, but it is no longer in demand due to population changes.
- Contract to use hospital, but changes in medical procedures render set-up obsolete.

Mega-Projects

- Large infrastructure projects costing >\$500 Million
- Cost requires PPP structures and complex contracting.
- Many have high failure rates

Why Mega-Projects Fail

- Large cost overruns
 - 44.7% for rail
 - 33.8% for bridges/tunnels
 - 20.4% for roads
- In accuracy of travel forecasts
 - -51.4% for rail
 - 9.5% for road

Why do these project fail?

- Technical (inadequate data and models)
- Psychological (optimism bias)
- Political-economic (strategic misrepresentation)

Technical

- Honest mistakes
- Lack of experienced forecasters
- Unreliable/outdated data
- In appropriate models
- Largely rejected as a major cause

Psychological

- Explanation where political and organization pressure is low
- Optimism bias
- Cognitive biases in how humans process information
- Involuntarily spin scenarios of success and overlook potential for mistakes

Political-economic strategies

- Planners and promoters deliberately overstate benefits and underestimate costs
- Doing so increases likelihood of funding, while honest assessments decrease likelihood.
- Competition for scarce resources
- Especially prone when there is high political or organizational pressure

Machiavelli's Formula

- Underestimate costs +
- Overestimated revenues +
- Undervalued environmental impacts +
- Overvalued development effects =
- Project approval!

Inverted Darwinism. Survival of the un-fittest.

Reference Class Forecasting (RCF)

- Identify reference class of past projects
- Establish probability distribution
- Compare project relative to the class
- Commonly results in higher expected costs and risks of cost overrun.
- Provides an “outside” view of risks.

Successful PPPs

- Chesapeake Forest
- Union Station
- Alameda Corridor

Chesapeake Forest

- Eastern Shore divested forestry holdings in eastern shore of Chesapeake Bay. Maryland lacked funds to purchase and manage lands. Jobs at stake.
- PPP purchased and managed land. Public sector monitors environmental practices and PPP managers forest in sustainable way.
- Timber harvest income makes project economically self-sustained. Generates revenue for local/state gov
- Contributes to water quality improvements in bay and keeps land out of non-forested uses

Union Station, Washington D.C.

- 1981 Union Station in disrepair, unoccupied, and in danger of demolition
- USDOT took control of project and entered PPP for restoration
- USDOT, D.C. city gov. (\$40M), Amtrak (\$70M), and a private developer (\$50M equity financing). \$160M, 5 year project. Reintroduced train and urban mass transit in addition to retail, dining and entertainment.
- Private developer pays base rent indexed for inflation and profits from operation are shared with private developer and Redevelopment corporation. Amtrak funds repaid by station revenue.

Alameda Corridor

- 20 mile express freight rail line that links the ports of Los Angeles and Long Beach to the national rail network in Los Angeles.
- Goal of reducing congestion and promoting economic development
- ½ public; ½ private funds. Estimated cost of \$1.8B, actual cost of \$2.4B.
- Yet, usage has allowed loan to be paid off 28 years ahead of schedule