Cornell Program *in* Infrastructure Policy

EDUCATING THE NEXT GENERATION OF INFRASTRUCTURE LEADERS

Public-Private Partnerships and Asset Management

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Defining Infrastructure (1)

- **Civil (or network) infrastructure:**
  - Drinking water treatment systems (pumps, plants, and pipes)
  - Wastewater treat systems (pumps, plants, and pipes)
  - Roads and highways
  - Bridges and tunnels
  - Communications systems (land line systems, cell towers, etc.)
  - Electric systems (generation, transmission, and distribution)
  - Railroads as network infrastructure (passenger and freight)
  - Solid waste removal/garbage collection
  - Street lights
  - Parking garages
  - stadiums
  - Sidewalks, etc.

- Hard infrastructure is usually part of a network (sometimes also called network infrastructure)

Defining Infrastructure (2)

- **Social infrastructure**:
  - Prisons
  - Courthouses
  - Schools
  - Hospitals
  - Senior centers
- Soft infrastructure is usually stand-alone; not part of a network; sometimes referred to as facilities

Two distinct types of infrastructure gaps:

A funding gap versus a financing gap

The funding gap: Infrastructure funding refers to the *underlying resources* (dollars) necessary to pay for infrastructure

This gap is the difference between what engineers say is needed for a "state of good repair" and what is currently available for funding

The two broad categories are some type of user fee and some type of broader tax revenue

Funding Sources for U.S. Roads and Highway Funding (2005, in percent): all gov't levels

Source	Fed.	State	Local	Total
Fuel & Vehicle Tax	20%	32%	1%	**53%**
Tolls	--	4%	1%	**5%**
Property Tax	--	--	5%	**5%**
General Fund	1%	2%	11%	**14%**
Other Tax and Fees	0%	3%	3%	**6%**
Investment Income	0%	2%	3%	**5%**
Bond Issues	--	8%	3%	**11%**
Total	**21%**	**51%**	**28%**	**100%**

Economists prefer system-wide variable per-mile road prices to pay for transportation infrastructure

The variable road price can include "externalities" that one driver imposes on another (such as congestion costs)

Once infrastructure funding is in place, then financing can come from many sources

Infrastructure Financing Sources in the United States

Tax-exempt municipal bonds

Privately issued corporate bonds

TIFIA (Transportation Infrastructure Funding and Financing Act) loans

Direct equity investment by a private investor (often considered the key aspect of a PPP)

State revolving funds (SRFs) , etc.

Where do Public-Private Partnerships (PPPs) fit in?

PPPs are an infrastructure delivery method used globally

P3s are commonly known as financing vehicles

Three Key Characteristics of PPPs:

1. Bundling of delivery functions (e.g. project design, construction, operation, maintenance, and financing)

2. The transfer of risks from taxpayers to private partners

3. A long-term relationship between the public-sector project sponsor and the private partner

Several keys to successful PPPs:

Early stakeholder involvement

Pre-proposal screen of projects for suitability as a PPP

Public-sector expertise in PPP delivery

Note that funding and financing can be explicitly separated

PPPs can be used if facility has direct user fee (e.g. toll) or if it does not

Example of availability payment PPPs

AP PPPs can include clear key performance indicators (KPIs)

Port of Miami Tunnel example

Role of public-sector PPP units in ensuring PPP success

Two PPP Success Stories:

Port of Miami Tunnel and Elizabeth River tunnels

In both cases, the state's DOT had little or no tunneling experience

Concession company in each case pioneered a tunneling method never before used in the state

No cost overruns despite being large on these megaprojects

Thank you!

Further reading: See Carter Casady & R. Richard Geddes, Private Participation in U.S. Infrastructure: The Role of PPP Units (AEI, 2016)

R. Richard Geddes, The Road to Renewal: Private Investment in U.S. Transportation Infrastructure (AEI Press, 2011)

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