Public Private Partnerships and Infrastructure Finance: Policy and Recent Evidence

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Presentation Outline

- Introduction to the Center for Transportation Public-Private Partnership Policy
- Transportation Finance in the US
- Introduction to Public Private Partnerships (P3)
- The U.S. P3 Context
- Highlighted Center Research

Center for Transportation Public – Private Partnership Policy

Center for Transportation Public-Private Partnership Policy

- Mission
  - To advance research, education and public service in the understanding of public-private partnership policy in the transportation sector

- Why is P3 research important?
  - P3s offer an important alternative to traditional funding sources, creating opportunities and challenges
  - Advancing public interest through P3s requires careful analysis by public decision-makers of costs, risks and rewards

Center´s Advisory Board

- Brings together valuable industry stakeholders

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Center´s Activities

- Hosts annual conference on P3s

3rd annual P3 Forum: *Evidence: P3s and the Evolution of Infrastructure Delivery*

Center´s Activities

- Support doctoral student research
- Peer reviewed journal articles
- Present work at academic & professional conferences
- Case studies on transportation P3 projects and programs
- White papers on topics such as best practices

Center´s Activities

Hays Outside the Box Competition

Poster Sessions at Conferences

Professional Insights Session

Transportation Finance in the US

Transportation Finance in the US

- Public and private mix of transportation services

- Ownership and Operation of Transportation by Mode
  - Roads / Highways: state and local governments, and private entities in some instances
  - Intercity passenger rail: public provision (Amtrak, a gov't corporation)
  - Urban transit: public provision (mostly city and local governments)
  - Freight rail: private provision (infrastructure and operation)
  - Air: airports have been publicly provided, while private firms operate flights
  - Sea: presence of private firms have been increasing
  - Ports: port authority model (city, county, state, interstate compact), mix of public & self financing

Highway Funding -1

- User fees
  - Excise tax on gasoline : Highway Trust Fund
  - Federal – 18.3 cents/gallon
  - Some states have their own gasoline taxes
  - Car registration fee (state)
  - Tolls (state / project)

- Non-user fees
  - Sales tax, etc. (state)

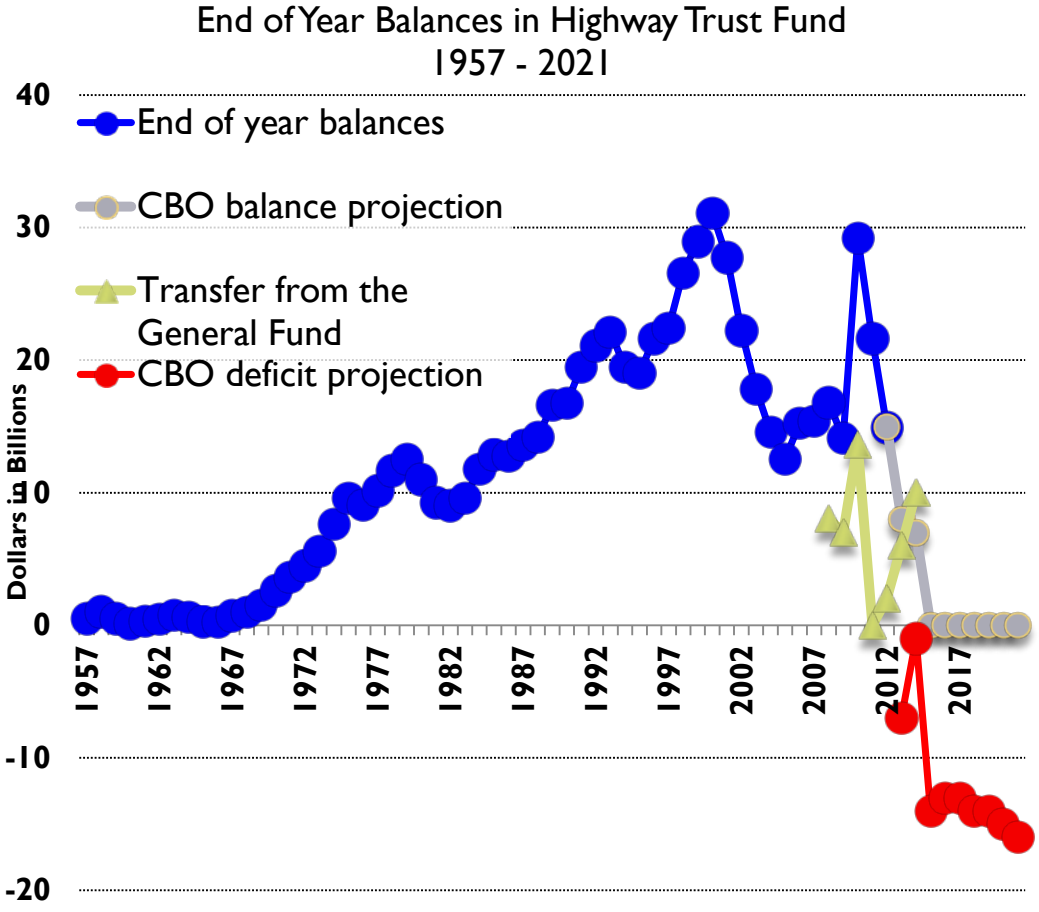
Highway Funding -2

- Debt-Financing: Bond by state and local governments
  - Tax-exempt municipal bonds
  - Various bond products (Private Activity Bond, GARVEE, ARRA, etc.)

- Debt-Financing: Loans for state and local governments
  - Transportation Infrastructure Finance and Innovation Act (TIFIA) Loan
  - State Infrastructure Bank Loans
  - Private Loans

Traditional Highway Funding Model in Crisis

- Increasing costs of construction
  - (e.g. increased regulation)
- Increasing costs of maintenance
  - (e.g. increased standards)
- Improving fuel efficiencies
  - (e.g. electric vehicles do not pay gas tax)
- Political inability to raise gas tax
  - (e.g. Taxpayer Bill or Rights in Colorado, TABOR)



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Note: CBO projections published in 2013

The Need for Innovation

Delays and Cost Overruns

And all the risks allocated to tax payers

San Francisco Bay Bridge

Boston´s Big Dig

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Note: http://baybridgeinfo.org/ and http://www.massdot.state.ma.us/highway/thebigdig.aspx

Public-Private Partnerships (P3s)

What are Public – Private Partnerships (P3s)?

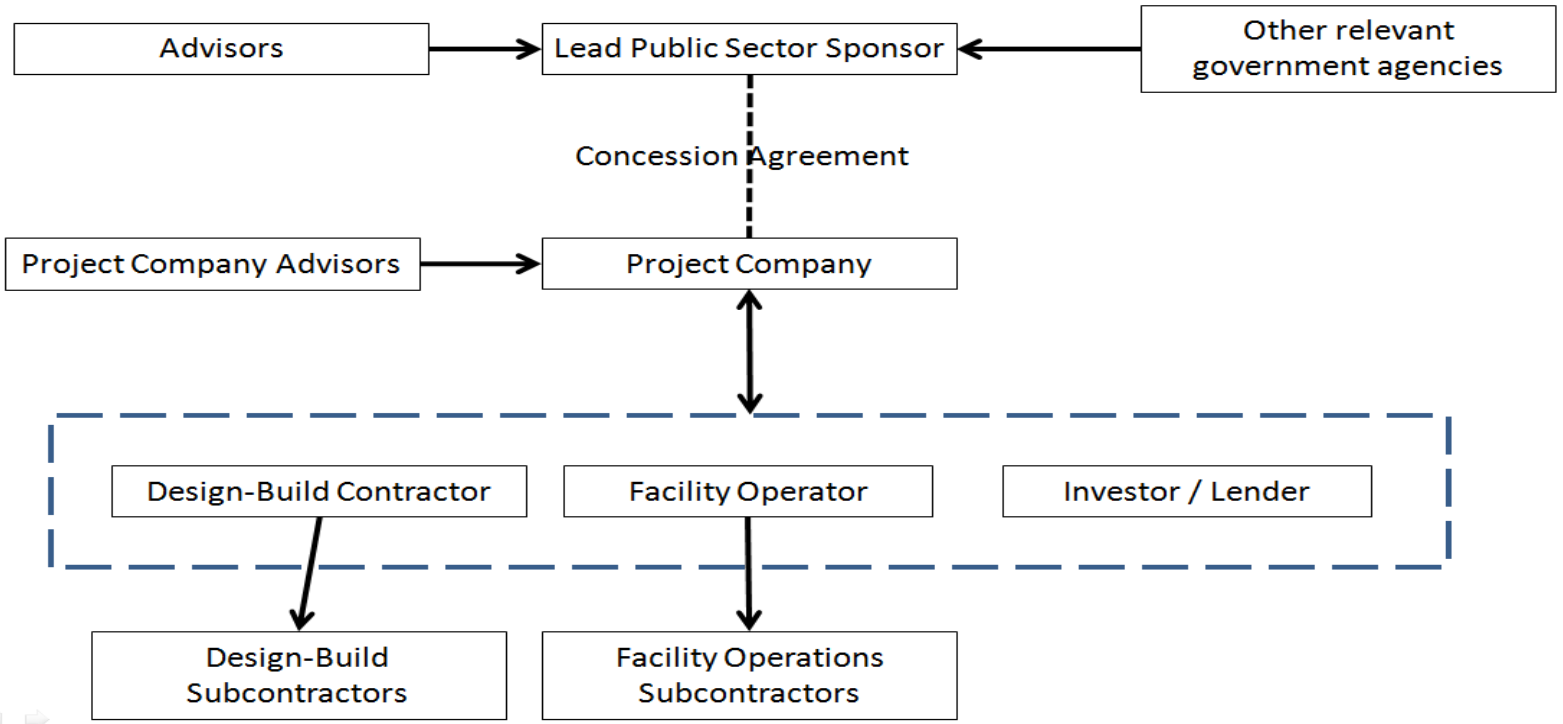
- Procurement mechanism to address issues of public provision model

- P3s: long-term contractual agreement between public and private partners to provide services traditionally done by the governments
  - Bundling of project delivery stages
  - Allocation of some project risks to the private partner

- A wide range of P3 contract types have been used
  - Design-Build
  - Design-Build-Operate-Maintain
  - Design-Build-Finance-Operate-Maintain
  - Lease, etc.

P3s: Project Arrangement

P3s employ complex project arrangements



Source: Public –Private Partnership Concessions for Highway projects: A Primer, the Federal highway Administration (FHWA)

Infrastructure Risks – What can be shifted?

- Political
  - Nationalization of project
  - Changes in law
  - Delays
- Revenue
  - Insufficient income from fares or tolls
  - Insufficient income from other operations
  - Insufficient traffic
- Capital Expenditures
  - Project schedule
  - Commodity prices/availability
  - Construction cost
- Operations & Maintenance (O&M)
  - Performance risk
  - Operating cost overrun
- Financing
  - Refinancing risks
  - Spread between O&M and revenue growth rates

Source: Nima, Attar. Infrastructure Business Models: Research and Analysis, ASCE Membership & Community

Financial Characteristics of P3s

- Funding Sources –how do you fund the infrastructure?
  - Private shareholder equity
  - Non-taxable bonds (e.g., municipal bonds, private activity bonds)
  - Taxable bonds
  - Bank debt (senior and/or subordinate)
  - State infrastructure bank loans
  - Federal loans (e.g., TIFIA)

- Revenue Sources –how do you recover the investment?
  - Direct User Charges (Tolls, Transit Fares, User Fees)
  - Shadow Tolls
  - Public Subsidies
  - Availability Payments
  - Combination of above

Source: Nima, Attar. Infrastructure Business Models: Research and Analysis, ASCE Membership & Community

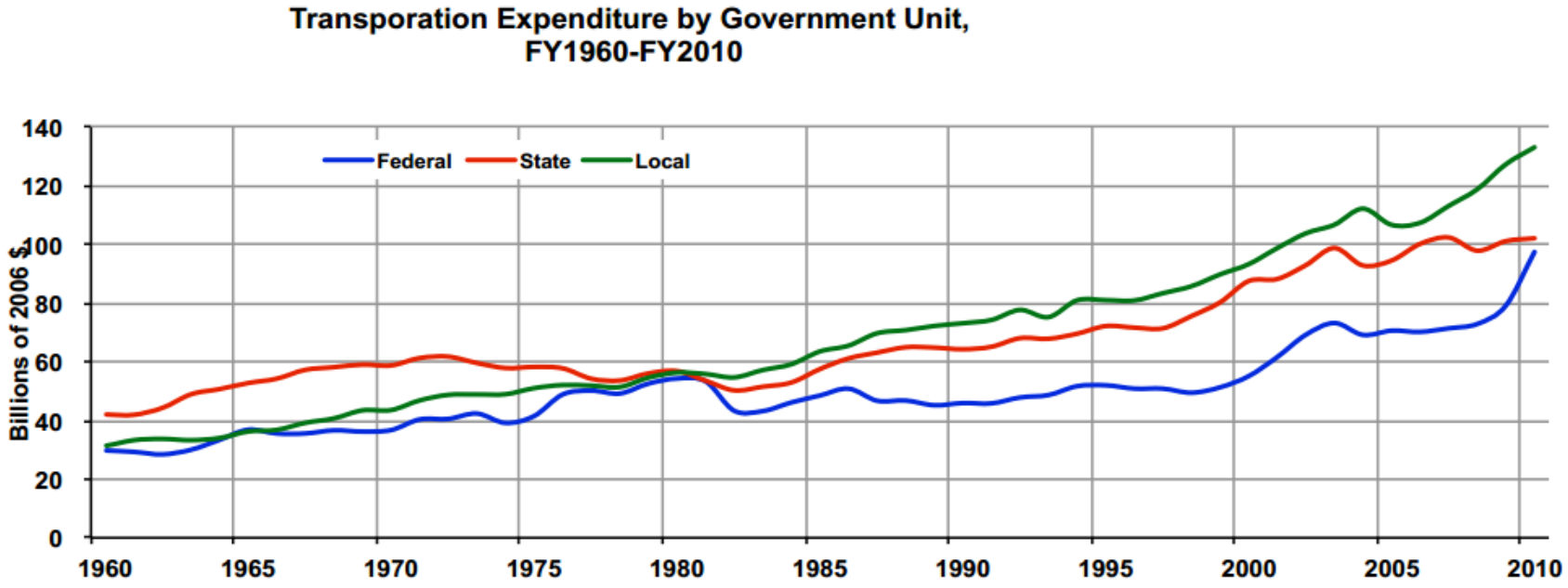
P3s: Advantages and Disadvantages

- Advantages
  - Accelerated delivery and availability to the public
  - On-budget, on-time delivery
  - Utilization of private financial resources
  - Cost saving through innovative practices of the private sector
  - Risks are more visible

- Disadvantages
  - Substantial transaction costs (e.g., legal, financial and technical consulting service fee, higher interest costs in cases of private debt-financing)
  - Complexity requires highly skilled civil servants
  - Government labor unions may perceive this as a threat
  - Country institution may favor opportunistic behavior from different players

The U.S. P3 Context

Government Transportation Funding is Decentralized



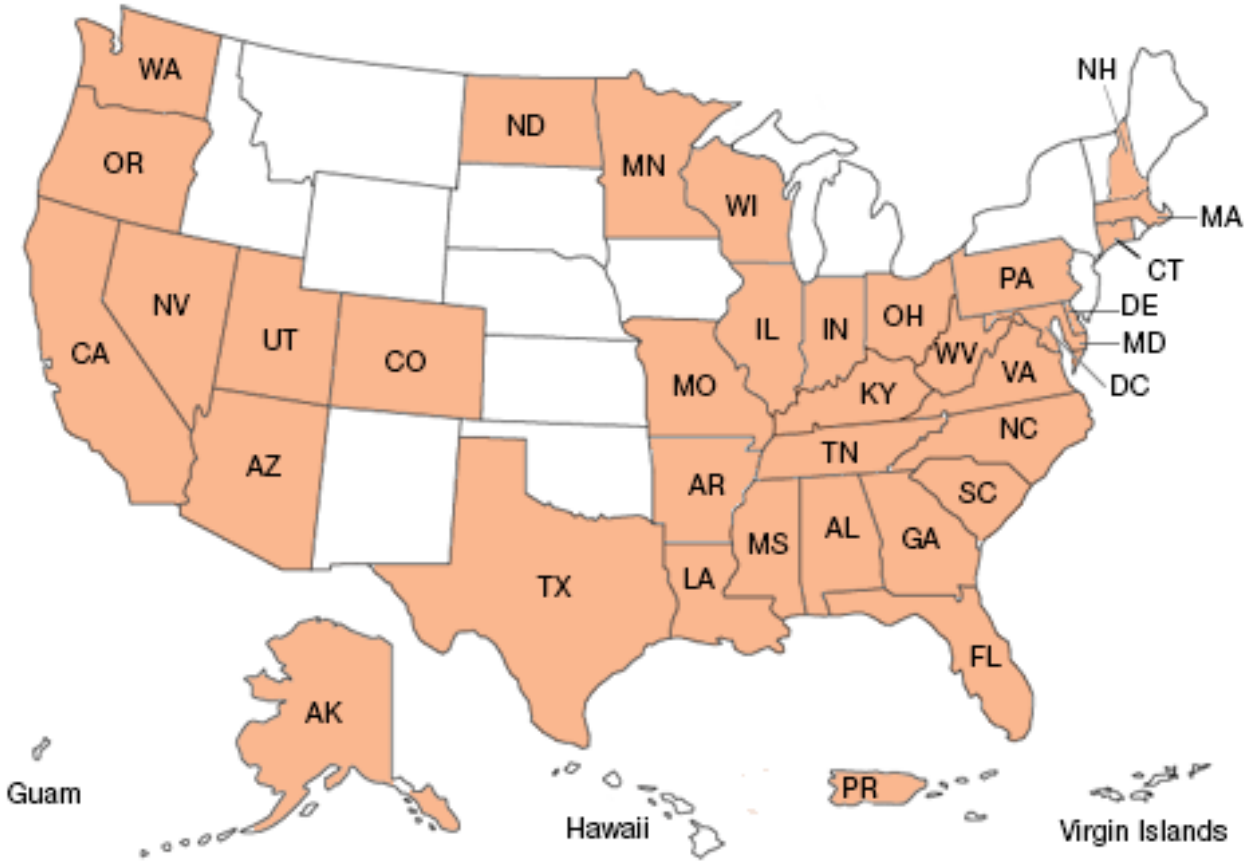
Note: Gifford (2012).

A Federal System

- Authority is fragmented
  - Coordination is hard to achieve
  - Experimentation allows innovations
- Infrastructure authority is centered at the state level
- Example: South Bay Expressway
  - The State of California implements the P3 project
  - Some Federal agencies oppose the project on environmental grounds
  - A group of Local governments bought the asset
  - Other states learn and improve the Californian P3 approach

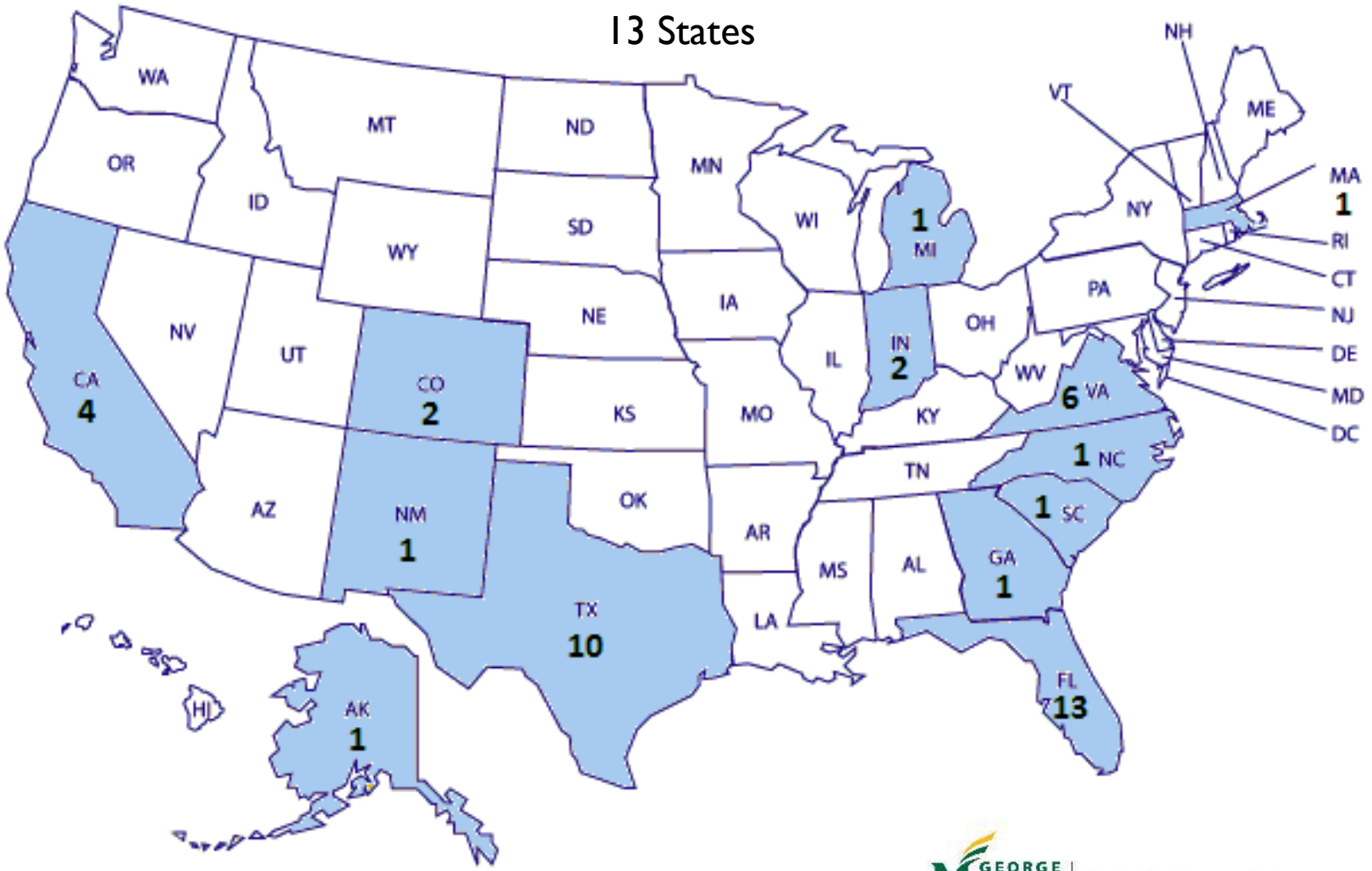
U.S. Transportation P3 Market – State Enabling Legislation

35 States, District of Columbia, Puerto Rico have enabling legislation



Source: U.S. Federal Highway Administration Office of Innovative Program Delivery (retrieved August 2016

U.S. Transportation P3 Market – Highway Projects



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Puerto Rico not shown. Source: Public Works Financing and InfraDeals

The U.S. Context Impacts P3 Governance Structure

- Federal
  - Grant and loan programs on infrastructure
  - Deductibility of municipal bond interests
- State
  - Authority resides here
  - Some of the assets are in this level
  - Implements some of the transportation P3 projects
- Local
  - Some of the assets are in this level
  - Implements some of the transportation P3 projects

Institutional Framework

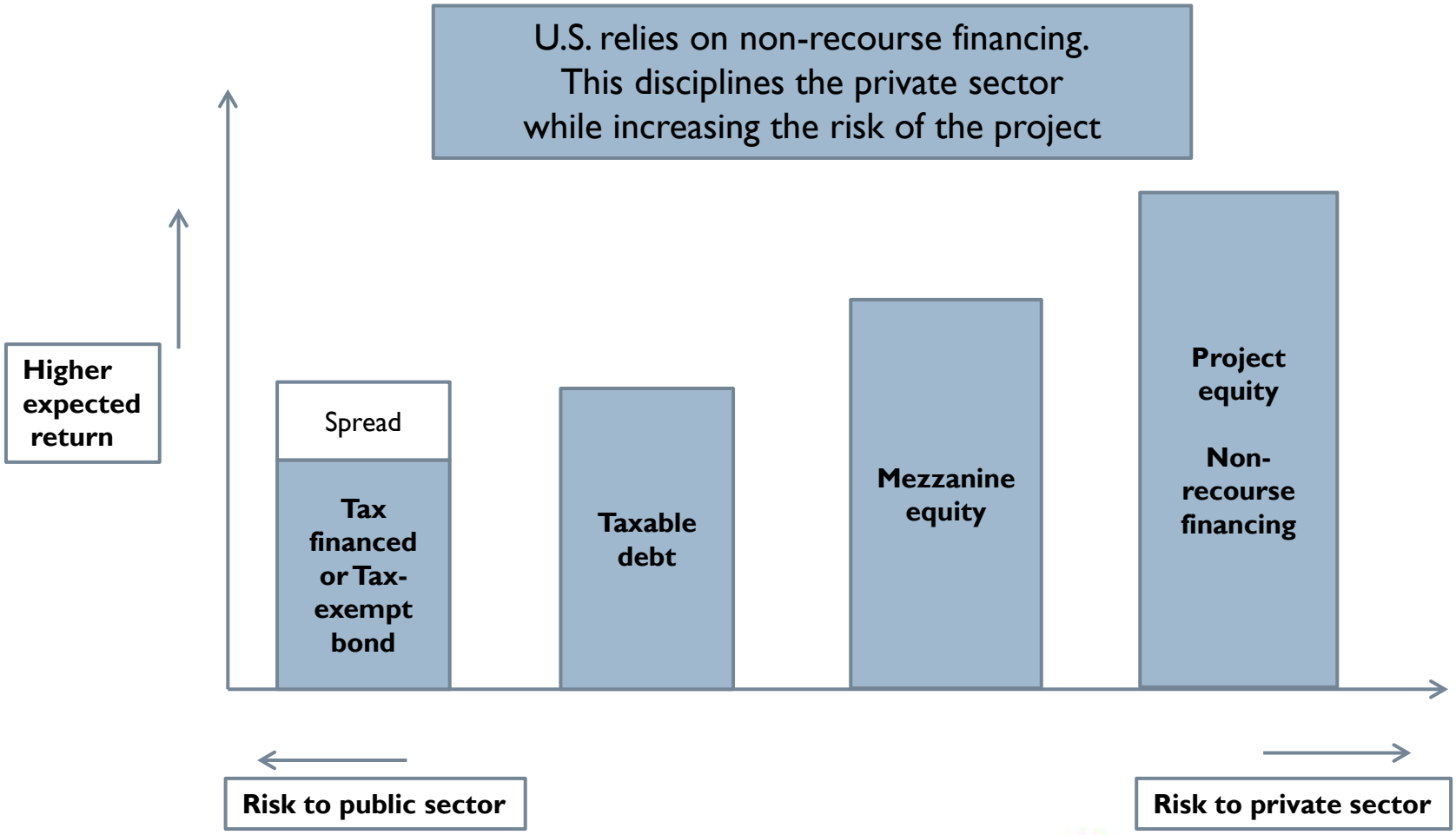
- TABOR - Taxpayer Bill of Rights
  - Limits funding in certain states – affecting infrastructure
- Litigation by citizens
  - Important avenue to oppose political and bureaucratic decisions
  - Several projects that have been canceled or nearly canceled: U.S. 460
  - Other have faced serious financial risks: Elizabeth River Crossings
- Bankruptcy – Chapter 11 and Active Capital Market
  - Chapter 11: favors the continuation of the business
  - Active capital market: facilitates competition for better concessionaires

United States – P3 Market Characteristics

- The market is growing but it has been slow
  - Competing sources of funds: Tax-exempt bonds, Highway Trust Fund
- Federal system promotes experimentation but hinders coordination across government levels
  - E.g., I-95 HOV/HOT Lanes, Arlington county vs Commonwealth of Virginia
- Federal level promotes P3s in different ways
  - BATIC (July 2016): Project preparation, credit assistance (TIFIA, RRIF, PABs), FASTLANE grants
- Litigation by citizens

Source: http://nast.org/wp-content/uploads/2016/03/P3.pdf

Different Types of P3 Financing Mechanisms



Source: Based on Josh Evans, Bostonia Partners (July 2014)

United States – P3 Trends

- Learning curve has improved delivery
  - E.g. Presidio Parkway vs. South Bay Expressway. More on-time delivery
- Traditional funding sources drying up; P3s more appealing
  - Debt-limits, opposition to tax hikes
  - Ongoing debate between availability payments vs revenue-risk
- P3 project pipeline expanding beyond transportation
  - E.g., University housing, Social infrastructure
- P3s battling political headwinds
  - VA – P3 office absorbed into VDOT; TX – P3 office disbanded; CA – P3 law expires 2016; FL – cancelled projects

P3 Center Research: Renegotiation of P3s

Summary

- 6 case studies of renegotiations were undertaken
  - SR 91 Express Lanes
  - South Bay Expressway
  - Indiana Toll Road
  - Dulles Greenway
  - Pocahontas Parkway
  - Elizabeth River Crossings

- What can be learned from P3 renegotiations in the US?
  - Main explanations for renegotiations in the U.S. P3 highways
    - Exogenous shocks: Great Recession and policy response
    - Contract complexity: novelty, civil rights concerns, risk transfer

Drivers of Renegotiation

Opportunism

Renegotiation occurs **to extract rents**, taking advantage of the incompleteness of the contract

See: Guasch (2004)

Exogenous changes

Renegotiation occurs **to adapt to unexpected exogenous events** that affect benefits of participants

See: De Brux (2010)

Contract complexity

Renegotiation occurs **to adapt to unexpected complexities** of the project

See: Saussier et al. (2009)

Winner´s curse

Renegotiation occurs **to diminish the loses of the bid winner** when it had unrealizable expectations

See: Athias et al. (2009)

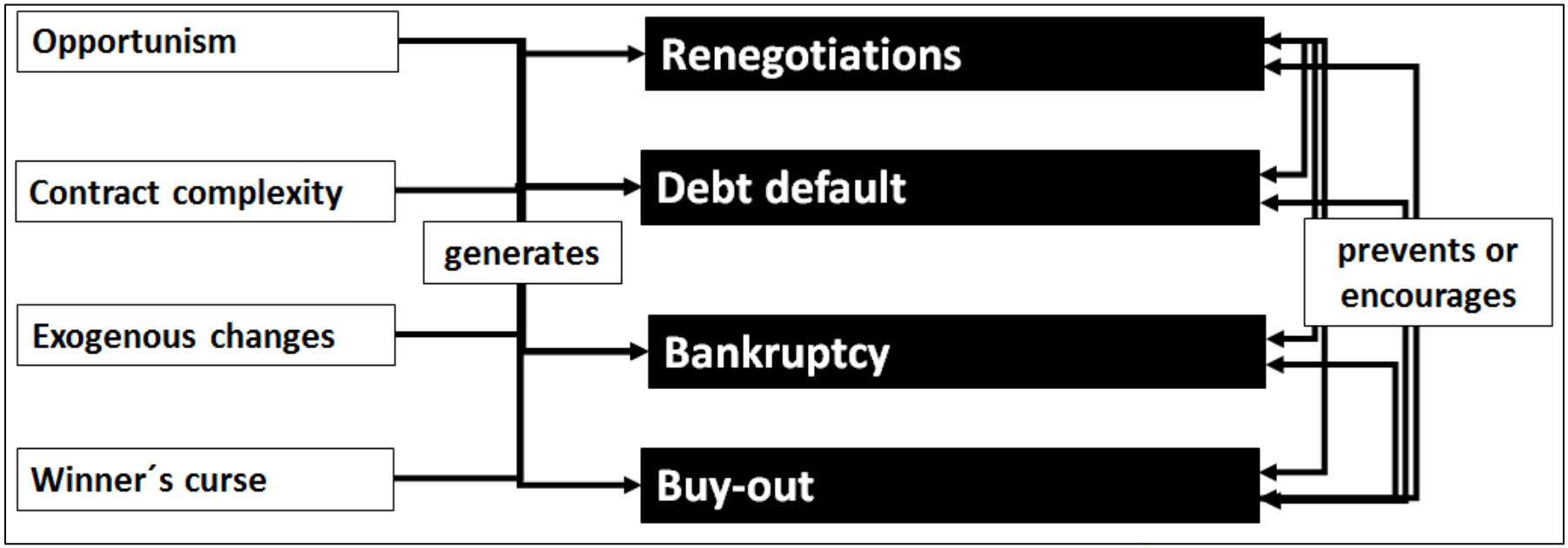
Renegotiation is One of Four Potential Outcomes

Renegotiations	Bankruptcy
Modifications of the conditions of the P3 contractual agreements	Legal status of an entity that cannot repay its debt. The court may approve liquidation or debt relief

Debt default	Buy-out
Inability to meet debt repayment obligations (interests and/or principal) when due	SPV is acquired by a new owner with different skills and risk preferences

Relevance of a Framework for P3 Renegotiations

- Are renegotiations a failure or a success?
  - Is it enough to analyze what was under renegotiation?
  - What do we learn if we also consider alternative outcomes?



When Renegotiations Are Not An Option

- Bankruptcy is a real risk
  - Private sector is internalizing most of the financial loses
  - Bankruptcy costs go to private operators
  - And also to creditors (debt reduction and reorganization)
  - No government debt-guarantees
  - Only in SBX we see government money lost (TIFIA loan)
  - However, TIFIA´s "spring lien" was useful to protect the public sector
- Are buy-outs an option?
  - There is an active capital market
    - It diminishes the monopoly power of the incumbent private operator
    - It is an alternative to inconvenient renegotiations and bankruptcies

P3 Center Research: Evidence Project

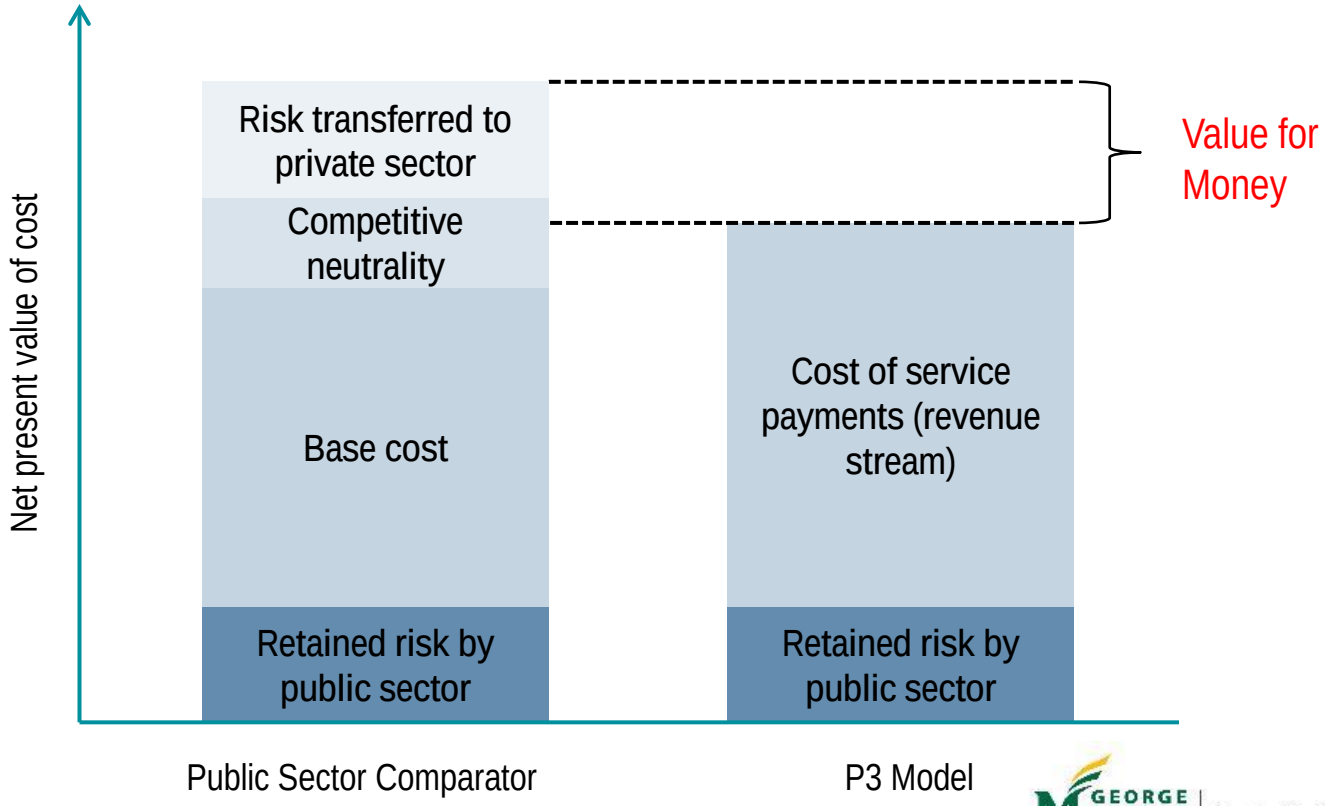
How are P3s actually Doing?

- Empirical evidence – not sufficient
  - Are they really saving costs?
  - Failures (e.g. bankruptcy) are more visible than successful continuing operation
  - Few US P3 concessions have reached maturity
  - Comprehensive analysis quite difficult : US P3 market highly fragmented
  - Relationships between the states' P3 institutions and their usage of P3s

Evaluating P3 Savings

Value for money (VfM)

How much $$ (if any) is saved through P3 versus conventional approach



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Source: Grimsey, Lewis 2005, Morallos, Amekudzi 2008, Siemiatycki, Farooqi 2012

Data & Method

- Data collection by contacting DOTs
- 13 VfM studies identified, 7 were analyzed

Project Name	Public Sponsor	Capital (million) [1]		Current Status
Presidio Parkway Phase 2	California DOT	$365	x	Under construction
I-595 Managed Lanes	Florida DOT	$1,814	x	In operation
Port of Miami Tunnel	Florida DOT	$914	x	In operation
I-4 Ultimate	Florida DOT	$2,323	x	Under construction
Brent Spence Bridge	Ohio DOT	$2,632	[2]	Procurement TBA
I-64 Managed Lanes	Virginia DOT	$2,957	[2,3]	Project deferred
I-85 Renewal Project	Virginia DOT	$806	[2]	Project deferred

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[1] Capital refers to the invested capital. [2] indicates estimates when the P3 model (DBFOM+avail.) is assumed. [3] The estimated cost includes costs of design, construction, operation and maintenance costs, and excludes the cost of financing.

Results

- Models
  - Different Public Sector Comparator due to procurement practices
  - Usual P3 under analysis: DBFOM + availability payments
- Discount rate (DR)
  - PSC: Similar discount rates despite literature debates on the topic
  - P3: Only one case where risk is recognized
- P3 Equity Internal Rate of Return (IRR)
  - Equity IRR for P3 projects in US ranges 11-12% for available payment projects

Project Name	PSC	P3	PSC - DR	P3 - DR	IRR
Presidio Parkway Ph2	DBB	DBFOM+a /DBF	Rf: 5.5%	Rf: 7.5%+risk	11.5%
I-595 Managed Lanes	DBF	DBFOM+a	Nom: 5%	As PSC	11.5%
Port of Miami Tunnel	DBB / DB	DBFOM+a	Nom5%	As PSC	11.33%
I-4 Ultimate	DB	DBFOM+a	Nom: 5%	As PSC	12%
Brent Spence Bridge	DBB+t /DB+t	DBFOM+a /DBFOM+t	Rf: 5%	As PSC	n/a
I-64 Managed Lanes	DBB	DBFOM+a /DBF /DBFOM+t	n/a	n/a	n/a
I-85 Renewal Project	DBB	DBFOM+a	n/a	n/a	n/a

a: availability payments. t: toll. Rf is risk free and tax exempt. Nom: nominal.

Center for Transportation Public-Private Partnership Policy George Mason University

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For more information:

Visit us at: p3policy.gmu.edu

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