

Revenue Volatility and Social Infrastructure Funding Inefficiency

Value for Funding Development Project

Stanford University Global Project Center

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Overview: *Focus on Specifics, Three Questions*

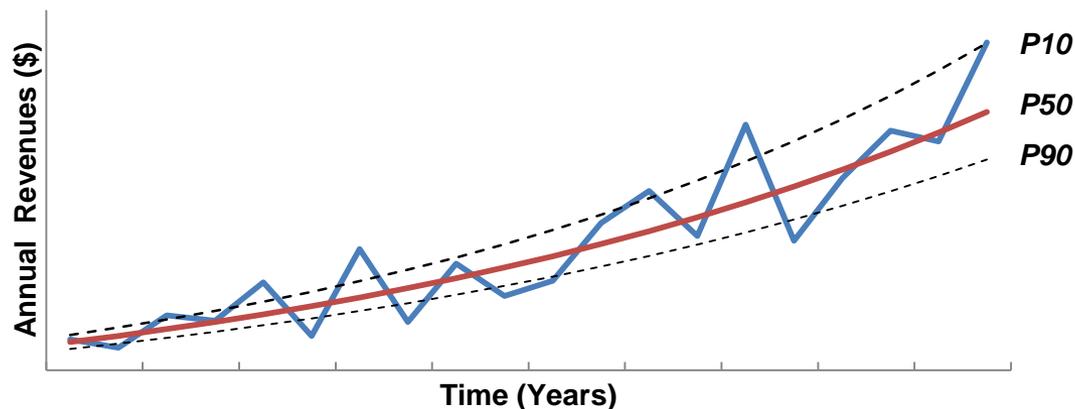
Value for Funding development can benefit from focused, non-theoretical research:

- *A specific fiscal constraint*: Increasing uncertainty of annual public-sector general revenues (“Volatility”)
- *A specific infrastructure sector*: US state and local social infrastructure relies on general revenues for funding investment and maintenance
- *A specific impact*: Volatility could lead to “Funding Inefficiency”, resulting in higher cost and reduced investment

Three questions:

1. Does Volatility cause significant Funding Inefficiency?
2. If so, what are specific – and measurable – mechanisms?
3. What are the implications for P3 evaluation and innovation?

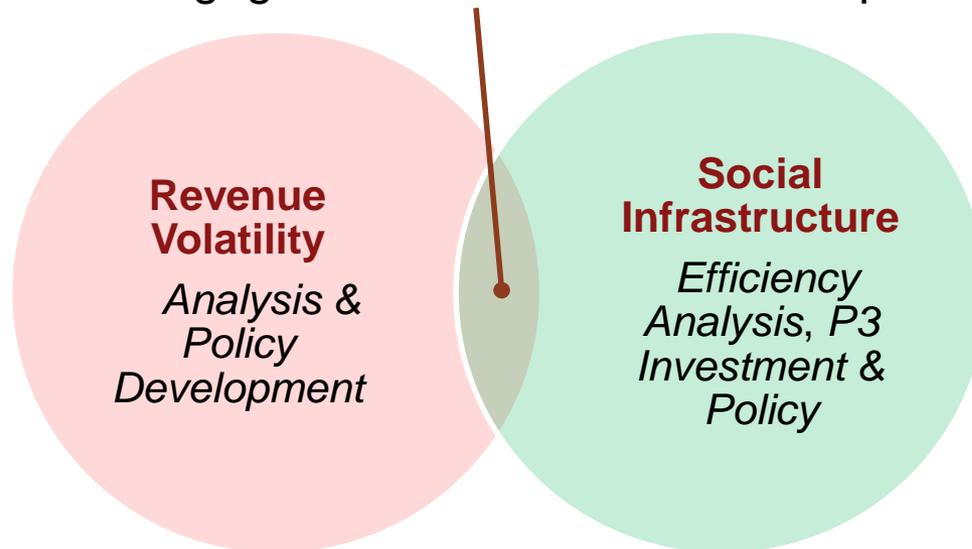
Revenue Volatility: *Hard to Deal With, Here to Stay*



- **Definition:** Annual unpredictable variation of general revenues (tax, transfers) around relatively predictable trend growth
- Volatility has increased significantly since early 2000's – here to stay?
- US local public sector institutionally not very efficient at managing Volatility due to balanced-budget rules, statutory debt caps, etc.
- Private sector may have fundamental comparative advantage due to institutional flexibility, more experience with business volatility

Social Infrastructure: *Funding the Front-Line*

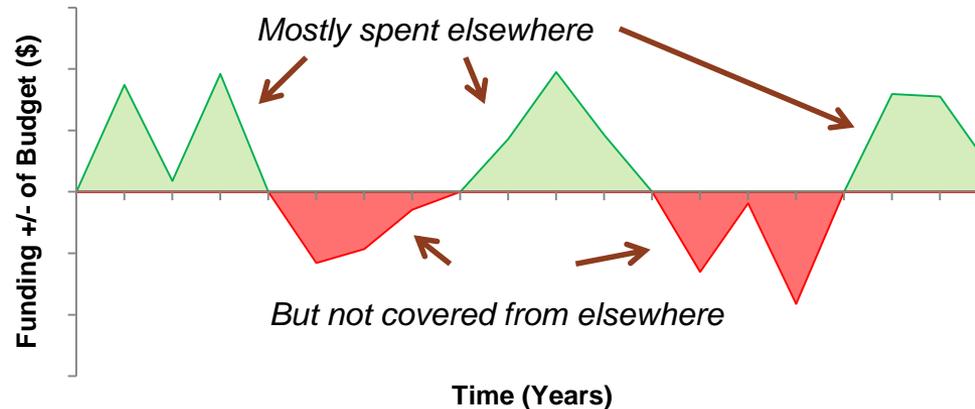
- Social infrastructure is at front-line of US infrastructure challenge -- lot of current focus on how to optimize funding
- Usually simple assets, but still require funding stability for long-term investment planning and maintenance cost-efficiency
- Essential social infrastructure usually relies on general revenues, so exposed to Volatility
- Need to create engagement **here** to answer our questions



Funding Inefficiency: *Three Thought Experiments*

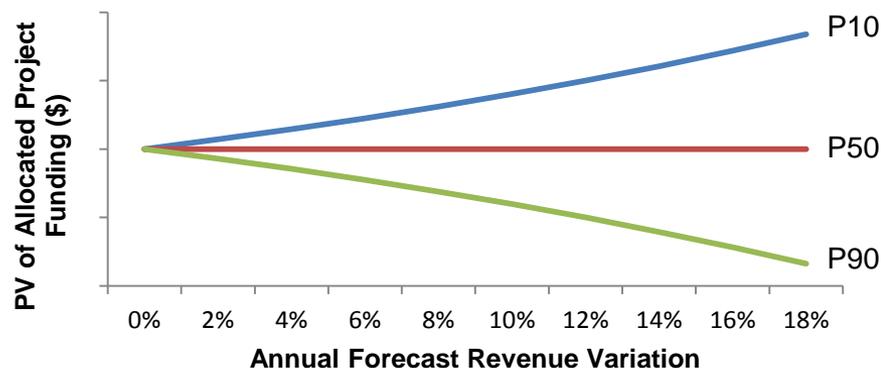
- Intuitively and anecdotally, we expect that Volatility will cause Funding Inefficiency, which raises project cost and reduces potential investment
- But VfF analysis requires *specific* mechanisms to be identified and quantified to create predictive models for P3 evaluation and innovation
- Need to stay open-minded, but thought experiments can help guide exploration and discussion:
 - a) *Deferred Maintenance*
 - b) *Risk-Aversion Constrained Investment*
 - c) *Public-Sector Cost of Capital*

a) Deferred Maintenance: *The Cost of Asymmetry*



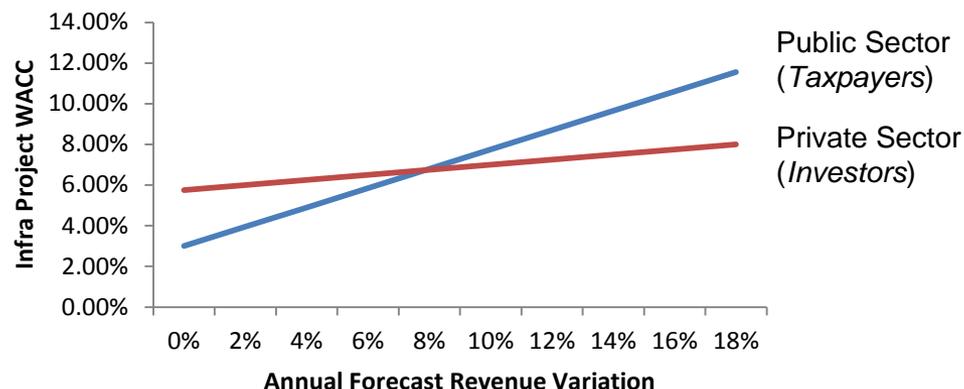
- Low 'political visibility' of maintenance can cause **asymmetrical** use of budget surplus or deficit – surpluses used for other purposes, but deficits not covered from other sources
- Net result over time is accrued maintenance deficit – accrual rate can reflect physical inefficiency – PV of accrued balance is added cost of the project
- Deferred maintenance cost might be predictable from revenue volatility forecasts

b) Risk-Aversion Constrained Investment



- Public-sector officials may be rationally risk-averse about incurring long-term funding obligations due to balanced-budget and similar requirements
- Revenue volatility will reduce the amount of the most certain annual funding (e.g. P90), even though average funding (P50) is higher
- This factor may predictably constrain investment in new and upgraded social infrastructure

c) Public-Sector Cost of Capital: *Uncertainty Premium?*



- Public-sector cost of capital for infrastructure investment is usually considered very low – near or at risk-free rate
- Low rate more plausible if taxpayers accept a ***certain*** level of taxes for a ***certain*** level of services
- But if revenue volatility causes annual uncertainty of tax and services, then taxpayers may require a higher ‘return’
- Private-sector investors can view risk in context of overall return – less premium for annual uncertainty

Implications for Private Sector, P3 Investment

General Principle: If Volatility matters, then private-sector comparative advantage is source of real gains in economic efficiency and social welfare

Evaluation: Estimating the cost of Social Infrastructure Funding Inefficiency caused by Volatility will permit better comparison of PSC and P3 alternatives

Policy and Innovation: Recognizing the cost of Volatility can guide policy and innovation – examples:

- *P3 brownfield concession rationale:* lower COK
- *Federal loan programs:* relative federal strengths re Volatility
- *Indexed P3s:* Volatility-indexed payments transfer uncertainty from public to private sector -- a “fiscal shock absorber”

Next Steps: *Answering Three Questions*

Near-term objective is to get preliminary answers to three questions posed above in Overview – basic path:

1. Engage with Volatility experts and policymakers
2. Engage with Social Infrastructure experts, P3 investors and policymakers
3. Preliminary assessment of Funding Inefficiency significance; begin to identify most relevant and quantifiable specific mechanisms
4. Outline of basic VfF models
5. Interim summary report and full research project proposal