International Seminar on
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Public-Private Partnerships

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Public Capital and Economic Growth: Key Issues for Europe
Jan-Egbert Sturm
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Outline presentation
Public capital represents (if not the engine then) the 'wheels' of economic activity
- Introduction
- Role of public capital in economic growth
- Development of public capital expenditure
- Empirical findings
  - Three waves of results
- Concluding remarks

Background information

Theory

Why does public capital matter for economic growth?
- Noticeable absence of formal economic models of the productivity effects of infrastructure
- Normally it is assumed that public capital
  - increases multifactor productivity and/or
  - is a third production factor

Some theoretical issues
- Congestion
  - Congestion gives rise to non-linearities in the relationship between public capital and growth
- Network effects
  - Once the basic links of a network are established, opportunities for productive investment diminishes
- Spill-over effects
  - Not only own stock of infrastructure is relevant, but also the neighbor's stock
- Economies of scale
  - Lower transportation costs might lead to more centralized production and thereby economies of scale
How to measure public capital?

- What is more relevant?
  - Ownership (public / private), or
  - Type of investment (infrastructure / machinery & equipment)

- National Accounts divide by ownership and include non-productive spending items (e.g., swimming pools)

- Stock of public capital equals
  - Sum of past investments adjusted for depreciation

- More relevant are the services provides from the stock
  - Even more difficult to measure
Development of public investment

- Since the early 1970s, there has been a decline in public investment in industrialized countries
  - as share of GDP
  - as share of the government budget
- What can explain the drop?
  - Political, demographic, economic reasons?
- During the last decade some shifts within the government budget have been made towards more public investment

Empirics

How to examine the impact of public capital on growth?

- Four approaches:
  1. Production function approach
  2. Cost function approach
  3. Vector AutoRegression (VAR) models
  4. Cross-country growth models
- Each approach has its own set of problems

Summary empirical results

1. Aschauer (1989) found an output elasticity of public capital equal to 0.4
   - First wave of studies confirmed this result
2. Subsequent studies often did not find a growth-enhancing impact
   - By solving some econometric issues, the relationship turned out to be not robust
3. Now, there is more consensus that public capital further growth
   - However, the impact reported in recent studies is substantially less than suggested in the first wave of studies

Relevant question from a policy perspective

- The relevant policy question is:
  "What is the net effect of more infrastructure taking into account that infrastructure construction diverts resources from other uses?"
   - Most research only focuses on the growth-enhancing effect of public capital
   - What is the optimal level of the public capital stock?
     - Public and private investment are financed out of total savings
     - Public capital should not only be productive, but also productive enough to offset the negative effect of less private investment
Role of maintenance

- Most studies focus on the importance of additional public investment spending.
- Maintenance of the existing stock is hardly addressed.
- Policymakers have a perverse incentive:
  - New public investment projects are politically more attractive than spending on infrastructure maintenance.
- Public capital deterioration is mostly considered as an exogenously given technical relationship.
  - Neglecting the choice between investing in 'new' public capital and extending the durability of the existing public capital stock via maintenance.

Conclusions

- Network effects cause non-linearities.
  - The effect of new public capital depends on the extent to which it alleviates bottlenecks in existing networks.
- Research on explaining the differences in public investment is still in its infancy.
- Maintenance and efficient use of existing infrastructure might be more important than building new infrastructure.

Concluding remarks

- There is now more consensus than in the past that public capital furthers economic growth.
- However, the impact reported by recent studies is not as big as some earlier studies suggested.
- There is evidence for reverse causality.
- There is evidence for heterogeneity:
  - The effect of public capital on growth differs across countries, regions and sectors.