
Public Policies within a Fully Priced Transportation Network: Lessons from Utility Regulation

ABE20 – Transportation Economics Committee Meeting
Transportation Research Board
Washington, DC
Tuesday, January 14, 2014

Overview of the Research

- Purpose: What lessons does utility regulation in other sectors (e.g. electric, water) hold for a fully priced **transportation** network?
 - Assume that the road system is fully priced on a variable per-unit used (MBUF) basis
 - Assume MBUFs are properly adjusted to “clear the market” (i.e. real-time congestion pricing)
-

Overview of the Study (con't)

- Assume political challenges in MBUF implementation are addressed
 - Allows abstraction away from issues of competition between “free” and priced roads (i.e. traffic diversion)
 - Pricing makes road use analogous to other utilities where customers pay per unit:
 - Electricity (per KWH)
 - Natural gas (per them)
 - Cell phone (per minute)
 - Water (per gallon)
-

Key findings

- Three standard concerns in public utility regulation:
 - Misuse of market power (e.g. via pricing)
 - Service quality standards (e.g. time-to-dial tone in telecoms)
 - Asset maintenance

 - Type of regulation used may distort firm's decisions (unintended consequences)
-

Key insights (con't)

- Degree of market power possessed by road operators may be *more heterogeneous* than for many other utilities, such as electric and water (due to more options)
 - The rate-of-return regulatory (RORR) approach sometimes applied to utilities has drawbacks that suggest caution in its application to road regulation
 - Example: Averch-Johnson effect
-

Key findings (con' t)

- Forms of incentive regulation such as price caps and revenue sharing have several appealing qualities when applied to roads
- Example: Price caps provide stronger incentives to innovate and keep costs down
- Scope for applying traditional utility pricing approaches to roads regulation: Ramsey or Inverse-Elasticity Pricing

$$\frac{P_i - MC_i}{P_i} = \frac{\lambda}{\epsilon_i}$$

Directions for future research

- **Road pricing and supply-side effects:**
 - How effective are variable tolls in directing investment into and out of road infrastructure projects?
 - What is the elasticity of supply of road investment with respect to tolls?
 - Do supply responses vary with ownership form? Are there hybrid forms that we can devise that would give us high-powered responses to price changes?
-

Directions for future research (con' t)

- Use of availability payments and shadow tolls in the United States
 - Can we learn from UK use of availability payments?
 - Can we apply **reverse (i.e. Dutch) auctions** (bidding down for lowest subsidy) in cases where PPP requires a subsidy to operate?
-

Directions for future research (con' t)

- **Least-present value of revenue auctions (LPVR):**
 - LVPR auctions have been successfully used in Chile
 - Are LPVR Auctions a model for the U.S. road system? If so, how can they be applied?
 - Are there circumstances unique to the U.S. which suggests that the auction format should be altered if used here?
-

Directions for future research (con' t)

- **Private participation within a road network:**
 - More exploration of the impact of private sector participation on one or more parts of a road network (but not all)
 - Examine how altering the incentives on one segment of the network may affect operation of the entire network
-

Directions for future research (con' t)

■ **Measuring Competition:**

- Development of an index of competition faced by a particular transportation facility
 - This will help to determine the degree to which regulation should substitute for market competition, or whether any regulation is needed
-

Directions for future research (con' t)

- **Road performance measures:**

- Can we develop measures of road performance that help under PPP situation?
 - How does this compare to the HPMS data (which may not be facility specific?)
-