

Economic Costs and Benefits of Road Pricing

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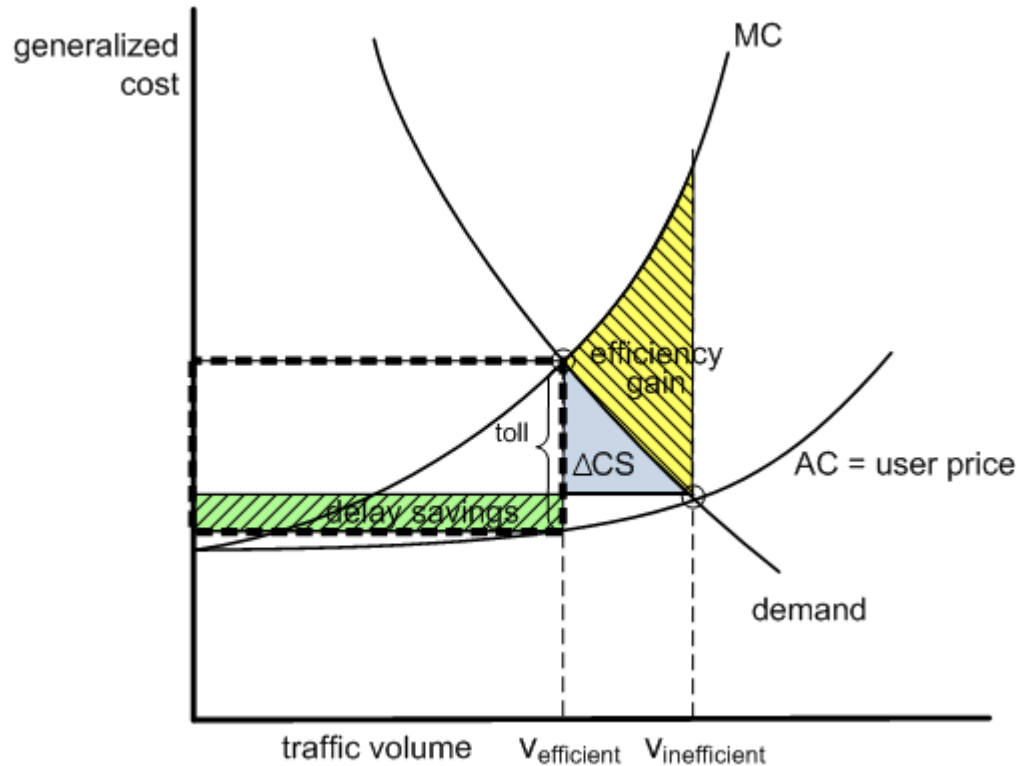


Questions

- Does pricing generate benefits in excess of costs for *operation* of a given stock of capital?
- Does pricing provide the means for planning *new capacity* in all related modes?

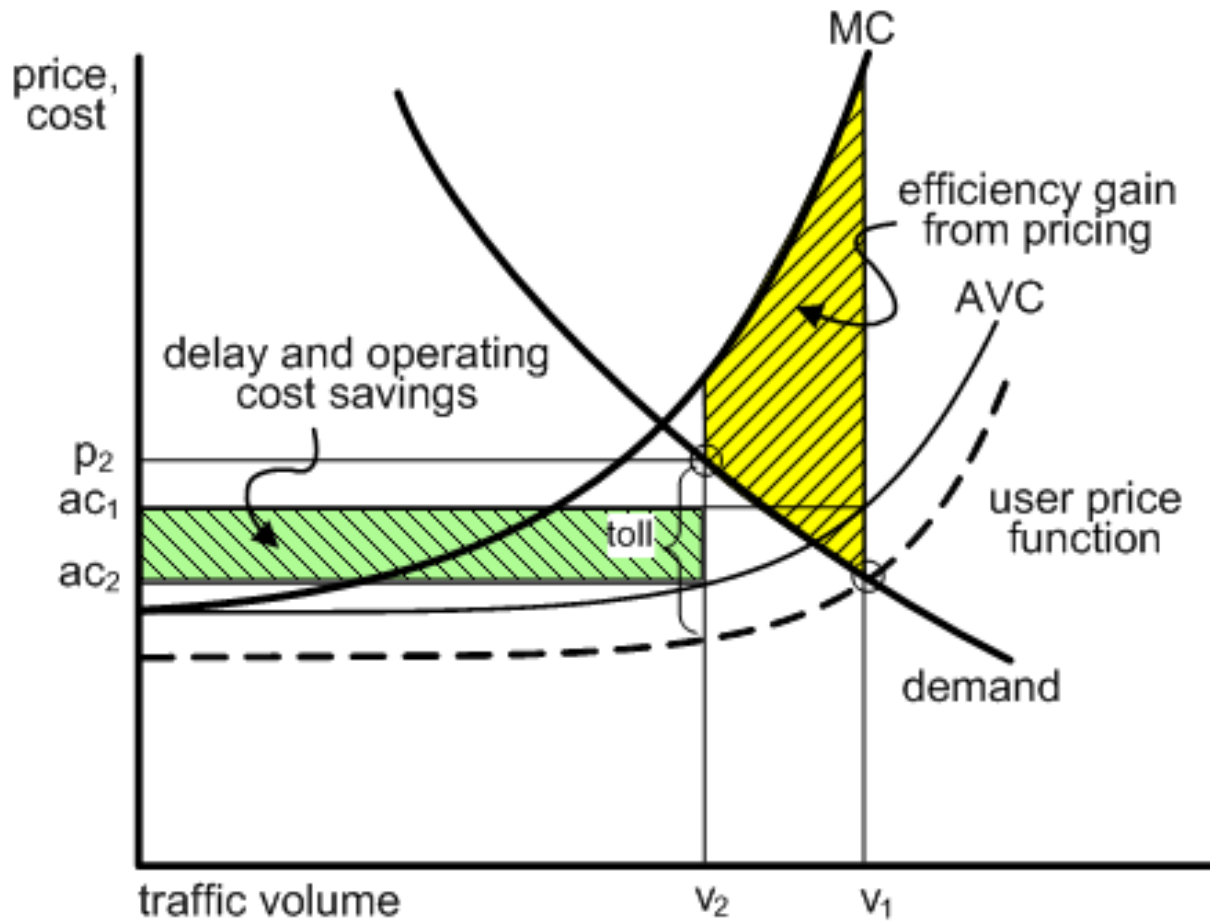


The Standard Model



- $CP > \text{no CP}$
- delay and operating cost savings as valued by users (CS) > deterred vehicle trips as valued by users

Modified Standard Model



Extensions

- Network
 - pricing expressways is effective
 - diversion to other expressways doesn't avoid toll
 - could have two networks
 - arterial diversion is manageable
 - arterial capacity is limited
 - traffic management limits substitutability
- Area Pricing or Cordon Pricing

– reasonably close to standard model

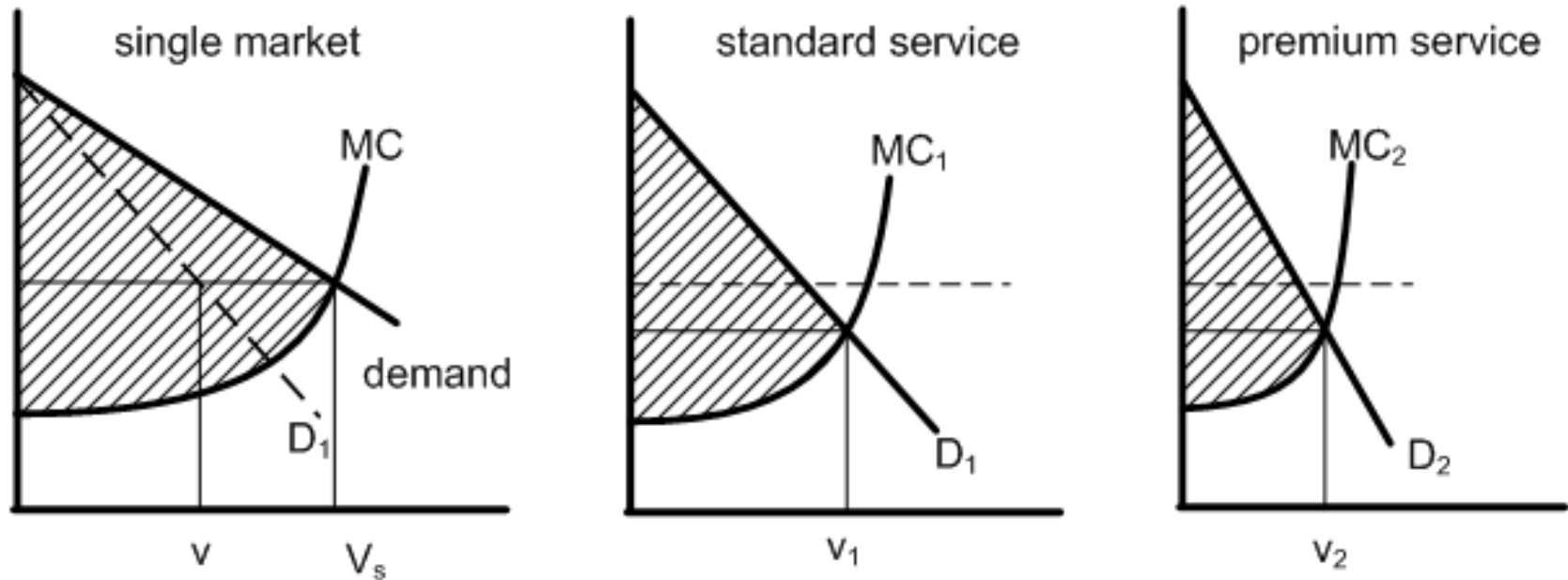


Multi-Class Service

- Holding capacity constant
 - HOV < no HOV
 - 2-class service with 1 priced > HOV
 - 2-class service with 1 priced <?> 1-class no CP
 - 2-class with both priced > 2-class only 1 CP
 - 2-class both priced <?> 1-class CP



Benefits of 2-Class Service



- generalized price is lower for both classes, but money price for premium service is higher
- for 2-C > single, sum of 2 areas > single

Add Capacity

- standard model
 - if incremental SR profit $>$ annualized capital cost
- cordon model
 - compare investment in substitute modes
- multi-class model
 - revenues insufficient to signal
 - capital costs enlarged
 - occupancy is critical (BRT)



Conclusions

- congestion pricing generates net benefits if properly applied
- HOT lanes an interim step
- evidence of user WTP is required for investment
- full facility pricing is probably most efficient
- selected private concessions can be shortcut
- devolution seems unavoidable

