Pricing

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Marginal Cost Pricing

• Setting price equal to marginal cost maximizes economic efficiency
  – higher price - discourage usage in which marginal benefit exceed marginal cost.
  – Lower price - allow usage in which cost exceeds benefit.
  – Note: marginal cost should be social marginal cost....
High Demand Situation

- Marginal cost exceeds ave. var. cost and ave. total cost

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\text{srmc} \quad \text{sratc} \quad \text{sravc}
\]

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\text{Demand}
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$\text{C1}$
what is marginal cost
investment implications
Chris Hendrickson, 9/26/2007
Low Demand Situation

- Marginal cost is less than ave. total cost
Free Goods

- User costs often exist, e.g. travel to parks.
- Public goods: no competition among beneficiaries, e.g. radio signal or defense.
Example: Congestion Tolls

• Idea: impose peak period surcharges on congested bridges or streets to avoid wasteful queuing.
• Typically, users incur an average variable or total cost of travel (waiting time, vehicle operation, some tolls, gasoline tax)
• Problem: all users would be worse off.
The Tolled

- Users of a facility would find that their travel cost goes up, to the value of $sr\ mc$ rather than $sr\ avc$. (users would be paying for the extra travel time they impose upon other users).
The Tolled Off

• Some drivers would be discouraged from travelling over the facility because of the higher charges. They must move to a less preferred travel alternative.
The Untolled

• Travellers on alternative routes would experience more congestion as drivers changed routes to avoid the high congestion tolls.
Who is Better Off?

• Society gains the toll revenues
• Society gains environmental benefits.
• The benefits to society should exceed (in theory) the losses to the drivers.
• Can some form of compensation be used to make everyone better off? Hard to do.
Equity Issues

- High congestion tolls would force lower income individuals off first, because they are more sensitive to dollar costs.
- Became significant issue when congestion tolls were proposed for Bay Area Bridge.
- Price breaks for carpooling is politically acceptable, however.
- Flow restrictions are accepted in some places.
Financial Constraints

- Srmc pricing may not meet financial constraint to cover costs.
- Price may have to be constrained to equal sratc.
- Price differentials between peak/off-peak periods may permit greater economic efficiency.
Financial Constraints (cont)

• Typical public problem: maximize net social benefit subject to revenue = costs.
• Often coupled with some sort of subsidy scheme for low income - see telephone and utility users.
• Issues of cross subsidy - postal rates do not cover costs of rural delivery.
Efficiency of Gasoline Tax

• Easy to collect efficiently.
• Taxes go up (per mile) in congestion - increasing cost of travel in congestion.
• Vehicle fuel efficiency is encouraged.
• Beneficiaries of transport improvements pay for them.
• Problems: raising gas taxes protested by low income households, what about alternative fuels?
New Technology Pricing Opportunities

- Benefits/costs of EZ-Pass (RFID tags)
- Electricity meters price signals and real time pricing schemes
Problem: Parking Charges at CMU

- CMU has multiple lots, in different locations around campus.
- CMU has to cover costs of parking operation and construction from charges.
- How should parking charges be set?
Problem 2: Turnpike Tolls

• Current turnpike tolls are a flat rate per mile with higher charges for heavier vehicles.
• Alternative roads do not have tolls (although proposal to do so on I-80)
• Political interest in maximizing revenues.
• What would you do?