Session 2.1
Estimation of Project Benefits

Introductory Course on Economic Analysis of Investment Projects
Measuring Benefits in an Efficient Market with No Price Effects

\[
\text{Revenues} = \text{Benefits}
\]
Measuring Benefits in an Efficient Market with Price Effects

The figure illustrates the relationship between price and quantity in an efficient market. The supply and demand curves are shown, with point a representing the equilibrium. The effects of price changes are depicted, with changes in price from $P_0$ to $P_1$ and their corresponding changes in quantity from $q_0$ to $q_1$. The diagram helps in visualizing how benefits are measured in an efficient market considering price effects.
Measuring Benefits in a Distorted Market: Non-incremental Benefits
Measuring Benefits in a Distorted Market: Incremental Benefits

The diagram illustrates a market with a downward-sloping demand curve, labeled $D$. The axes are labeled as follows:

- **Price** (vertical axis)
- **Quantity** (horizontal axis)

Key points and labels on the diagram include:

- $P^*$: The price at the optimal quantity $Q^*$.
- $P_1$: The price at the new quantity $Q_1$.
- $Q^*$: The optimal quantity before the market distortion.
- $Q_1$: The new quantity after the market distortion.
- $b$: The area under the curve between $P^*$ and $P_1$, representing the incremental benefits.

The shaded area $b$ indicates the incremental benefits in a distorted market compared to the optimal scenario.
Benefit Valuation Methodology

Non-incremental Benefits
- Resource Cost Savings
  - Supply Price

Incremental Benefits
- Willingness-to-Pay
  - Demand Price
Valuing Project Outputs

Incremental to present production

DEMAND PRICE

Tradable

World Market Price (FOB)

Non-tradable

Domestic Market Price

Non-incremental to present production

SUPPLY PRICE

Tradable

World Supply Price (CIF)

Non-tradable

Domestic cost of supply

NB> Note that the domestic market demand price includes net taxes (i.e., it is a measure of what consumers are willing to pay for it), but that the domestic market supply price is only the cost of production (i.e., it should exclude any production taxes or surplus profits).
## Benefit Identification: Urban Infrastructure Projects

<table>
<thead>
<tr>
<th>Type of Project</th>
<th>Potential Nonincremental Benefits</th>
<th>Potential Incremental Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Piped Water Supply</td>
<td>i) Alternative sources of supply displaced</td>
<td>Improved quality</td>
</tr>
<tr>
<td></td>
<td>ii) Improved quality displacing adverse health impacts</td>
<td>Induced demand</td>
</tr>
<tr>
<td></td>
<td>iii) Improved quality resulting in efficiency gains</td>
<td></td>
</tr>
<tr>
<td>b) Wastewater Treatment</td>
<td>i) Alternative sources of wastewater treatment displaced</td>
<td>Induced demand</td>
</tr>
<tr>
<td></td>
<td>ii) Improved health through cost of illness displacement</td>
<td></td>
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</tbody>
</table>
## Benefit Identification: Energy Projects

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<th>Potential Incremental Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Power Generation</td>
<td>Displaced alternative forms of electricity/energy generation in various sectors – all size generators</td>
<td>Additional or induced energy consumption valued at willingness-to-pay</td>
</tr>
<tr>
<td>b) Electricity Transmission</td>
<td>i) Transmission loss reduction&lt;br&gt;ii) Reliability Improvement&lt;br&gt;ii) Alternative supply displacement</td>
<td>Induced demand</td>
</tr>
<tr>
<td>i) Augmentation</td>
<td>i) Transmission loss reduction&lt;br&gt;ii) Reliability Improvement&lt;br&gt;ii) Alternative supply displacement</td>
<td>Induced demand</td>
</tr>
<tr>
<td>ii) Interconnection</td>
<td>Alternative sources of fuel displaced</td>
<td>Induced demand</td>
</tr>
</tbody>
</table>
## Benefit Identification: Transportation Sector

<table>
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<th>Potential Incremental Benefits</th>
</tr>
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</table>
| a) Road Improvement/Rehabilitation | i) Reduced operating costs for existing traffic  
ii) Reduced operating costs for traffic diverting from alternative route  
iii) Travel time savings  
iv) Reduced road maintenance expenditures | Willingness-to-pay of new traffic generated by improved conditions of road. |
| b) Expressway Construction       | i) Resource cost savings for traffic diverting from existing roads/railways  
ii) Resource cost savings for traffic remaining on existing roads (reduced congestion) | Willingness-to-pay of new traffic generated by new road. |
Transport projects

- Benefits = Vehicle Operating cost savings for Normal Traffic
- Benefits = 0.5* Vehicle Operating cost savings for Generated Traffic
- Benefits can be estimated initially in financial prices (e.g., via HDM model) then converted to economic prices
Non-Quantifiable Economic Benefits

- non-tangible (social / political, knowledge / information / business skills)
- tangible (inputs for processing industry, new businesses)
- exclude from economic analysis but describe textually (quantity and quality)
Thank you