

Hedonic Models and the Analysis of Nuclear Facilities' Impacts on Property Values

A Survey of the Economic Literature

**PORTS
FUTURE**



Overview of Methodology and Literature Review

- What is the methodology?
- What are some landmark studies and what do they tell us?
- What are the strengths/limitations of these studies?
- What data would be needed to do such a study for PORTS?
- What would the literature suggest we might find?



The Basic Methodology

- A statistical approach to uncovering the average “value” consumers place on attributes such as crime, proximity to public amenities, traffic congestion, clean air, and so on



Figure A1: Indifference curves in z - θ space

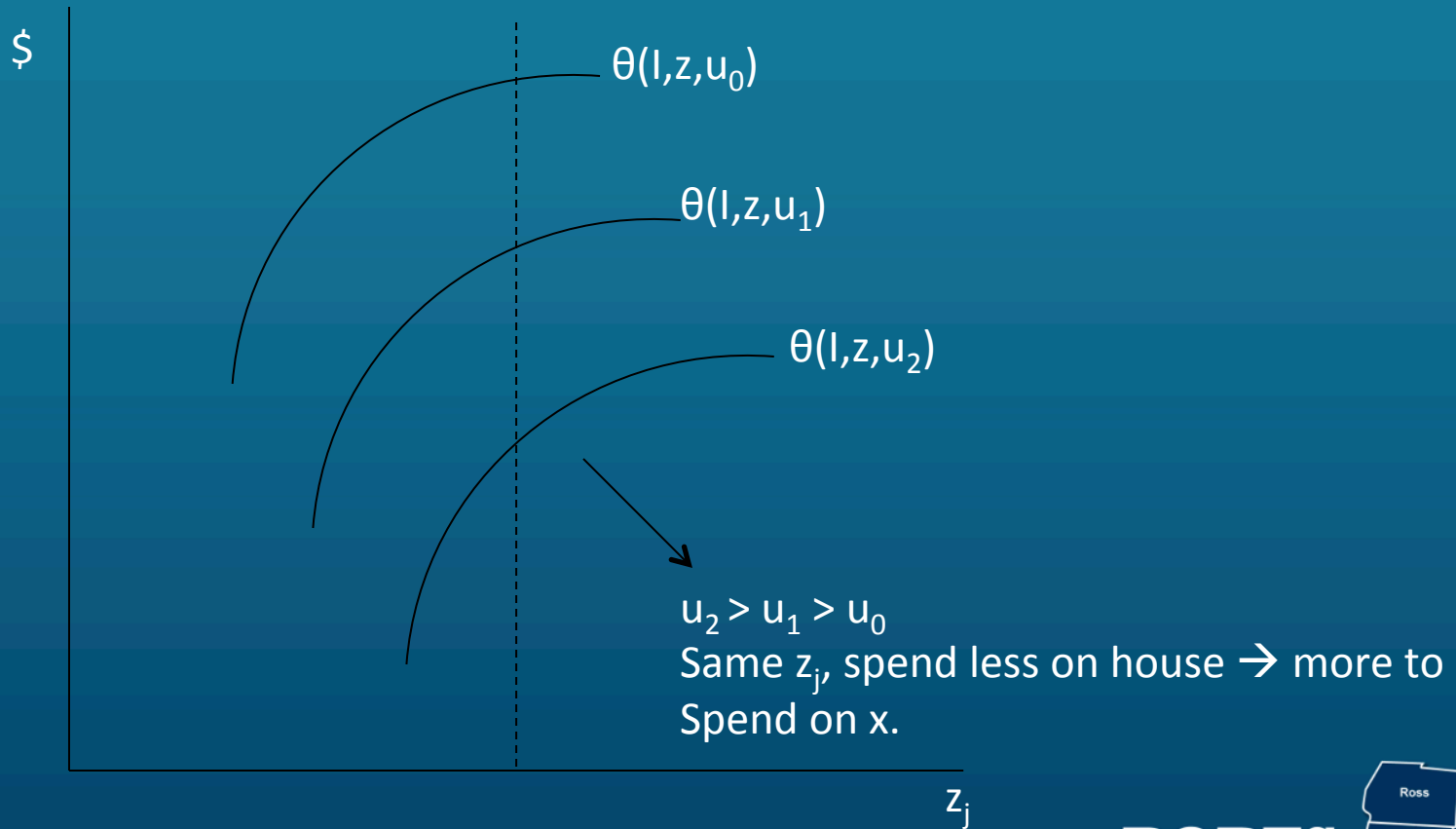
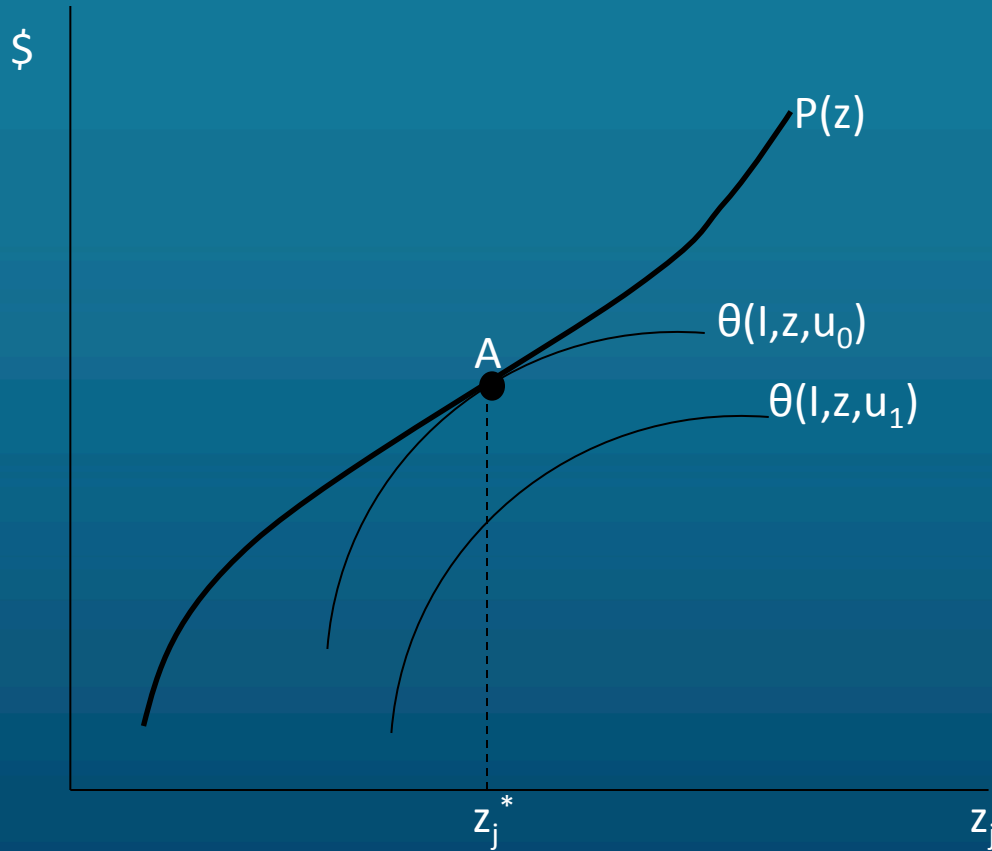


Figure A2: Consumer's choice



Point A: highest utility such that consumer's willingness to pay is equal to price $P(z)$.

Figure A3: Different consumers

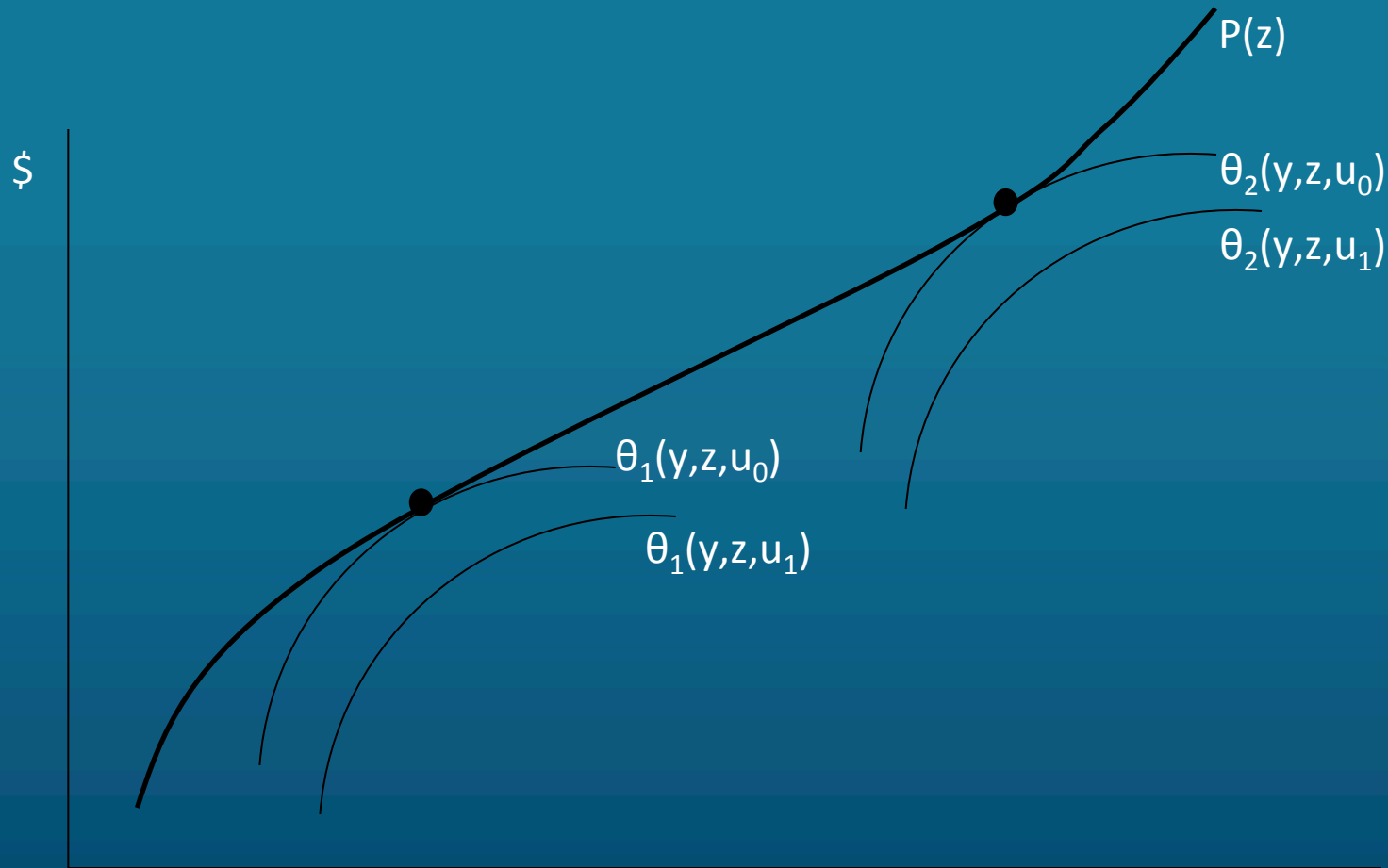


Figure A4: Offer functions

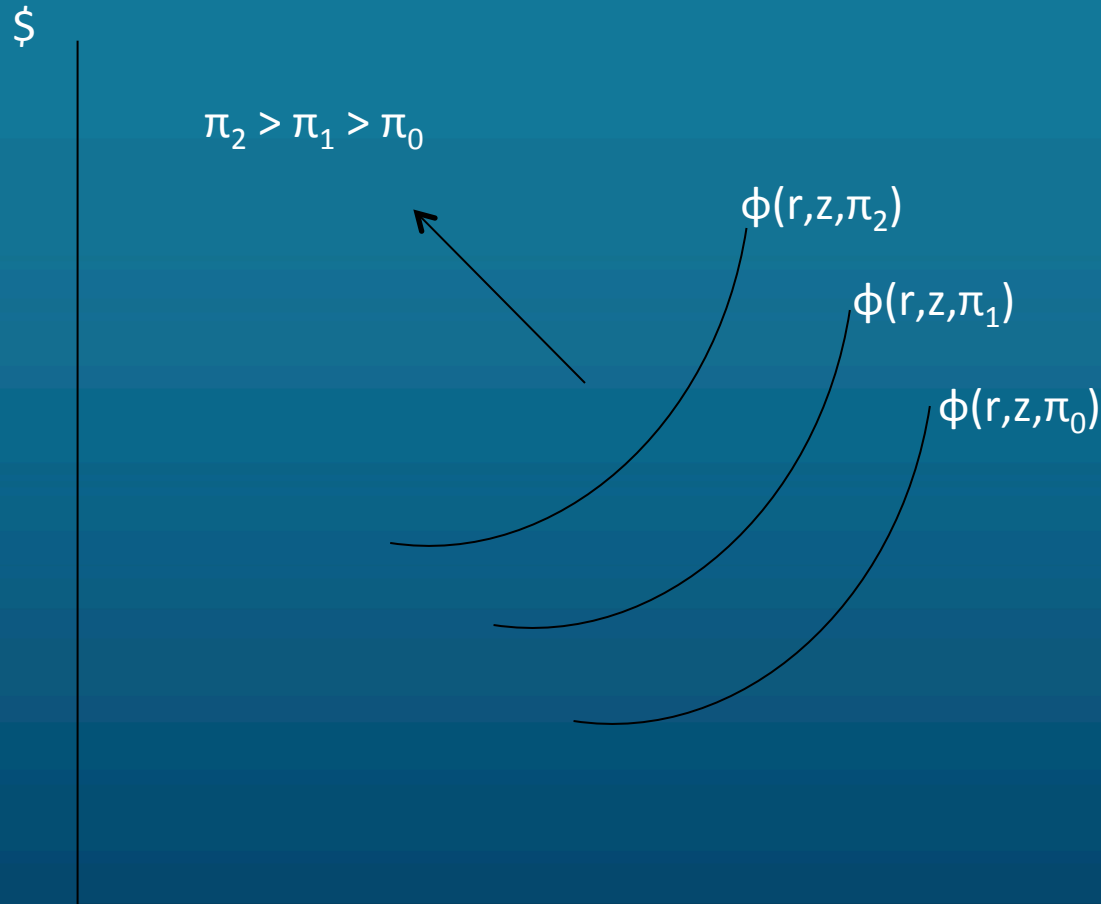
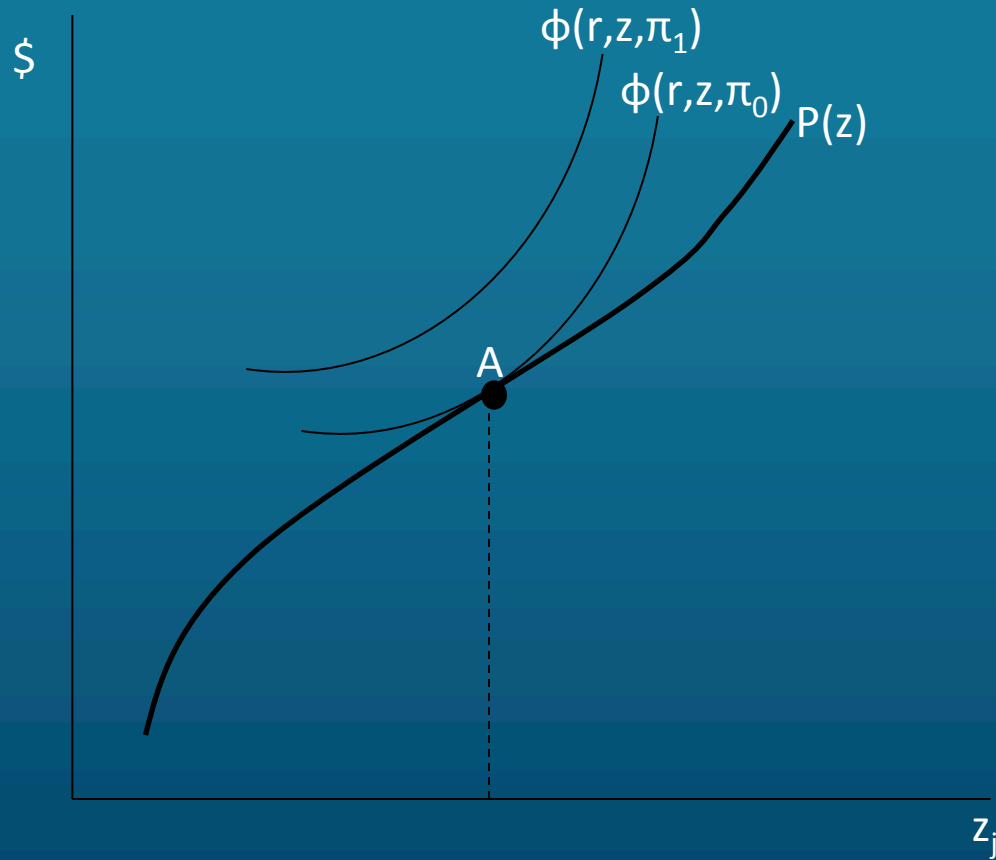


Figure A5: Production decision



Point A: highest profit such that producer's offer price ϕ is equal to price $P(z)$.

Figure A6: Different producers

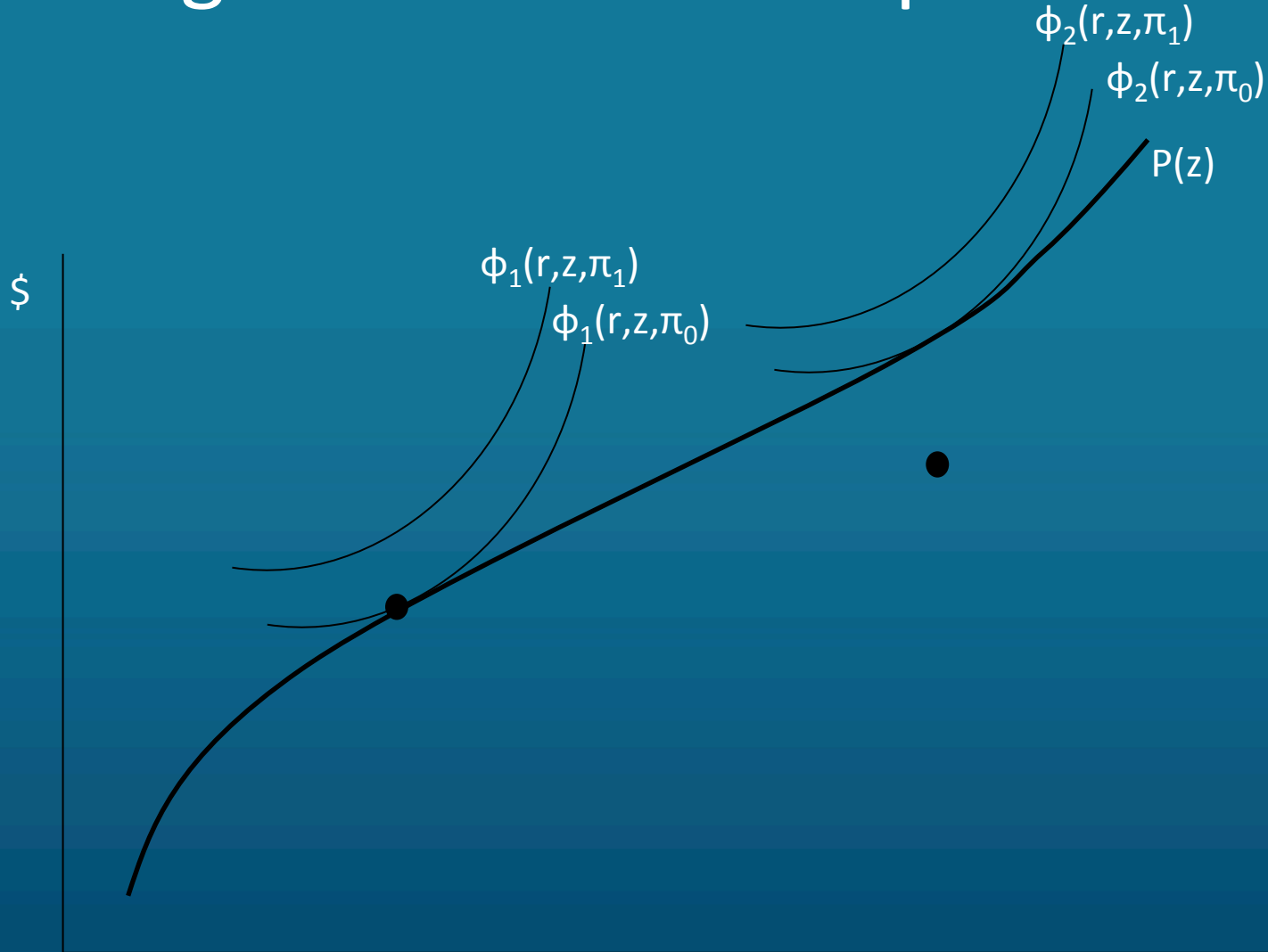


Figure A7: Market equilibrium

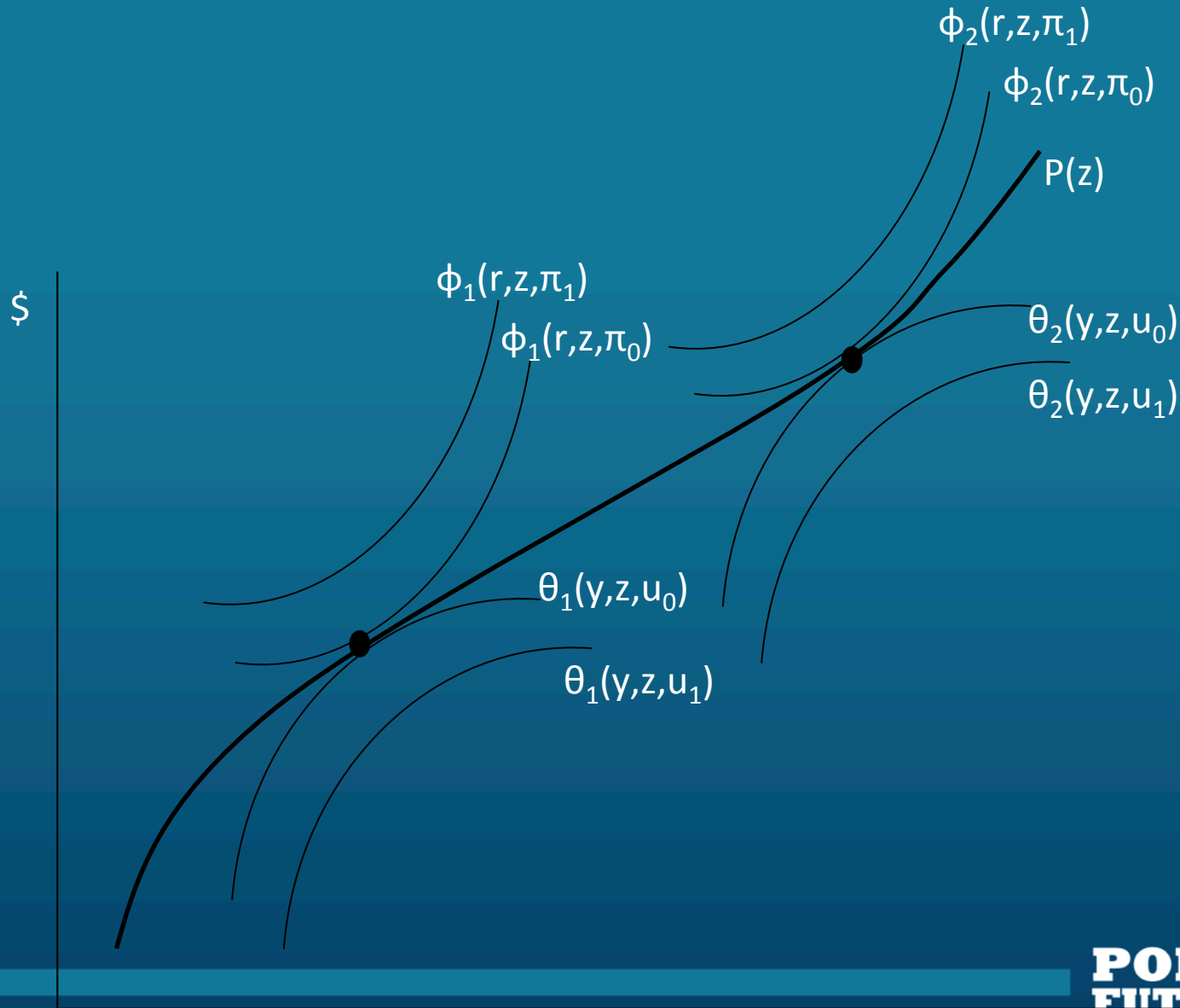
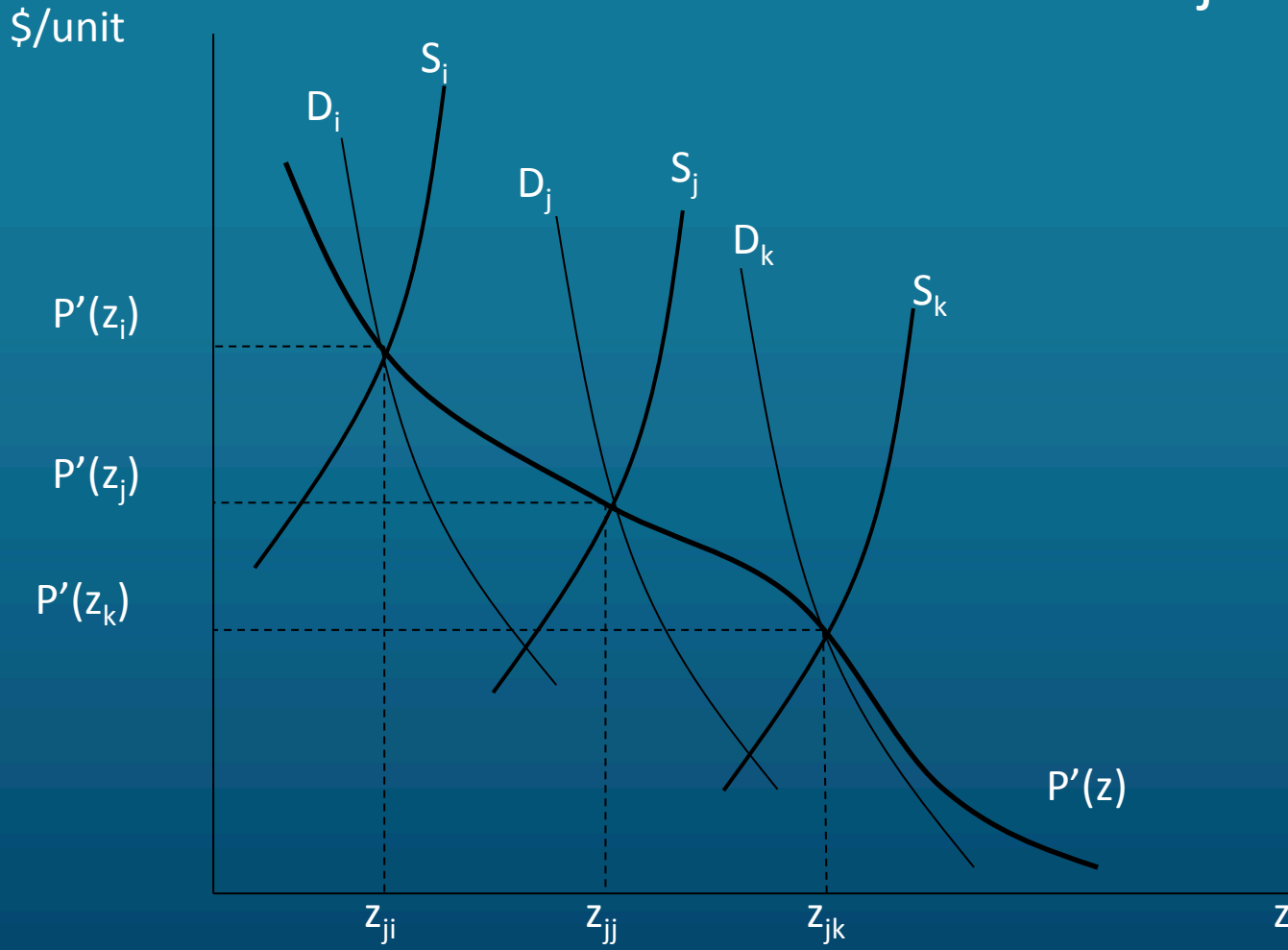


Figure A8: Hedonics – supply and demand for attribute z_j



Selected Existing Studies & Findings

- The Origins
 - Griliches (1971)
 - Harrison and Rubinfeld (1978)
- Recent Work
 - Bezdek and Wendling (2006)
 - Braden et al. (2011)
 - Davis (2011)
 - Greenstone and Gallagher (2008)



Data and Modeling Needs

- Requires one or more of the following data
 - Census data
 - Property assessed values
 - Property sales records
 - Reliable indicators of neighborhood conditions vis-à-vis environmental quality, public amenities and services, public safety, and so on
- Varying degrees of modeling complexity possible
 - Spatial and temporal correlations
 - Multicollinearity
 - Endogeneity



Conclusions from the Literature

- Public perception suggests large losses to property values due to proximity of hazardous sites, including nuclear sites. **However**, empirical results suggest small effects and sometimes positive effects.
- Nuclear sites often increase property values in rural communities, because of the economic growth and tax revenues they generate for the region.
- Even when nuclear sites do not contribute substantially to the local economy, the impact of proximity on house values estimated to be either nil or relatively small.