The Bid-Rent Function

Outline

- Leftover Principle
- Von Thunen's Model
- Comparative Statics

Ricardo

- Fixed prices
- Zero economic profit
- Fertility of land varies
- Land to highest bidder
- Zero Transport Costs

Leftover Principle

$$\pi = P \bullet Q - C(f_i) - R = 0$$

$$R = P \bullet Q - C(f_i)$$

where f_i is fertility of the acre of land; C is production cost; P is price; Q is output; R is rent.

Von Thunen

- Fixed prices
- Central market place
- Competitive markets
- Production costs same at all location
- All farmers use 1 acre of land

Land Rent and Accessibility

$$\pi = P \bullet Q - C - t \bullet Q \bullet u - R = 0$$

 $R = P \bullet Q - C - t \bullet Q \bullet u$

where t is unit transport cost; u is distance; C is production cost; P is price; Q is output; R is rent.

Flexible Farmer

- For each distance, firm chooses acreage and nonland inputs to minimize costs of producing Q.
- As rents increase, firm will use less land and more land inputs.
- Bid rent function will be steeper close to city.
- Flexible firm will have lower costs than inflexible firm
- Decrease in transport costs will make bid-rent less steep if output prices unchanged. If output prices affected, bid-rent will be lower.

Bid Rent for Flexible Farmer



BID-RENT for Flexible Farmer

Increase in Transport Costs



Effect of Increase in Transport Costs on Bid-Rent

Increase In Price of Output

