HOCHSCHULE BREMEN
UNIVERSITY OF APPLIED SCIENCES

# Airport Competition: *A Spatial Approach*

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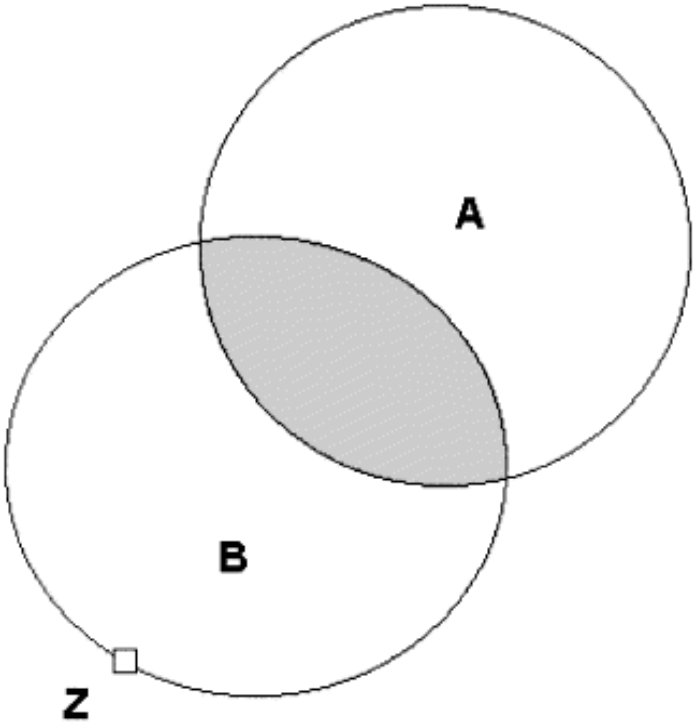
# Introduction (1)

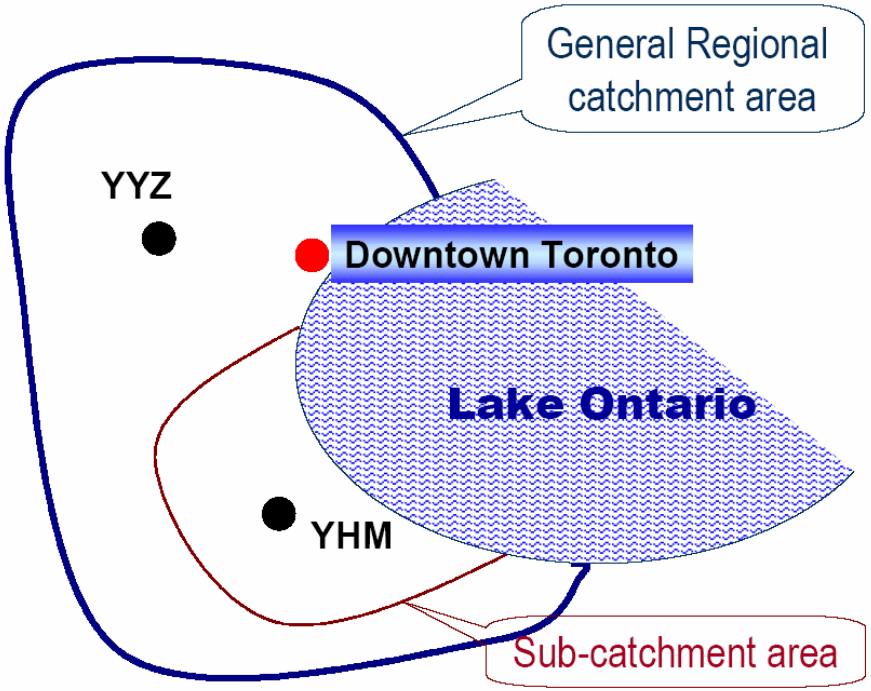
- Airport competition has received little attention in literature
  - Usually assumed to be typical natural monopoly
- Challenged by Starkie (2002), Tretheway and Kincaid (2005) and others
- Airports compete on a range of different attributes, e.g. destination competition, competition for becoming an airline base

# Introduction (2)

- Common: competition in shared local market → *spatial competition*




Starkie (2002)




Tretheway and Kincaid (2005)

# Outline

- Why spatial economics matters
- Models of spatial competition
- Conclusion

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# Why spatial economics matters (1)

- Economics has been a “spaceless” science
- Spatial Impossibility Theorem (Starrett, 1978)
- Backyard economy
- Models of imperfect competition
- Common assumptions:
  - Firms and households are spread over geographic space
  - Transportation costs create alternating demand elasticities between spatially separated markets
  - Firms have pricing power

# Why spatial economics matters (2)

- Airports sell product to local community
- Production and consumption in spatial setting
- Competition will be imperfect
- Seek to explain (spatial) competition

# Outline

- Why spatial economics matters
- Models of spatial competition
  - Hotelling's model
  - Salop's model
  - Ferreira-Thisse model
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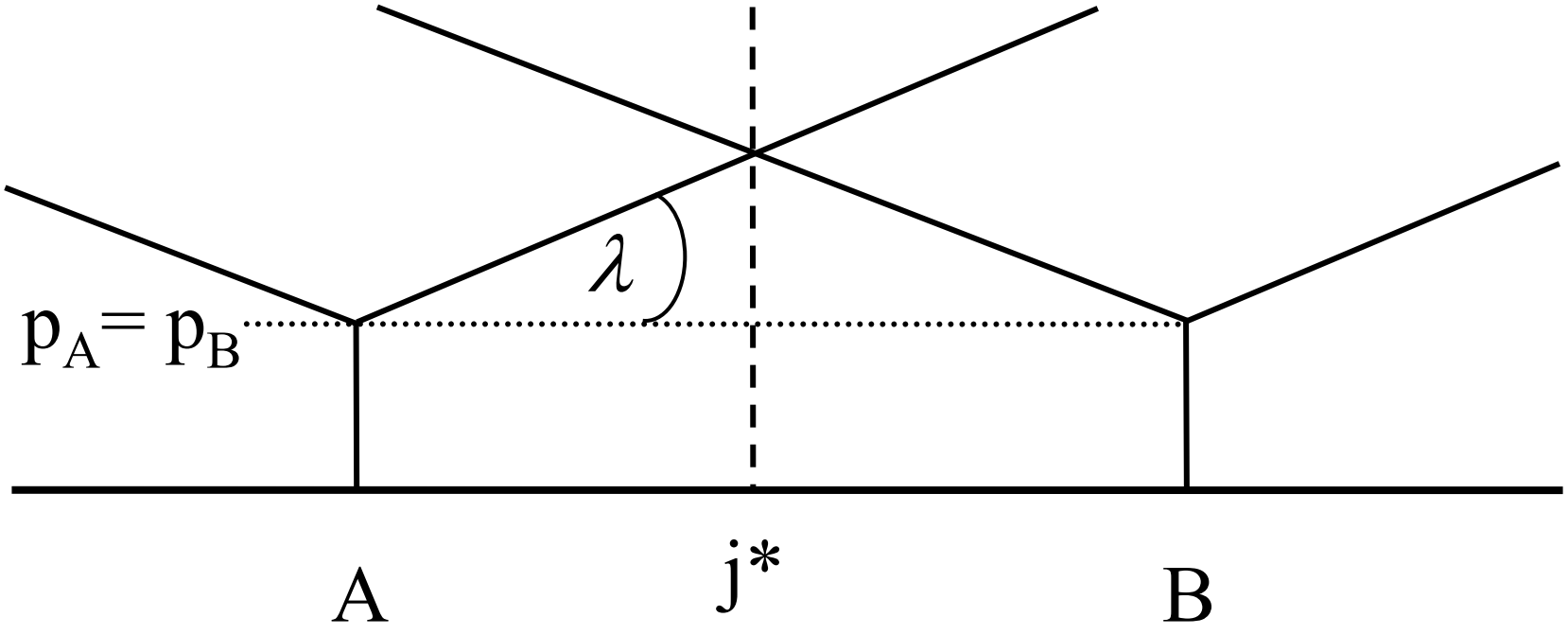
# Hotelling's model (1)

- Consumers face different costs:
  - Mill price – price of product charged by firm
  - Transportation costs – costs incurred by consumer for traveling to production site (and back to consuming location), distance x price per unit distance (e.g. 4 € per km, 2 $ per mile)
  - Delivered price = mill price + transportation costs

# Hotelling's model (2)

- Two firms, homogeneous product, even distribution along a straight street
- Fixed location and endogenous prices

# Hotelling's model (3)



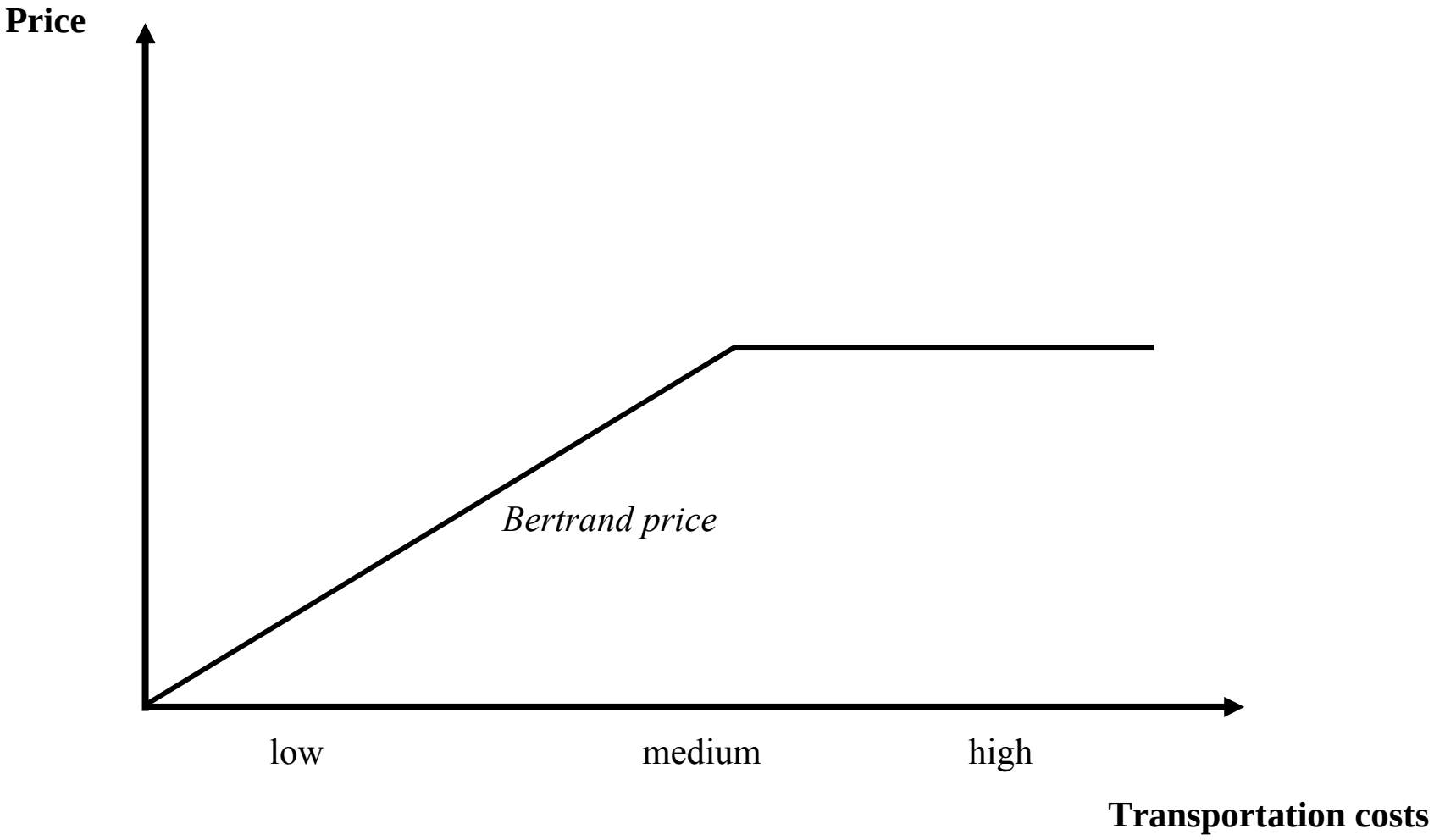
# Hotelling's model (4)

- Seek equilibrium in prices
- Case 1: non-collusive
- Case 2: collusive model (joint profit maximization)

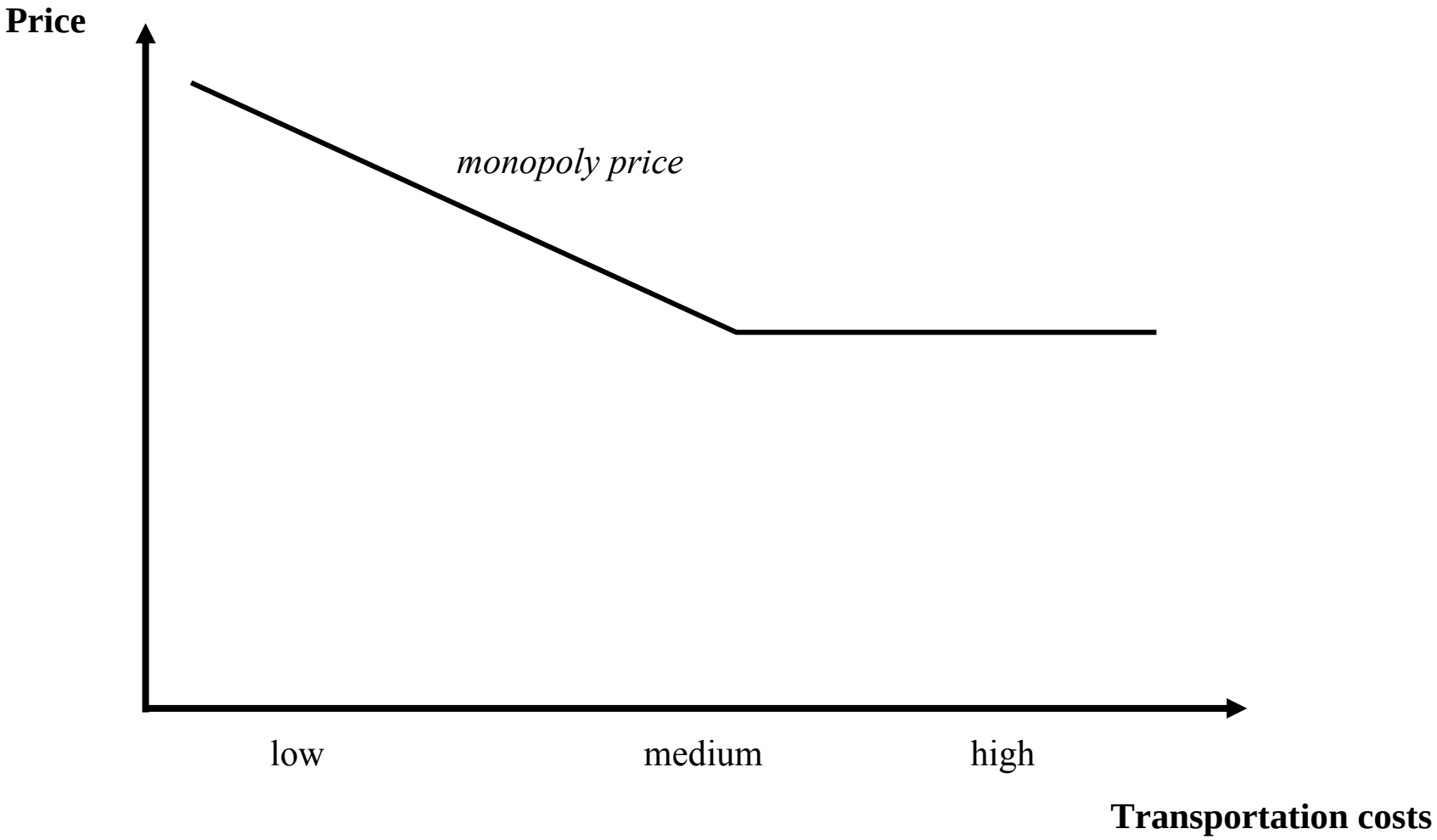
# Case 1: non-collusive model (1)

- Trade off: raising mill price and loosing consumers (albeit charging remaining higher price)
- Consumers withdraw at some point
  - Utility is bounded
- Level of (unit) transportation costs

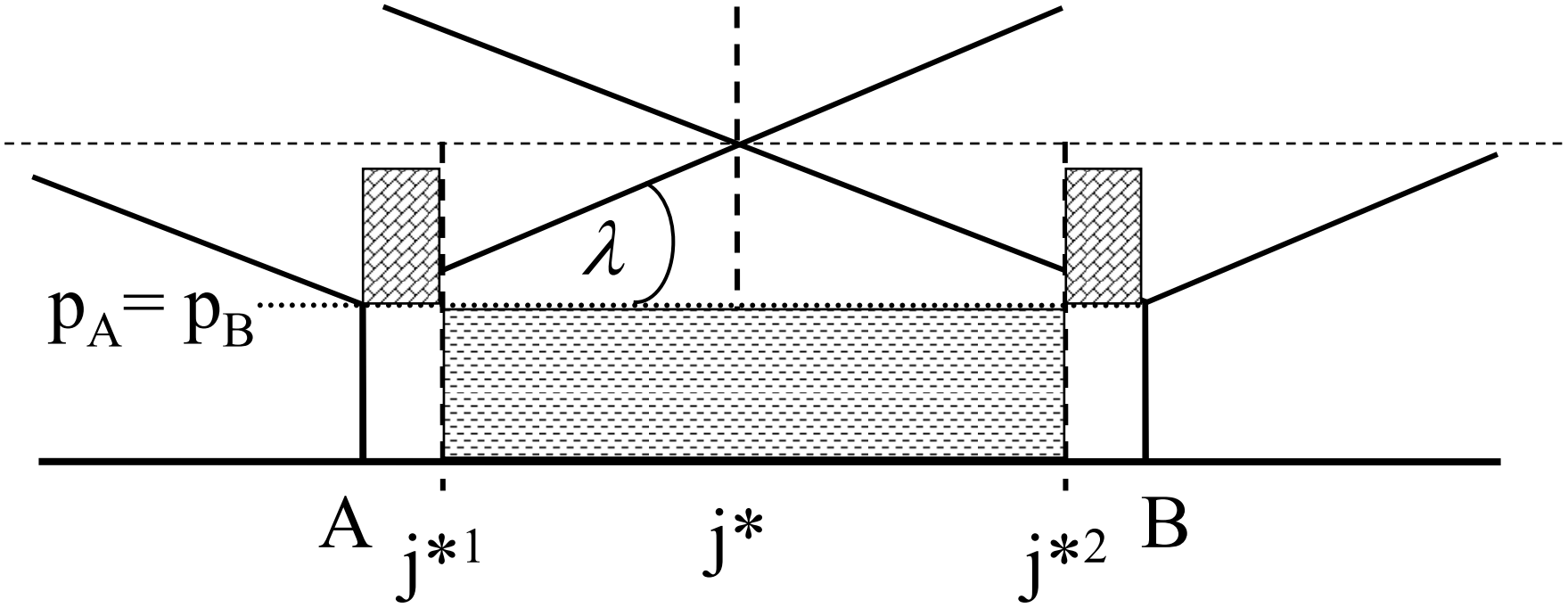
# Case 1: non-collusive model (2)



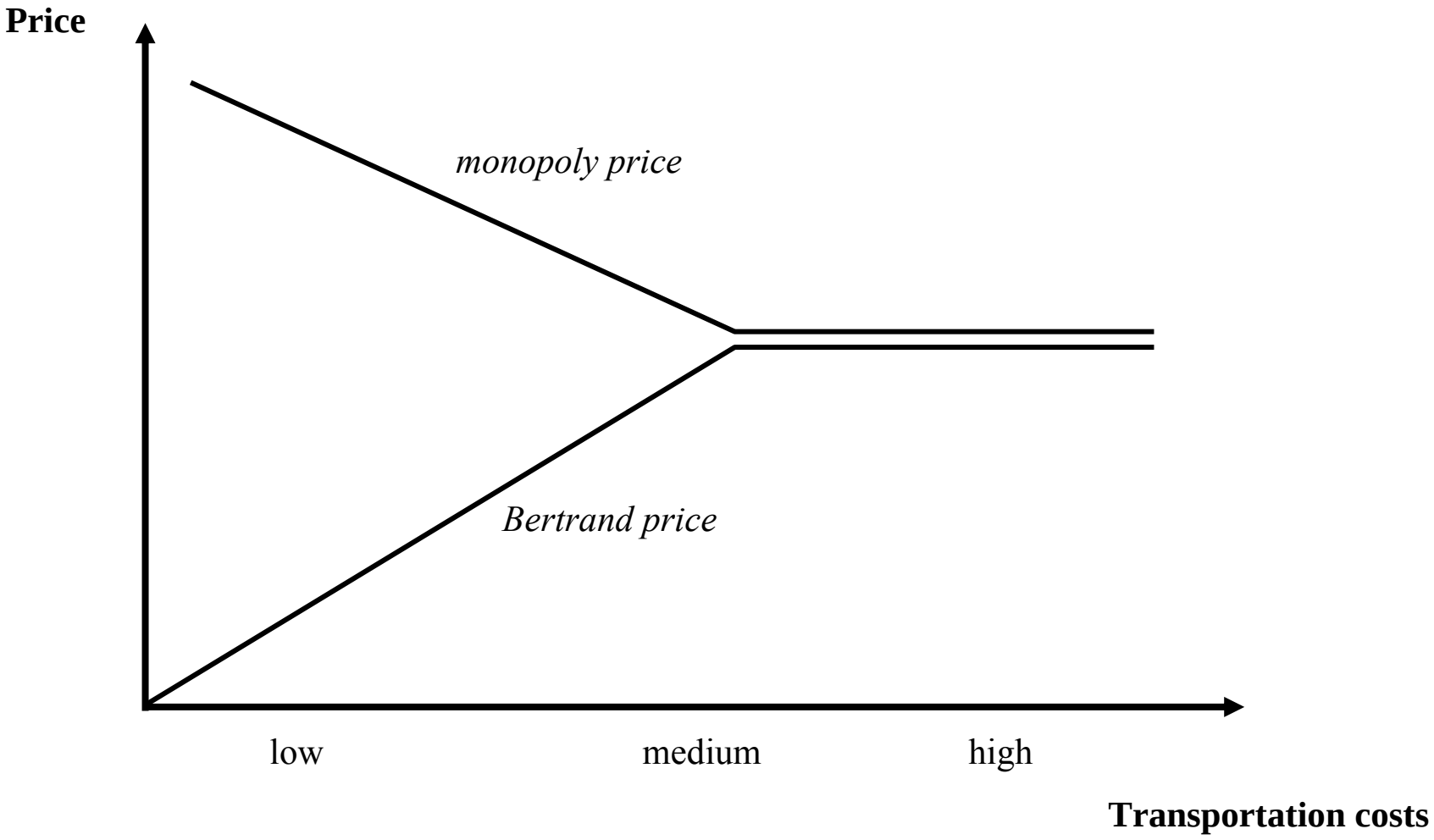
# Case 2: collusive model (1)



# Case 2: collusive model (2)



# Cases 1 and 2 – A comparison



# Consequences for airport competition (1)

- If airports are on “the same street”
  - Price competition for low and medium levels of transportation costs
- Localized competition
  - i.e. airports compete with direct neighbor
  - A’s pricing influences B’s pricing, vice versa
- Low transportation costs imply a high demand substitutability
  - Explicit costs or GTC
  - Business vs. leisure travelers

# Consequences for airport competition (2)

- Lowering transportation costs increases demand substitutability
  - management may influence airport access
- Implication: keep separate owners
  - If transportation costs are sufficiently low
- Airports must offer same destinations
  - i.e. there must actually be a choice

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# Salop's model (1)

- Drawback:
  - Fixed number of firms
- No entry
- Street becomes a circle
- Number of firms is endogenous

- Seek equilibrium in number of firms

# Salop's model (2)

- Outcome:
  - High fixed costs, low number of firms
  - Prices increase with increasing number of firms, since transportation costs decrease
- As market size increases (i.e. street length increases) number of firms goes up as well
  - fixed costs decline relative to market size
- Fostering airport entry can be beneficial, but may not reduce prices

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# Ferreira-Thisse model (1)

- Account for product differences
- Model keeps lambda variable
  - i.e. lambda is an indicator for product quality
- Outcome:
  - If airports are very close they will vertically differentiate
  - Homogeneous if they are far away

# Ferreira-Thisse model (2)

- Amsterdam airport is different from Rotterdam, is different from Lelystad airports
- Same for Paris, London, Berlin, Rome, …
- Not just direct price competition, also product differentiation

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# Conclusion (1)

- Spatial competition seems relevant for airport competition
- Initiate the debate on the relevance of spatial economics for airport competition
- Hotelling → price competition
- Salop → entry competition
- Ferreira-Thisse → product differentiation
- If possible airports should be allowed to compete

# Conclusion (2)

- Open points:
  - Simplicity of models
  - Vertical relationship (mill price ≠ airport charges)
  - Airline competition
  - Price discrimination
  - Other arguments for joint ownership (e.g. double marginalization problems for hub and spoke)
  - Other factors affecting competition (regulation, slot constraints)

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# Dank u wel!

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