

# Network competition in the Open Aviation Area

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# Introduction

- joint open aviation area
- "Tearing down regulatory barriers allows us to foster more affordable and convenient air travel and gives our airline industry more opportunities to compete, innovate and thrive"  
(U.S. Transportation Secretary Mary Peters)
- Claims in media that enhanced competition will lower transatlantic fares with hundreds of Euros.

# Objective

- What will be the effect of the agreement between E.U. and U.S.?
- Compare effects of deregulation of aviation markets in the U.S. and E.U.
- Small modelling exercise: effects of new arrangement on competition and consumer welfare.

# Effects of deregulation of aviation markets in the U.S. and E.U.

- Prior to the deregulation, Civil Aeronautics Board (CAB), determined routes and regulated fares in the U.S. to protect the carriers from “destructive” competition.
- International markets also heavily regulated.
- “The basic trouble remains that the world has too many airlines, most of them inefficient, undercapitalized and unprofitable” (The Economist, 1960).

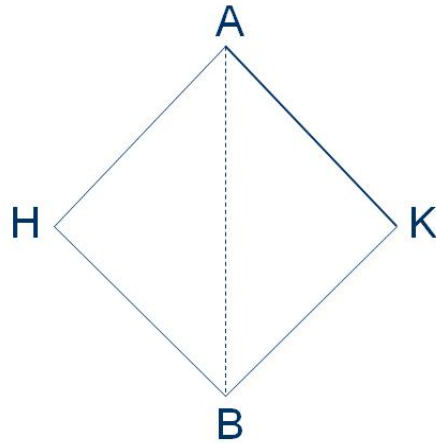
# Effects of deregulation of aviation markets in the U.S. and E.U.

- **1978: Airline Deregulation Act.**
  - All restrictions on (domestic) routes, fares and schedules removed.
  - Increased airline operating efficiency and competition were expected to benefit both airlines and passengers.
- **Large scale entry of new carriers, followed by rapid departure of most of them.**
  - 40 carriers immediately after the deregulation, some 15 years later there were six or seven.

# Effects of deregulation of aviation markets in the U.S. and E.U.

- Formation of hub-and-spoke networks.
  - Exploit density effects.
- Formation of alliances.
  - Exploit density effects (size matters).
  - Reduce competition.
- Zhang (1996): hub-and-spoke networks have built-in anti-competitive effect.
  - Fortress hubs.

# Effects of deregulation of aviation markets in the U.S. and E.U.



- Airline 1 uses H as a hub, serves AH and BH directly, and AB indirectly.
- Airline 2 uses K as a hub, serves AK and BK directly, and serves AB indirectly

# Effects of deregulation of aviation markets in the U.S. and E.U.

- Airline 1 invades markets AK and BK
  - Prices decrease (increased competition). Airline 2 loses money.
- Airline 2 behaves aggressively in AB market: increased output lowers average costs on the AK and BK links: **density economies**.
  - Airline 1 loses output in AB-market (airline 2 captures part of the AB-market of airline 1). Average costs on the AH and BH links increase. Number of passengers in the AH and BH markets decreases (flights are more expensive).
- Output is decreased in the original network (HAB). Additional profits of the new AK and BK markets have to be balanced against losses in the other markets.
- When density economies are strong, attacking the network of airline 2 decreases profits for airline 1.

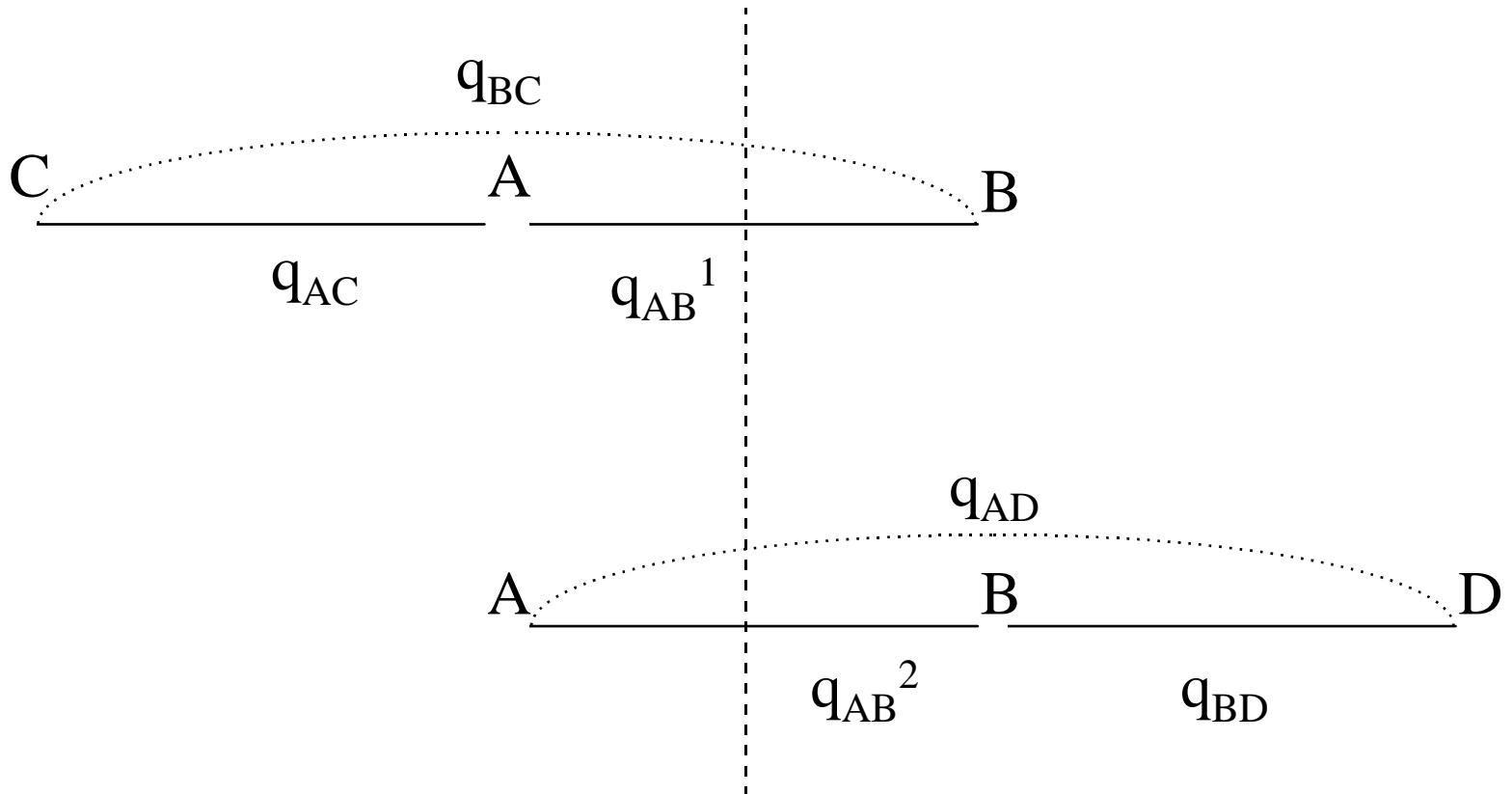
# Effects of deregulation of aviation markets in the U.S. and E.U.

- Results also applies when hub-to-hub market is served.
- Very 'thick' markets can be served directly.
- Low-cost airlines do not have indirect travel
  - Networks effect absent
  - Enter markets whenever a profit can be made.
- E.U. case: similar.
  - Fortress hubs
  - Alliance formation.

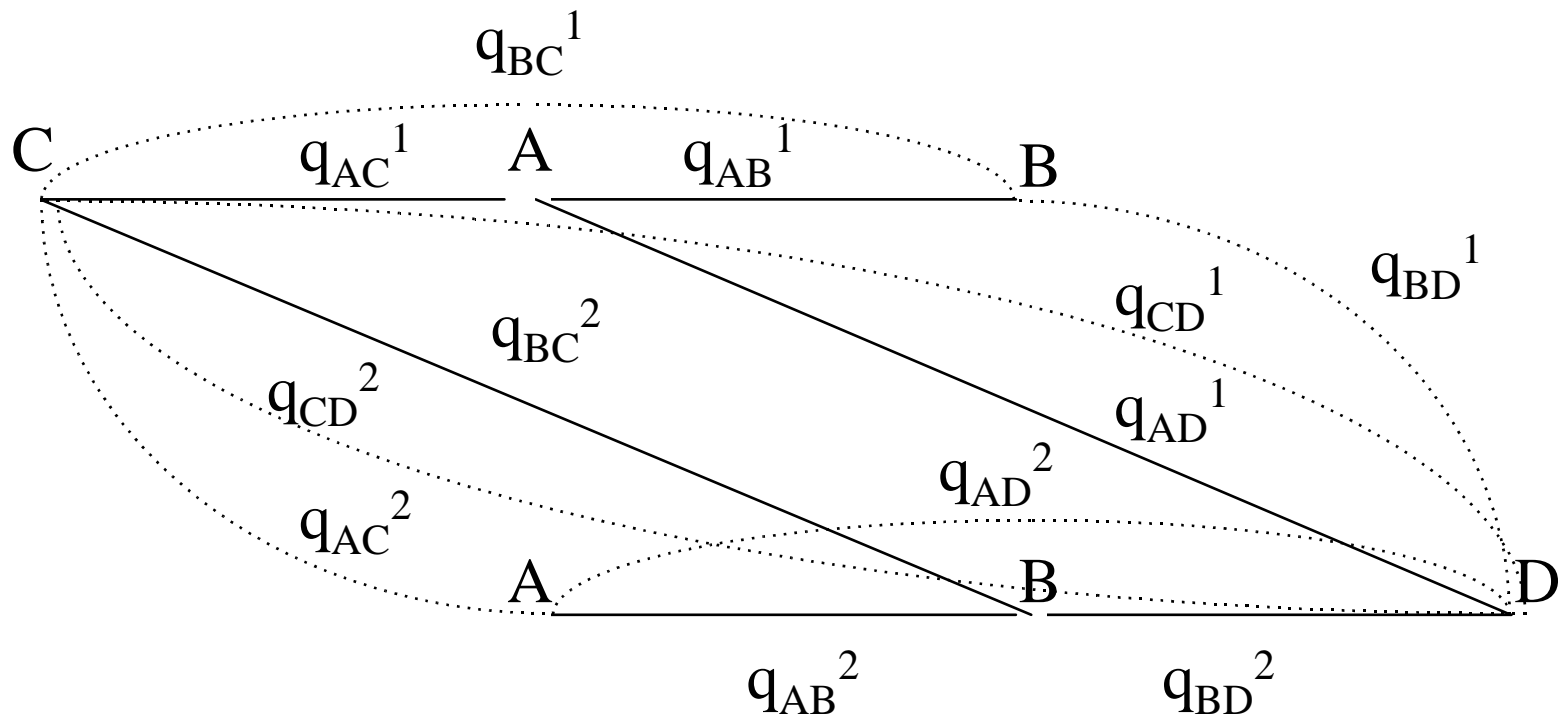
# Effects of open aviation area.

- three scenarios
  - base scenario, 1 international market
    - 2 alliances, hub-to-hub market and local markets.
  - open skies, no alliance
    - Further alliance formation not allowed.
  - open skies, alliance
- marginal costs:  $1-\theta Q$
- demand:  $P = \alpha - Q/2$

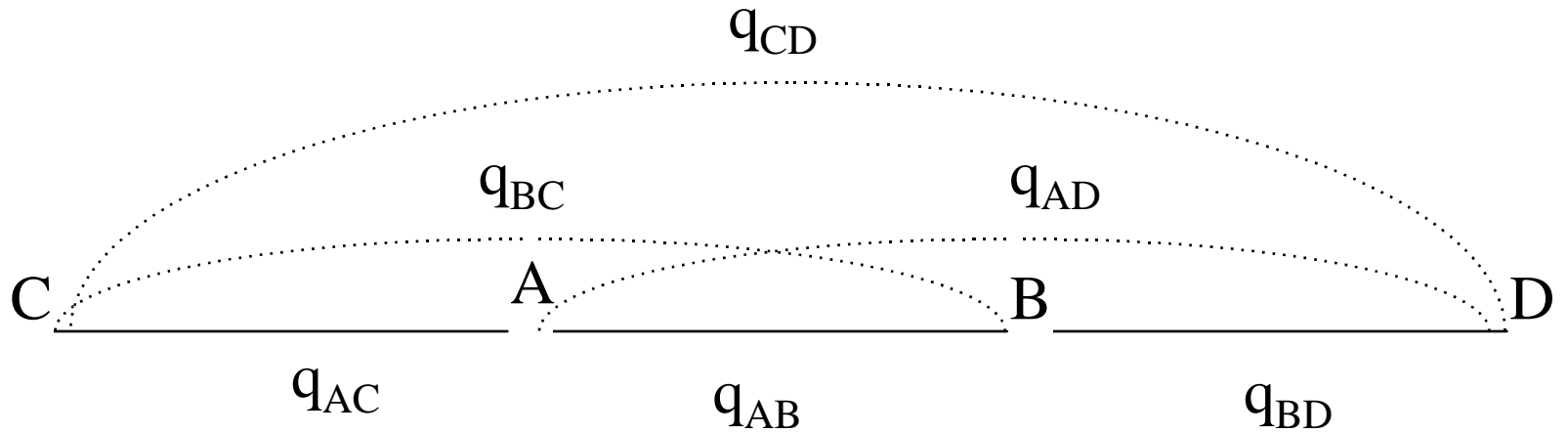
# Scenario I



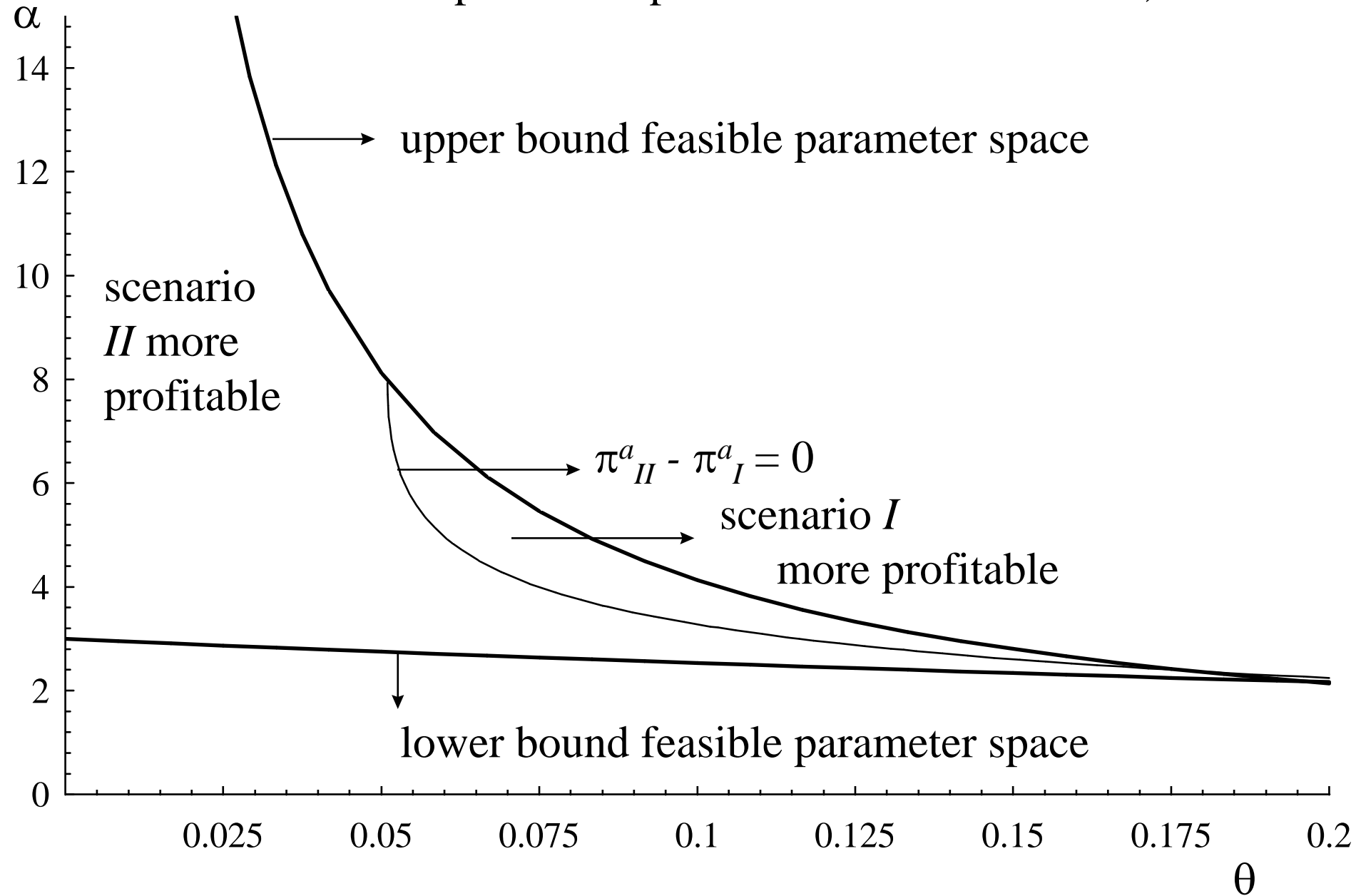
# Scenario II



# Scenario *III*



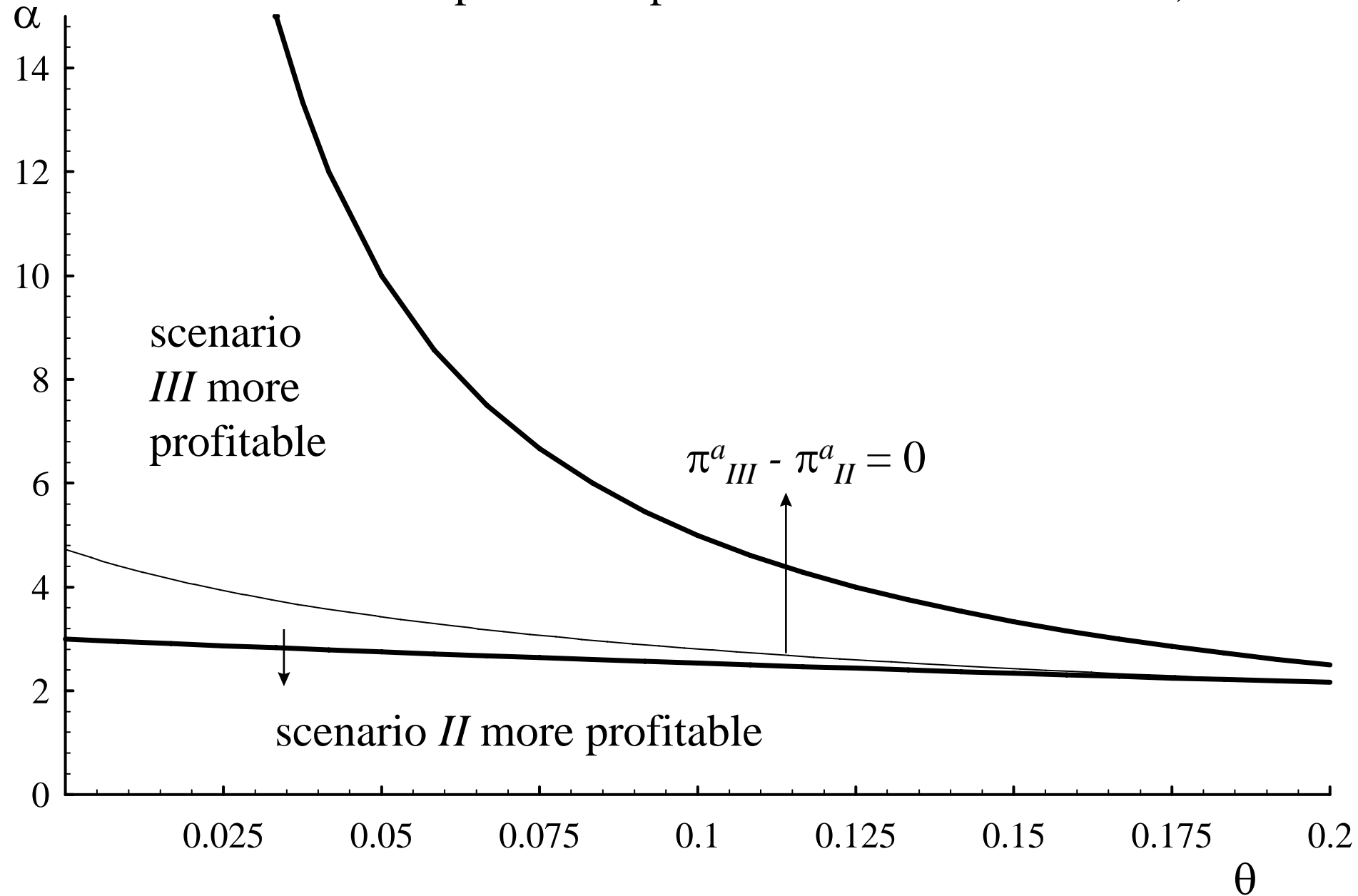
# Comparison of profits in scenarios I and II, $f = 0$



# Effects of deregulation of aviation markets in the U.S. and E.U.

- U.S. airlines will not “invade” European networks if:
  - Passengers have a high willingness-to-pay, *and*
  - Density economies are relatively high.
- Extension of Zhang’s finding: invade market, and competitor increases output in indirect market. Density effects reduce profits in ‘original’ network.
- ‘Thick’ markets may be entered with direct flight (New York – London).

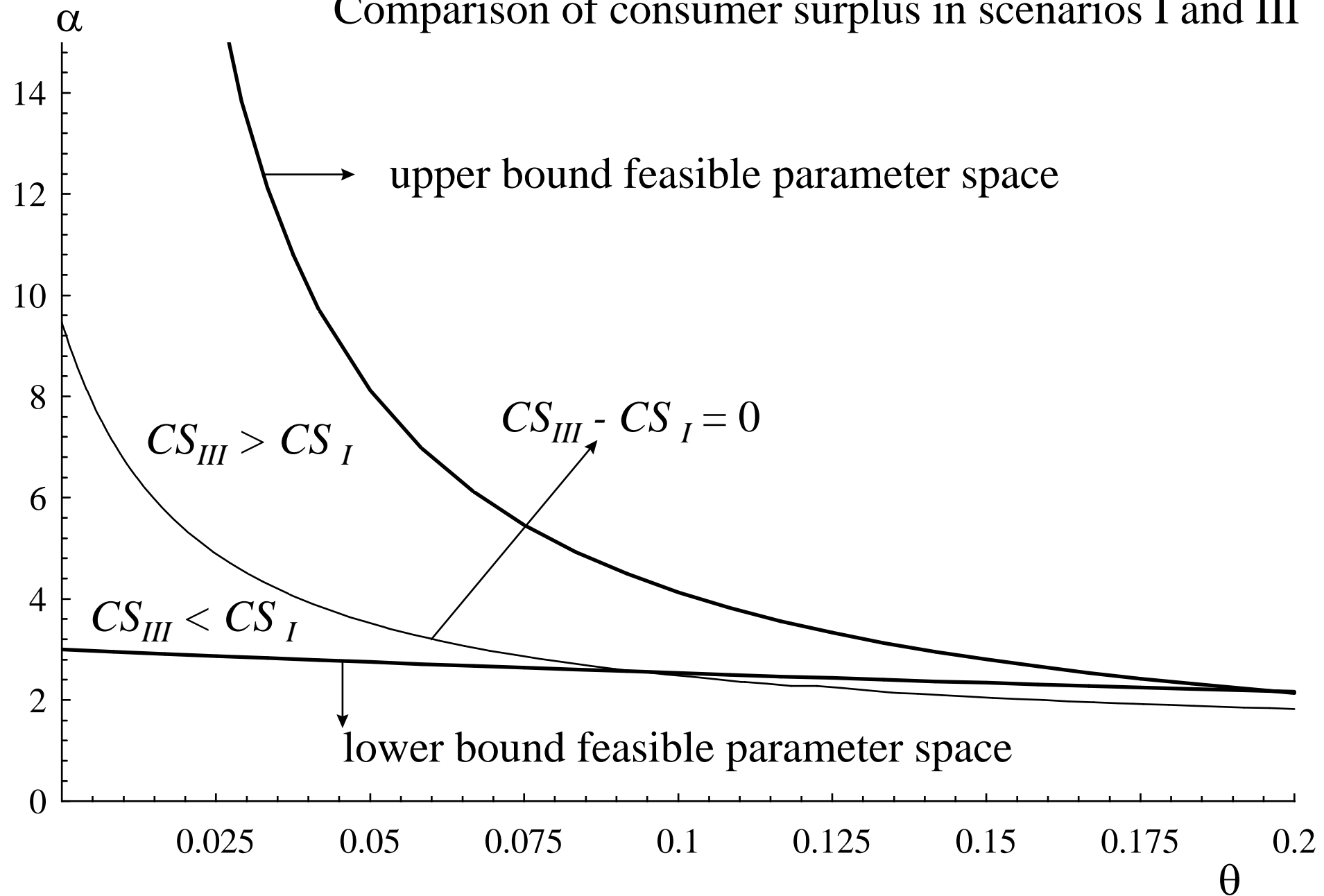
Comparison of profits in scenarios II and III,  $f = 0$



# Effects of deregulation of aviation markets in the U.S. and E.U.

- Joining alliance agreement with European carrier (alliance) is in most cases more profitable than invading the European carrier's network. Only when the level of demand and density economies are low, there are not enough opportunities to exploit density economies

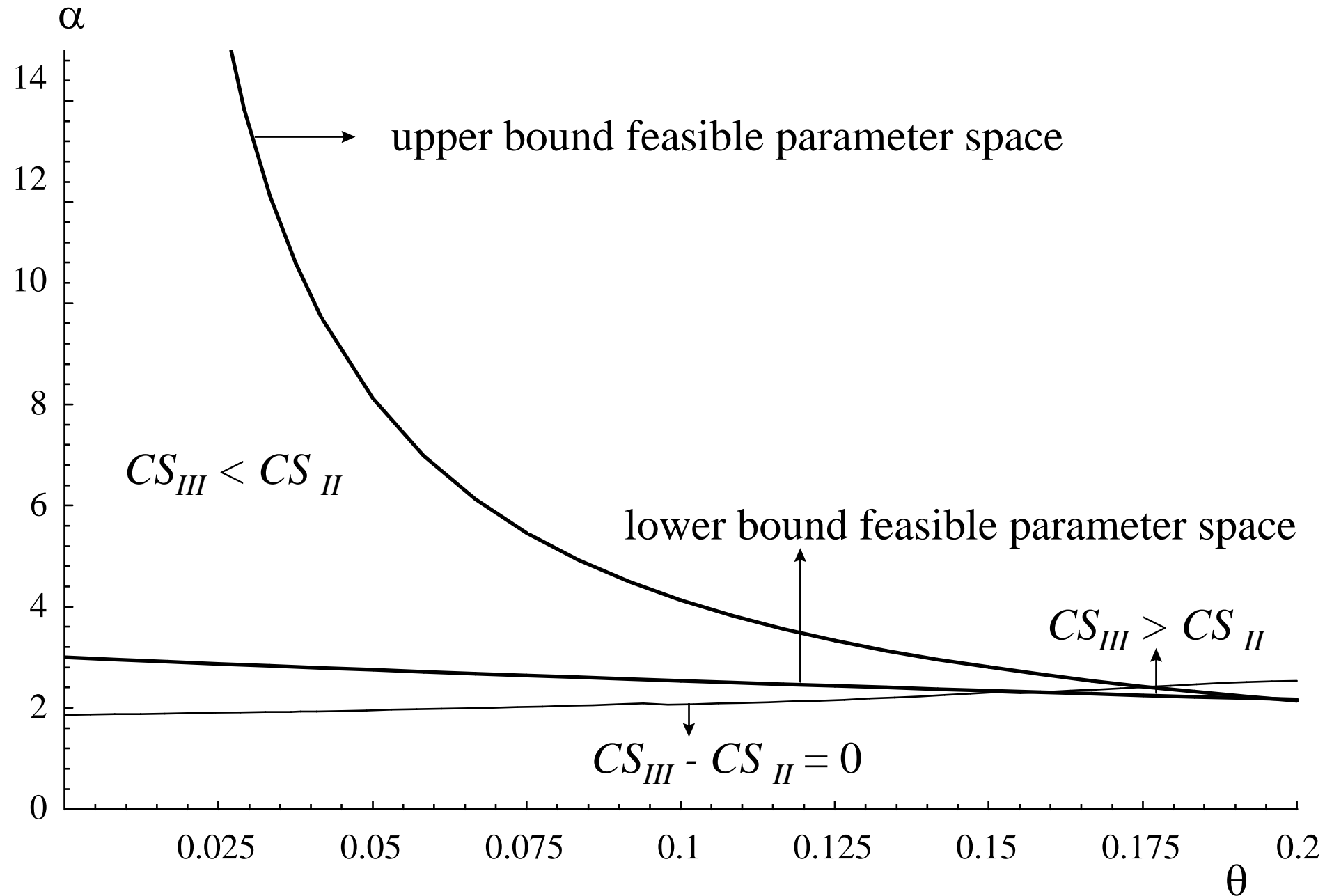
# Comparison of consumer surplus in scenarios I and III



# Effects of deregulation of aviation markets in the U.S. and E.U.

- Passengers are better off under an alliance agreement compared to the base scenario when density economies are high; this puts a downward pressure on prices.
- However, compared to the “invasion” scenario (where competition on all markets puts a downward effect on prices), we see that the effect of density economies only outweighs the competitive effect when economies of density are very high.

# Comparison of consumer surplus in scenarios II and III



# Effects of deregulation of aviation markets in the U.S. and E.U.

- When the government tries to protect the consumer by forbidding the alliance, at high levels of demand and economies of density the airlines do not choose to invade their competitor's network. At these levels of demand and economies of density, it is likely that consumers will prefer the codesharing scenario over the base scenario.

# Discussion

- It is most likely a dominant strategy for an airline to enter an alliance.
- Consumer surplus is then most likely lower than under the competitive scenario.
- Authorities may forbid alliance in favor of competitive scenario, in which consumer surplus is higher than in base case. But then it may be a dominant strategy for airlines to keep their old network.
- Conclusion: entry only in very thick markets.