(Road and) Airport Congestion Management: Lessons for the Rail Sector

ARAF's Conference on
Capacity Constraints of Rail Transport Networks and Economic Regulation
May 13th, 2013 – Paris

Achim I. Czerny
Assistant Professor of Regulatory Economics
WHU – Otto Beisheim School of Management
Burgplatz 2, 56179 Vallendar
achim.czerny@whu.edu

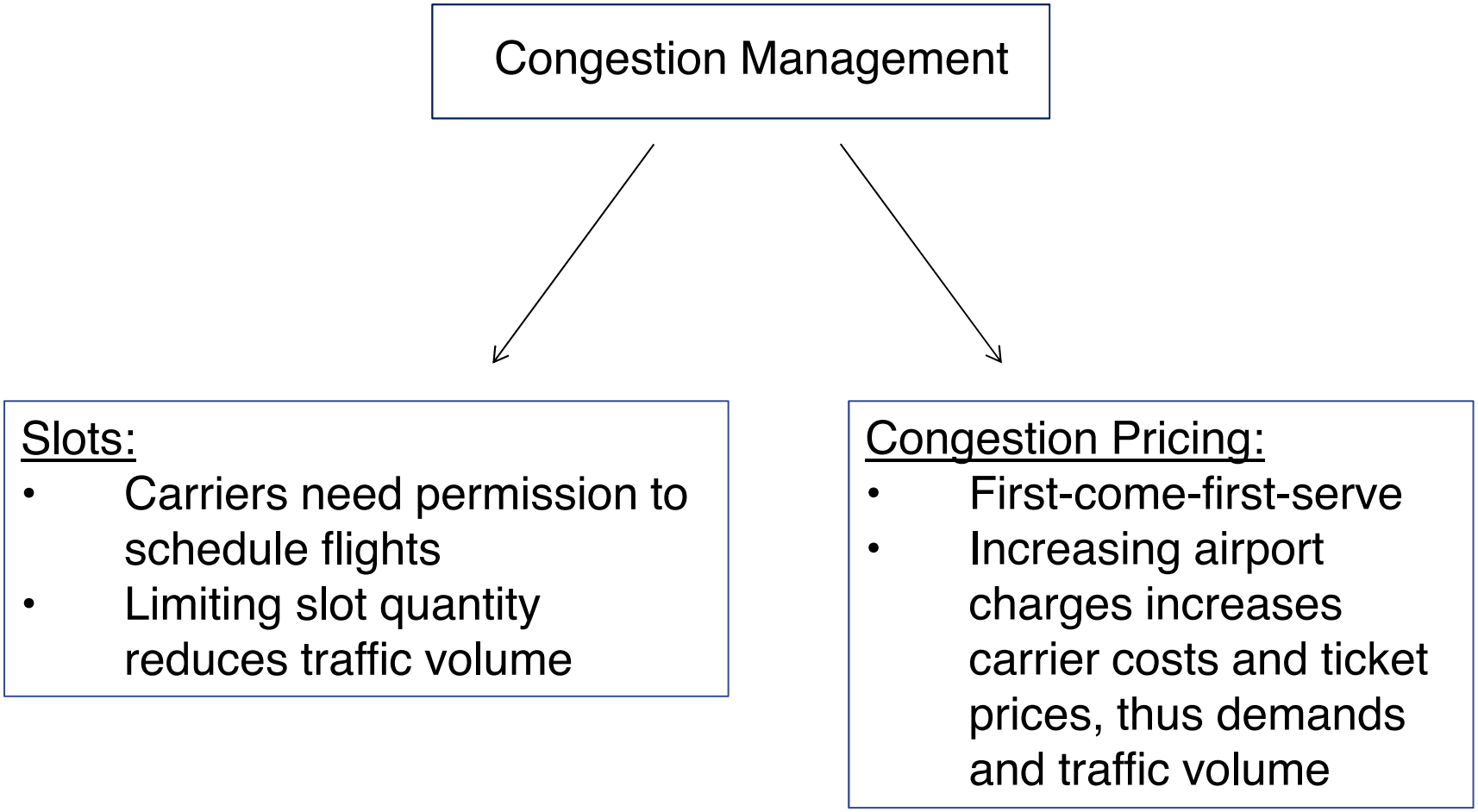
Excellence in Management Education

Airport Congestion

- In the US, China and Europe more than 25% of flights are delayed
- In 2007, total delay cost were around $31 billion in the US (Ball et al. 2010)
- The volume of traffic relative to airport capacity is a major cause for congestion
- Airport slots or congestion pricing can be used to control delays

Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

Slots and Congestion Pricing



Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

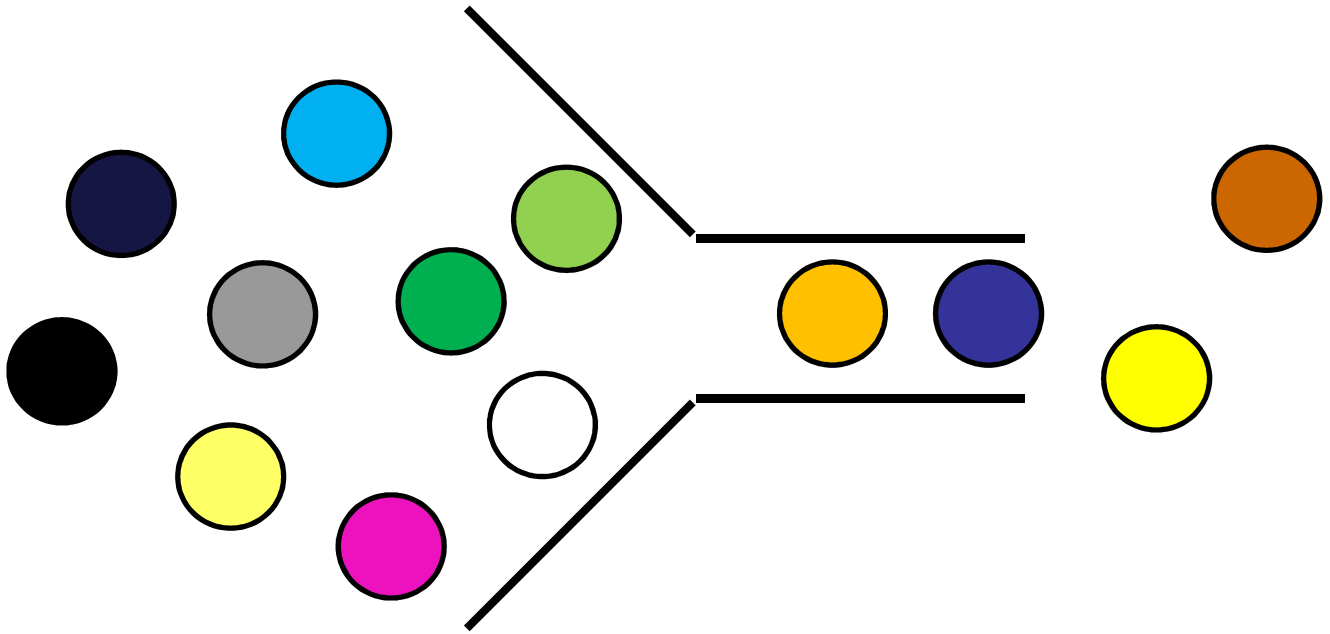
Studies Concentrate on Congestion Pricing

- While most European Airports are slot controlled, there are almost no airport slot controls in the US
- First-come-first-serve at Atlanta, the biggest airport in terms of passenger numbers (approx 90 mio/year)
- Studies concentrate on first-come-first-serve, where demand is controlled by “congestion pricing”
- Main finding: Airport congestion may be reduced by “self-internalization” (e.g. Daniel 1995, Brueckner 2002 and Zhang and Zhang 2006)

Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

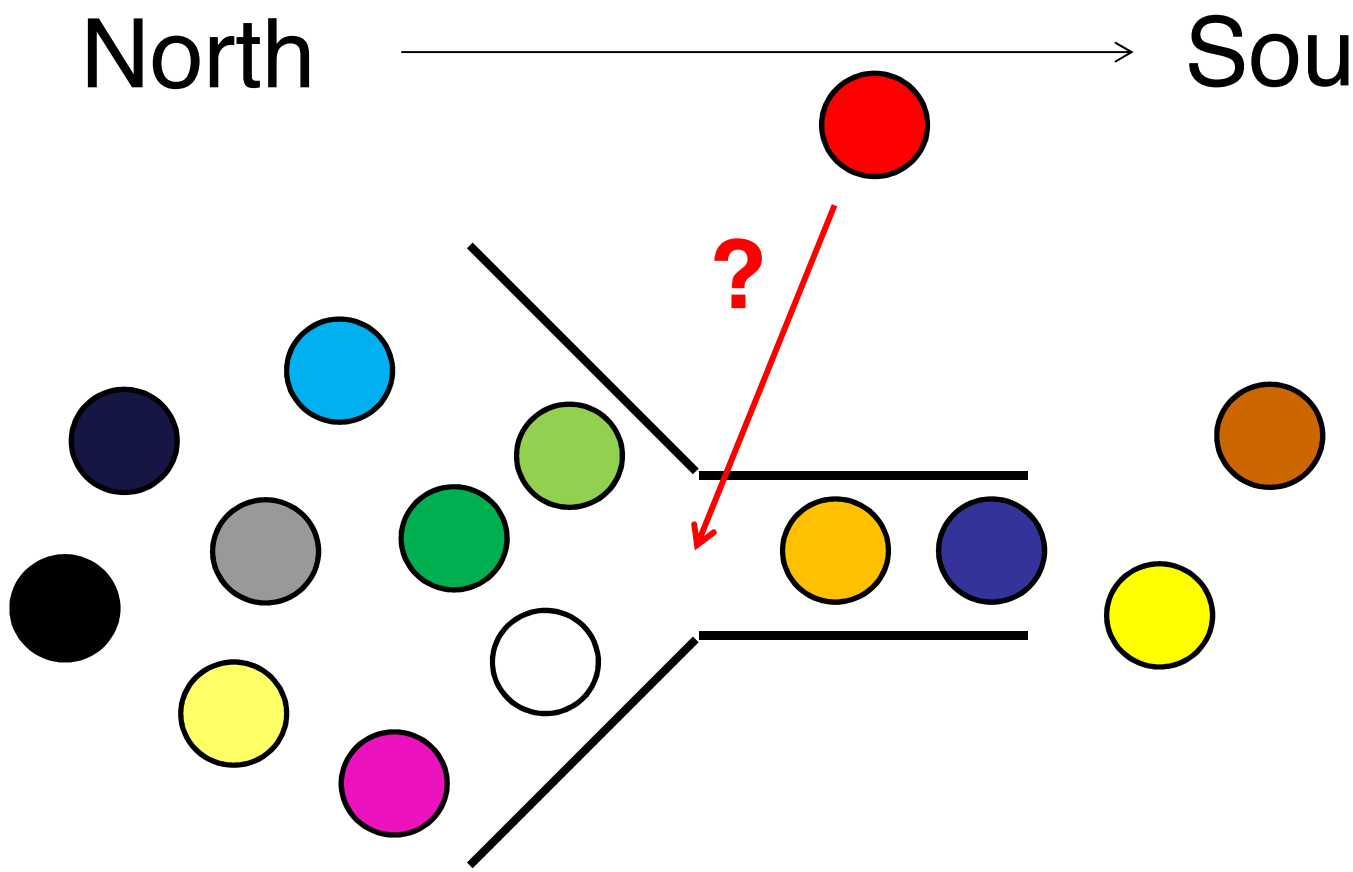
Self-internalization

North → South



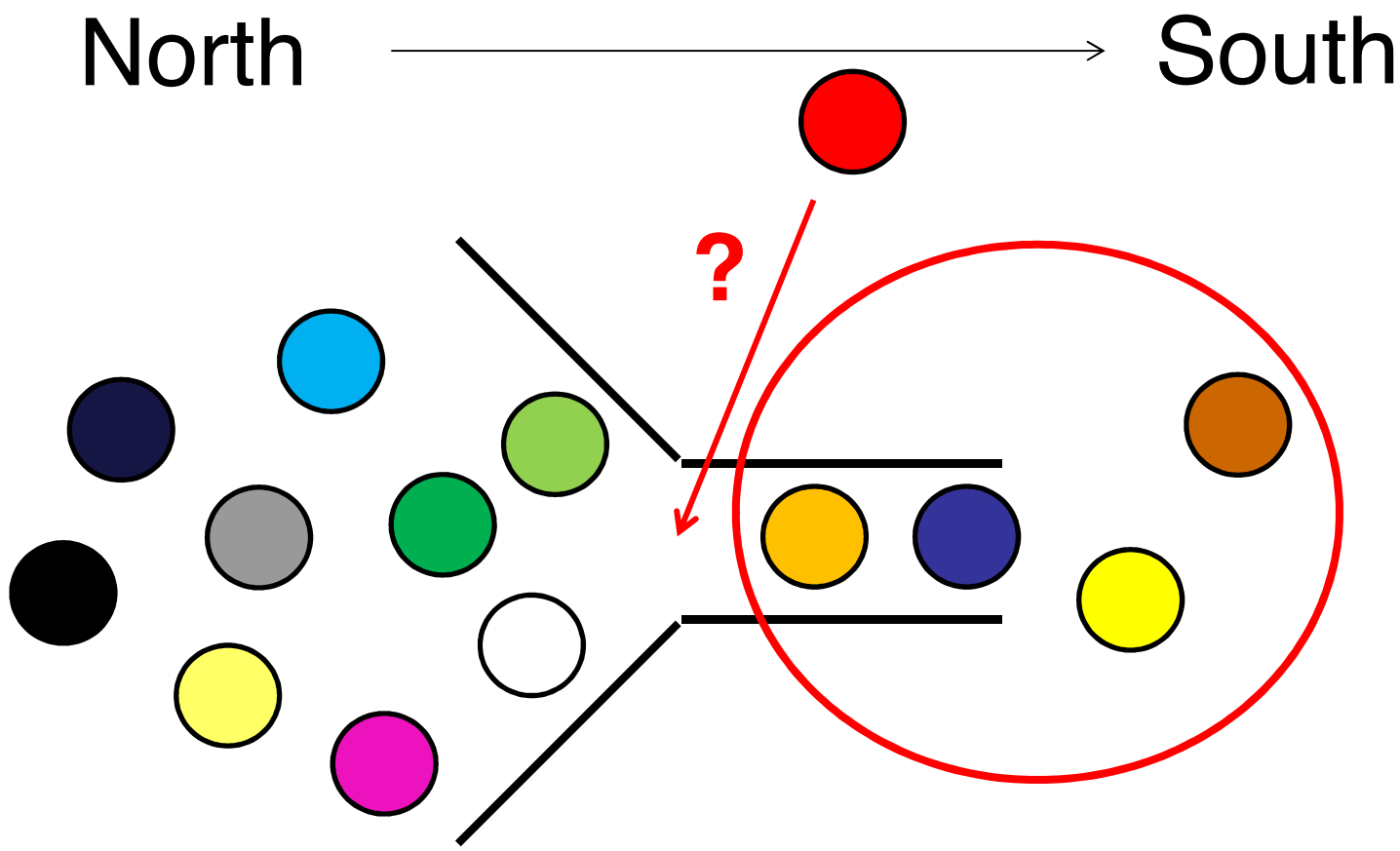
Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

Self-internalization



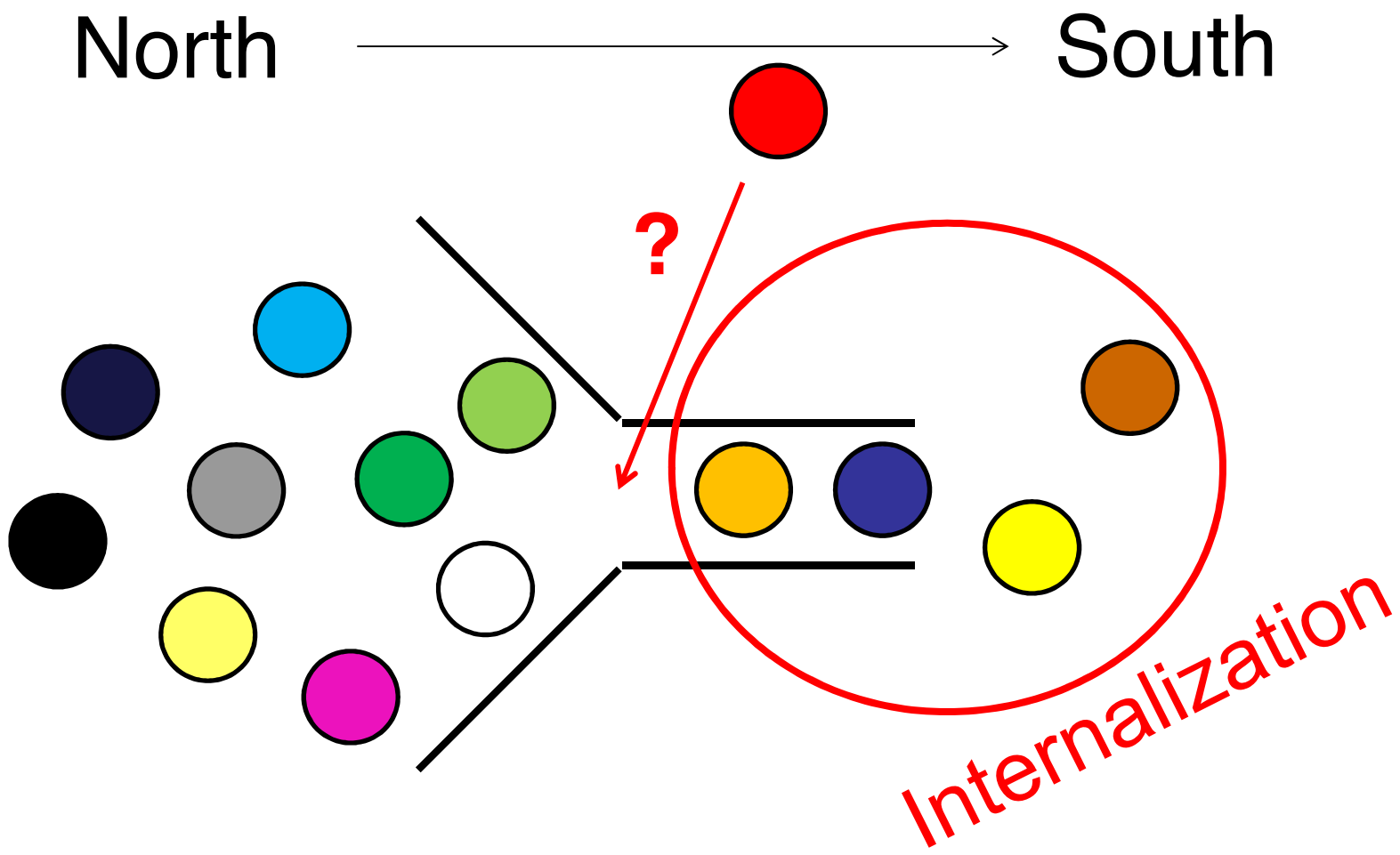
Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

Self-internalization



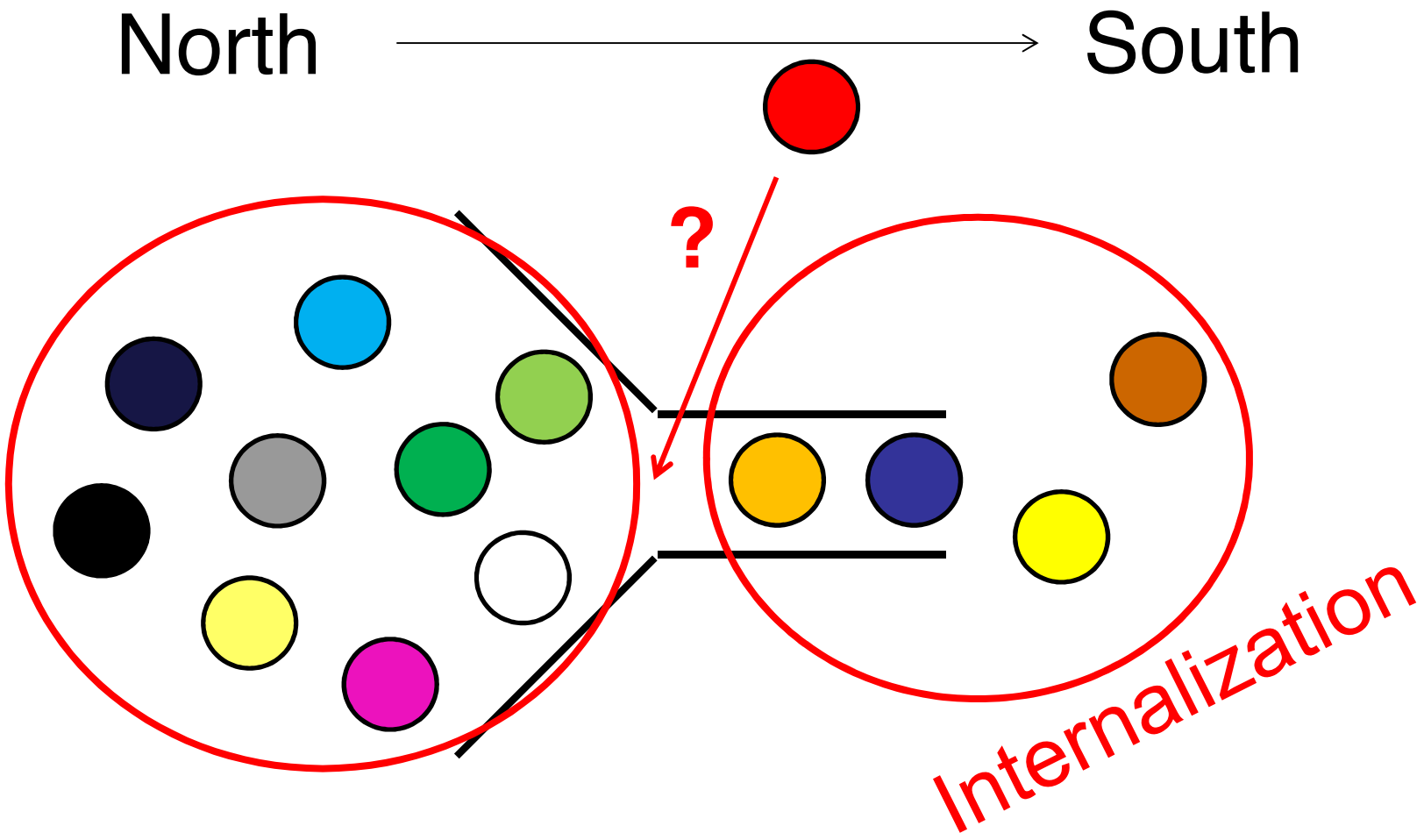
Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

Self-internalization



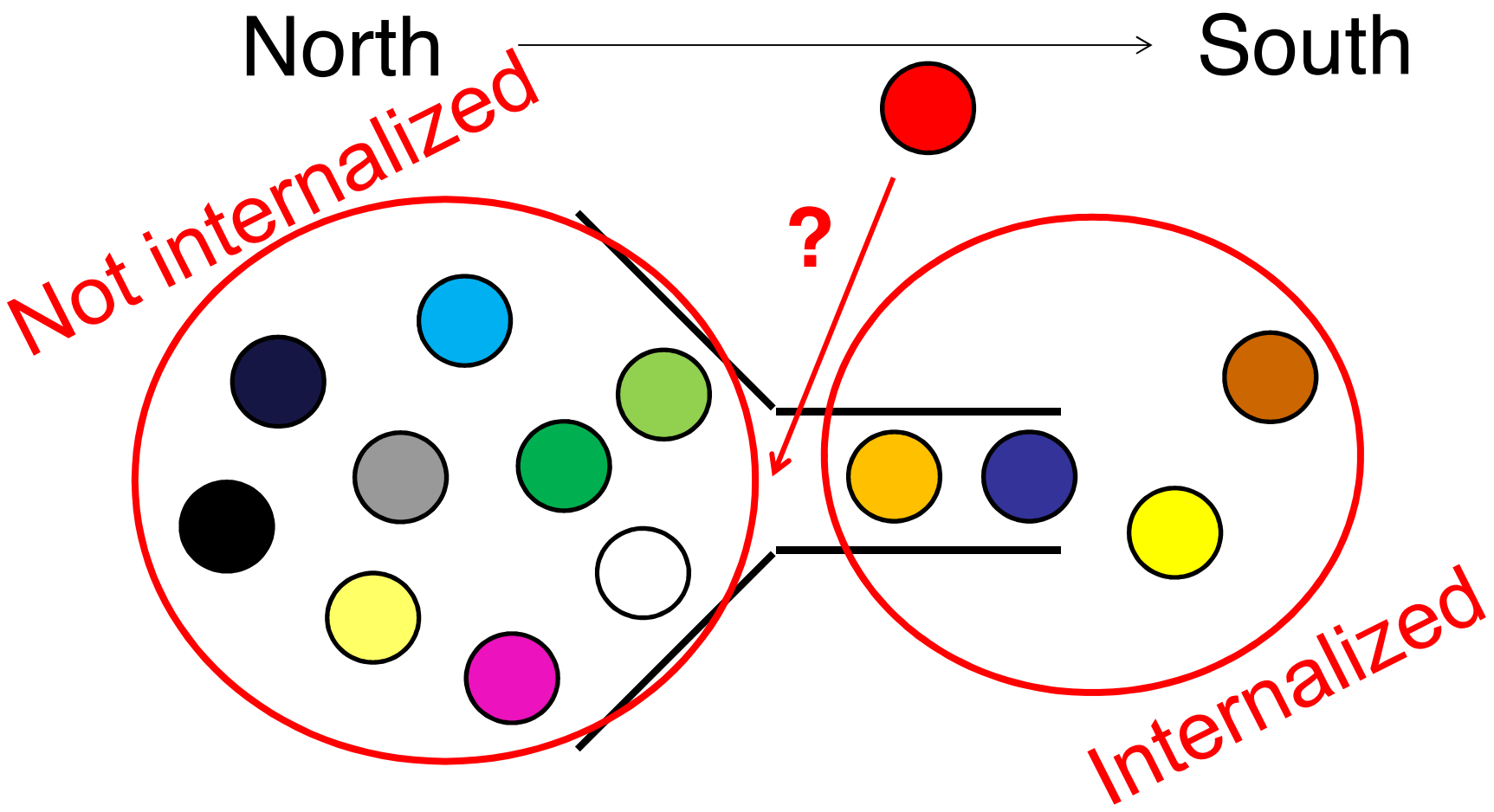
Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

Self-internalization



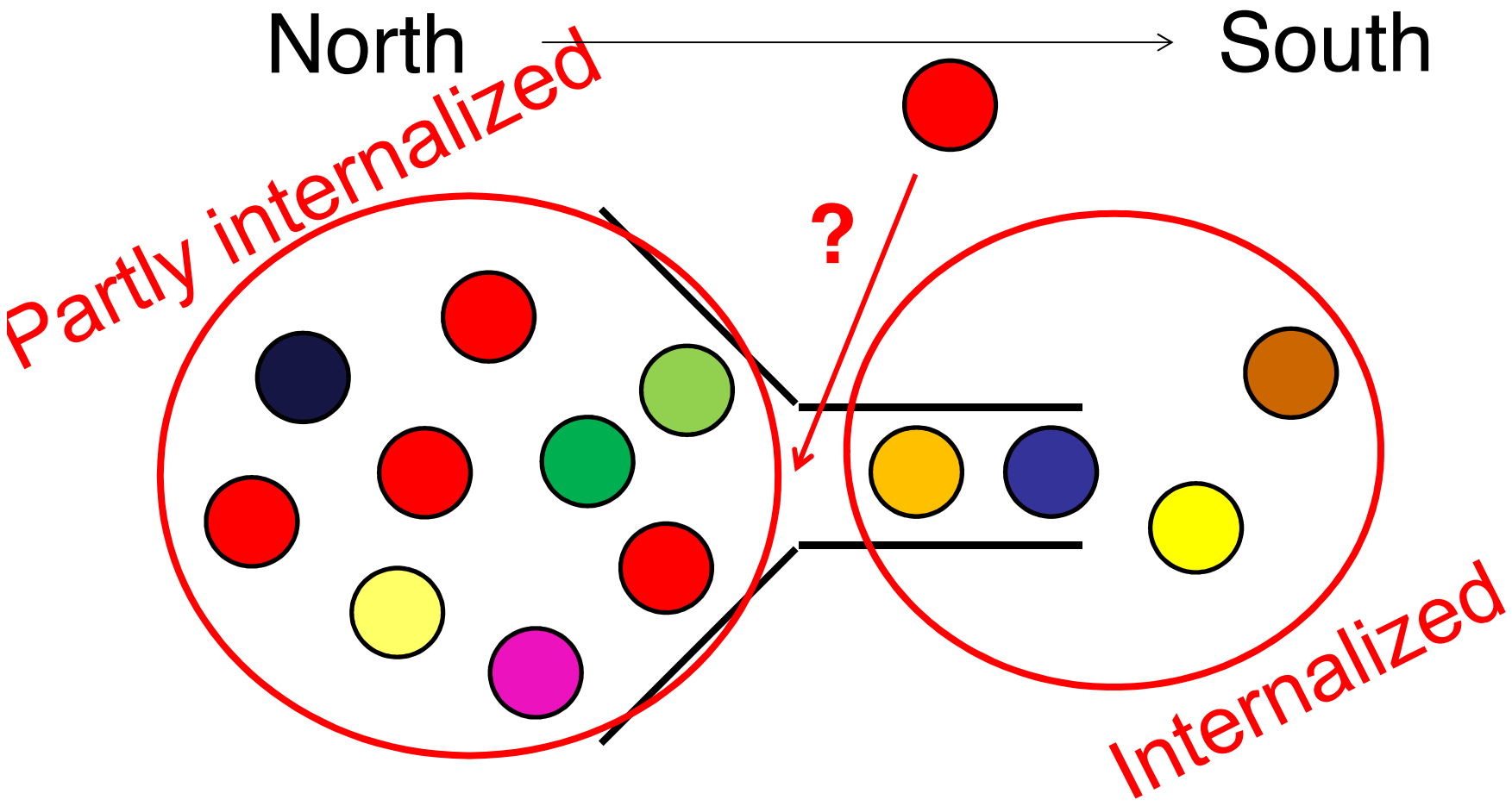
Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

Self-internalization



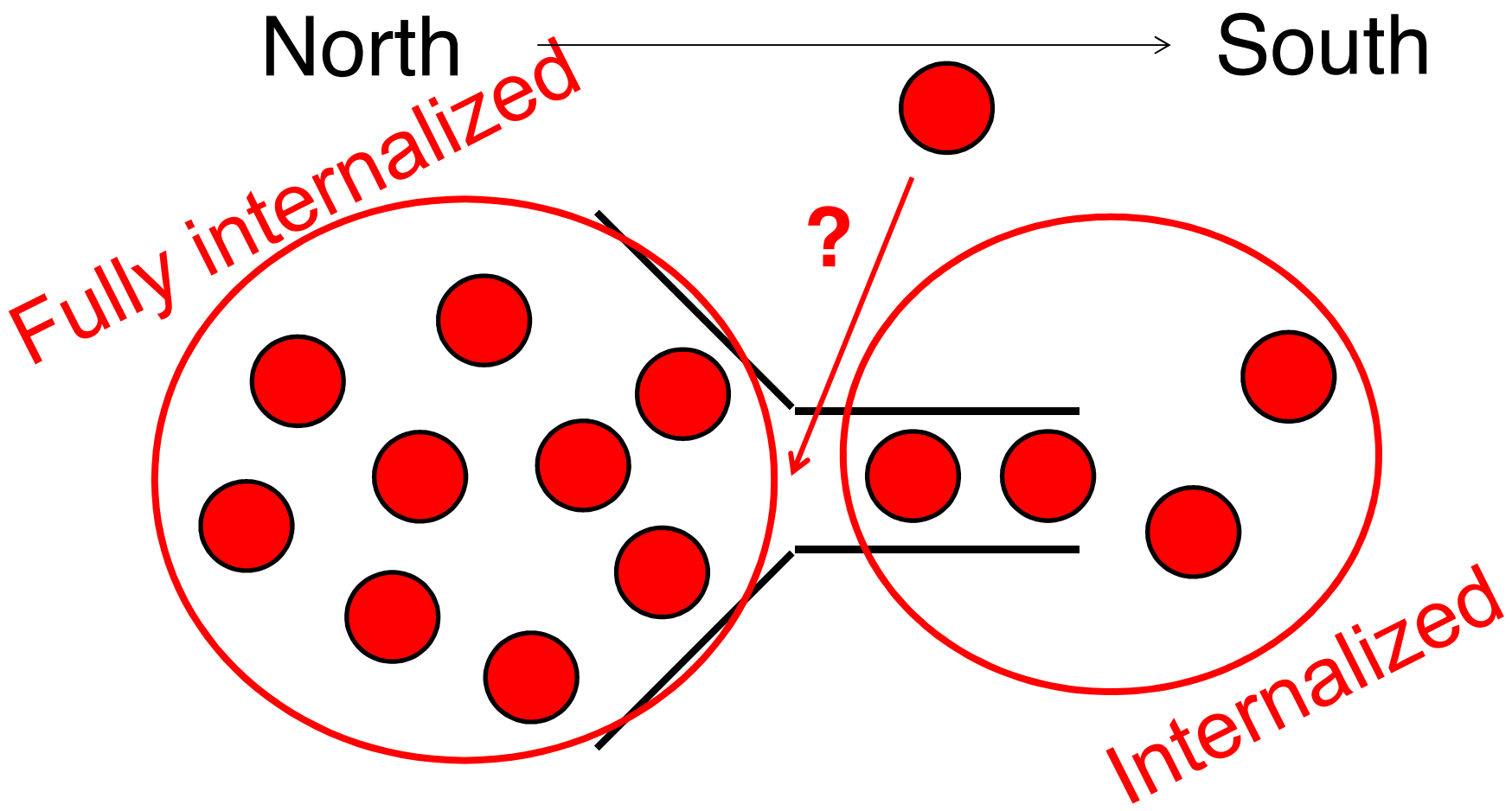
Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

Self-internalization



Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

Self-internalization



Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

Self-internalization

- Self-internalization means that carriers take into account that they impose congestion on themselves
- The incentive for self-internalization is high for large carriers relative to small carriers
- Large carriers produce little externalities relative to small carriers

Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

Self-internalization

Bad news: Small carriers high airport charge and large carriers low airport charge!

Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

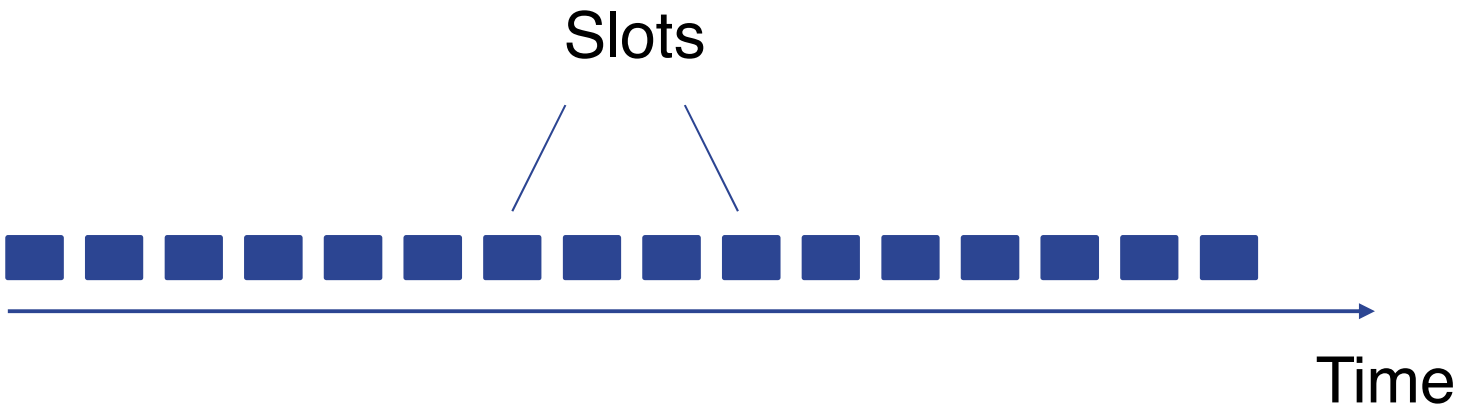
Self-internalization

Good news: Self-internalization becomes irrelevant with slots (e.g. Brueckner 2010 and Basso and Zhang 2011)

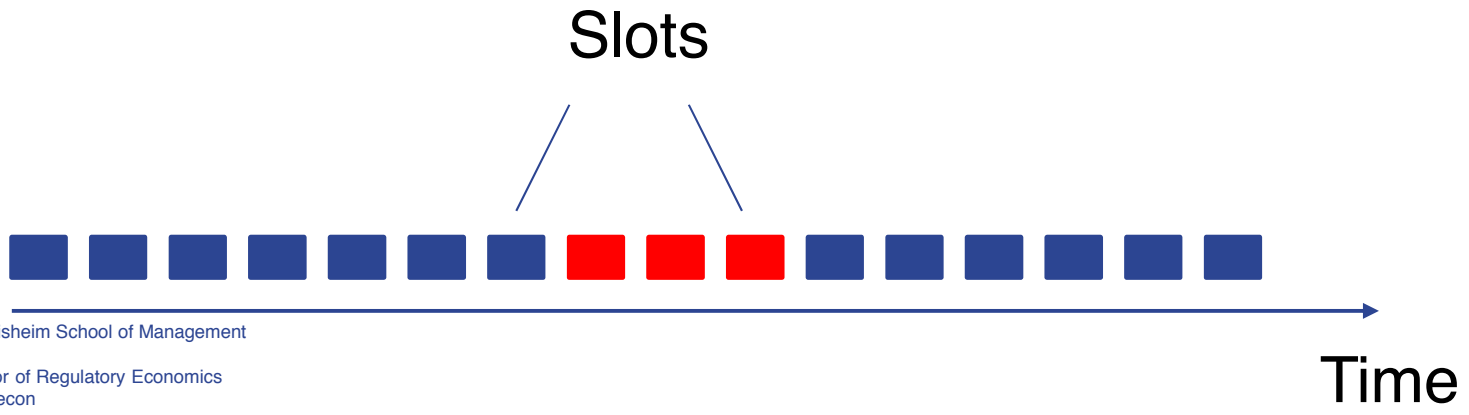
Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

Slots Eliminate Self-internalization

Monopoly blue airline



Small red airline enters the market



Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

Lesson 1:

With slots self-internalization becomes irrelevant.

Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

Aiport Slots and Competition

- Grandfather rules/historic “rights” can be implemented
- Use-it-or-lose-it is used to prevent slot-hoarding
- Priority to newcomers
- Voluntary slot transfers (exchanges/leases/trades) may increase concentration

Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

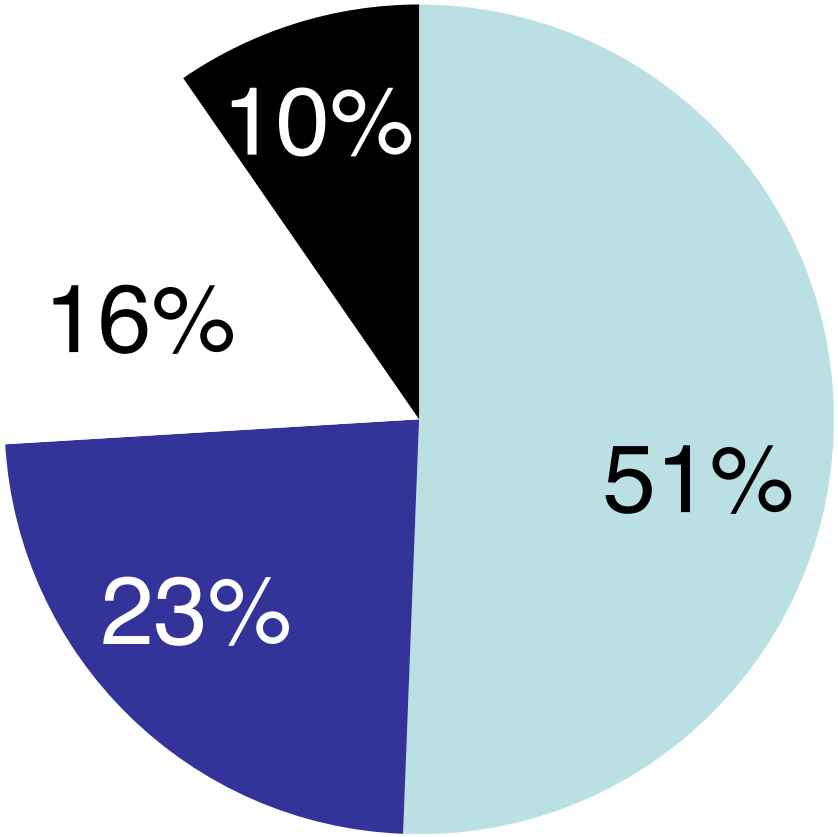
Lesson 2:

Carrier competition works with slots.

Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

Concession Revenues 50%

Revenue shares at Hartsfield-Jackson Atlanta International in 2010:



- Parking, car rental and other concessions
- Terminal, maintenance buildings, and other rentals
- Landing fees
- Other

Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

More Congestion, Higher Revenues

- More slots, more passengers, higher concession revenues (e.g. Zhang and Zhang 1997, Starkie 2001 and Czerny 2006)
- Concession revenues can be used to…
  - …cover infrastructure investments and maintenance costs
  - …reduce public subsidies
  - …reduce infrastructure charges (to the benefit of carriers/train operating companies)

Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

Lesson 3:

Use concession revenues for what you think is appropriate.

Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

Conclusions

- Self-internalization: not with slots
- Slots and competition: no problem
- Concession revenues: be creative

Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon

Merci.

Achim I. Czerny
Assistant Professor of Regulatory Economics
www.whu.edu/regecon