

# Managing Airport Congestion via Pricing or a Slot Regime

Airport **congestion** is a worldwide problem, although temporarily lessened by downturn.

Without government intervention, the amount of peak-hour traffic at congested airports will be **too high**.

**Government must intervene**, but total elimination of congestion is not in society's interest.

Intervention needed because **airlines make wrong choices** from society's point of view.

In scheduling an extra peak flight, an airline **ignores congestion costs** imposed on other carriers.

Leads to operation of **too many** peak flights.

How to **fix problem**? Price mechanism vs. slots?

## *Congestion pricing*

Airport congestion pricing means **charging more** for landings at peak hours.

But **theory** of congestion pricing for airports is **different** than for roads.

Reason: each airline at congested airport operates **many flights**.

Congestion imposed on other carriers, but **airline also congests itself**.

So airlines take self-imposed congestion into account (they **internalize** congestion).

Implication: **big airlines** should pay **low congestion tolls**

**Small airlines** should pay **high tolls**.

Reason: big airline **internalizes most of congestion** it creates, so charge for remaining congestion damage can be low.

Vice versa for small airline.

**Controversial** outcome: small airlines **will fight**, arguing unfairness.

Possible remedy is use of a **uniform congestion toll**.

But **outcome is wrong**: too little traffic for big carriers, too much for small carriers.

## *Slot regimes*

Do slot regimes **circumvent** this problem?

Analysis shows that **answer is yes**.

First, airport must determine the **correct level** of peak hour flights (not easy to do).

Sets **total number of slots** equal to this flight volume.

Then **allocates slots** to carriers using either

- **Free allocation**, or
- **Auction**

With free allocation, **trading of slots** must be allowed to get right outcome (more below).

Each system has a **price** (trading price or auction price) that's **uniform** across carriers.

Uniform price doesn't work in congestion pricing, but **works here** because total flight volume is **fixed** in advance.

## *Existing institutions for congestion management*

Congestion pricing (higher peak landing fees) is **nonexistent**, although used at London-Heathrow in past.

In U.S., government regulators recently **changed rules** to allow higher peak fees.

Several congested U.S. airports have slot regimes, and **trading is allowed**.



Slot trading **allowed in U.K.**, but **not possible** in rest of EU until recently, when legalized.

**Japan** matches previous EU practice.

Free allocation of slots, with **trading not feasible**.

Main **policy recommendation** for Japan, assuming continuation of free slot allocation: **ALLOW SLOT TRADING**.

Without a trading system, slots **may not be held** by the carriers that **value them most**.

Government must make **judgment** regarding allocation, and its decisions may be **incorrect**.

With trading, **invisible hand** of market will guide slots to their **highest valued** uses.

Pattern of initial free slot allocation is **not crucial**: post-trading allocation **same** regardless of initial holdings by carriers.

**Auction regime** will lead to same outcome as slot trading.

One key difference: **earns revenue** for airport.

In U.S., **partial auction** proposed: portion of outstanding slots taken back each year and auctioned.

Carriers oppose since costs go up; **legal fight** unfolding.

Proposal based on belief that trading regime is **not working** properly.

Concern is **hoarding** of slots by some carriers.

But view is **hard to support** theoretically.

A carrier **should sell** unproductive slot to high-value user.

Slot auctions are also **option for Japan**.

But **unnecessary** if slot trading added to current free allocation system.

However, if additional **airport revenue** is needed, slot auctions can provide it.