

Single Till or Dual Till at Airports: a Two-sided Market analysis

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Activities of airports

Diversification

- Activities at (big) airports depart from core business
 - Fraport : aeronautical services stand for 60% of the revenues but 40% of the profits, while commercial activities yield 60% of the profits
 - ADP : increase of the operational profit explained by the commercial activity

An Example

ADP

Good resistance of retail and services: +0.4%

<i>In euro millions</i>	9M 09	9M 08	Δ 09 / 08
Retail and services	638.5	635.7	+0.4%
Commercial activities	275.8	273.2	+0.9%
Fees	185.9	185.7	+0.1%
SDA&DFP revenue	139.3	134.8	+3.4%
Eliminations	-49.4	-47.3	+4.5%
Car parks / access	107.9	115.0	-6.2%
Industrial services	46.1	52.6	-12.3%
Rental revenue	74.7	59.3	+25.8%
Other	134.0	135.5	-1.1%

★ Slight growth of commercial activities (+0.9%) despite the difficult environment:

- Efforts to raise sales/pax (12.0€ ; +8.4%) more than offset traffic impact

★ Car parks hit by traffic decline and drop in average spend/user

★ Decrease of industrial services resulting from transfer of electricity and cooling/heating revenue to "rental revenue" (-€7.9m)

★ Increase in rental revenue driven by transfer of revenue from industrial services, indexation of lease and new facilities

Activities of airports

Diversification

- Activities at (big) airports depart from core business
 - Fraport : aeronautical services stand for 60% of the revenues but 40% of the profits, while commercial activities yield 60% of the profits
 - ADP : increase of the operational profit explained by the commercial activity
 - Schipol: 34% of the operating result is coming from the commercial activity
- ⇒ Question: how to organize these two activities? separately or not?

The current regulation

single till

- Who? ICAO with 3 main documents:
 - Article 15 of the Chicago convention (on international civil aviation)
 - Document 9082: policies on airport charges and air navigation services
 - Document 9562: the airport economics manual
- ⇒ Commercial revenues are included in the regulation area

Main contribution of the paper

Original application of Two-sided Market model

Airports play the role of a platform between shops and passengers

- Two-sided market analysis + regulation
- Commercial and aeronautical activities related through externalities

Results

- Single till regulation is always better
- Evaluate the impact of the externalities on the price structure (helpful for regulation)

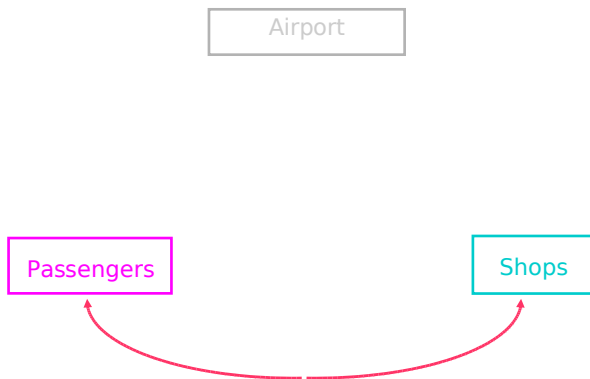
- Related to airports

- Starkie and Yarrow (2001), Starkie (2002): single till is not so good because gives wrong incentives in terms of investment (cost of capital model)
 - no externalities
- Torres, Dominguez, Valdès and Aza (2005): show a positive (and significative) correlation between waiting time and commercial expenditure at airports
 - shops demand depends as well on the connecting time

- Related to two-sided market analysis
 - Rochet-Tirole (2004, 2003), Wright (2004): seminal papers
 - usage externalities
 - Armstrong (2002): platform competition
 - The airport is a (regulated) monopolist
 - Anderson-Coate (2005): welfare analysis

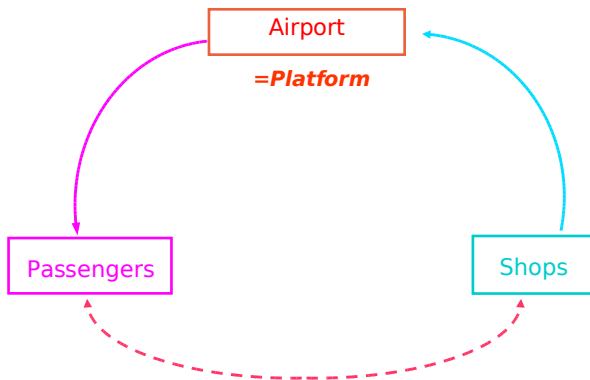
Market for aeronautical and for commercial services

How does it work?



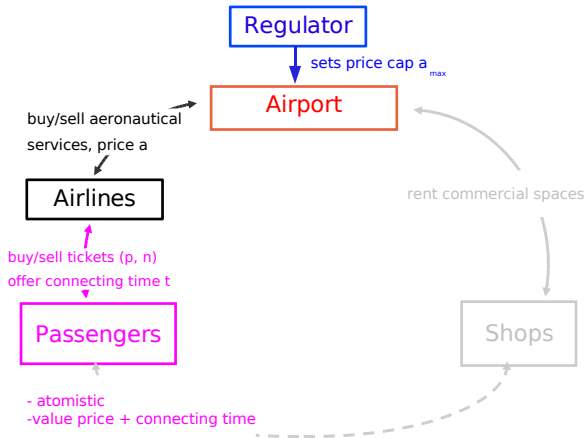
Market for aeronautical and for commercial services

How does it work?



Market for aeronautical services

How does it work? Aeronautical activity



Market for aeronautical services

- Passengers express their demand for travel:

$$N(p, t)$$

where p is the price of the ticket
and t is the connecting time

- the higher the price p , the less the demand for travel (**direct effect**)
- the higher the connecting time t , the less the demand for travel
- price and time are imperfectly substitutable i.e. $\frac{\delta^2 N(p, t)}{\delta p \delta t} < 0$

Market for aeronautical services

- Airlines choose t and p in order to maximize their profits, given the demand for travel

Costs:

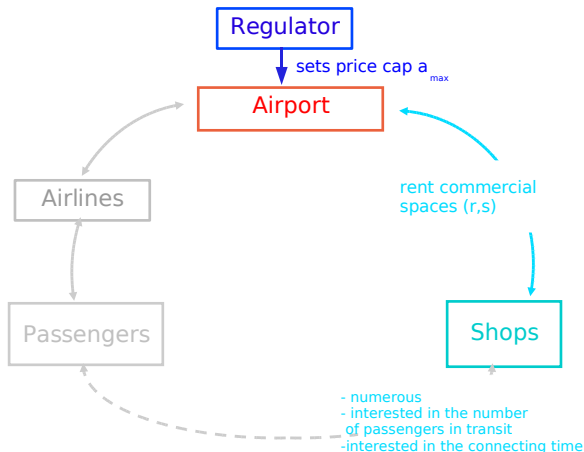
- aeronautical costs/taxes + production costs
- ⇒ choosing a high t allows to produce at a lower cost

Revenues:

- all coming from selling the tickets at price p
- ⇒ choosing a high p decreases the demand (local monopolies)

Market for commercial services

How does it work? Commercial services



Market for commercial services

- Shops express their demand for space inside the airport

$$s(r, N, t)$$

where r is the rent for the space,
 N is the number of passengers,
 t is the waiting time

- the higher the rent, the lower the demand for space (**direct effect**)
 - the higher the number of passengers, the higher the demand for space (**positive externality**)
 - the longer the connecting time, the higher the demand for space (**positive externality**)
- ⇒ there exist external effects between the aeronautical and the commercial activities.

Airport choices

- The airport chooses...

if single till:

...tax a to be paid on each ticket sold, corresponding to the aeronautical activity, given the demand for ticket $N(p, t)$, given the demand for space $s(r, N, t)$

if dual till:

...a tax a , given demand of passengers $N(p, t)$, given demand for space $s(r, \bar{N}, t)$, with \bar{N} taken as given, i.e. ignoring N is influenced by the aeronautical tax

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Regulator choice

- The regulator sets a_{max} ...

if single till:

...taking the total profits of the airport into account

if dual till:

... taking profits generated by the aeronautical services only

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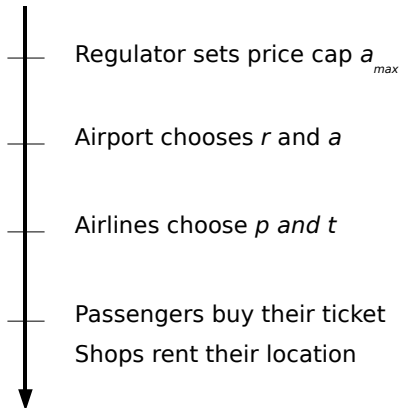
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Time line



- Role of the connecting time

$$\frac{\delta \Pi}{\delta t} = 0 \Leftrightarrow p - a - \frac{\delta C}{\delta N} = \frac{\delta C}{\delta t} / \frac{\delta N}{\delta t}$$

The airline sets t comparing

- gains in terms of cost from increasing the connecting time
 - costs in terms of number of passengers of increasing their waiting time
- The airline does not internalize the fact that a is influenced by t

Main Results

Profits

The airport makes at least as much profit as in the dual till situation

Not clear-cut effect on a

The single till aeronautical tax can be lower or higher depending on which effect (waiting time or passengers) has a superior effect

- Two positive externalities are coming from the aeronautical side : waiting time + number of passengers
- However, the waiting time has a negative impact on passengers demand

Main Results

Rent

The rent of the shops is higher (always) because shops are benefiting of the externalities

Ticket price

The price of the ticket is lower if the aeronautical tax is lower (inducing a lower number of passengers)

Connecting time

The waiting time is higher if the aeronautical tax is lower (inducing a lower number of passengers)

- Testing empirically
 - trying to measure and compare the externalities
- Adding asymmetric information on the airport side (on costs for instance) and focusing more on the regulation impact in two-sided market model