

Airports as two-sided platforms, consequences for regulation

Estelle Malavolti

April 2019



Airports as
two-sided
platforms,
consequences for
regulation

Estelle Malavolti

Motivation:
Airports as
business players

Paper contribution

Airports as
platforms

Literature

The model

Main results and
conclusion

Airports Business Model

Airports: what do they do?

- ▶ Airports are suppliers for airline companies
 - ▶ allocation of slots
 - ▶ payment of charges (landing, passengers)
 - ▶ payment of services (ground handling, use of facilities, security...)
 - ▶ **around 60% of the total revenues**

Airports as
two-sided
platforms,
consequences for
regulation

Estelle Malavolti

Motivation:
Airports as
business players

Paper contribution

Airports as
platforms

Literature

The model

Main results and
conclusion

Airports Business Model

Airports: what do they do?

- ▶ Airports are customers for airline companies
 - ▶ commercial activities ++ increase
 - ▶ parking
 - ▶ rental cars intermediate
 - ▶ shops inside the terminals
 - ▶ **more than half of the profit for big infrastructures**

Airports as
two-sided
platforms,
consequences for
regulation

Estelle Malavolti

Motivation:
Airports as
business players

Paper contribution

Airports as
platforms

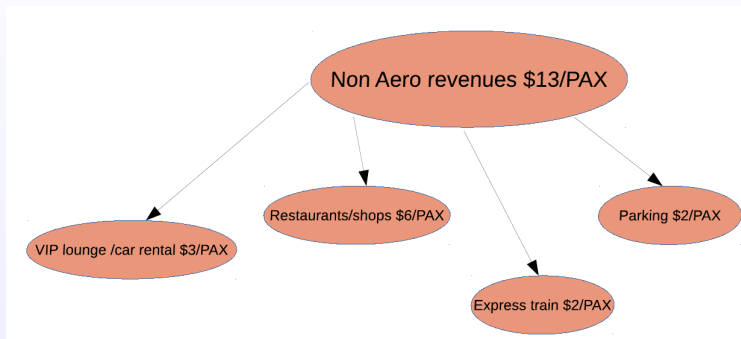
Literature

The model

Main results and
conclusion

Airports Business Model

Heathrow airport, 2017



Airports as two-sided platforms, consequences for regulation

Estelle Malavolti

Motivation:
Airports as business players

Paper contribution

Airports as platforms

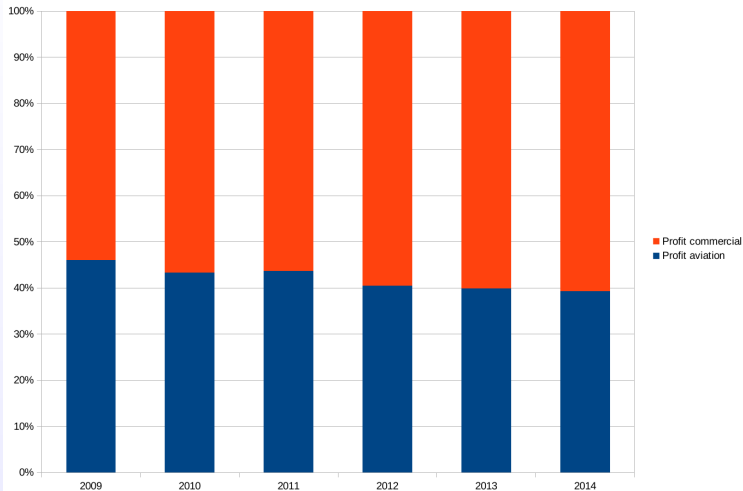
Literature

The model

Main results and conclusion

Air Transport Market

ADP financial results 2009-2014



Airports as two-sided platforms, consequences for regulation

Estelle Malavolti

Motivation:
Airports as business players

Paper contribution

Airports as platforms

Literature

The model

Main results and conclusion

Main contribution of the paper

The paper contribution

- ▶ Airports play the role of a platform between shops and passengers
 - Two-sided market analysis, with regulation
 - The commercial and aeronautical activities are related with each other through **externalities**
- ▶ Single till regulation is the best way to take into account the problem of externalities
- ▶ Assessment of the impact of the externalities on the price structure (helpful for regulation)

Airports as two-sided platforms, consequences for regulation

Estelle Malavolti

Motivation:
Airports as business players

Paper contribution

Airports as platforms

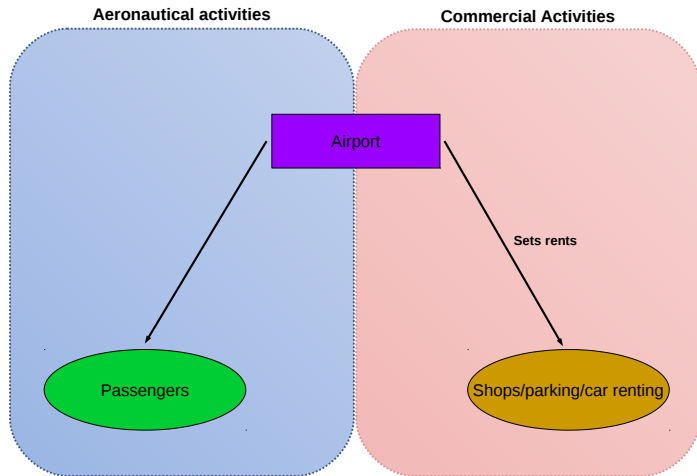
Literature

The model

Main results and conclusion

Airport as two-sided markets

Airports make passengers and shops meet



Airports as two-sided platforms, consequences for regulation

Estelle Malavolti

Motivation:
Airports as business players

Paper contribution

Airports as platforms

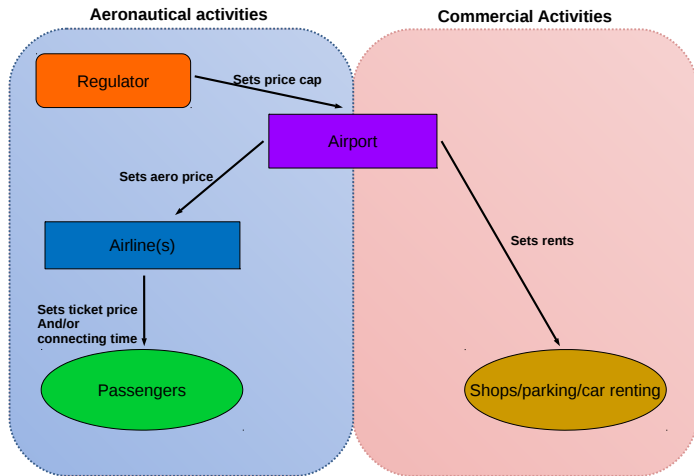
Literature

The model

Main results and conclusion

Airport as two-sided markets

Role of the regulator



Airports as two-sided platforms, consequences for regulation

Estelle Malavolti

Motivation:
Airports as business players

Paper contribution

Airports as platforms

Literature

The model

Main results and conclusion

Airports: two types of regulation

Airports as
two-sided
platforms,
consequences for
regulation

Estelle Malavolti

Single Till regulation

- ▶ principle: include every single cost/revenue in the area of regulation when setting the aeronautical charges
- ▶ recommended by ICAO: article 15 of Chicago convention ; document 9082 on policies on airport charges and air navigation services ; document 9562 on airport economics manual
- ▶ supported by IATA

Motivation:

Airports as
business players

Paper contribution

Airports as
platforms

Literature

The model

Main results and
conclusion

Airports: two types of regulation

Airports as
two-sided
platforms,
consequences for
regulation

Estelle Malavolti

Dual Till

- ▶ principle: sets price cap for the regulated business excluding the other activities (revenues+costs)
- ▶ adopted (and pushed!) first by the Australian airports
- ▶ now in place for many airports (Schipol, Fraport, Manchester, Budapest...)

Motivation:

Airports as
business players

Paper contribution

Airports as
platforms

Literature

The model

Main results and
conclusion

Airports: a third option?

Adjusted Dual Till

- ▶ principle: sets price cap for the regulated business excluding the other activities (revenues+costs) BUT let the airport choose what to add in the area of regulation
- ▶ Adopted mainly in France for the big airports (6)
- ▶ ex: Nice airport (still not validated) proposed to include in a discretionary fashion part of the commercial profits
- ▶ ex: Paris Airport : including parking revenues only

Airports as two-sided platforms, consequences for regulation

Estelle Malavolti

Motivation:
Airports as business players

Paper contribution

Airports as platforms

Literature

The model

Main results and conclusion

Related to regulation of airports

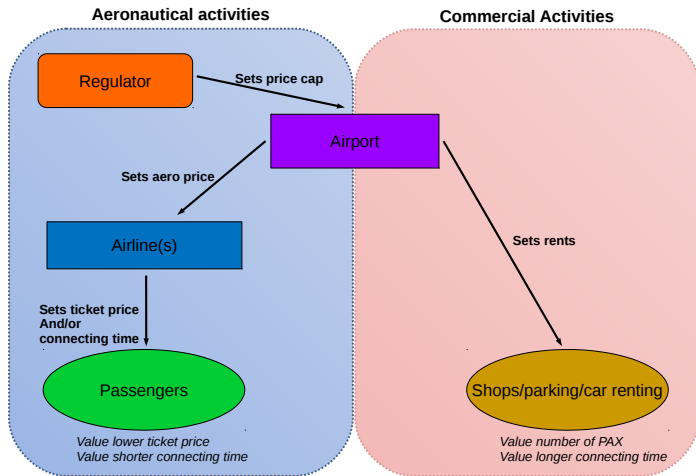
- ▶ Starkie and Yarrow (2001), Starkie (2002): single till is not so good because gives wrong incentives in terms of investment (cost of capital model)
- no externalities
- ▶ Czerny (2004): single till is better to maximize welfare at non congested airports (not two-sided)
- ▶ Torres, Dominguez, Valdes 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 markets analysis

- ▶ Rochet-Tirole (2004, 2003): seminal paper
- usage externalities ; Wright (2004)
- ▶ Armstrong (2002): platform competition
- The airport is a (regulated) monopolist
- ▶ Anderson-Coate (2005): welfare analysis
- ▶ Weyl (2006)

Air Transport Market

Airport as two-sided platforms



Airports as two-sided platforms, consequences for regulation

Estelle Malavolti

Motivation:
Airports as business players

Paper contribution

Airports as platforms

Literature

The model

Main results and conclusion

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.

$$\frac{\delta^2 N(p, t)}{\delta p \delta t} < 0$$

Airports as
two-sided
platforms,
consequences for
regulation

Estelle Malavolti

Motivation:
Airports as
business players

Paper contribution

Airports as
platforms

Literature

The model

Main results and
conclusion

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)

Airports as two-sided platforms, consequences for regulation

Estelle Malavolti

Motivation:
Airports as business players

Paper contribution

Airports as platforms

Literature

The model

Main results and conclusion

Market for commercial services

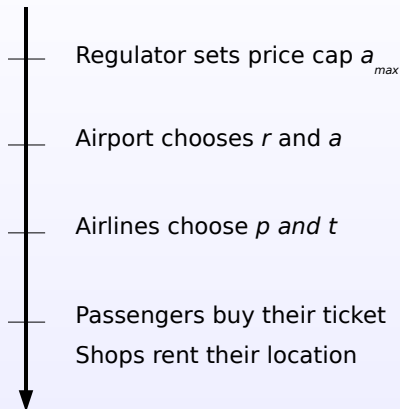
- ▶ Shops express their demand for space inside the airport

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

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.

Time line



Airports as
two-sided
platforms,
consequences for
regulation

Estelle Malavolti

Motivation:
Airports as
business players

Paper contribution

Airports as
platforms

Literature

The model

Main results and
conclusion

Main Results

- ▶ 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

Airports as two-sided platforms, consequences for regulation

Estelle Malavolti

Motivation:

Airports as business players

Paper contribution

Airports as platforms

Literature

The model

Main results and conclusion

Main Results: price structure is affected by the presence of the externalities

Rent

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

Airports as two-sided platforms, consequences for regulation

Estelle Malavolti

Motivation:
Airports as business players

Paper contribution

Airports as platforms

Literature

The model

Main results and conclusion

Main Results: price structure is affected by the presence of the externalities

Regulation

- ▶ Single till is optimal: it allows to internalize the side effects of passengers on shops. Total surplus is higher.

Airports as two-sided platforms, consequences for regulation

Estelle Malavolti

Motivation:
Airports as business players

Paper contribution

Airports as platforms

Literature

The model

Main results and conclusion

Optimal Regulation

- ▶ other reasons for Single Till regulation
 - ▶ nature of the costs : ++ fixed costs, not easily attributable to one activity or another
 - ▶ asymmetric information : ++ in case of privatization

Airports as
two-sided
platforms,
consequences for
regulation

Estelle Malavolti

Motivation:
Airports as
business players

Paper contribution

Airports as
platforms

Literature

The model

Main results and
conclusion