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The potential for medium-term growth at Schiphol Airport - An assessment of alternative policy measures

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• Objectives
• Approach: simulations using the ACCM model
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Objectives:
Study for Dutch Ministry of Transport:

• What growth could be expected for Schiphol Airport until 2020 if there would be no capacity restrictions?

• Would the expected future demand fit within the current restrictions (both runway capacity and noise limitations)?

• If not,
  – What would be the welfare implications?
  – What would be the policy options?
  – How effective would these be?
Background: Why new medium term forecasts?

- Incidental factors
  - 11 September 2001
  - War Iraq
  - SARS

- Structural developments
  - Air France-KLM
  - Low Cost Carriers

- New medium/long term macro-economic scenarios
Approach: Use of ACCM Model

Base Year (2003)

- Macro-economic data
- Passenger counts
- Level-of-service

Traveller choice module -> Airline choice module -> Output

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Approach: Use of ACCM Model

Base Year (2003)
- Macro-economic data
- Passenger counts
- Level-of-service

Growth factor

Traveller choice module

Forecast Year (2020)
- Macro-economic data
- Level-of-service

Growth factor

Traveller choice module

Output

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**Approach: Use of ACCM Model**

**Base Year (2003)**
- Macro-economic data
  - Passenger counts
- Level-of-service

**Forecast Year (2020)**
- Macro-economic data
  - Level-of-service

**Traveller choice module**
- Growth factor

**Airline choice module**
- Growth factor

**Iteration to fit capacity constraints**

**Output**
Traveller choice module

• Observed base year demand pattern

• Market growth:
  – GDP development
  – Trade development
  – Price development
  – Network development

• Competition:
  – Airports
  – Airlines/routes
  – Car, high-speed train
Airline choice module

- Observed base year supply pattern
- Aircraft size
  - Cost per seat
  - Market size
  - Degree of competition
- Technology
  - Fleet renewal
  - Fleet expansion
- Time of day
  - Passenger preferences
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Scenarios: Four futures for Europe

1. Global Economy
2. Strong Europe
3. Transatlantic Markets
4. Regional Communities

Four futures for Mainport Schiphol

1. Global Economy
   - worldwide aviation growth: HIGH
   - hub function Schiphol: IMPORTANT

2. Strong Europe
   - worldwide aviation growth: LOW
   - hub function Schiphol: IMPORTANT

3. Transatlantic Markets
   - worldwide aviation growth: HIGH
   - hub function Schiphol: LIMITED

4. Regional Communities
   - worldwide aviation growth: LOW
   - hub function Schiphol: LIMITED
Expected growth of Schiphol is strongly dependent on scenario assumptions

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Expected growth of Schiphol is strongly dependent on scenario assumptions

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In two scenarios potential demand cannot be met given current capacity constraints.

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Capacity Schiphol Airport

- In high growth scenarios demand exceeds supply
- Physical capacity: 625,000 movements
- Noise capacity:
  - Currently: about 480,000 movements
  - Increasing to 550,000 – 600,000 movements in 2020
  - Increase in noise capacity depends on policy measures
Policy options

- **Slot trading**
  - Instead of existing slot allocation

- **General charges**
  - Ticket tax
  - VAT
  - Fuel tax

- **Specific charges**
  - Take-off/landing charges depending on time-of-day
  - Take-off/landing charges depending on technology class airplane
System of slot-trading instead of slot-allocation would allow for more flights

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Slot trading stimulates the use of newer type aircraft

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Relative impacts of policy options on Aircraft Movements Schiphol 2020

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Relative impacts on Market Share SkyTeam

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Relative impacts on Transfer Percentage

Slot trading

Ticket tax

VAT

Fuel tax

Evening/night charge

Old technology charge

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Impact on Consumer Surplus (mio Euro)

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- Slot trading
- Ticket tax
- VAT
- Fuel tax
- Evening/night charge
- Old technology charge
## Assessment of policy options

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<th>Side effects</th>
<th>Robustness</th>
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<td>Specific charges</td>
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Conclusions (1)

• Potential for substantial growth at Schiphol airport in period up to 2020
  – Depends on macro-economic scenario
  – Capacity limits elsewhere increase potential demand further

• Real chance that airport capacity will be reached before 2020
  – Noise capacity more restrictive than runway capacity

• Measures needed to accommodate growth
  – Incentives to use less noisy aircraft: differential pricing
Conclusions (2, tentative)

• Slot trading (if possible) would be very effective, few side effects and robust

• General charges: ticket tax/VAT/fuel tax may be effective but can have negative side effects and are not robust

• Specific charges: take off/landing by time of day/aircraft technology class are potentially effective, but the side effects are uncertain, and the effects are not entirely robust
Conclusions (3)

• But: research continues… and more simulations will be done in the coming weeks
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