

# **Development of the Hub-and-Spoke Concept**

---



**Jan Veldhuis**  
**German Aviation Research Seminar**  
**Berlin, 12 January 2002**

## Context of Study

- **Strong growth of connecting traffic at Schiphol**
- **Almost permanent discussion on usefulness of hub-and-spoke systems for Dutch society**
- **Pro-arguments: H&S indispensable in competition between airlines and strong economic effects**
- **Con-arguments: little economic effects to society, but strong negative environmental effects**  
**Moreover: H&S systems will come to end**
- **Study aimed to support discussion with objective information, also in context with parliamentary debates expected**
- **Address 'common misunderstandings'**
- **Clear distinction into effects for 'society' and interests of 'industry' (hub-airline and hub-airport)**



## Summary of study (1)

- **Different starting position in USA (deregulation) and Europe (regulation)**
- **Hub-and-spoke not only in air transport**
- **Critical factors in development:**
  - **fares**
  - **network quality (frequency and coördination)**
- **Strong dynamics: more direct connections in large markets, still scope for H&S in smaller markets**
- **Airlines: economies of size and scope, but also more complexity**

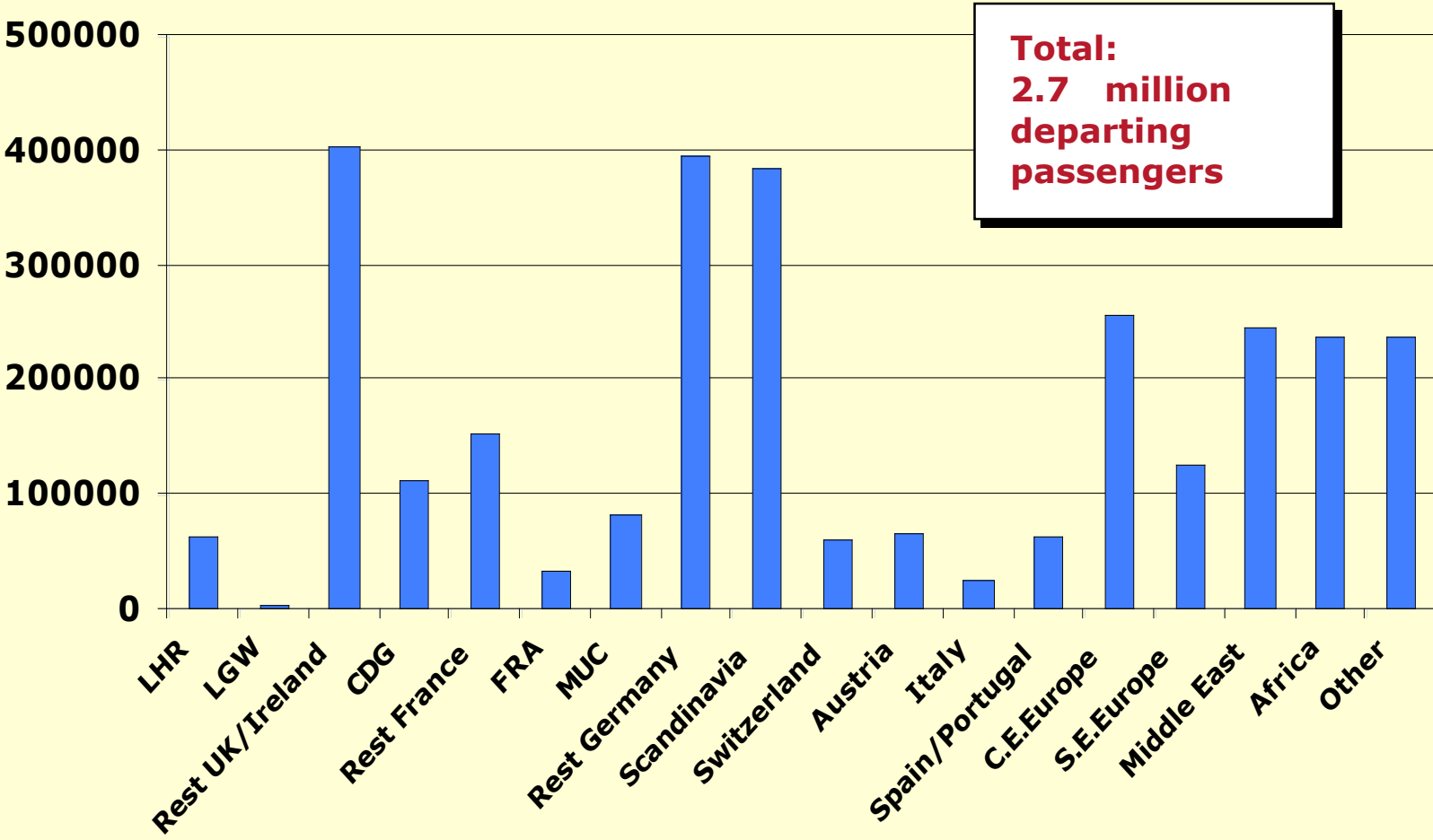


## Summary of study (2)

- **Passengers: more frequencies, but longer travel times**
- **Society: better access to world, but local environmental effects**
- **Schiphol has “reasonable network position” in comparison with other ‘big three’.**
  - **Heathrow best network quality in direct connections**
  - **Frankfurt best network quality in hub connections**
- **Transfer at Schiphol: longer distances and between smaller markets**



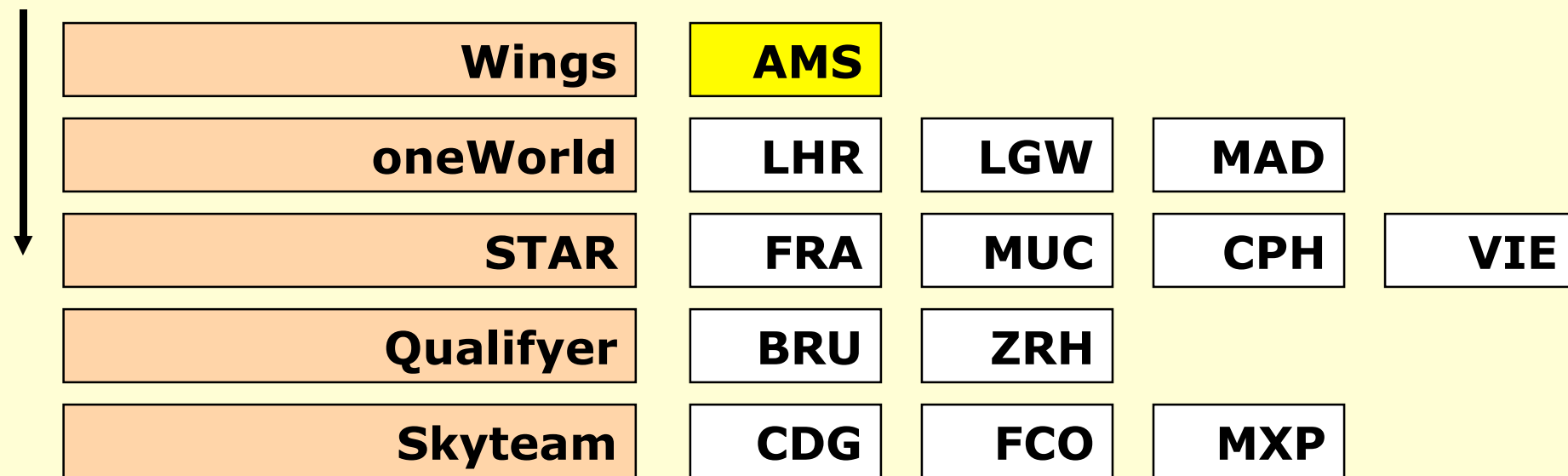
# Connecting passengers from and to North America by 'hinterland' region (1999)



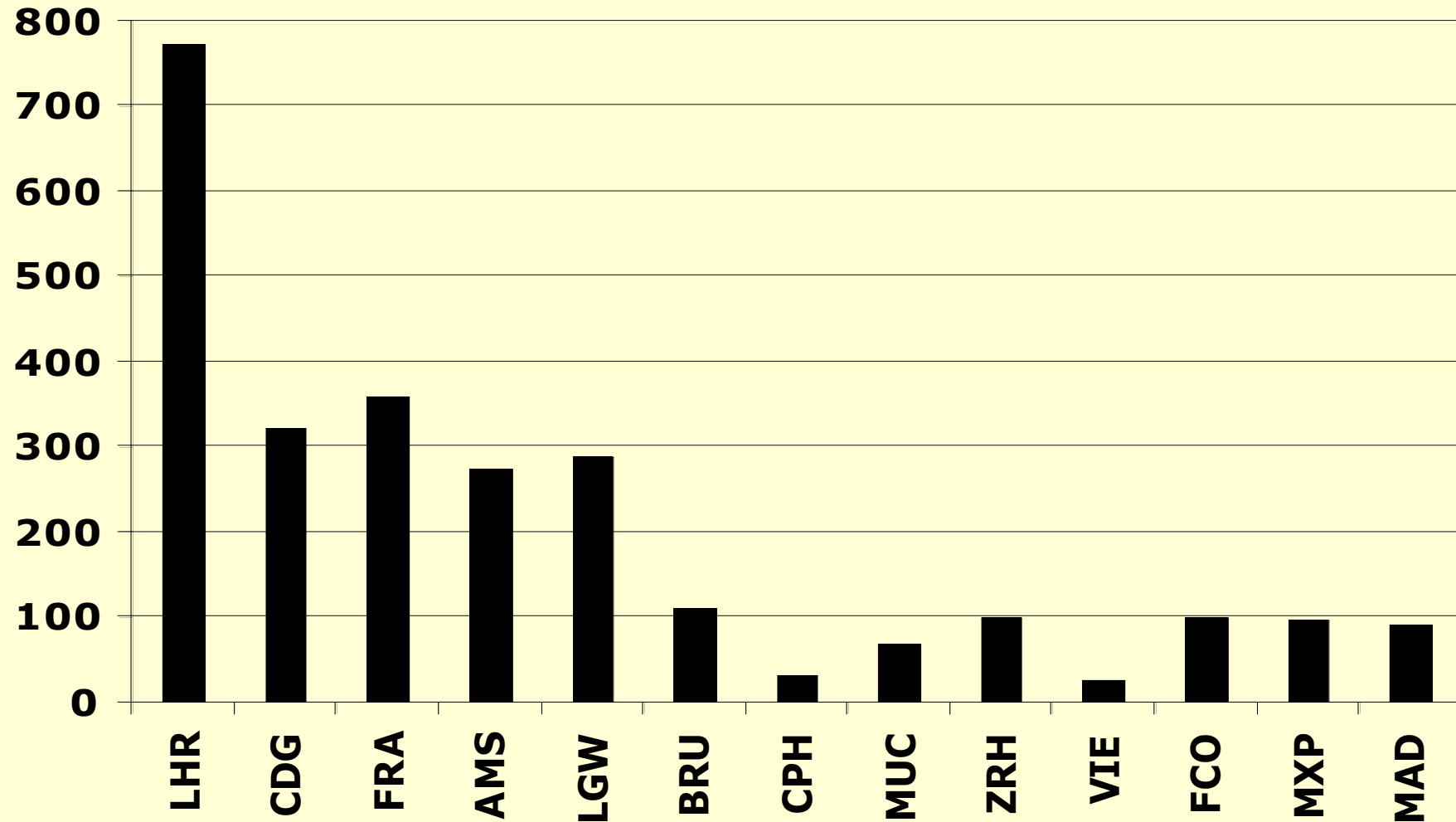
# Who are the Competitors of the Hub-Complex Schiphol ?

Alliances

Hubs →

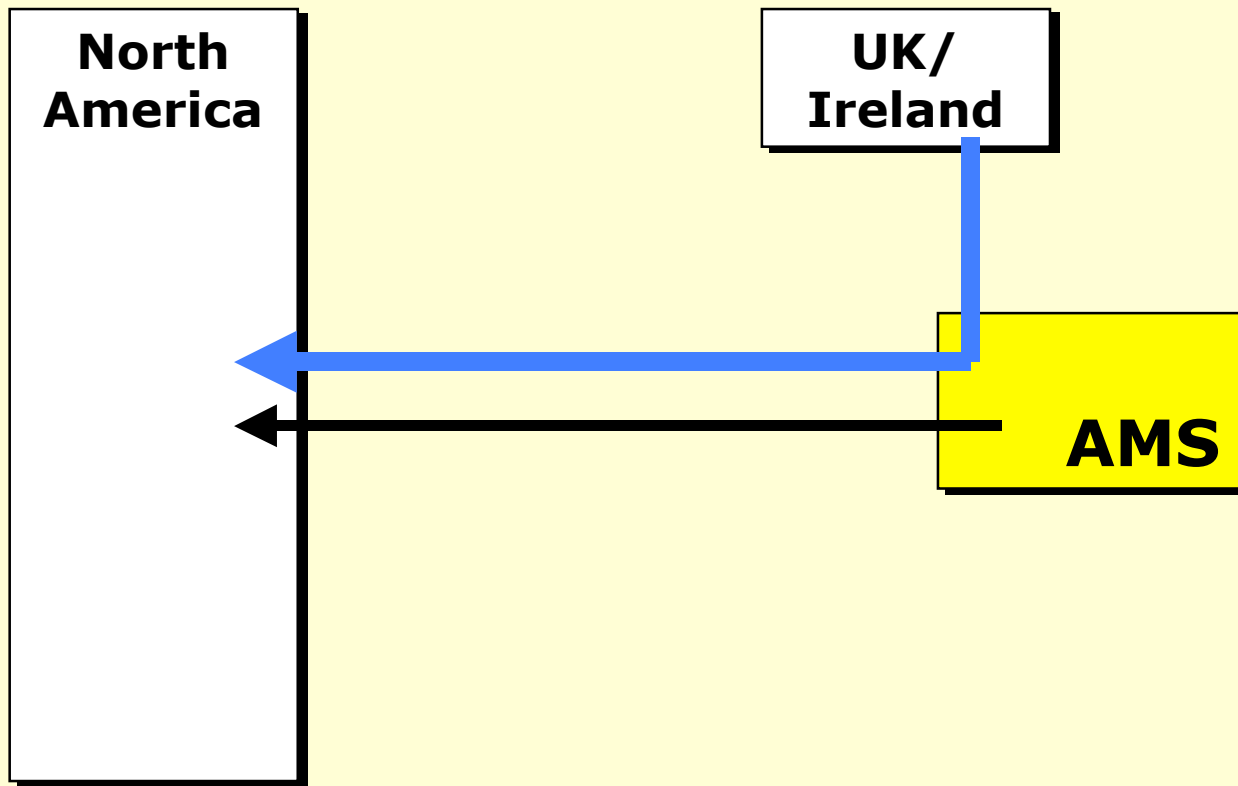


## Direct Frequency from 13 European hub-airports in the market Europe - North America, 1999

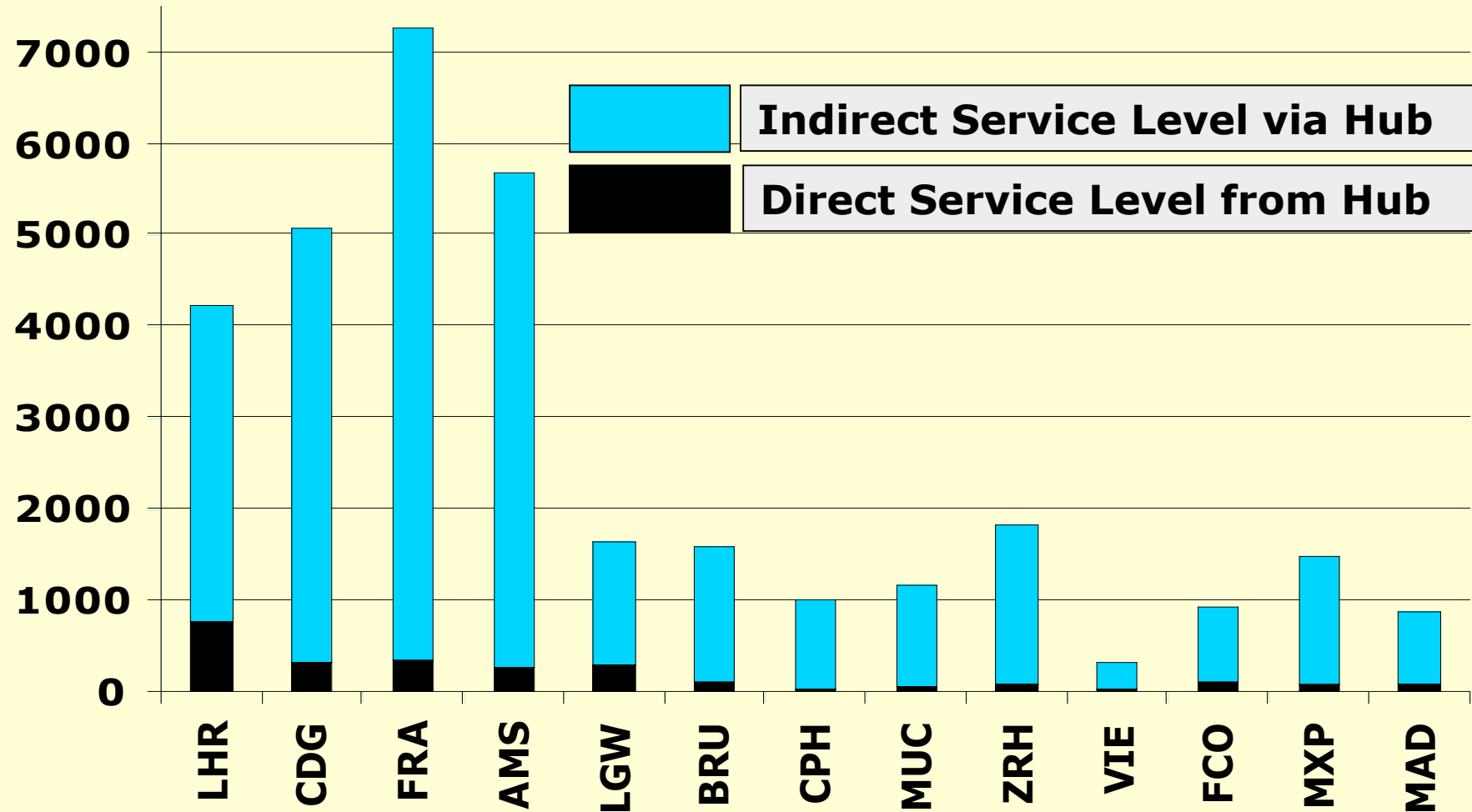


Amsterdam Aviation Economics

# What are hub systems really competing on?



## Direct and Indirect Service Levels from and via 13 European hub-airports in the market Europe - North America, 1999



Amsterdam Aviation Economics

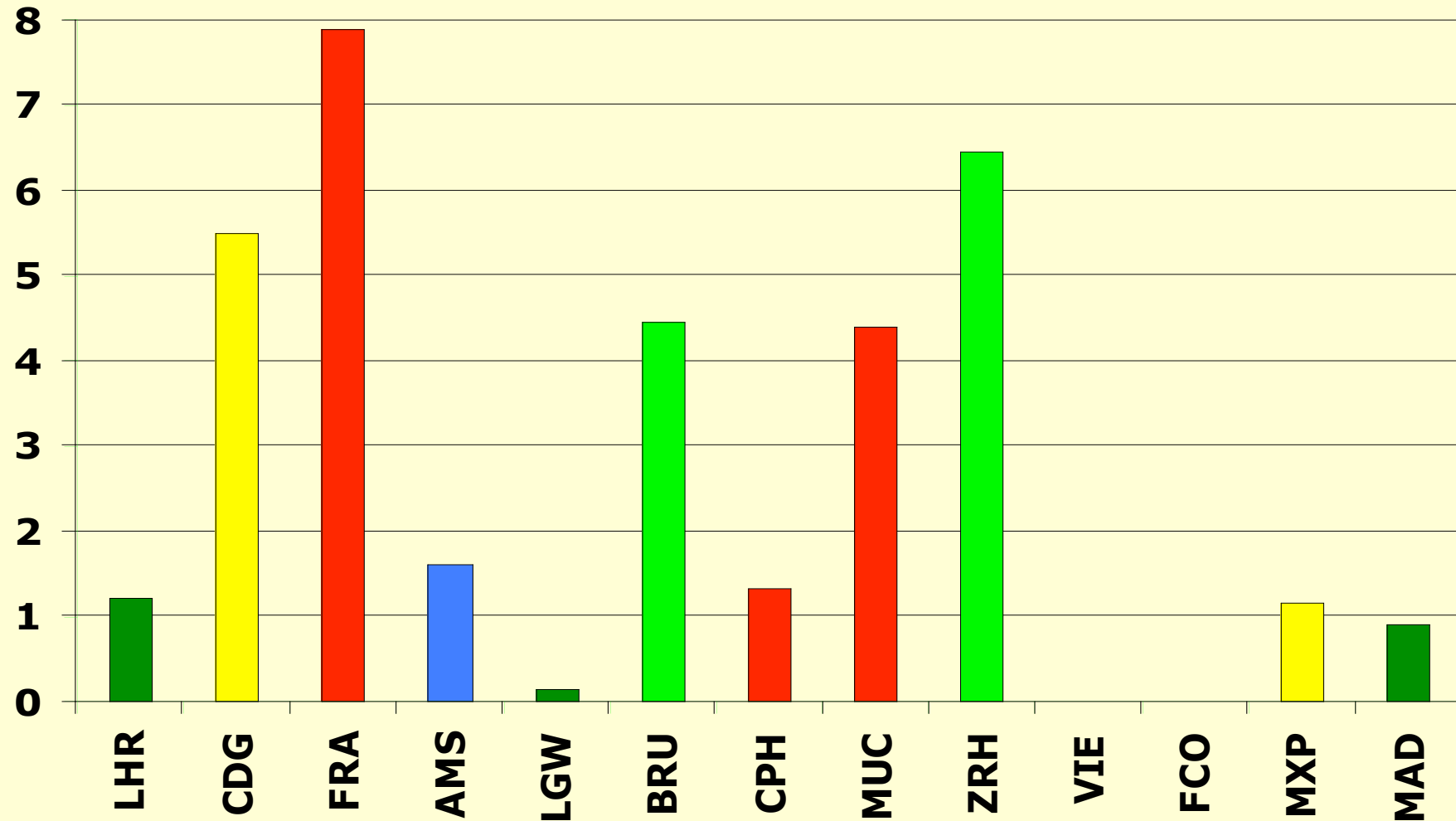
## Summary of study (3)

**Distinguishing three categories of (47.000) markets when addressing scope for further development:**

- **Network quality relative low (scope for improvement and higher market shares)**
- **Network quality average**
- **Network quality relative dominant (yield-markets)**

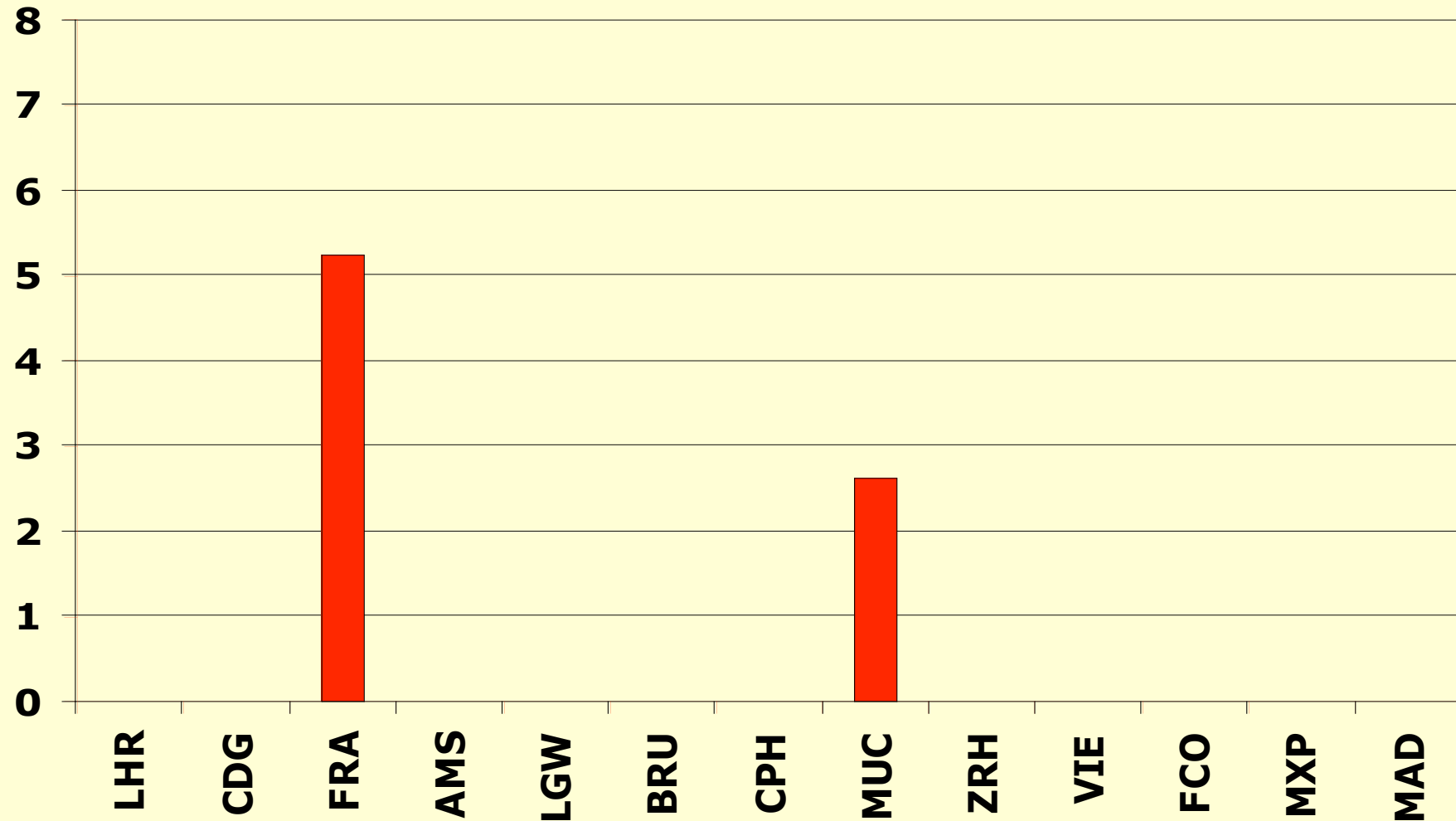


## Indirect Service Levels via 13 European hub-airports in the market Stockholm - Lisbon, 1999



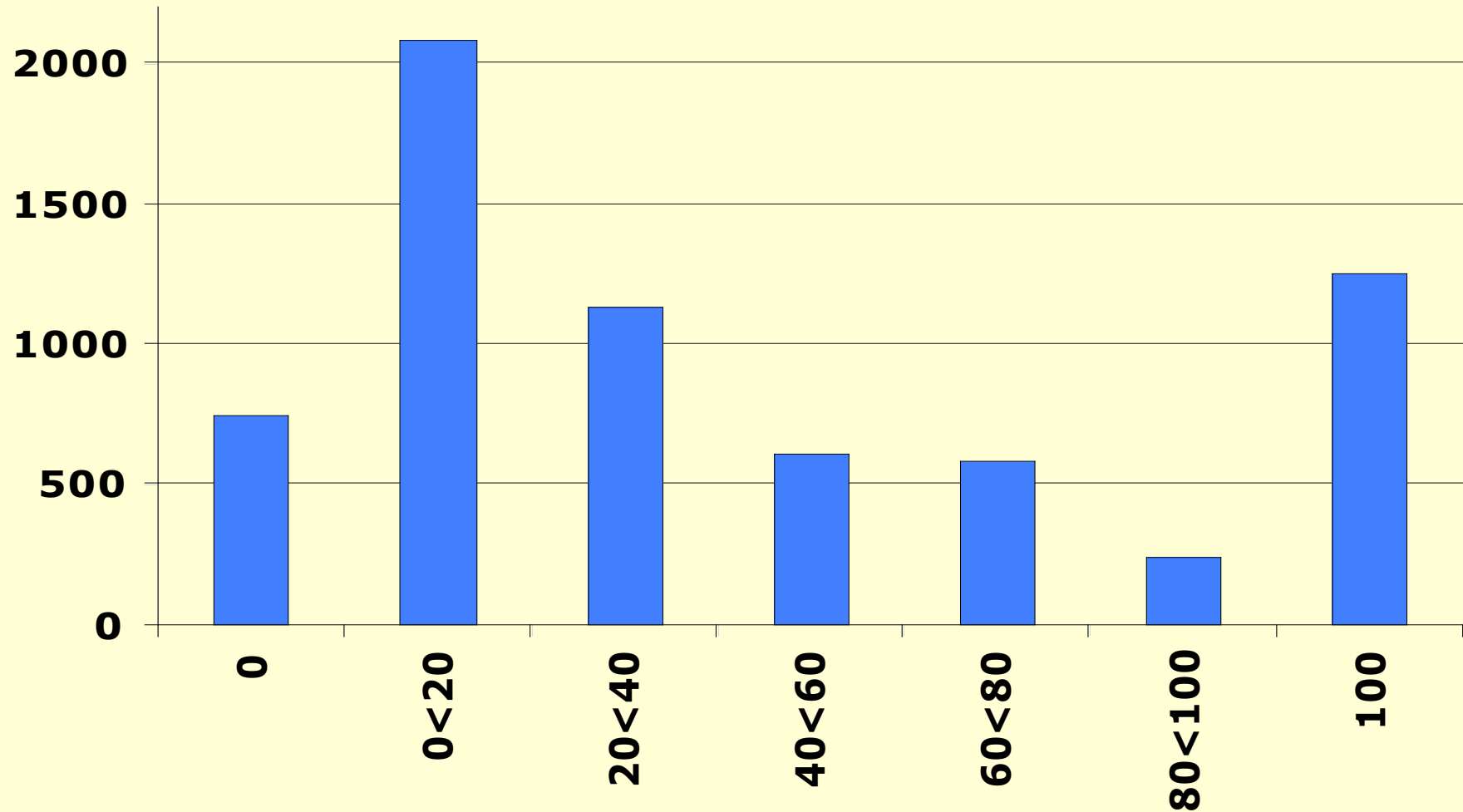
Amsterdam *A*viation *E*conomics

## Indirect Service Levels via 13 European hub-airports in the market Leipzig - Miami, 1999



Amsterdam **A**viation **E**conomics

## Departing connecting passengers at Schiphol by market dominance of KLM in terms of network quality, 1999



Amsterdam **A**viation **E**conomics

## Summary of study (4)

- **By improving network quality in markets with relative low network quality at current market potential maximal 50% growth possible (market shares)**
- **Further growth of connecting traffic along with market growth**
- **Critical factors:**
  - **peak hour capacity**
  - **network development of competitors**
  - **retaining sufficient *yield***
- **External factors:**
  - **point-to-point connections and low cost carriers**
  - **high speed trains**
  - **capacity restrictions at airports**
  - **multi-hub systems**



# Point-to-point connections and low cost carriers

		Market Size	
		Large	Small
from Hubs	<ul style="list-style-type: none"><li>• NW: direct</li><li>• LC: direct from secondary airports</li></ul>	<ul style="list-style-type: none"><li>• NW: direct</li></ul>	
non-hub - non hub	<ul style="list-style-type: none"><li>• NW: indirect</li><li>• LC: direct</li><li>• NW compete on frequency and 'frills'</li></ul>	<ul style="list-style-type: none"><li>• NW: indirect</li></ul>	

## Point-to-point:

- Small markets become large
- Technology(<300 seats long haul and fast small jets in Europe)

## Capacity of Hubs

- **Distinction in threats for H&S-systems in general and for individual hubs**
- **Biggest threats for hubs with relative shortages in capacity**
- **Markets seek 'channels with least resistance'**
- **Substitution-elasticity of capacity shortages in transfersegment is high**
- **Loosing hubs must rely on local market**
- **Chances for hubs with relative capacity potential**
- **If more (or the majority of) the large hubs face capacity problems, 'point-to-point-systems will gain market shares**

