INTRODUCTION TO AIR TRANSPORT ECONOMICS

Nathalie LENOIR

Plan of presentation

• Outlook on the airline industry:
  – Figures and questions

• Traffic

• The air transport system
Air transport in figures

- The market: 2.43 billion passengers over the world in 2010 (IATA)
  - +7% relative to 2009, after slowdown in 2009 (-2.1%)
  - Passenger traffic growth of 4.2% a year until 2029 according to Boeing (CMO 2009-2028)

- The market: over one-third of the value of world trade in merchandise (OECD)
  - Downturn in 2008 (-1%) and 2009 (-9.8%), rebound in 2010 (+18%)
  - Freight traffic growth of 5.9% a year until 2029 (Boeing CMO)

A dynamic industry!!

---

World traffic (1970-2010): passengers

Source: ENAC Air Transport Data
More figures...

- 16 billion dollars of profits in 2010 worldwide
  - 11 billions losses in 2009, 16 losses in 2008
  - Overall, more than 30 billion losses since 2001 worldwide.
  - Several airlines bankrupt (2001 crisis, 2008 crisis)
- An industry very dependent on oil !!
  - Fuel costs represented before (<2000) 10-13 % of airlines costs, but this goes up as fuel prices rise (26% in 2009, 2010 for all IATA airlines)
- ...and criticized for polluting
  - About 5 liters/100 RPKs (jet fuel)
  - Jet fuel is not taxed for pollution (so far...)

IATA Airlines: Revenues and Margins 2000 – 2007

Source IATA
IATA profits and fuel

Oil prices and jet fuel
(May 2008)

New fuel price average for 2011
(IATA April 2011)

124.5 $/b

Source IATA
Source La Tribune, 23/05/2008
Airline costs shares 2001-2006

<table>
<thead>
<tr>
<th></th>
<th>North America</th>
<th>Europe</th>
<th>Asia Pacific</th>
<th>All Major Airlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour</td>
<td>36.2%</td>
<td>25.2%</td>
<td>27.2%</td>
<td>25.8%</td>
</tr>
<tr>
<td>Fuel</td>
<td>13.4%</td>
<td>26.6%</td>
<td>12.2%</td>
<td>20.5%</td>
</tr>
<tr>
<td>Aircraft Rentals</td>
<td>5.5%</td>
<td>3.7%</td>
<td>2.9%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Depreciation and</td>
<td>6.0%</td>
<td>4.9%</td>
<td>7.1%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Aircraft Amortisation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>38.9%</td>
<td>39.6%</td>
<td>50.6%</td>
<td>43.9%</td>
</tr>
</tbody>
</table>

Source: IATA Economic Briefing, June 2007
Exemple: Air France/KLM on long-haul

- Air France long-haul fleet
- KLM long-haul fleet

Fuel consumption of world fleet (litres/100 RPKs)

Source: Air France/KLM annual report 2007
Cycles in Air transport

- A cyclical activity
  - a cycle each decade 1970-80, 1980-90, 1990-2000, 2000...
  - an average growth of 14% per year from 1955 to 1969, of 10% from 1970 to 1979, of 8% from 1980 to 1990, and of 5% from 1990 to 2000.
  - Crisis situation 2008-2009

- Growth that follows closely economic growth
  - measured by production (world GDP)

- Cycles more important than in the economy
  - highs are higher
  - lows are much lower !!

Traffic growth (1970-2010)

Source: ENAC Air Transport Data
Traffic growth (1970-2010)

...and economic activity

Source: ENAC Air Transport Data

Some cycles are just not right!

Aircraft deliveries and traffic growth

Source: IATA Financial Forecast, March 2008
Air transport: summary and questions

- A historically high growth industry
  - fast technological changes
  - falling costs
  - growing demand
- Why is it so marginally profitable?
  - net profit low (around 2-3%) in good years!
  - Cyclical activity: follows economic cycles
- How will it react to foreseeable difficulties?
  - Potential fossil energy crisis
  - Sensitivity to the environmental impacts of aviation

Plan of presentation

- Outlook on the airline industry
- Traffic
  - Measures of activity
  - Traffic flows
- The air transport system
Measures of activity: supply

- Airlines produce a certain capacity on aircraft for passengers and freight
- Measures of supply for passengers:
  - number of seats offered on the planes
  - number of seat-kilometers: available-seat-kilometers (ASK)
  - $1 \text{ ASM} = 1.609 \text{ ATK}$; (1 mile = 1.609 km)
- Measures of supply for freight
  - capacity in tons of freight
  - capacity in ton-kilometers: available-ton-kilometers (ATK)
  - $1 \text{ ATM} = 1.4599 \text{ ATK}$ (1 US ton = 0.97 metric ton)

Supply linked to costs

Measures of activity: demand

- Airlines transport passengers and freight
- Measures of passenger (satisfied) demand
  - number of passengers transported (PAX)
  - number of passenger-kilometers: revenue-passenger-kilometers (RPK)
- Measures of freight demand
  - tons of freight transported
  - ton-kilometers transported: revenue-ton-kilometers (RTK)

Demand linked to revenues
Measures of activity: supply and demand

- Supply and demand are rarely equal
  - Demand fluctuates with time, supply is quite rigid
- Adjustment between supply and demand
  - Shows to some extend airline management ability
  - Is represented by the Load factor (Lf)

\[ L_f = \frac{RPK}{ASK} \]
\[ L_f = \frac{Passengers}{Seats} \]

Traffic (RPKs)

World annual traffic (RPKs - trillions)

Source: ICAO, Airbus
Traffic Flows by region

- The North-American continent has more than a quarter of total world traffic
  - But the North-American market is growing now slower than the European and Asian markets
- The axis Asia / North-America / Europe represents three quarters of world traffic
  - Europe and Asia are growing faster
  - It corresponds to the richest or fastest growing regions of the world
  - China is the fastest growing market
  - For 2009-2029 Boeing forecasts an average yearly growth of 2.8% for the US market, 4.1% for Europe, 7.9% for the domestic Chinese market!

Traffic Flows by region
(2009, RPKs)

Source, Boeing CMO
Forecast summary
Annual traffic growth

Growth

2009 to 2029

- Asia Pacific including within China: 7.1%
- Asia Pacific excluding within China: 6.6%
- Within North America: 2.8%
- Within Europe: 4.1%
- North Atlantic: 7.9%
- Within China: 4.3%
- Europe to Asia Pacific: 5.6%
- Transpacific: 4.8%
- North America to Latin America: 5.3%
- Within Latin America: 7.1%
- Europe to Latin America: 4.6%
- Within CIS: 4.8%
- Africa to Europe: 4.6%
- Middle East to Asia Pacific: 7.5%

Routes in Europe

Number of routes (city to city EU-27)

- Domestic
- Intra-EU


2500
2000
1500
1000
500
0
The fastest growing market: China

87 M pax in 2001
272 in 2009

China: Beijing traffic

Total Commercial Passengers
Beijing

Source: Airbus Global Market Forecast 2007
Plan of presentation

- Outlook on the airline industry
- Traffic
- The air transport system
  - Passengers
  - Manufacturers and lessors
  - Airports
  - Governments
  - Air traffic control providers
  - Airlines
Passengers

- Leisure passengers
  - Tourism
  - VFF: visiting families and friends
  - Any other passenger who pays for his ticket himself
- Business passengers
  - Do not pay for their ticket themselves
- Air traveller has higher income than average population

Outlook on French passengers (2007 DGAC survey)

- About half of traffic is business passengers
- 18% of the population flies at least once a year (17% in 1993)
  - 1.6 travels for leisure, 5.3 for business
  - This rate is much higher for higher incomes: 58% for incomes higher than 5300 euros per month
  - ...and much lower for lower incomes: 12% for incomes lower than 1200 euros
- About 50% of the population never flies
Outlook on China’s demand

- In the US, on average 2.2 trips per year per inhabitant by plane, in China, 0.06 trips!
  - Huge potential for air traffic

- Drivers of traffic growth are income and exports growth
  - Chinese disposable income has grown tenfold in two decades
  - Transport and communications are the fastest growing item in Chinese households budget
  - But there are huge disparities between regions

---

Chinese household budget

Index 100 in year 1990

- Transportation and communication
- Housing
- Education
- Food, clothing, appliances, services

Source: National Bureau of Statistics of China, Airbus
Manufacturers

- Design aircraft
- Sell them to airlines or lessors

Average market value (M$ - 2010)
A321-200 (2008) 51
737-900ER (2008) 51
747-400 (2005) 140
A330-300 (2008) 125
A340-600 (2008) 125
A380-800 (2008) 170
777-300ER (2008) 171

Equal game in a duopoly: around 50% market share each

14 240 commercial jets in 2009
29 050 in 2029 (Airbus estimates)

Lessors

- Buy aircraft from manufacturers
- Lease them to airlines

Lessors (2005) / fleet value(M$) / fleet
- ILFC 28 395 / 824
- GECAS 23 617 / 1276
  (GE Capital Aviation Services)
- CIT Group Inc. 5145 / 297
- Boeing Capital Corporation 4 836 / 358
- RBS Aviation Capital 3681 / 117
Why lease aircraft?

Source: Air France/KLM annual report 2007
AF/KLM Fleet 2008
- 419 aircraft
- 161 leased (38%)

The triangle

- Manufacturers have market power over airlines
- Lessors have leverage over manufacturers
- The market is thus more balanced
Airports

• Airports provide runways, gates and terminals
• get paid in return: airlines pay aeronautical fees
  – Landing fees (for use of runways)
  – Passenger fees (for use of terminals)
  – Others: parking fees, lighting fees...

• congestion problems
  – Around 150 congested airports in the world
  – Congestion means that demand exceeds capacity at some periods
Examples of fees: Nice (source Nice airport)

- Passenger fees

€ ex.VAT per departing passenger

<table>
<thead>
<tr>
<th>Country Type</th>
<th>Fee (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>National &amp; Europe Schengen</td>
<td>6.55</td>
</tr>
<tr>
<td>Europe non Schengen</td>
<td>9.14</td>
</tr>
<tr>
<td>International</td>
<td>10.07</td>
</tr>
</tbody>
</table>

- Landing fees

€ HT / € ex.VAT

<table>
<thead>
<tr>
<th>Weight Range</th>
<th>Fee (€)</th>
<th>% Change</th>
<th>Proportion of Flights by 2 Leading Carriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 18 tonnes inclusive</td>
<td>49.39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 to 25 tonnes, per additional tonne</td>
<td>74.96</td>
<td>+3.653</td>
<td></td>
</tr>
<tr>
<td>25 tonnes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 to 75 tonnes, per additional tonne</td>
<td>297.76</td>
<td>+4.456</td>
<td></td>
</tr>
<tr>
<td>75 tonnes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Par tonne supplémentaire, per additional tonne</td>
<td>7.105</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10 Main World airports (2008)

<table>
<thead>
<tr>
<th>Airport</th>
<th>Pax ( Millions)</th>
<th>% Change</th>
<th>Proportion of Flights by 2 Leading Carriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlanta</td>
<td>90.04</td>
<td>0.7%</td>
<td>66.3%</td>
</tr>
<tr>
<td>Chicago</td>
<td>69.35</td>
<td>-9.0%</td>
<td>41.6%</td>
</tr>
<tr>
<td>London</td>
<td>67.05</td>
<td>-1.5%</td>
<td>52.5%</td>
</tr>
<tr>
<td>Tokyo</td>
<td>66.7</td>
<td>-0.1%</td>
<td>62.1%</td>
</tr>
<tr>
<td>Paris</td>
<td>60.85</td>
<td>1.6%</td>
<td>50.4%</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>59.54</td>
<td>-3.8%</td>
<td>32.6%</td>
</tr>
<tr>
<td>Dallas</td>
<td>57.06</td>
<td>-4.5%</td>
<td>81.8%</td>
</tr>
<tr>
<td>Beijing</td>
<td>55.66</td>
<td>3.9%</td>
<td>58.2%</td>
</tr>
<tr>
<td>Frankfurt</td>
<td>53.47</td>
<td>-1.3%</td>
<td>56.3%</td>
</tr>
<tr>
<td>Denver</td>
<td>51.43</td>
<td>3.2%</td>
<td>39.3%</td>
</tr>
</tbody>
</table>

Source: Airline Business
10 Main World cities (passenger traffic 2009)

<table>
<thead>
<tr>
<th>City</th>
<th>PAX (Millions)</th>
<th>%change 2008/2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>LONDON</td>
<td>121,2</td>
<td>-4,7%</td>
</tr>
<tr>
<td>NEW YORK</td>
<td>101,5</td>
<td>-4,7%</td>
</tr>
<tr>
<td>TOKYO</td>
<td>94,0</td>
<td>-6,6%</td>
</tr>
<tr>
<td>ATLANTA</td>
<td>88,0</td>
<td>-2,3%</td>
</tr>
<tr>
<td>PARIS</td>
<td>83,0</td>
<td>-4,9%</td>
</tr>
<tr>
<td>CHICAGO</td>
<td>81,5</td>
<td>-6,4%</td>
</tr>
<tr>
<td>BEIJING</td>
<td>67,0</td>
<td>14,5%</td>
</tr>
<tr>
<td>DALLAS</td>
<td>63,8</td>
<td>-2,2%</td>
</tr>
<tr>
<td>LOS ANGELES</td>
<td>61,4</td>
<td>-7,6%</td>
</tr>
<tr>
<td>SHANGHAI</td>
<td>57,0</td>
<td>10,3%</td>
</tr>
</tbody>
</table>

Source: ENAC Air Transport Data

15 Main world cities (air traffic 2009)
Hubs and congestion

• In the world, about 150 airports are constrained by capacity problems...
  – most are hubs
  – most major European airports are concerned
  – most important US airports face delays

• Several factors can explain capacity shortage
  – sheer lack of space (runways, but also gates)
  – but also concentration of flights during the day at hubs

How to deal with lack of space

Different response in the US and in Europe

• In Europe “airport slots” are defined in order to avoid delays
  – no (or few) delays but less landings and take-offs

• In the USA, airlines are supposed to coordinate their schedule in order to avoid delays
  – There are delays (sometimes huge ones) but all capacity is used
  – except on a few slot controlled airports (Chicago, New York, Washington National)

• Results in different outcomes
The US congestion problem

- Market is mostly self regulating through delays
  - everybody suffers from delays: passengers and airlines
  - huge amounts of money are lost every year
  - hub airlines suffer from bad image
  - Some are trying to “de-peak” their traffic
- Congestion is in itself a barrier to entry on US airports
  - access theoretically possible, but in fact no room for challengers except if they use secondary non congested airports (strategy of low-cost airlines)

Peak traffic at hubs (US case)

Hub airline arrival banks + other airlines traffic

Real Capacity

Delays

06h00 23h00

Nb : real capacity is not fixed: it depends on weather, traffic homogeneity...
"De-peeking" traffic at hubs

No Delays...
(only works if one airline has large share of traffic!

06h00 23h00
Hub airline arrival banks + other airlines traffic

Estimated Capacity
Real Capacity

The European congestion problem

- On most major European airports, slots are allocated through historic rights
  - the “grandfather rights” system (once you get a slot, you keep it in the future, as long as you are effectively using it)
  - only non attributed slots (not many !) can be distributed to challengers
- No sufficient access possible for competitors on European main airports
  - non consistent with liberalization goal of promoting competition
Peak traffic at hubs (European case)

No Delays...
But under-utilization of capacity

Hub airline arrival banks + other airlines traffic

Theoretical Capacity (always possible)
Real Capacity

Congestion: two approaches, no solution

- Whether in Europe or in the US, no real solution
  - building infrastructures is one solution but is costly and increasingly difficult
  - it may be preferable to use secondary airports more
  - The European Commission wants to revise the slot attribution process, in order to allow more entry, but hub airlines need space, in order to set up an efficient operation

- Competition will remain limited on main hub airports in the years to come!
Air traffic control

- Ensures safety on land and in the air for a fee
- Congestion problems in airspace and near airports
Governments

- Provide rules and regulations and enforce them
  - Safety, security, working conditions, environmental rules...
- Negotiate bilateral agreements for traffic rights between countries

A historically regulated industry

- International traffic regulated by bilateral agreements between countries
  - designed at the end of second world war (Chicago 1944)
  - limited competition: some freedom in prices and frequencies but limitations in numbers of airlines
- Domestic traffic in the USA regulated until 1978
- European “Domestic” traffic regulated until 1997
  - In both cases regulation meant practically no competition
Framework of bilateral agreements

- Points of entry in each country
- Designated carrier(s) for each country
  - Only carriers from both countries
  - Carriers designated by name
- Capacities (fixed or not)
  - Equal if fixed
- Pricing rules
  - Restrictive until 1978, more pricing freedom afterwards

« Domestic » traffic

Europe (Bef. 1997)
Each government sets rules
International traffic ruled by restrictive bilaterals
- Access: only national airlines
- Competition: Two airlines on most international routes
- No pricing freedom

USA (Bef. 1978)
Government agency regulating markets (CAB)
- Access: which airlines?
- Entry: where do they fly?
- Competition: how many airlines on each route?
- Prices: no pricing freedom
The deregulation years: from 1978 until today

- Domestic traffic in the USA deregulated in 1978
- International agreements evolve towards more competition since 1978 between the USA and the rest of the world
  - gradually more price freedom since 1978
  - new “open skies” agreements proposed since 1992
- European “Domestic” traffic liberalized between 1987 and 1997
  - a largely free European market

The Airline Deregulation Act (Oct. 1978)

- After a short transitory period, the market become «free» for all airlines (old and new) to access and serve
- Access to the market
- Traffic rights (after 3 years)
- Prices (after 4 years)
- Mergers and agreements ruled by the Department of Justice (DOJ)
- Subsidies allocated by auctions (Essential Air Services)
The European Liberalisation laws (third package, effective 1997)

- Free access to the market for all airlines from the European Union
  - new legal concept
- All intra-European markets accessible to all European Airlines (even domestic markets)
  - Subject to slot restrictions at busy airports
- Free prices (01/01/1996)

Structure of an “open skies” agreements (Aft. 1992)

- Permission for airlines from both countries to operate between all points of both countries without restrictions
- No restrictions on frequencies and capacities
- No restrictions on price
- All possible 5th freedom rights are automatically granted
- Possibility of signing code sharing agreements with US airlines
- No cabotage rights (right to fly inside foreign country)
The new US – EU Open sky

- Open sky between US and EU
  - All EU airlines have traffic rights from all EU countries
  - Ownership in US airlines up to 49.9% but voting rights only 25%
  - No cabotage rights in US for EU airlines
  - Traffic rights in EU for US airlines
- Came into force at the end of March 2008
  - Forecasts of large traffic increase on the North-Atlantic Routes
  - But crisis in 2008 and 2009

New regulations : ETS

- Market created in 2003 to exchange pollution rights (CO2)
  - The regulator puts a given quantity on the market
  - Firms exchange rights on this market
  - Market price depends on demand
- Difficulties in early stages (learning phase)
  - Oversupply (too many permits)
  - Volatility in prices
  - Failed to reduce emissions significantly
- Expected to become more efficient in later stages : phase III
  - Inclusion of more economic sectors
Aviation and ETS

Inclusion of aviation in ETS in 2012

- Total quotas for industry based on historic emissions: average over 2004-2006
- Free allowances for each period:
  - 82% of total quotas in 2012, 80% from 2013
  - Allocated according to activity (RTKs) of former year (2010 for 2012)
- Airlines have to get the rest on the carbon market, according to their emissions (national monitoring authorities)

Airlines

- Figures and definitions
- The “network” majors
- The charter airlines
- The “low-cost” airlines
Main World Airlines: traffic (2009)

Source: ENAC Air Transport Data


Source: ENAC Air Transport Data
Main World Airlines: revenues (2008)

Op. revenues ($M)  Op. Results($00 000)

Source: ENAC Air Transport Data

Main World Airlines: revenues (2009)

Oper. Rev. (000)  Oper. result (00)

Source: ENAC Air Transport Data
The major airline

• Problem of definition:
  – No common definition
  – In Europe and Asia: large non « low cost » airlines
  – US: annual revenues > $1 billion
• Distinction between « network » majors and « low cost carriers » majors
  – Other names: full service carriers (FSC), legacy carriers...

The “network” major

• Global strategy: transports everybody, everywhere
  – Extended network, hub strategy
  – Transports passengers and freight
  – High and low fare passengers
  – Alliances strategy with other majors
• High costs
  – Being global is costly
• Much sensitivity to economic situation
  – Difficult situation for some of those airlines today
Networks: hubs versus point to point

Point to point network

- 5 cities: 10 routes \( n(n-1)/2 \)

Hub and spoke network

- 5 cities: 4 routes \( n-1 \)

The “Hub and spokes” network

- The predominant type of network these days
  - Historic network for European airlines
  - Adopted (and perfected) by the US airlines after deregulation
- Hub networks have many advantages
  - For hub airlines and their passengers
- But also drawbacks
  - For competitors, for airports
The Hub network: a centralized network

Hubs in practice (Continental 2005)
The virtuous circle of the hub system

- Airlines serve routes with less planes, and with bigger planes
- Bigger planes means lower costs per passenger
- With lower prices more passengers come
- More passengers mean bigger planes, more frequencies and new routes
- New routes mean more passengers...
- As a result: access for the average person to air transport!
Advantages of the hub network

- For hub airlines:
  - More destinations with less flights
  - Larger planes, lower costs, more demand
  - More control at the main airport (the hub)

- For passengers:
  - More destinations, more frequencies
  - Lower prices (globally)
  - Shorter connections

- For hub airports
  - More business

Drawbacks of hubs

- For other airlines
  - Difficulty of access to hub airports

- For hub airports
  - Congestion
  - Dependence on main hub airline

- For hub airlines:
  - Cost of capacity
  - Management of connections

- For passengers
  - Less direct flights
Example of hub: Air France hub at CDG Airport (source Air France)

Source: Air France/KLM annual report 2007

Organisation of Hubs: Connection banks

Source: Air France/KLM annual report 2007
The hub-specific type of competition

Network majors: Alliances

- Alliance policies among all international majors to achieve global world coverage
  - By using code sharing
  - Secondary goal is to reduce costs by common purchase policy (mixed success)
- Three main alliances: Oneworld, Skyteam, Star Alliance, with 55.5% of world capacity (ASKs, 2010)
Alliances (Sept. 2010)

<table>
<thead>
<tr>
<th>Alliance</th>
<th>Destinations</th>
<th>countries served</th>
<th>capacity share</th>
<th>pax traffic share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Star Alliance</td>
<td>1130</td>
<td>181</td>
<td>25.9%</td>
<td>25.4%</td>
</tr>
<tr>
<td>Skyteam</td>
<td>815</td>
<td>169</td>
<td>15.3%</td>
<td>17.1%</td>
</tr>
<tr>
<td>Oneworld</td>
<td>679</td>
<td>146</td>
<td>14.2%</td>
<td>15.6%</td>
</tr>
</tbody>
</table>

Star Alliance (2011)

Encompasses 28 member airlines, providing a global network of destinations and services.
Skyteam (2011)

Oneworld (2011)
Code sharing

- Is the use of one airline flight code for flights on another airline
  - Airlines buy blocks of seats on other airline and sell them under their own flight code
- Possible inside an alliance if authorities agree to it (US federal authorities, European commission)

Code sharing: example

United: flight code UA
Washington
Munich
Lufthansa: flight code LH
Bratislava
Code sharing: example

- Flight UA 123 / LH 456
  - Is also UA 123 / UA 789
  - And LH 321 / LH 456

United: flight code UA
Washington

Lufthansa: flight code LH
Munich
Bratislava

Code sharing

- Same airline code means better display in reservation systems
  - No apparent change of airline
  - 75% of reservations made on first screen

- For passenger:
  - real coordination means better service (baggage, lounges, no missed transit)
  - But often he does not know which airline he is flying with until on board!
The “low-cost” airline

- A “niche” strategy
  - direct routes, short haul
  - high traffic routes, leisure and business
  - low price
- Low costs
  - secondary airports, limited service, internet ticket sell...
- High growth market in Europe
- High profitability
  - Only for “large enough” airlines

Low Cost Airlines 2010

<table>
<thead>
<tr>
<th>Country</th>
<th>PAX</th>
<th>Operating Revenues ($M)</th>
<th>Operating Result ($M)</th>
<th>Operating Margin %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southwest Airlines</td>
<td>USA</td>
<td>88,2</td>
<td>12 104</td>
<td>988</td>
</tr>
<tr>
<td>Ryanair</td>
<td>Ireland</td>
<td>71,2</td>
<td>4 021</td>
<td>541</td>
</tr>
<tr>
<td>Easyjet</td>
<td>UK</td>
<td>46,4</td>
<td>4 632</td>
<td>270,5</td>
</tr>
<tr>
<td>Air Berlin</td>
<td>Germany</td>
<td>33,6</td>
<td>3 677</td>
<td>53,4</td>
</tr>
<tr>
<td>Gol Transportes Aereos°</td>
<td>Brazil</td>
<td>28,1</td>
<td>2 873</td>
<td>244,9</td>
</tr>
<tr>
<td>AirTran Airways</td>
<td>USA</td>
<td>24,7</td>
<td>2 619</td>
<td>128,2</td>
</tr>
<tr>
<td>JetBlue Airways</td>
<td>USA</td>
<td>24,3</td>
<td>3 779</td>
<td>333</td>
</tr>
<tr>
<td>West jet Airlines</td>
<td>Canada</td>
<td>15,2</td>
<td>2 576</td>
<td>244,4</td>
</tr>
<tr>
<td>Virgin Blue</td>
<td>Australia</td>
<td>14,3</td>
<td>1 106</td>
<td>-119</td>
</tr>
</tbody>
</table>

* Financial 2009
° Pax 2009
Low Cost Airlines 2006-2010

<table>
<thead>
<tr>
<th>Country</th>
<th>PAX (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southwest Airlines USA</td>
<td>83,8</td>
</tr>
<tr>
<td>Ryanair Ireland</td>
<td>42,5</td>
</tr>
<tr>
<td>Easyjet UK</td>
<td>28</td>
</tr>
<tr>
<td>AirTran Airways USA</td>
<td>20,1</td>
</tr>
<tr>
<td>Air Berlin Germany</td>
<td>19,7</td>
</tr>
<tr>
<td>JetBlue Airways USA</td>
<td>18,6</td>
</tr>
<tr>
<td>Gol Transportes Aereos°</td>
<td>17,4</td>
</tr>
<tr>
<td>Virgin Blue Australia</td>
<td>14,3</td>
</tr>
<tr>
<td>West jet Airlines Canada</td>
<td>11,2</td>
</tr>
</tbody>
</table>

Source: ENAC Air transport Data

The Cost Gap: The US market

Network Airlines

-36% Valujet/AirTran

-45% JetBlue

Southwest

Difficulties to maintain the revenue gap

Source: IATA: Economic Briefing, Airline Cost performance

° pax 2009
The Revenue Gap: The European market

Source IATA: Economic Briefing, Airline Cost performance

The cost gap is –40% for Easyjet, -64% for Ryanair

The low cost carriers networks

• Low costs carriers have « bases » but no hubs
  – They do not manage connections at their bases
  – LCC networks are much more spread out

• Their networks are decentralized networks
  – Still some economies of scope/networks
  – No problems of congestion
Competition between low-cost and majors

The Charter Airline

- A “niche” strategy
  - Non scheduled: not year-round routes
  - Leisure travels, tourist market
  - Package holidays
  - Low yield passengers

- Low costs
  - Limited service, no marketing structure

- A specific European model
  - About half of cross-border intra-European traffic
  - Nearly nothing elsewhere
The charter airline business model

**Charter airline**
- Sell flights to tour-operators
- Charter airline tries to find enough clients ready to buy flights to keep planes and crews busy
- Success depends on aircraft utilization, not on passengers!
- Only few people are needed to deal with clients

**Scheduled airline**
- Sell seats to passengers on scheduled flights:
- Airline tries to fill up planes by mixing high fare and low fare passengers in order to optimize profit.
- Costs are mostly fixed when flight has been scheduled

---

Charter Airlines (2008)

<table>
<thead>
<tr>
<th>Airline</th>
<th>/ Country</th>
<th>/ Pax (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TUI Group</td>
<td>/ Europe</td>
<td>/ 25.5</td>
</tr>
<tr>
<td>Thomas Cook</td>
<td>/ Europe</td>
<td>/ 10.95</td>
</tr>
<tr>
<td>Air Berlin group</td>
<td>/ Europe</td>
<td>/ 3.5</td>
</tr>
<tr>
<td>Transavia Airlines</td>
<td>/ Netherlands</td>
<td>/ 3.3</td>
</tr>
<tr>
<td>Air Transat</td>
<td>/ Canada</td>
<td>/ 3.15</td>
</tr>
<tr>
<td>Monarch Airlines</td>
<td>/ UK</td>
<td>/ 2.6</td>
</tr>
<tr>
<td>Transaero Airlines</td>
<td>/ Russia</td>
<td>/ 2.0</td>
</tr>
<tr>
<td>Sun express</td>
<td>/ Turkey</td>
<td>/ 1.6</td>
</tr>
<tr>
<td>Travel service AL</td>
<td>/ Czech Rep</td>
<td>/ 1.56</td>
</tr>
</tbody>
</table>
Freight airlines: The integrators

- Not airlines at all but logistic providers
  - an integrated service along the logistic chain
  - the airline is a part of that chain (an important one!)
- Very specialized strategy
  - Specialize in express freight and in small shipments
  - Door to door service
  - Ensures delivery delays
- High growth and profitable industry

Main world airlines: Freight (2009)

Total freight RTK (000 000)

Source: ENAC Air Transport Data
And competitors: High speed Rail

• A short haul operator
  – Competes with air on less than 3h-3h30 rail routes (typically Paris Marseille): total travel time is the same as with air!
  – From city centers to city centers
• Low prices
  – partly because of infrastructure subsidies
• More environmental friendly
  – More efficient energetically, less CO2 emissions
  – But electricity still has to be produced

HST market share

(Distances comprises entre 300 et 600 km)

Source: brochure « TGV dans le monde »