Overview of Recent Forces & Trends in the Airline Industry

Prof. R. John Hansman

With the help of the Faculty and Students of the MIT Global Industry Study

Traffic Source: Sage Analysis courtesy Prof Ian Waitz

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World Population Distribution &
2004 Air Transportation Activity

North America
36% Pax
26% Cargo
~160 Airlines
~4100 Airports

Europe
27% Pax
27% Cargo
~200 Airlines
~2400 Airports

Latin America/Caribbean
4% Pax
3% Cargo
~50 Airlines
~580 Airports

Africa
2% Pax
2% Cargo
~20 Airlines
~300 Airports

Middle East
4% Pax
6% Cargo
~20 Airlines
~230 Airports

Asia/Pacific
27% Pax
36% Cargo
~80 Airlines
~1800 Airports

Air Transport: ICAO, R. Schild/Airbus
Passenger and freight traffic represent RPK and FTK share in 2004
Relationship Between Economy and Air Transportation

Economy

Direct / Indirect / Induced employment effects

Economic Enabling Effect
(Access to people / markets / ideas / capital)

Demand

Supply

Air Transportation System

Airlines

Travel/Freight Need

Financial Equity/Debt Markets

Revenue/Profitability

Pricing & Schedule

Vehicle Capability

NASDAQ Capability
Correlation Between US GDP and Passenger Traffic

Data source:
- **RPMs**: Bureau of Transportation Statistics, (BTS)
- **GDP**: US Bureau of Economic Analysis
- **Recession data**: National Bureau of Economic Research
Air Transportation Markets

2004 Data

The diagram represents passenger-kilometers per capita against GDP per capita for various countries. It highlights the comparative performance of different regions and countries in terms of air transportation market size and economic status. Notable regions such as Europe (EU 26) are identified, and countries like the United States, India, and China are distinctly marked.
Key Forces

- Travel Demand
- Market Expectations
- Competition
- Equity Markets - Cyclic Industry
- Capacity Limitations
- Fuel
- Labor
- Regulatory
- Environmental
- Information Technology
- Media
- Equity Markets
- Security Requirements
Market Expectations

- **Safety/Security**

- **Service**
  - Schedule
  - Price
  - Frequent flyer / loyalty programs
  - Reliability
  - On-time performance
  - Service
Trend Time Scales

• **Long Term Macro Trends**
  - Since Deregulation (1978)

• **Medium Term Trends**
  - Since September 11, 2001
US Passenger Growth Trends
Effect of De-Regulation

Scheduled Revenue Passenger Miles in US

Data source: Bureau of Transportation Statistics
Passenger Traffic Trends (RPK) by World Region

Data source: ICAO, scheduled services of commercial air carriers (through 2006), IATA annual traffic growth data for year 2007 (Jan-Oct)
Freight Trends (FTK) by World Region

Data source: ICAO, scheduled services of commercial air carriers (through 2006), IATA annual traffic growth data for year 2007 (Jan-Oct)
Safety Trend

U.S.A. and Canadian Operators Accident Rates
Hull Loss and/or Fatal accidents – Worldwide Commercial Jet Fleet – 1959 through 2005
U.S.A and Canadian Operators Accident Rates
Hull Loss and/or Fatal accidents – Worldwide Commercial Jet Fleet – 1986 through 2005

Accident rate
(accidents per million departures)

Year

Rest of the World
U.S.A. & Canadian operators
Comair Accident
27 - Aug - 2006
Sao Paulo Runway Overrun
17 Jul 2007

Area where plane crashed

Washington Luis Avenue

São Paulo

Main runway

Probable path of TAM Airlines flight JJ3054

CONGONHAS INTERNATIONAL AIRPORT

Built in 1919
8 kilometers, or 5 miles from the city center
Over 12 million passengers per year

Main runway length
1,940 meters, or 6,365 feet

Sources: Infraero, worldaerodata.com

Image by Digital Globe via Google Earth

Source: Intl Herald Tribune
Trends in Aircraft Size

Data source: Form 41 Traffic data from Bureau of Transportation Statistics (US carriers)
U.S. Domestic Average Load Factor

Data source: ATA, US member airlines, scheduled mainline service
U.S. Domestic ASMs and RPMs

Data source: ATA, US member airlines, scheduled mainline service
Spending on Air Travel Has Fallen as % of U.S. Economy
Recent Quarters’ Modest Recovery Still $26B Short of Historical Norm

Systemwide Passenger Revenue as % of Nominal GDP

Historical Band

$26B

*Four-quarter rolling passenger revenue derived from government filings of passenger airlines whose annual operating revenues exceed $100 billion

Sources: ATA Airline Cost Index; Bureau of Economic Analysis; U.S. Department of Transportation

Data source: ATA.
Cyclic Industry with Exponential Growth In Volatility Since Deregulation

Data source: ATA Annual Revenue and Earnings - Net Profit and Loss
US Airlines Net Profit
Best Fit of Undamped Oscillation
Cycle Period = 11.3 yr  eFolding Time = 7.9 yr

Data source: ATA - available at: [www.airlines.org](http://www.airlines.org) & Airline Quarterly Reports

*Note: Airlines; American Airlines, United Air Lines, Delta Air Lines, Northwest Airlines, Continental Airlines, US Airways, Southwest Airlines, JetBlue Airways, Alaska Airlines,
Excludes; Continental airlines 2007 Q4 results, Includes: Delta Airlines & Northwest Airlines Q2 2007 reorganization items.
September 11 Does not Significantly Change Trend
Analysis using only data before 2001

* American Airlines, Delta Airlines, United Airlines, Northwest, Continental, Southwest, JetBlue, America West, Alaska.

** The projection for the full year is computed as 2 times the loss for Q1 & Q2 combined
World Airlines Net Profit
historical data between 1978 to 2007 –
with projection to 2012

Data source: ICAO data (1978 to 2006) and IATA (2007)

Note: IATA represents 250 airlines comprising 94% of the international scheduled air traffic
Net Profit and Aircraft Deliveries

Hypothesize that instability driven by capacity response phase lag

Data source: ICAO data (Profit) and SpeedNews data (Aircraft deliveries)
Growth Limits
Constraints vs Damping

Upside: Capacity, Market
Downside: Financial

Data source: ATA - available at: www.airlines.org & Airline Quarterly Reports
Medium Term Trends

- Trends since Sept 11
- Economic Down Cycle
- Recovering
- Fuel Costs
- IT Effects
- Low Cost Carrier Envy
- Bankruptcies
- Labor Reductions and Givebacks
Data source: ATA, US member airlines, scheduled mainline service
U.S. Domestic ASMs

Data source: ATA, US member airlines, scheduled mainline service
Data source: ATA, US member airlines, scheduled mainline service
U.S. Average Domestic Yield

Data source: ATA Monthly Passenger Revenue Report, 7 US major airlines excluding Southwest (WN).
Historic Yield Trend
1995-2007

Data source: ATA Passenger Yield Report, 7 US major airlines excluding Southwest (WN).
Historic Yield Trend
1995-2007

Data source: ATA Passenger Yield Report, 7 US major airlines excluding Southwest (WN).

Data source: ATA Monthly Passenger Revenue Report, 7 US major airlines excluding Southwest (WN).
Atlantic Yield 2000-2007

Data source: ATA Monthly Passenger Revenue Report, 7 US major airlines excluding Southwest (WN).
Latin Yield 2000-2007

Data source: ATA Monthly Passenger Revenue Report, 7 US major airlines excluding Southwest (WN).
Pacific Yield 2000-2007

Data source: ATA Monthly Passenger Revenue Report, 7 US major airlines excluding Southwest (WN).
Airline Profitability Impact

$/ASM

CASM

RASM

9/11-9/13

Security costs

Quick Recovery

Slow Recovery

Insolvency

Time
Airline Profits

Data source: Airline quarterly reports, profits and losses including reorganization items
Cargo Operations Profitable

Data source: Companies’ annual reports
Market Cap: US Majors
4-Sept-2007

Total Market Cap: $ 44.5 billion

Data source: Yahoo Finance.
Market Cap: US Majors
26-Feb-2008

Total Market Cap: $35.2 billion

Data source: Yahoo Finance.
RPM Share vs. Market Cap

Source: Yahoo! Finance and Bureau of Transportation Statistics
American AAL Flights (8/7/02)

DFW 18%
ORD 12%
MIA 6%
Hub and Spoke vs Direct Networks

Completely Connected Network = 2(N-1) Flights
(eg., 50 Airports, 98 Flights)
Fully Connected Network

Completely Connected Network = N(N-1)
(eg., 50 Airports, 2450 Flights)
US Carrier CASM for the First Quarter of 2006

* Mainline CASM excluding special items, regional affiliates, UAFC

Data source: Company Press Releases
Emergence of Secondary Airports

“Southwest Effect”

Original Core airport
Emerged Core airport
Secondary airport

Airports:
- SFO
- LAX
- MSP
- DAL
- HOU
- DTW
- ORD
- STL
- CVG
- ATL
- DCA
- PHL
- LGA / JFK / EWR
- BOS
- MIA
- PHX
- BWI
- ISP
- PVD
- MHT
High Density Airport Systems

Boston Region

Airports: Legend
- Core
- Secondary
- Business Av. / High density GA
- VLJ capable GA
- non VLJ capable GA
Low-Cost Carrier Envy
Emergence of LCCs

Canada (7, 1 in 2004)
- CanJet
- HMY Airways
- JetsGo Airlines
- Tango Airlines
- WestJet
- Zip
- Canada West

USA (19, 4 in 2003/2004)
- AirTran
- Allegiant Air
- American West
- ATA
- Frontier Airlines
- InterState Jet
- JetBlue Airways
- Midwest Express
- Pan American
- Southeast Airlines
- Southwest Airlines
- Spirit Airlines
- Song
- Sun Country Airlines
- USA 3000 Airlines
- Vacation Express
- Ted
- Independence Air
- Virgin USA

Europe (60, 3 in 2004)
- Aer Arann
- Air 2000
- Air Baltic
- Air Berlin
- Air Finland
- Air Luxor Lite
- Air Polonia
- Air Scotland
- Air SouthWest
- Air Wales
- Alpi Eagles
- Azzurra Air
- Hi Fly
- Fly Me
- Fly Nordic
- Air Service + Blue1
- Blue Air
- Central Wings
- Dau Air
- Iceland Express
- Monarch
- My Air
- Scand Jett
- Transavia
- Vueling
- Inter Sky
- Jet 2
- LTU
- Meridiana
- Baboo
- Basiq Air
- Bexx Air
- BMI Baby
- British European
- BudgetAir
- Corendon
- Deutsche BA
- EasyJet
- Eolaavia
- Excel Airways
- Fairline Austria
- Fare4U
- German Wings
- Germania Express
- Globespan
- Hapag Lloyd Express
- Hellas Jet
- Helvetic Airways
- Iceland Express
- Ryanair
- Snalskjutsen
- SnowFlake Airlines
- Sterling
- Sun Express
- Swedline
- ThomsonFly
- V Bird
- Virgin Express
- VLM Airlines
- VolareWeb
- Windjet Vola
- Smart Wings
- Wizz Air
- Hop

Asia/Pacific (20, 8 in 2004)
- Air Arabia
- ValuAir
- Air Asia
- Virgin Blue
- Air Deccan
- Song
- American West
- Sun Country Airlines
- ATA
- USA 3000 Airlines
- Frontier Airlines
- Vacation Express
- Interstate Jet
- Ted
- JetBlue Airways
- Independence Air
- Midwest Express
- Virgin USA
- Pan American
- Southeast Airlines
- Southwest Airlines
- Air Arabia
- ValuAir
- Air Asia
- Virgin Blue
- Air Deccan
- Song
- American West
- Sun Country Airlines
- ATA
- USA 3000 Airlines
- Frontier Airlines
- Vacation Express
- Interstate Jet
- Ted
- JetBlue Airways
- Independence Air
- Midwest Express
- Virgin USA
- Pan American
- Southeast Airlines
- Southwest Airlines
- Copa
- Aeroposta
- Inter continental LCCs
- Air Madrid
- Condor
- East Jet
- LTU
- Martinair
- Zoom Airlines
- Air service
- Central Wings
- Dau Air
- Iceland Express
- Inter Sky
- Jet 2
- LTU
- Meridiana
- South America (3)
- Bra
- Gol
- U Air
- Africa (2)
- 1Time
- Kulula
- Aero Asia
- Bangkok Air
- Spring
- Awair
- Origin Pacific
- Kingfisher
- Spice Jet
- Jazeera Airways

Source: http://www.etn.nl/lcostair.htm, airline news
Low-Cost Carrier Envy (or not)
Emergence of LCCs

Source: http://www.etn.nl/lcostair.htm, airline news
Competition

• Brutally Competitive Business
  ▪ Inter-Airline
  ▪ Automobile and other Surface Modes

• Historical Focus on high yield travelers shifted

• Gaming
  ▪ Schedule
  ▪ Performance Index Gaming

• Alliances
  ▪ Code Share Based
  ▪ Network power
  ▪ Virtual mergers to overcome international restrictions
  ▪ Operating Benefits (not yet realized)
  ▪ Varying Commitments
EU-US Open Skies Agreement

- On April 30, 2007 E.U. and U.S. signed a preliminary Open Skies accord
  - Allows EU airlines to operate direct flights between U.S. and any EU country (and some others)
  - Allows U.S. airlines reciprocal right, and ability to fly between EU city-pairs
  - Agreement will replace 22 bilateral air service agreements currently in place between the U.S. and the Member States
  - Implications for Alliance Anti-Trust Immunity
  - In effect March 30, 2008

- E.U. has made liberalized foreign control a prerequisite for a permanent agreement
  - U.S. domestic market lucrative as standalone and hub-feeder
    - Cabotage rights only granted to U.S. Incorporated airlines
    - U.S. incorporation requires meeting ownership caps
    - Without control, network composition cannot be shaped
  - Match EU’s 49% foreign control restriction
The North Atlantic: Market for Low Cost Carrier Expansion

- Proposed transatlantic route network by RyanAtlantic*

- Development of international parallel networks
- Phenomenon observed within the United States and Europe with the development on point-to-point parallel networks (between secondary airports) by Southwest and Ryanair

Airline Alliances
US DOT Antitrust Immunity

Star Alliance
- Adria Airways (JP)
- Air Canada (AC)
- Air New Zealand (NZ)
- ANA (NH)
- Asiana Airlines (OZ)
- Austrian Airlines (OS)
- Blue1 (KF)
- bmi (BD)
- Croatia Airlines (OU)
- LOT Polish Airlines (LO)
- Lufthansa (LH)
- SAS (SK)
- Singapore Airlines (SQ)
- South African (SA)
- Spanair (JK)
- Swiss Intl Air Lines (LX)
- TAP Portugal (TP)
- Thai Airways Intl (TG)
- Turkish Airlines (TK)
- United (UA)
- US Airways (US)

Oneworld
- American Airlines (AA)
- British Airways (BA)
- Cathay Pacific (CX)
- Finnair (AY)
- Iberia (IB)
- Japan Airlines (JL)
- LAN (LA)
- Malév (MA)
- Qantas (QF)
- Royal Jordanian (RJ)

SkyTeam
- Aeroflot (SU)
- Aeroméxico (AM)
- Air France (AF)
- Alitalia (AZ)
- Continental (CO)
- Czech Airlines (OK)
- Delta (DL)
- KLM (KL)
- Korean Air (KE)
- Northwest (NW)

Existing Immunity
Immunity Application In Progress

Source: Wikipedia, BTN Online
LCC Shift to Major Airports

Sources: http://www.southwest.com/cities/philadelphia.html, ETMS Data Analysis

Southwest

PHL Entry

Service since May 9, 2005:

- Chicago (Midway) $79 one-way
- Las Vegas $99 one-way
- Orlando $79 one-way
- Providence $29 one-way

US Airways match many of Southwest's fares with its own new, less restricted "GoFares."

Both airlines offer the lowest available fares on many competing routes.

US Airways

Network

Sources: http://www.southwest.com/cities/philadelphia.html, ETMS Data Analysis
Capacity Allocation Strategies
(Domestic vs. International ASMs – from 2005 to 2006)

Data source: Bureau of Transportation Statistics
Consolidation Trend

- Recent International Consolidation
  - Air France and KLM
  - Air France and Alitalia
  - Lufthansa and Swiss
  - China Southern and China Northern and Xingiang
  - Cathy Pacific and Dragon

- Recent US Consolidation
  - USAir and America West

- Merger Discussions
  - Delta and Northwest
  - Potential for Additional Reactionary Moves

- International Strategic Investment
  - Lufthansa and JetBlue
  - Virgin and Virgin America
Principal Airline Distribution Channels

- **AIRLINE RES SYSTEM**
  - **GDS/CRS**
    - **TRAVEL AGENCY**
      - **CONSUMER**
    - **WEB BASED Intermediary**
      - **CONSUMER**
  - **AIRLINE Phone Resv**
    - **TRAVEL AGENCY**
      - **CONSUMER**
  - **AIRLINE WEB SITE**
    - **CONSUMER**

**Significant Growth In Web Booking**
**Change in Airline Scheduling (e.g. rolling hubs)**
**IATA Push for 100% electronic tickets**
Distribution

- Reduction in commissions to travel agents
- Shift to e-tickets (additional charges for paper tickets)
- Increased restrictions on low fares (USAir charges)

Electronic Processing

- **Airline Tickets #1 Web Product by Value**
  - Browser 1st page effect on marketing

- **Increase in e-Tickets**
  - Cost Savings
  - Charge for Paper Tickets
  - Interlining of e-Tickets
  - 40% in 2005

- **IATA Target**
  - 70% in 2006
  - 100% e-tickets by end of 2006

- **CAPPS II**
Productivity Improvements Driving Cost Relief Network Restructuring, Work Rules, Human Capital, Outsourcing, Technology

Source: ATA US Airline Cost Index: Major & National Passenger Carriers, Q3 2005
Employees Full Time: US Network Carriers 2001-2005

Job cuts continue: United announced 1000 last week 6/15/06

Source: US DOT
Positive Views of Employee Morale

Source: The Wilson Center for Public Research, Inc. – based on 150,674 interviews conducted with pilots or flight attendants from 1/1/2001 to 9/20/2005
Pension Obligations at the end of year 2004

Source: Airlines Annual Financial Reports (US airways (successor company) figure corresponds to year 2003)
Trends in Fuel Price

Average Crude Oil and Jet Fuel Prices

Data source: ATA: Fuel Cost and Consumption (oil data through Feb 2008, jet fuel data through Dec 2007)
Unit Costs for Labor and Fuel

Data source: ATA U.S. Airline Cost Index, through 4th Quarter 2007
Growth Limits
Constraints vs Damping

Downside: Financial
Upside: Capacity, Market

Data source: ATA - available at: www.airlines.org & Airline Quarterly Reports

Q1 & Q2 2007
(8 major airlines)
US Flight Delays
from 1995 to 2007

Data source: FAA Operational Network (OPSNET)
Flight Cancellations from 2000 to 2007 (by month)


(top 11 airlines from 2000 to 2002, top 20 airlines from 2003 to 2007)
US Flight Delays
from 2000 to 2008

National Delays (in minutes)

Source: FAA OPSNET data
Capacity Limit Factors

- **Airport Capacity**
  - Runways
  - Gates
  - Landside Limits (including Security)
  - Weather

- **Airspace Capacity**
  - Airspace Design
  - Controller Workload
  - Balkanization

- **Demand**
  - Peak Demand
  - Hub & Spoke Networks

- **Environmental Limits**
  - Noise (relates to Airport)
  - Emissions (local, Ozone, NOX, CO2)
Airport System Capacity Limit Factors

- Runways
- Weather
  - Capacity Variability
  - Convective Weather
- Landside Limits
  - Gates
  - Terminals & Security
  - Road Access
- Downstream Constraints
- Controller Workload
- Environmental
  - Community Noise
  - Emissions
- Safety
Flight Delays*
(9 US airports)
from 1995 to 2007

* Note: 12 month moving average

Data source: FAA Operational Network (OPSNET)
New York Airport Flight Delays*
from 1995 to 2007

* Note: 12 month moving average

Data source: FAA Operational Network (OPSNET)
Key Terminal System Flows
(adaptive system - impedance matching)
CTX 9000 Explosive Detector

500 Bags/hr
NO LIQUIDS OR GELS OF ANY KIND WILL BE PERMITTED IN CARRY-ON BAGGAGE. THESE ITEMS MUST BE IN CHECKED BAGGAGE. This includes all beverages, shampoo, suntan lotion, creams, tooth paste, hair gel, and other items of similar consistency. Read our Permitted and Prohibited Items list for more information.
Mishandled Baggage
from 1997 to 2007


Note: 2007 data point for January to June 2007
Denied Boardings (DB’s) from 1996 to 2007*

Note: 2007 data point represents average denied boarding (per 10,000 enplanements) for January to June 2007.
Consumer Complaints from 1997 to 2007*

Note: 2007 data point represents average consumer complaints (per 100,000 enplanements) for January to March 2007
Other Threats
Portable SAMs

SAM-7 Fired at Arkia Airlines B757-300 Mombassa Kenya, Nov 2002
Air Traffic Controller Staffing

ATO Hiring Forecast vs. Losses

Time to CPC (Certified Professional Controller)
Terminal; 8 - 24 months
Enroute: 36 - 60

Source: Air Traffic Controller Workforce Plan - 2004
Projected % Developmental Controllers

From: ATCS Workforce Plan Briefing
Congestion Driven Schedule Creep

Source: ASDI data
Historical Evolution of Scheduled Block Time
(Month of April / from 1996 to 2006)

NY La Guardia – Chicago O’Hare

Houston – Dallas

Data source: Department of Transportation, Bureau of Transportation Statistics
- Analysis based on top 3000 OD routes (US Domestic – by US carriers)
- Filtered down to 1950 OD routes with uninterrupted service between 1996 and 2006 (April)
- OD routes covering 76% of total passengers in the U.S. in 2006

**Annual Growth Rate of Scheduled Block Time**
(top 1950 OD routes)

- Mean: +0.5%
- Mode: +0.4%

*Data source: Department of Transportation, Bureau of Transportation Statistics*
Trends in Aircraft Size

Data source: Form 41 Traffic data from Bureau of Transportation Statistics (includes Regional Jets and Turboprops)
Most Common Regional Jets

**ERJ 145 (50 seats)**
About 400 aircraft in national fleet
About 2000 daily flights in January 2003

CRJ 200 (50 seats)
CRJ 200 Production on hold
About 400 aircraft in national fleet
About 1500 daily flights in January 2003
U.S. Regional Jet Growth

Source: FAA registration data from 1995 until the present
Source: based on manufactures’ a/c specifications. Full pax range of standard version.
EMB 190 Jet Blue Delivery (10/05)
A-380

- **A380 Baseline**
  - Shrink
  - Stretch
  - ER Variants

- 555 passengers (3 class)

- 14,800km/8,000nm range

- Payload: 330,000lbs over 10,400km/5,600nm

- Rolls-Royce Trent 900 engines or GP7200 engines

*http://www.airbus.com/*
B-787

-300 (290-330 pax) (3000-3500 nm)
-800 (210-250 pax) (8000-8500 nm)
-900 (250-290 pax) (8600-8800 nm)
“All New” A350

Not your fathers A330

250-300 Seats
7500-8800 nm Range

13 Orders Prior to Paris Air Show
High Fuel Price Favoring Turboprops

<table>
<thead>
<tr>
<th>Backlog (firm orders)</th>
<th>ATR42/72*</th>
<th>Bombardier Q series**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>179</td>
<td>100</td>
</tr>
</tbody>
</table>

* as of Aug 2nd 2007
** as of April 30th 2007

Data source: Aircraft manufacturers website – ATR aircraft & Bombardier
### Very Light Jets
Small turbofan aircraft

<table>
<thead>
<tr>
<th>Aircraft characteristics*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Passengers:</strong></td>
</tr>
<tr>
<td>4 to 8</td>
</tr>
<tr>
<td><strong>Acquisition price:</strong></td>
</tr>
<tr>
<td>$m 1.4 to 3.6</td>
</tr>
<tr>
<td><strong>Cruise speed:</strong></td>
</tr>
<tr>
<td>340 to 390 kts</td>
</tr>
<tr>
<td><strong>Operating ceiling:</strong></td>
</tr>
<tr>
<td>41,000ft to 45,000ft</td>
</tr>
<tr>
<td><strong>Range:</strong></td>
</tr>
<tr>
<td>1100 to 1750 NM</td>
</tr>
<tr>
<td><strong>Take off field length:</strong></td>
</tr>
<tr>
<td>2200ft to 3400ft</td>
</tr>
</tbody>
</table>

### Orders
- Eclipse: 2300
- Adam: 75
- Mustang: 330+

* for twin-engine VLJs (excludes D-Jet)
Regulatory Factors

- De-Regulation (Re-Regulation)
- FAA Reauthorization
- Open Skies
- Airport Demand Management (LGA-ORD)
- Operating Regulations
- Security
- Performance Monitoring
  - Data Quality Concerns
- Passenger Bill of Rights
- Anti-Trust Considerations Changing
  - Mergers (AA-TWA, UAL-US, Am West-US))
  - E-Commerce (Orbitz)
FAA Reauthorization ‘07

- Funding Modernization (NGATS)
- Contributions from the general fund? (18% > 50%)
- The “battle” over user fees:
  - Airlines vs Business Aviation

<table>
<thead>
<tr>
<th>Tax</th>
<th>Rate</th>
<th>Percentage of Total Tax Collections in FY 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ticket Tax</td>
<td>7.5% on Airfares</td>
<td>49.7%</td>
</tr>
<tr>
<td>Segment Tax</td>
<td>$3.20 per Flight Segment</td>
<td>19.6%</td>
</tr>
<tr>
<td>Rural Airport Tax</td>
<td>7.5% on Airfares from Rural Airports</td>
<td>0.8%</td>
</tr>
<tr>
<td>Waybill Tax</td>
<td>6.25% on Price of Freight and Mail Transferred by Air</td>
<td>5.4%</td>
</tr>
<tr>
<td>GA and Jet Fuel</td>
<td>GA Fuel: 19.3 cents/gallon, Jet Fuel: 21.8 cents/gallon</td>
<td>1.9%</td>
</tr>
<tr>
<td>Commercial Jet Fuel</td>
<td>4.3 cents/gallon</td>
<td>5.8%</td>
</tr>
<tr>
<td>International Departures/Arrivals</td>
<td>$14.10 per international departure/arrival</td>
<td>14.4%</td>
</tr>
<tr>
<td>Alaska/Hawaii Tax</td>
<td>$7.00 per domestic departure/arrival to Alaska or Hawaii</td>
<td>0.8%</td>
</tr>
<tr>
<td>Frequent Flyer Tax</td>
<td>7.5% on proceeds of third party sales of frequent flyer miles</td>
<td>1.6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7.5% on proceeds of third party sales of frequent flyer miles</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: FAA
U.S. Air Transportation Networks

Data source: FAA ETMS Sept. 30th 2004 to Oct. 1st 2005
Environmental Issues

Noise

- Stage 4 (Equipment)
- Airports (Capacity)

Emissions

Intergovernmental Panel on Climate Change
Media

- Drives Public Perception
  - Risk
  - Delays
  - Expectations

- Drives Public Policy
  - Congress - FAA - NTSB

- Shorter Reaction Timescale
  - CNN, Web
  - Proliferation of Digital Cameras and Distribution
    - eg Concorde Photographs
Concorde Accident