Introduction to AIRLINE ECONOMICS

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We first examine the laws of SUPPLY and DEMAND, which unhappily, too often tend to be in disequilibrium.
SUPPLY – Why are their periods of relentless overcapacity in the airline industry?

Demand is highly cyclical, and inventory cannot be warehoused;
SUPPLY – Why are their periods of relentless overcapacity in the airline industry?

Demand is highly cyclical, and inventory cannot be warehoused;
Fixed costs are high, and aircraft remain aloft even when operations fail to cover fully allocated costs;
Hubbing geometrically increases city-pair product offerings; airlines create overlapping hub networks;
New aircraft must be ordered years ahead of delivery; aircraft are ordered in good times, and delivered in bad;
The S-curve relationship between frequency, along one axis, and unit revenue, along the other, encourages airlines to offer relatively more flights than their competitors in all important markets; frequency is a means of product differentiation for the relatively price-inelastic business traveler.
The S Curve

Frequency

Market Share

0%

50%

100%

0%

50%

100%
SUPPLY – Why are their periods of relentless overcapacity in the airline industry?

Investment is, too often, irrational;
Governments provide export financing;
Bankruptcies sometimes redistribute, but do not eliminate, capacity;
The going-concern value often is greater than the liquidation value of airlines, thereby motivating an infusion of capital into bankrupt airlines rather than their liquidation;
Reducing capacity increases unit costs and decreases product offerings;
and
Aircraft are not accordians, whose inventory of seats can be reduced if demand falls
Exits exceeded by new entrants even in recession

Airline new entrants and exits

-60
-40
-20
0
20
40
60
80
100

Number of airlines

New entrants

Exits

Recessions

Source: Ascend
**DEMAND – Why is demand so fickle?**

Demand is highly cyclical, depending on time of day, day of week, and season;

Demand can be adversely affected with broader changes in the economy; recession can erode disposable income, GDP, and consumer confidence, which can, in turn, chill demand for air travel;

In mature markets, air travel growth slows;

Globalization has led to a decline in domestic growth, as production has moved off-shore;

Teleconferencing and other telecommunications technological advances have eroded market share for air travel;
DEMAND – Why is demand so fickle?

The inability to cover costs has led carriers to cut costs by reducing service, thereby reducing product differentiation. The commoditization of air travel has left airlines with little opportunities for product differentiation other than price; service has deteriorated industry-wide;

- Air travel is a credence good;
- Air travel is an intermediate good;
- Air travel is, for many travelers, a fungible commodity, particularly for short flights.
Increasingly, consumers view transportation as a fungible commodity
New Search Engines Add to Commoditization of the Product
DEMAND – Why is demand so fickle?

Demand can be chilled by recession, war, terrorism, or health concerns (e.g., SARS).

Thai Airways tries logo cover-up after A330-300 skids off runway

STEVE CREEDY The Australian September 03, 2013 4:19PM

A Thai Airways plane takes off as another, with its logo and name covered up, rests on ground the morning after it skidded off the runway in Bangkok. Source: AFP.
DEMAND – Why is demand so fickle?

Price elasticites of demand are segmented along leisure and business traveler lines;

- Business travelers tend to be less-price sensitive than leisure travelers;
- Business travel is paid for with pre-tax dollars, and usually results in tangible benefits, such as increased sales;
- Leisure travel is paid for in post-tax dollars, results in intangible benefits, and can be postponed if times are bad;
- The market also is segmented according to distance, with surface modes of transport competing for short-distance trips;
Demand-Based Pricing

Passenger Market Segmentation

- Business Traveler
  - Large Corporation
  - Small Business
- VFR
  - Emergency Visit
  - Leisure Visit
- Leisure Traveler
  - The Wealthy
  - The Not So Wealthy
Rules of Thumb

+1% in disposable income = +2.7% traffic

-10% in fares = +3% traffic

+10% in fares = -3% traffic

+7% revenue

20% of pax = 80% of profit

5% of pax = 40% of revenue

>10 trips a year = 45% of trips flown = 8% of pax
Demand for Air Freight Transport

For cargo, air freight caters to high-value, time-sensitive shipments, because the cost of moving freight by air is high, and many goods can be routed via another mode of transport.

If it is of high-value, the goods can absorb the high cost of air freight in its purchase price.

If it is time-sensitive (such as perishable fish or flowers), it often must move by air or not at all.
We now examine the relationship between COST and PRICE which, too often, tend to intersect at an unsustainable level.
COSTS – Why do airlines have difficulty covering their Fully Allocated Costs?

Airlines are capital intensive.
Airlines are labor intensive.
Airlines are safety intensive, and therefore highly regulated.
COSTS – Why do airlines have difficulty covering their Fully Allocated Costs?

Fixed Costs + Variable Costs = Fully Allocated Costs

Once aircraft are purchased, flight crews trained and departures scheduled, costs are disproportionately Fixed.

The marginal costs of adding an additional passenger to a scheduled flight are nil;

The seat is a perishable commodity, and cannot be warehoused and sold another day.

Joint costs are difficult to ascribe to individual passengers crossing a network hub.
COSTS – Why do airlines have difficulty covering their Fully Allocated Costs?

As a rule of thumb:

- Larger aircraft have lower CASM than small aircraft;
- However, smaller aircraft have lower block-hour and trip costs;
- Aircraft enjoy a cost-taper over distance:

![Graph showing the relationship between average sector length and CASM for different airlines.](image-url)
Network Carriers Have Higher Costs than Point-to-Point Carriers
AIRCRAFT DIRECT OPERATING COSTS
DELTA AIRLINES // AUGUST 12, 2010 // LAX-DTW-JFK

TOTAL LAX-DTW: $13,880
TOTAL DTW-JFK: $3,872
TOTAL ONE-WAY TRIP: $17,752
COSTS – Why do airlines have difficulty covering their Fully Allocated Costs?

Aircraft are expensive machines that only produce Available Seat Miles only when they are aloft; Hubbing and maintaining a frequent flight schedule drives costs up by:

• Requiring relatively smaller aircraft;
• Creating congestion and delay during the hub rotation, and idle ground facilities between hub banks;
• Resulting in lower equipment and facilities utilization and higher fuel consumption.
COSTS – Why do airlines have difficulty covering their Fully Allocated Costs?

Fuel costs are volatile; carriers can hedge fuel to reduce volatility, but hedging is gambling, expensive gambling. A one cent increase in fuel costs US airlines an extra $180 million annually.
COSTS – Why do airlines have difficulty covering their Fully Allocated Costs?

Fuel costs are volatile; carriers can hedge fuel to reduce volatility, but hedging is gambling … expensive gambling.

Aircraft are expensive, though they can be leased.

Airports and air navigation service providers are natural monopolies that, absent regulation, can charge whatever the market will bear.

Inclement weather can delay or ground aircraft.

Organized labor has the ability to extort higher wages and lower productivity by striking.

Governments tax airlines unmercifully.

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<table>
<thead>
<tr>
<th></th>
<th>Boston-San Diego on American</th>
<th>Chicago-Frankfurt on Lufthansa</th>
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<tbody>
<tr>
<td>Base fare</td>
<td>$593.49</td>
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<td>U.S. federal tax</td>
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<td>Security fees</td>
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<tr>
<td>Airport charges</td>
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<tr>
<td>Fuel surcharge</td>
<td>NA (not applicable)</td>
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<td>Customs, immigration and agriculture inspection fees</td>
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<td>17.50</td>
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<tr>
<td>Total taxes and fees</td>
<td>86.51</td>
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<tr>
<td>Total ticket cost</td>
<td>680.00</td>
<td>1,488.65</td>
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</table>

Source: The Wall Street Journal
COSTS – Why do airlines have difficulty covering their Fully Allocated Costs?

Airlines are a service industry, in which customer-service employees are largely unsupervised. Organized labor has the ability to extort higher wages and lower productivity by striking or by sabotaging service and increasing costs.
## Sample Round-Trip Itinerary: Peoria (PIA) - Raleigh/Durham (RDU) via Chicago O'Hare (ORD)

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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<tbody>
<tr>
<td><strong>Base Airline Fare</strong></td>
<td><strong>$238.51</strong></td>
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<td>Federal Ticket (Excise) Tax (7.5%)</td>
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<tr>
<td>Passenger Facility Charge (PIA)</td>
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<tr>
<td>Federal Flight Segment Tax (PIA-ORD)</td>
<td>3.90</td>
</tr>
<tr>
<td>Federal Security Surcharge (PIA-ORD)</td>
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<tr>
<td>Passenger Facility Charge (ORD)</td>
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<td>Federal Flight Segment Tax (ORD-RDU)</td>
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<td>Federal Security Surcharge (ORD-RDU)</td>
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<tr>
<td>Passenger Facility Charge (RDU)</td>
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<td>Federal Flight Segment Tax (RDU-ORD)</td>
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<td>Total Taxes</td>
<td><strong>61.49</strong></td>
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<td><strong>Total Ticket (Fare + Taxes)</strong></td>
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<tr>
<td>Taxes as % of Fare</td>
<td><strong>25.8%</strong></td>
</tr>
<tr>
<td><strong>Taxes as % of Ticket</strong></td>
<td><strong>20.5%</strong></td>
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</tbody>
</table>
Cost Breakdown By Category

- FUEL: 21.2%
- LABOR: 25.0%
- TRANSPORT-RELATED EXPENSES: 14.0%
- PROFESSIONAL SERVICES: 10.0%
- OTHER OP. EXPENSES: 7.1%
- AIRCRAFT RENTS & OWNERSHIP: 7.8%
- NON-AIRCRAFT RENTS & OWNERSHIP: 4.7%
- INTEREST: 0.0%
- UTILITIES & OFFICE SUPPLIES: 7.1%
- NON-AIRCRAFT INSURANCE: 4.7%
- ADVERTISING & PROMOTION: 7.8%
- COMMUNICATION: 20.0%
- PASSENGER COMMISSIONS: 30.0%

Source: Montie Brewer
LCCs have a cost advantage over Network Carriers

Source: USA Today
PRICE – Why do airlines offer prices below Fully Allocated Costs?

The commoditization and perishability of seats drives prices down.
The commoditization and perishability of seats drives prices down. If a competitor with excess inventory drops or needing a cash infusion prices below fully allocated costs, a carrier with unsold seats has two options:

1. Meet the competitor’s price, and lose money; or
2. Keep its price firm, and lose more money.

Variable costs are relatively low; too often, carriers charge a price which covers variable costs and makes some contribution to fixed overhead, but fails to achieve fully allocated costs.

Individual carrier behavior is usually rational; collective industry behavior can be irrational.

The Antitrust Laws prohibit collective efforts to achieve rationality.
Start of Deregulation
World economic growth and airline profit margins

Net post-tax profits as % of revenues

World GDP growth

Net post-tax profit margin


2012-13
Revenue arrives before product delivery; any sharply upward increase in costs cannot be recaptured. Passengers are resistant to sharp price increases. Unlike air freight, passengers do not have to travel to market, and can refrain from travel if prices jump sharply.
PRICE – Why do airlines offer prices below Fully Allocated Costs?

Internet travel distributors provide instant price transparency.
### The State of the American Airline Industry

#### Fee Comparison:

<table>
<thead>
<tr>
<th></th>
<th>CHECKED BAGS</th>
<th>INFLIGHT WIFI</th>
<th>UNACCOMPANIED MINOR</th>
<th>TELEPHONE BOOKING</th>
<th>PETS</th>
<th>FLIGHT CHANGE</th>
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<td><strong>AirTran</strong></td>
<td>$15 FIRST</td>
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<td>$7.95 MOBILE</td>
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<td>$0 STANDBY</td>
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<td><strong>AA</strong></td>
<td>$15 FIRST</td>
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<td>$7.95 MOBILE</td>
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<td><strong>Delta</strong></td>
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<td>$150 CARGO</td>
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<td><strong>jetBlue</strong></td>
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<td><strong>Spirit Airlines</strong></td>
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<td><strong>United</strong></td>
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<td><strong>US Airways</strong></td>
<td>$15/$30</td>
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<td>$150</td>
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</table>
2012 worldwide airline financial results per departing passenger

- **Revenues**
  - Air fare $181.91
  - Cargo & other $34.26

- **Costs**
  - $225.70

- **Net profit**
  - $2.54

Sources: Ancillary revenues from Idea Works 2012 estimate, other data IATA. Costs include operating items and debt interest.
PRICE – Why do airlines offer prices below Fully Allocated Costs?

Revenue arrives before product delivery; any sharply upward increase in costs cannot be recaptured.
Passengers are resistant to sharp price increases.
Unlike air freight, passengers do not have to travel to market, and can refrain from travel if prices jump sharply.
In the long run, a carrier must cover its Fully Allocated Costs, or face bankruptcy.
In the long run, the airline industry must cover its cost of capital, or it will be unable to meet the needs of the traveling public.
Twelve Days Of Christmas

Well, OK, fifteen

Source: Montie Brewer
Questions?