Fares and Competition in US Markets: Changes in Fares and Demand Since 2000

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Objectives & Approach

Objectives

- Track fare and traffic changes in US domestic markets since 2000
  - By distance and market size
  - In hub vs. non-hub markets
  - In markets with LCC presence and new entry
- Examine relative fares of major competitors
  - Which airlines obtain a “yield premium” in these markets?

Data Sample

- Top 1000 US O+D Markets extracted from O&D Plus
- Markets were matched across each year 2000-2005
  - 856 matching markets – Total “Market Sample”
Passenger volumes rebounded by 2005 to 4% above 2000 levels after dropping by 11%.
After dropping 16%, fares increased slightly in 2005 but were still 14.8% lower than in 2000.
Total Market Revenues

Slow recovery since 24% drop from 2000 to 2002, but still 11% below 2000 levels.
Distribution of Fare Changes

Most, but not all markets have seen lower fares.
Average fares 24% lower in long haul markets, while short haul fares have remained stable.

Average Fare - Total Market Sample - by distance
Passenger traffic in short haul markets dropped 13%, while increasing 15% in long haul markets.
Average fares have dropped more in hub markets, but started at much higher levels and remain higher than in non-hub markets.
Lower fares in hub markets have reduced total revenues by 17%, given similar 3-4% traffic growth in hub and non-hub markets.
LFA Market Presence and Fares

- Fares decreased more for markets with small LFA market shares (than those with bigger LFA presence), but remain higher overall.
- Largest (29%) decrease in fares observed for markets with new entry by LFA since 2000.

**Average Fare - Total Market Sample- by LFA MS**


Decrease rates:
- LFA <10% 2004: -16.6%
- LFA > 10% 2004: -13.0%
- New Entry (00-04): -29.1%
LFA Entry and Traffic Growth

- Traffic increased in markets with LFA presence, but decreased in markets with small/no LFA share.
- Greatest traffic increase (24%) in markets with new LFA entry 2000 to 2005.

Total Passengers PDEW - Total Market Sample - by LFA MS

- LFA <10% 2004: -4.2%
- LFA >10% 2004: +7.4%
- New Entry (00-04): +23.9%
### Average Fare Regression Model

\[
FARE = \alpha + \beta_1 \times DIST + \beta_2 \times PAX + \beta_3 \times LFA + \beta_4 \times CONC + \beta_5 \times HUB
\]

**2000**

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**2004**

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Note: All coefficients are significant at 1% level, except PAX00 which is significant at 10% level.

- Larger markets had lower fares, more so in 2004
- Presence of LFA reduces fares, but less so in 2004
- Higher fares in more concentrated markets, less so in 2004
- “Hub premium” still exists, but cut by half between 2000 and 2004
Calculated “yield index” for each airline in each market of the Total Sample:

\[ YI_{ij} = \frac{\text{Airline i Yield in a market } j}{\text{Avg Yield in market } j} \]

Aggregate yield index for each airline by year, weighting by passenger volumes in each market:

\[ AX_i = \frac{\sum (YI_{ij} \times \text{Pax of airline i in market } j)}{\sum (\text{Pax of airline i})} \]
Legacy Carriers with Yield Premium

- CO, UA, NW and AA have maintained above average fares
- AA yield index has decreased, moving closer to 1.0 by 2005
- DL and US obtained little or no yield premium for most years during the period 2000-05.
- Both US and (especially) HP have increased their yield premium in recent past.

![Aggregate Yield Index](chart.png)
Largest Low Fare Airlines

- The largest LFA have below average yields
- B6 (JetBlue) and WN (Southwest) closer to 1.0 than FL (AirTran)
Remaining Major Carriers

F9 (Frontier), NK (Spirit) and TZ (Am. Trans Air) also below average yields, while AS (Alaska) premium is disappearing.
Fare and traffic trends differ by distance:
- Short haul fares have remained stable, while traffic has decreased 13%
- Long haul market fares down 24%, traffic up 15%

LFA presence lowers fares and increases traffic
- Greatest impacts observed for new LFA entry

Hub fares decreased more than non-Hub fares
- But hub premium is still evident

Largest Legacy airlines have maintained a yield premium over LCCs in top markets:
- DL is the exception, while US/HP have shown upward trend
- WN and B6 are closer to market averages than smaller LCCs
Fares and Competition – Next Steps

- Continue updates as 2006 data become available
  - Capture recent upward fare movement
  - Determine whether market differences persist

- More detailed analysis to examine correlation between individual carrier yield indices and
  - Markets shares, market concentration measures
  - LFA presence and timing of entry
  - For hub vs. non-hub markets

- Relationship of yield premium to capacity shifts
  - Changes in seat capacity and load factors
Total revenues decreased most in long haul markets despite traffic growth – down 12% overall.
Hub vs. non-Hub Analysis

Hub Definition

- Connecting traffic > 50% of total traffic
- Exclude international entry airports
  - Cincinnati, Charlotte, Atlanta, Houston, Dallas/Fort Worth, Memphis, Chicago O’hare, Detroit, Minneapolis/St. Paul, Pittsburgh, Denver.

Distribution

- Top 1000 US Markets
- Total Market Sample (856 markets)
  - Hub Markets (365 markets)
  - Non-Hub Markets (491 markets)
The hub/non-hub segmentation has no real difference in traffic growth as both segments experienced a passenger increase between 3-5%.

![Total Passengers PDEW - Total Market Sample - Hub vs non-Hub](chart.png)
Analysis of Competition by Low-Fare Airlines

Definition

- Low-fare competition is significant for total low-fare carriers market share > 10%

Distribution

- Total Market Sample (856 markets)
  - LFA > 10% Markets (579 markets)
  - LFA < 10% Markets (277 markets)

2004

- Market Share of total LFA > 10%
- Market Share of total LFA < 10%

- From LFA >10% to <10% (legacy new entrants) – 22 markets.
- From LFA <10% to >10% (LFA new entrants) – 104 markets.

2000

- LFA > 10% Markets (497 markets)
- LFA < 10% Markets (359 markets)
Huge revenue drop of 20% for markets with small LFA presence.
Analysis of Competition by Concentration Level

Concentration Definition (HHI Index)
- Low concentration: HHI < 2000
- Moderate concentration: 2000 < HHI < 4000
- High concentration: HHI > 4000

Distribution

Top 1000 US Markets

Total Market Sample (856 markets)

- HHI < 2000
- 2000 < HHI < 4000
- HHI > 4000

- Low Conc. Markets (43 markets)
- Moderate Conc. Markets (309 markets)
- High Conc. Markets (504 markets)
As a result, total revenues are down for all three concentration levels between 7 and 13%.

### Total Revenues PDEW - Total Market Sample - by concentration

- **Low Concentration**: -7.1%
- **Moderate Concentration**: -13.0%
- **High Concentration**: -10.1%
# Model of Change in Average Fare

**Model:**

\[
\text{CHGFARE} = \alpha + \beta_1 \times HUB + \beta_2 \times DIST + \beta_3 \times PAX00 + \beta_4 \times FARE00 + \beta_5 \times LFA00 + \beta_6 \times CHGLFA + \beta_7 \times CONC00 + \beta_8 \times CHGCONC
\]

## Change in Fare Linear Results

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Note: All coefficients are significant at 5 % level.

## Change in Fare Log-Linear Results

Note: All coefficients are significant at 5 % level.