

Introduction to AIRLINE ECONOMICS



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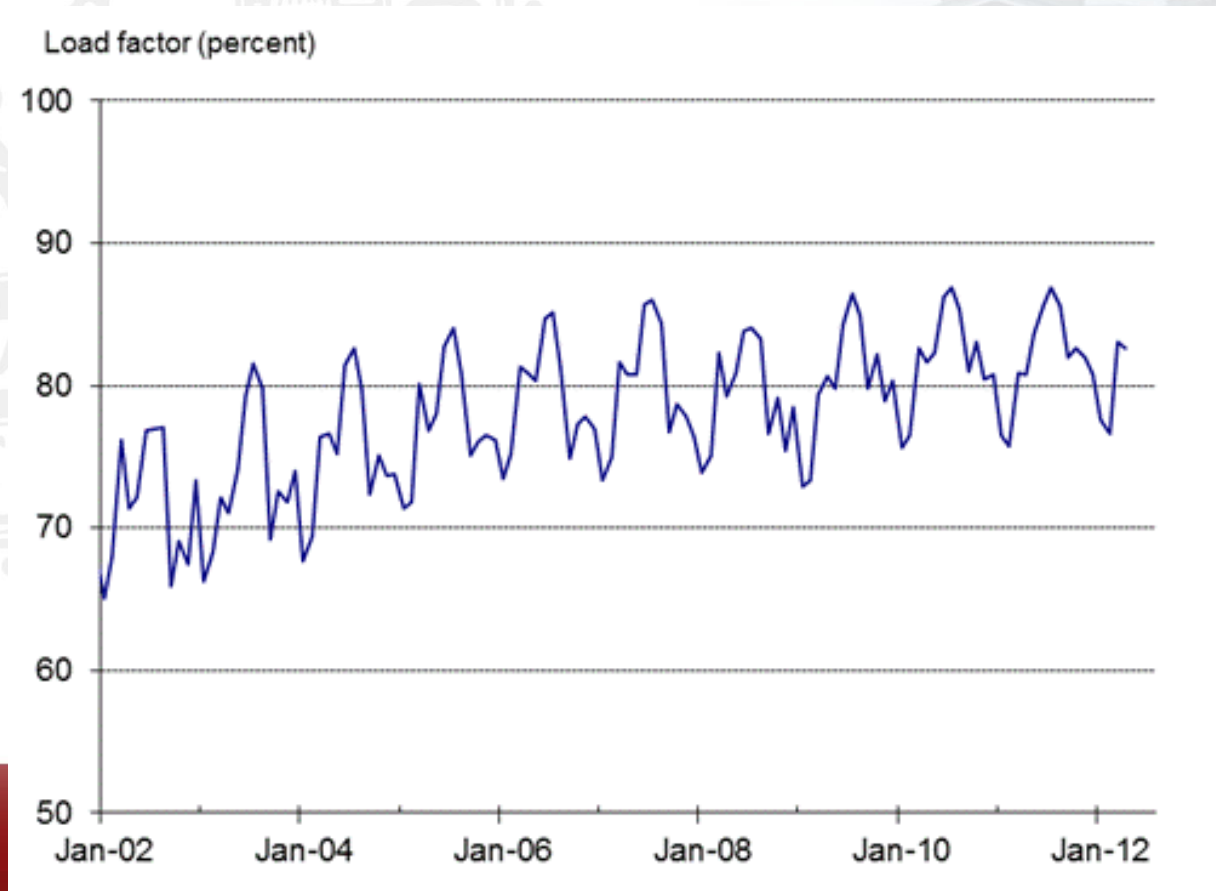
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We first examine the laws of SUPPLY and DEMAND, which unhappily, too often tend to be in disequilibrium.



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

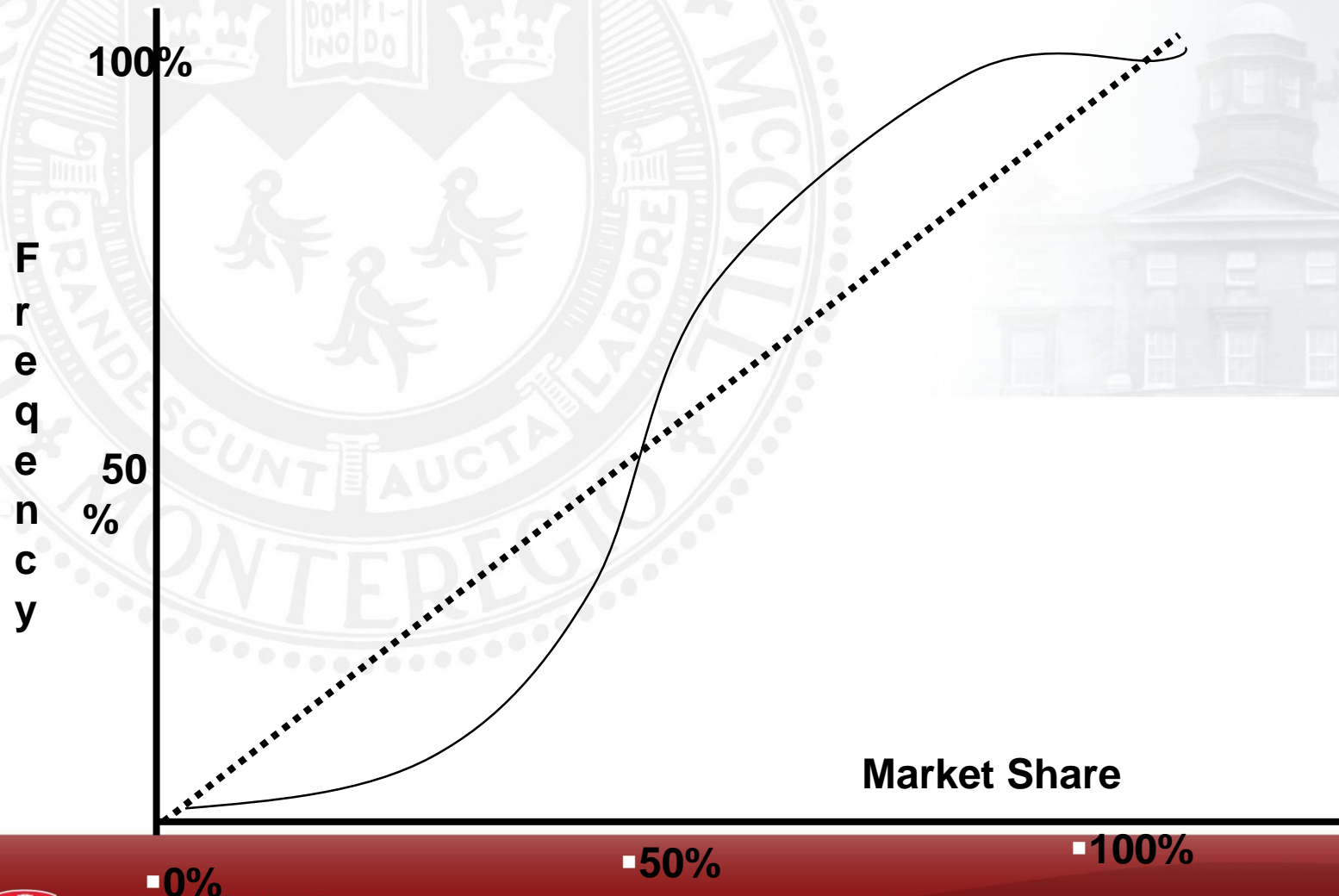
Demand is highly cyclical, and inventory cannot be warehoused;



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



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

Investment is, too often, irrational;

Governments provide export financing;

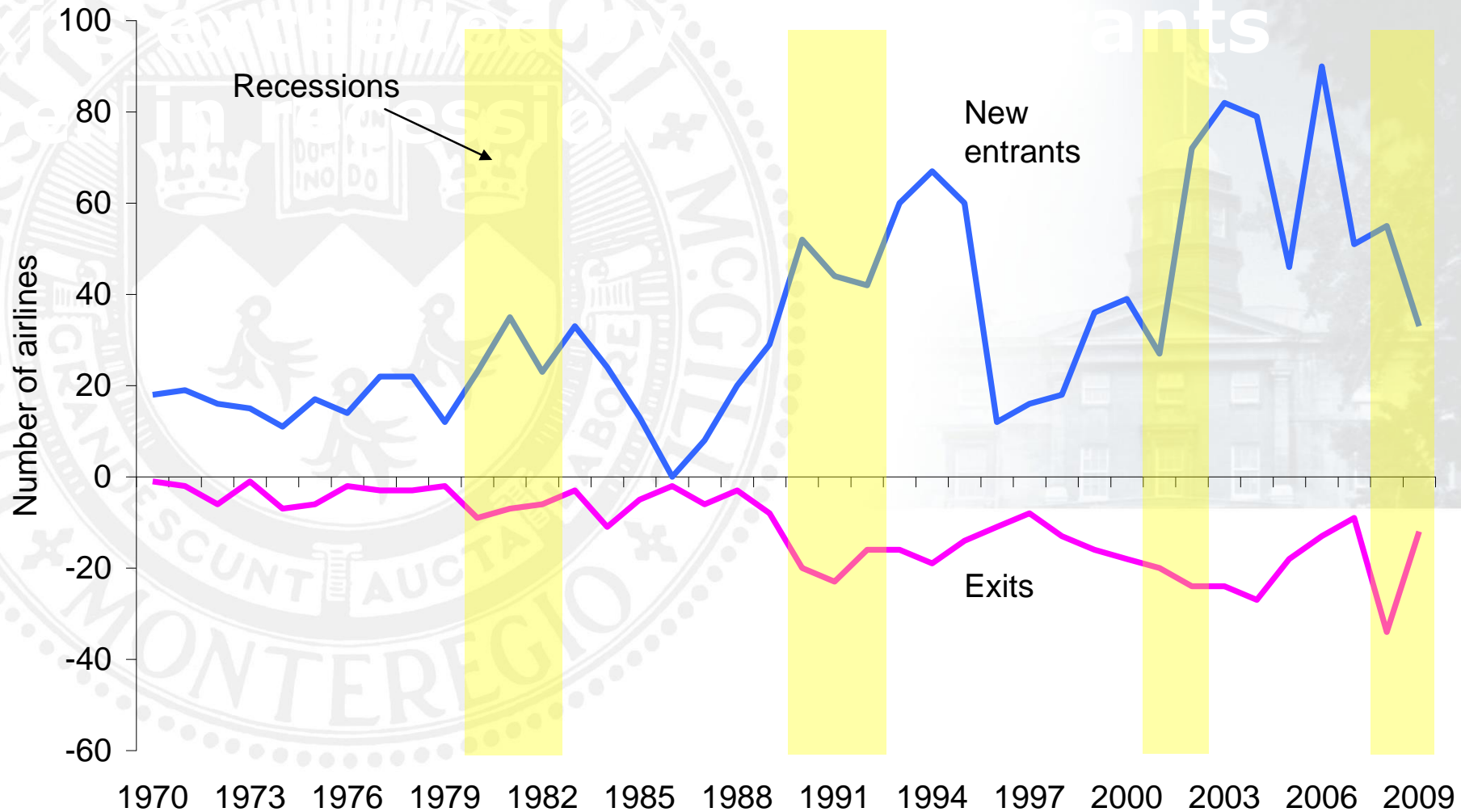
Bankruptcies sometimes redistribute, but do not eliminate, capacity;

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

Airline new entrants and exits



DEMAND – Why is demand so fickle?

Demand is highly cycle, 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.



wiseGEEK

Increasingly, consumers view transportation as a fungible commodity





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Non-stop	\$134 total \$144				\$507 total \$517			
1 stop	\$240 total \$269	\$134 total \$150	\$134 total \$150	\$134 total \$155	\$240 total \$262	\$240 total \$262	\$526 total \$545	\$525 total \$545
2+ stops		\$468 total \$493						

Fares are per person in US dollars, using e-tickets. Total fare includes all [taxes and fees](#).

[Additional baggage charges may apply.](#)

Some itineraries require [paper tickets](#) with an additional charge. Changes after booking are subject to [change fees](#).

Sort flights by:

[Lowest price](#)

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Source: Montie Brewer

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 09, 2013 4:19PM

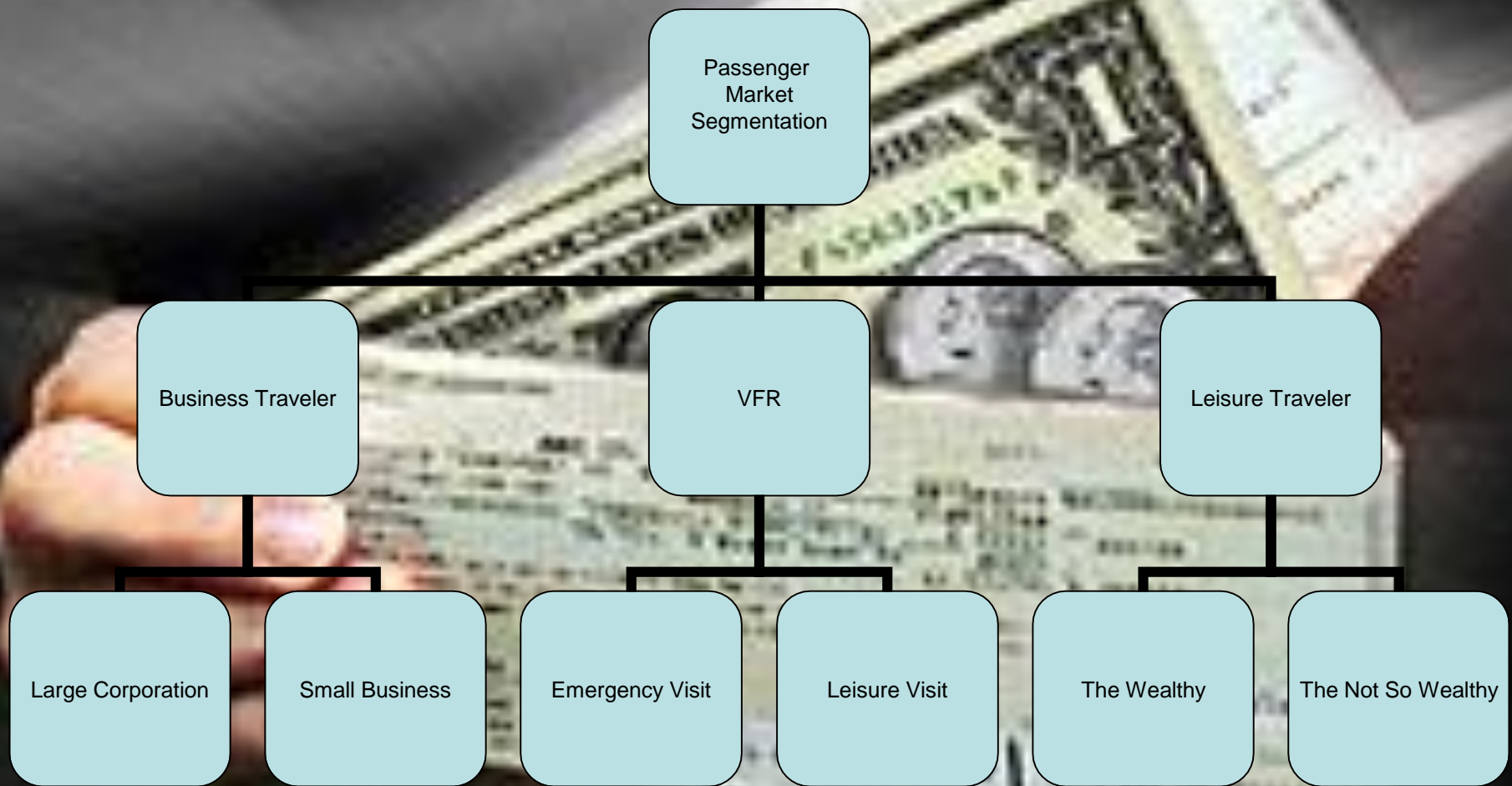


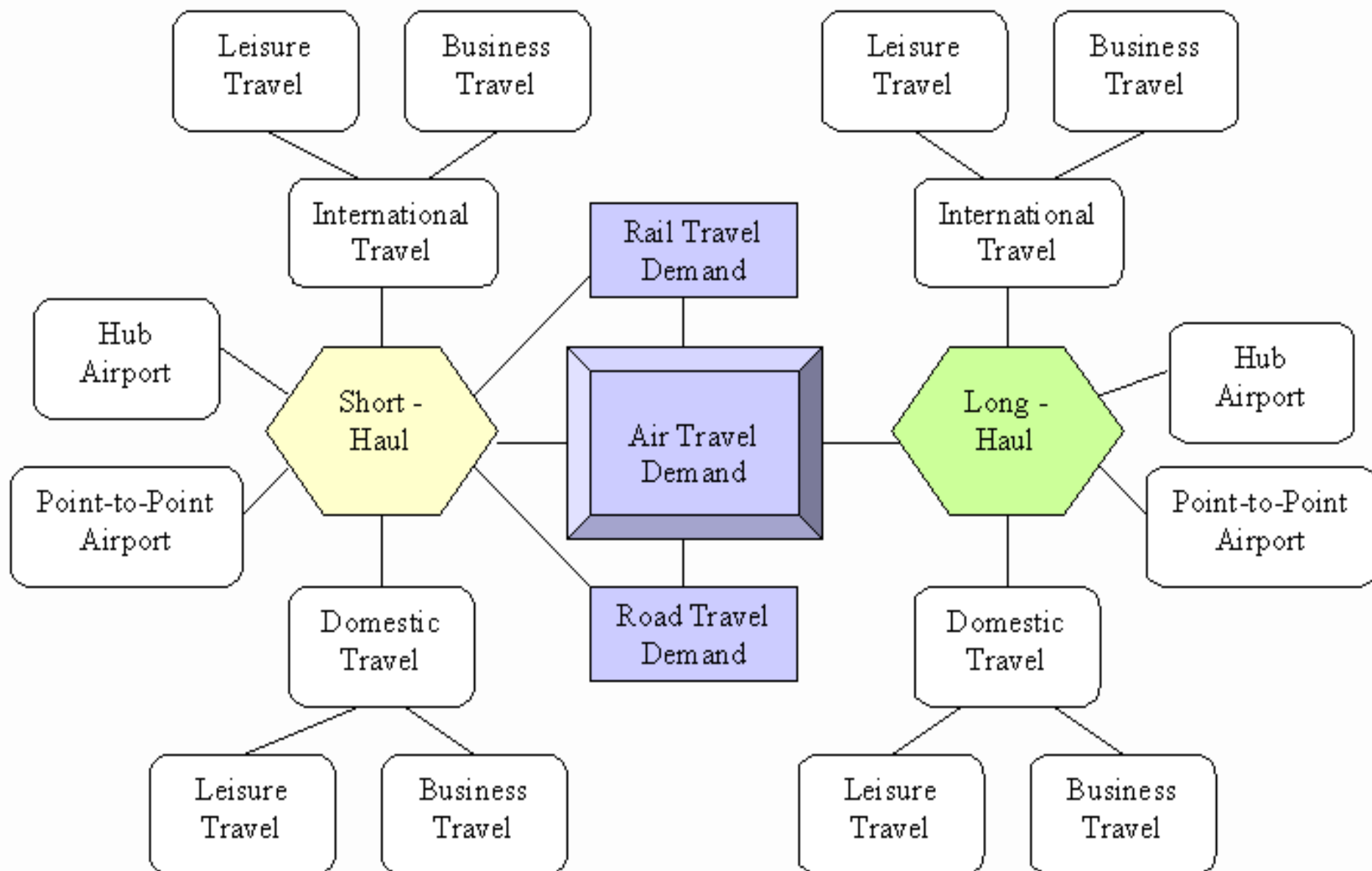
A Thai Airways plane takes off as another, with its logo and name covered up, rests on ground the morning after it skidded off the runway in Bangkok. Source: AFP

DEMAND – Why is demand so fickle?

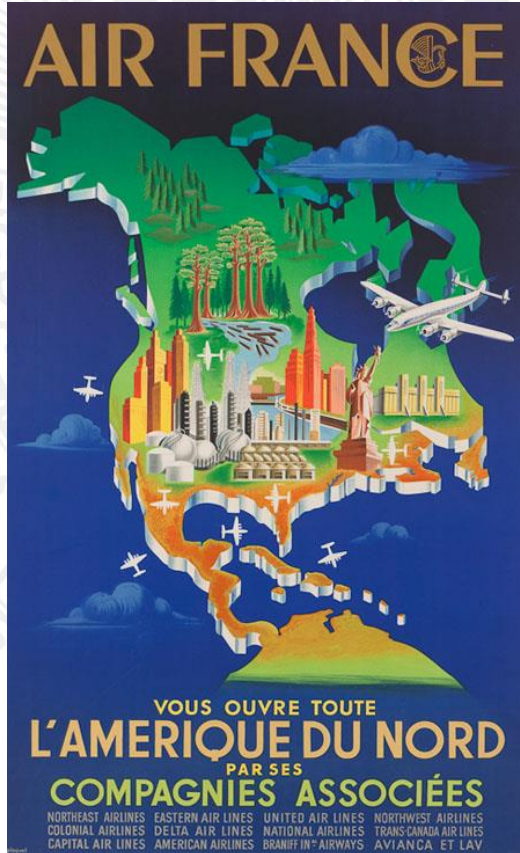
Price elasticities of demand are segmented along leisure and business traveler lines;

- 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;





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

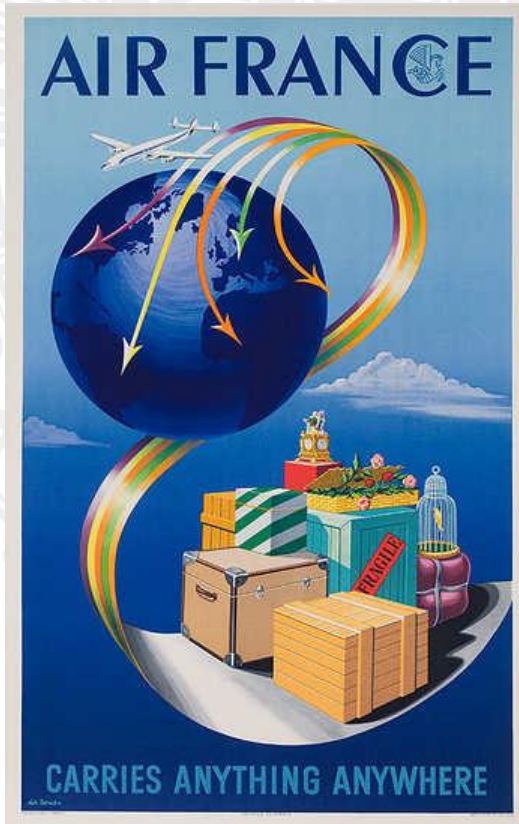
5% of pax = 40% of revenue

>10 trips a year = 45% of trips
flown = 8% of pax



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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.



CUTS OF BEEF

Chuck

1. Stew
Ground beef
2. Chuck roast
Blade roast and steak
3. Boneless shoulder pot roast and steak
Arm pot roast and steak
4. Cross-rib roast
Short ribs

Rib

1. Standing rib roast
Rib steak
Rib-eye (Delmonico) roast and steak
2. Short ribs

Short Loin

1. Top loin steak
Club steak
2. Top loin steak
T-bone steak
Filet mignon
(tenderloin)
3. Top loin steak
Porterhouse steak
Filet mignon

Sirloin

1. Pinbone sirloin steak
Boneless sirloin steak
2. Flatbone sirloin steak
3. Wedgetone sirloin steak
4. Tip steak
Tip roast
Cube steak
Kebabs

Foreshank and Brisket

1. Stew
2. Shank crosscut
3. Fresh brisket
Corned brisket

Short Plate

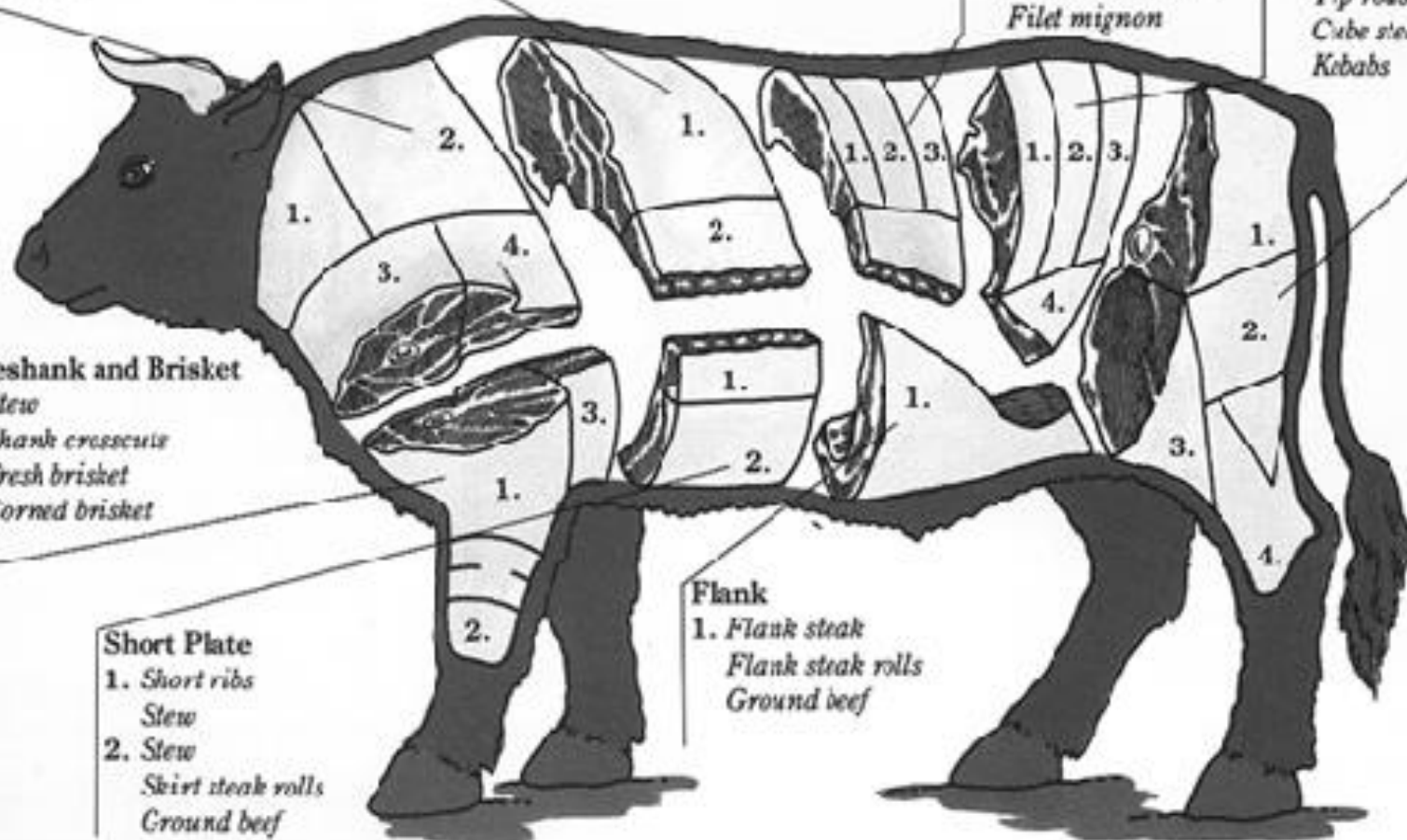
1. Short ribs
Stew
2. Stew
Skirt steak rolls
Ground beef

Flank

1. Flank steak
Flank steak rolls
Ground beef

Round

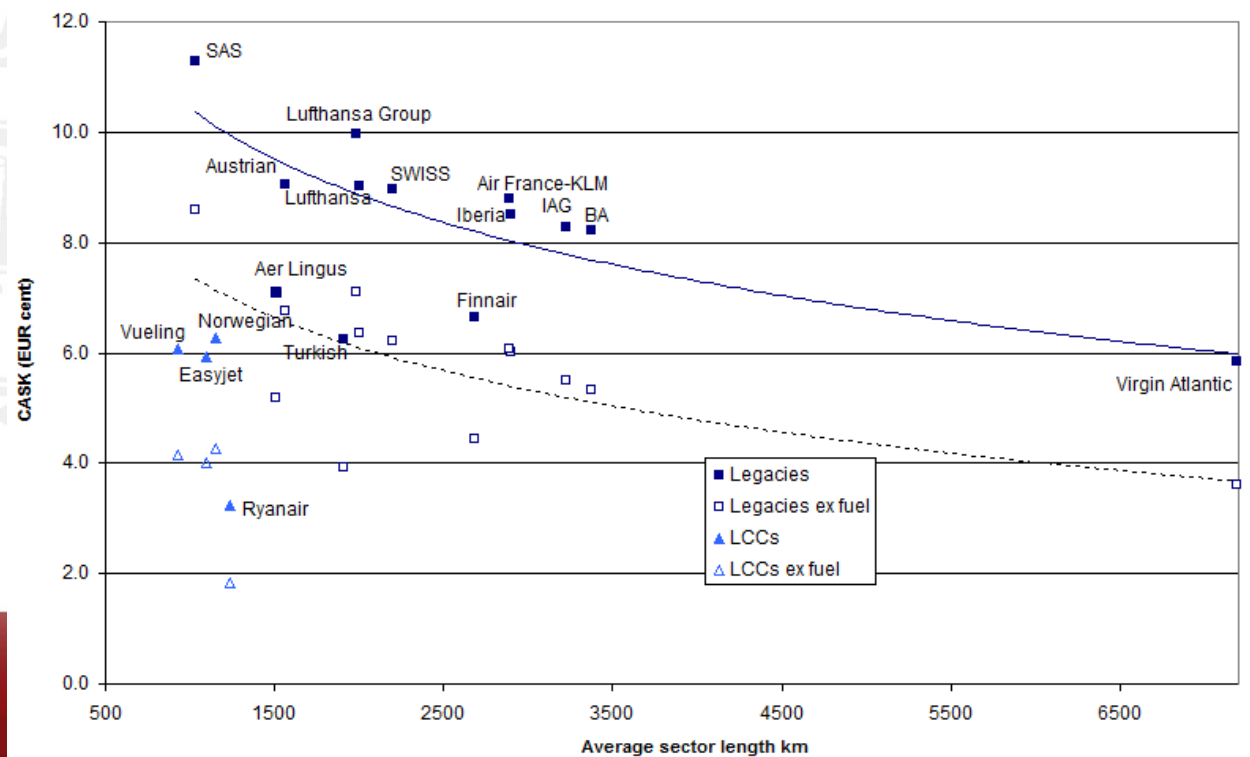
1. Boneless rump
roast
2. Round steak
Top round
steak
Bottom round
steak and
roast
Eye of round
Cube steak
3. Tip roast
Tip steak
Cube steak
Kebabs
4. Heel-of-round
roast
Ground beef



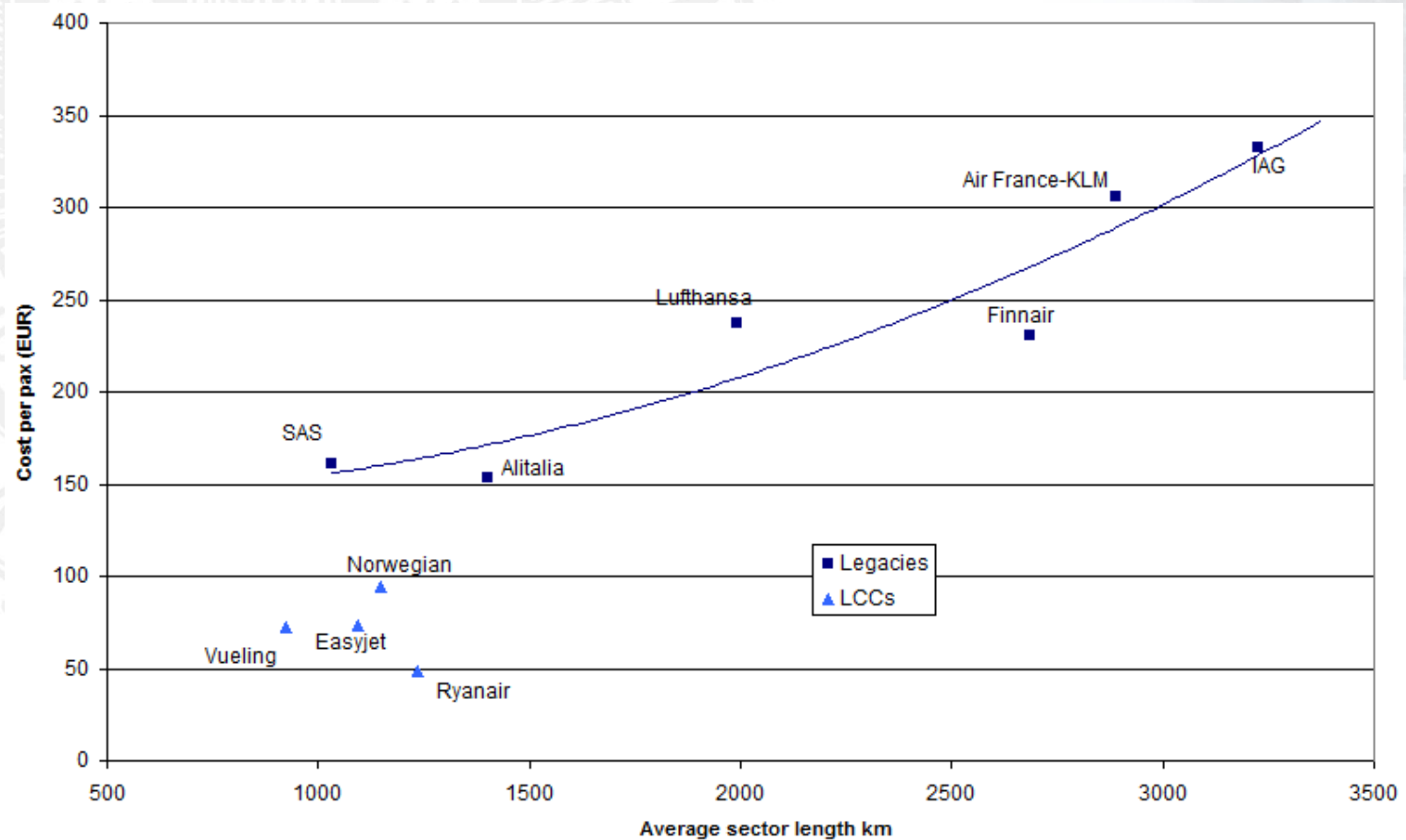
COSTS – Why do airlines have difficulty covering their Fully Allocated Costs?

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:



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.









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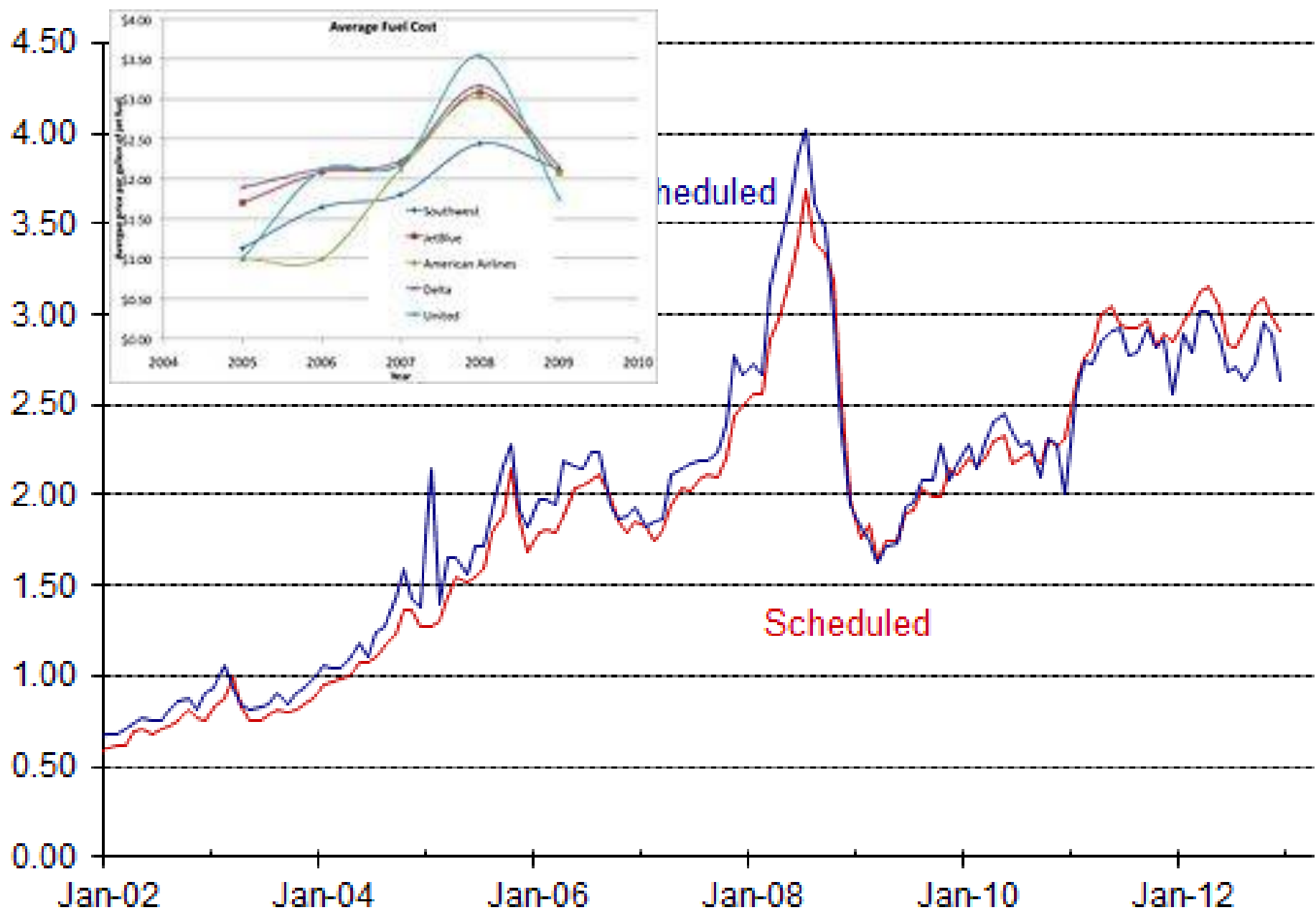


COSTS – Why do airlines have difficulty covering their Fully Allocated Costs?

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.

Dollars per gallon



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 de
Organized labor has the a
productivity by striking
Governments tax airlines

Oh, the Fees You'll Pay ...

Here are two sample air tickets with taxes, fees and surcharges broken out.

	Boston-San Diego on American	Chicago-Frankfurt on Lufthansa
Base fare	\$593.49	\$1,191.00
U.S. federal tax	58.51	30.80
Security fees	10.00	12.67
Airport charges	18.00	36.68
Fuel surcharge	NA	200.00
Customs, immigration and agriculture inspection fees	NA	17.50
Total taxes and fees	86.51	297.65
Total ticket cost	680.00	1,488.65

Source: the airlines. NA=not applicable

COSTS – Why do airlines have difficulty covering their Fully Allocated Costs?

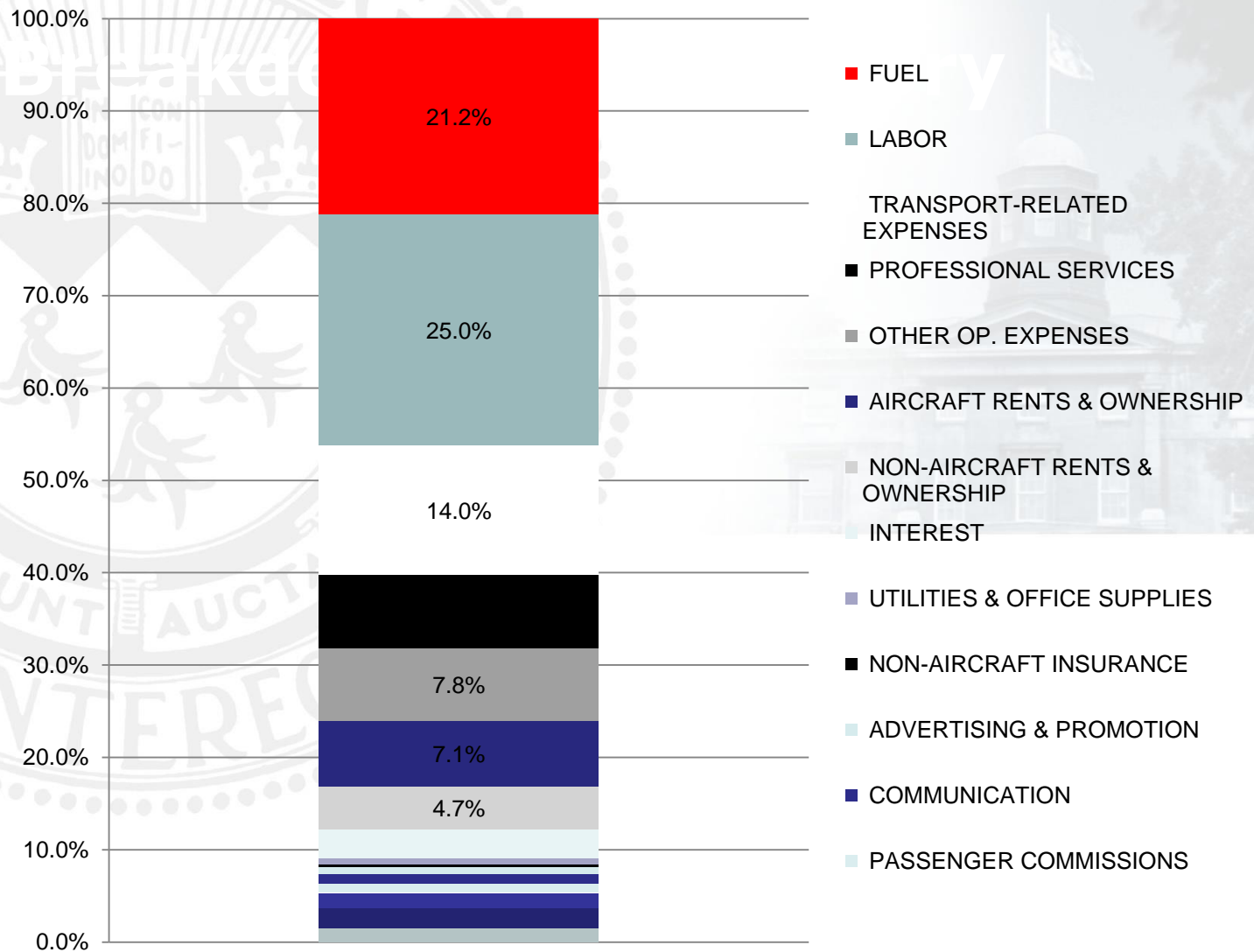
Airlines are a service industry, in which customer-service employees are largely unsupervised.

Organized labor has the ability to extort higher wages and lower productivity by striking or by sabotaging service and increasing costs.



Taxes

Sample Round-Trip Itinerary: Peoria (PIA) - Raleigh/Durham (RDU) via Chicago O'Hare (ORD)	
Base Airline Fare	\$238.51
: Federal Ticket (Excise) Tax (7.5%)	17.89
: Passenger Facility Charge (PIA)	4.50
: Federal Flight Segment Tax (PIA-ORD)	3.90
: Federal Security Surcharge (PIA-ORD)	2.50
: Passenger Facility Charge (ORD)	4.50
: Federal Flight Segment Tax (ORD-RDU)	3.90
: Federal Security Surcharge (ORD-RDU)	2.50
: Passenger Facility Charge (RDU)	4.50
: Federal Flight Segment Tax (RDU-ORD)	3.90
: Federal Security Surcharge (RDU-ORD)	2.50
: Passenger Facility Charge (ORD)	4.50
: Federal Flight Segment Tax (ORD-PIA)	3.90
: Federal Security Surcharge (ORD-PIA)	2.50
Total Taxes	61.49
Total Ticket (Fare + Taxes)	\$300.00
Taxes as % of Fare	25.8%
Taxes as % of Ticket	20.5%



LCCs have a cost advantage over Network Carriers



TRULY LOW COST

THE AIRASIA LOW-COST MODEL RESTS ON THREE PILLARS...

Point-to-Point Network

All short-haul AirAsia flights (four-hour flight radius or less) & medium-to-long haul AirAsia X flights are non-stop

RESULTS

No need for human resources & infrastructure at transit locations

BENEFITS

Huge cost savings

High Aircraft Utilisation

AirAsia is known for its relentless focus on high turnaround of flights

25 Turnaround time in minutes, among the fastest in Asia

RESULTS

More frequencies, more routes

BENEFITS

Customer convenience, greater cost efficiencies

No Frills Equals Low Fares

Frequent flyer miles and airport lounges are a strict no-no. Passengers have the choice of paying for in-flight meals, snacks and drinks

RESULTS

Lower fares

BENEFITS

Ancillary revenues

How come cheap airlines are so cheap?

Fastest growing segment of air travel are low fare airlines (LFAs), sometimes called low cost companies (LCC). LFAs now constitute 35% of scheduled intra-EU point to point traffic – and the cheap flights revolution in Europe only started in 1990 by Ryanair. In the USA it was the Southwest Airlines that has led the attack against high flights prices since 1971.

Low cost airline

Regular airline

So how cheap are the cheap flights? Average fare (€)

Ryanair	Easyjet	Aer Lingus	Southwest	Lufthansa	Air France	British Airways
44	65*	94	106,60*	235	267	324

Higher seat density – 737-300: 148 seats, single class cabin

Fast turnarounds (up to 25 min.) – higher utilization of the plane

Direct flights – point to point, no transfers, short routes

Smaller airports – cheaper; simple ground facilities

Tickets sold directly, mostly by Internet (easyjet – 95%)

No Frills – no additional costs

Standardised fleet (only one aircraft type) – cheaper maintenance, training

High variable-proportion of salary (up to 26 %), better HR utilisation

128 seats in a regular one

Turnaround slowed down by use of major airports with large amount of traffic (approx. 45 min.)

Transfers, long hauls

Bigger airports – more expensive

Many tickets sold by travel agencies, incurring extra charges

Entertainment programme, quick check in, lounges, paper tickets, business class, catering

Various aircraft

High basic salaries (variable proportion up to 11 %), trade union affiliation

The case of extreme productivity

Passengers per employee:

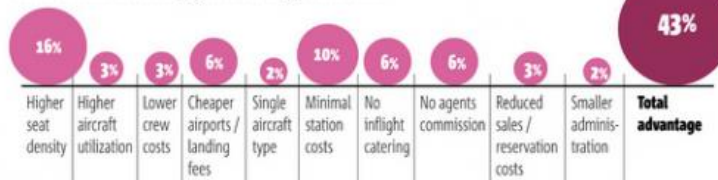
Easyjet: 6772

Ryanair: 9679

British Airways: 735

Air France/KLM: 715

Where do all those savings, on an average, come from?



Data based on information provided by ELFAA Presentation "Variations in Airport Charges", Ian Skeels – Secretary General, Aviation Industry Group – 2nd Annual Managing Airline Operating Costs Conference, Dublin 7 December 2005.

www.5Wgraphics.com



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Source: USA Today

PRICE – Why do airlines offer prices below Fully Allocated Costs?

The commoditization and perishability of seats drives prices down.



PRICE – Why do airlines offer prices below Fully Allocated Costs?

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.

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- Davao
- Taipei
- Hong Kong
- Singapore
- Kuala Lumpur

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FROM
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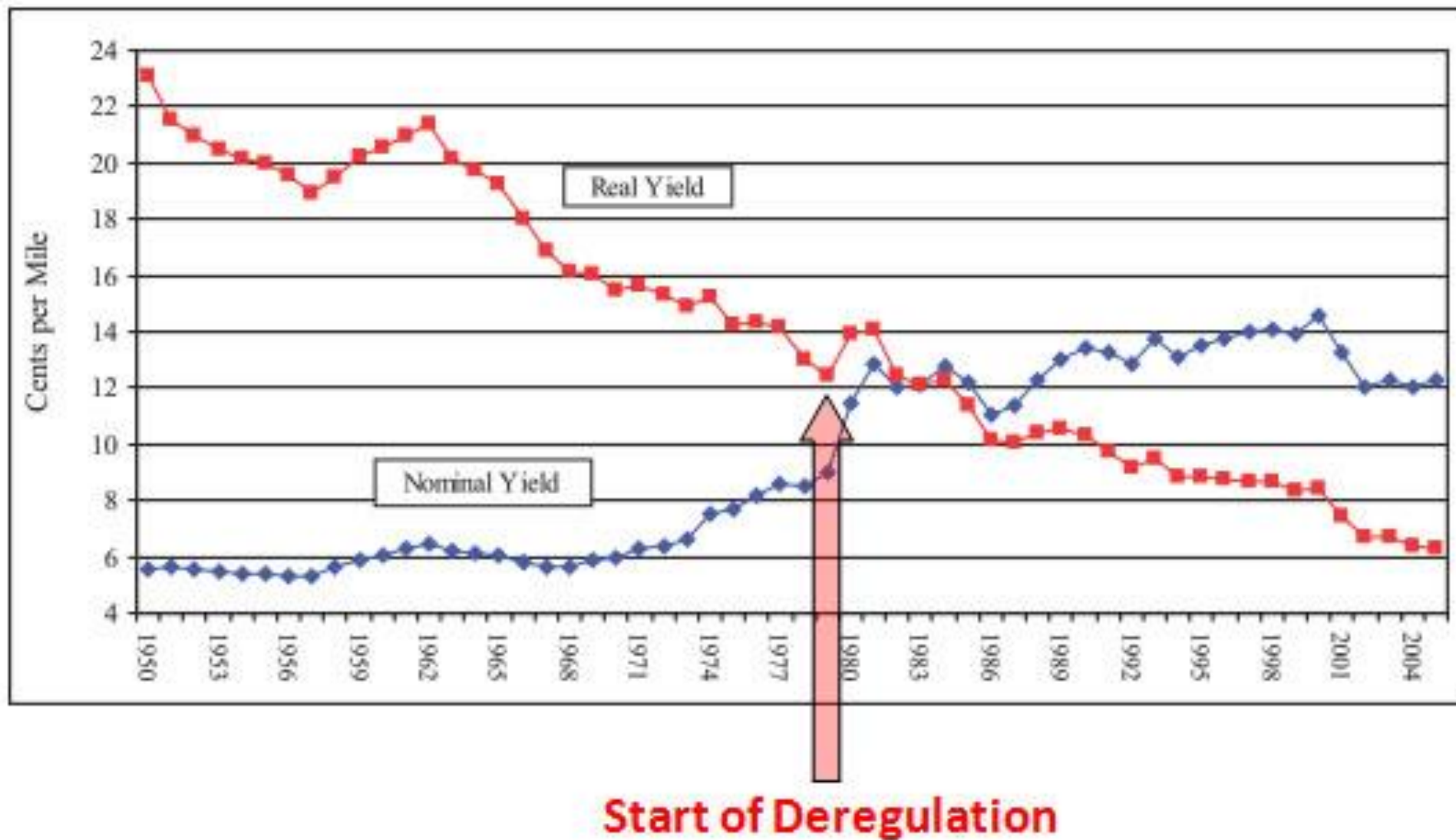
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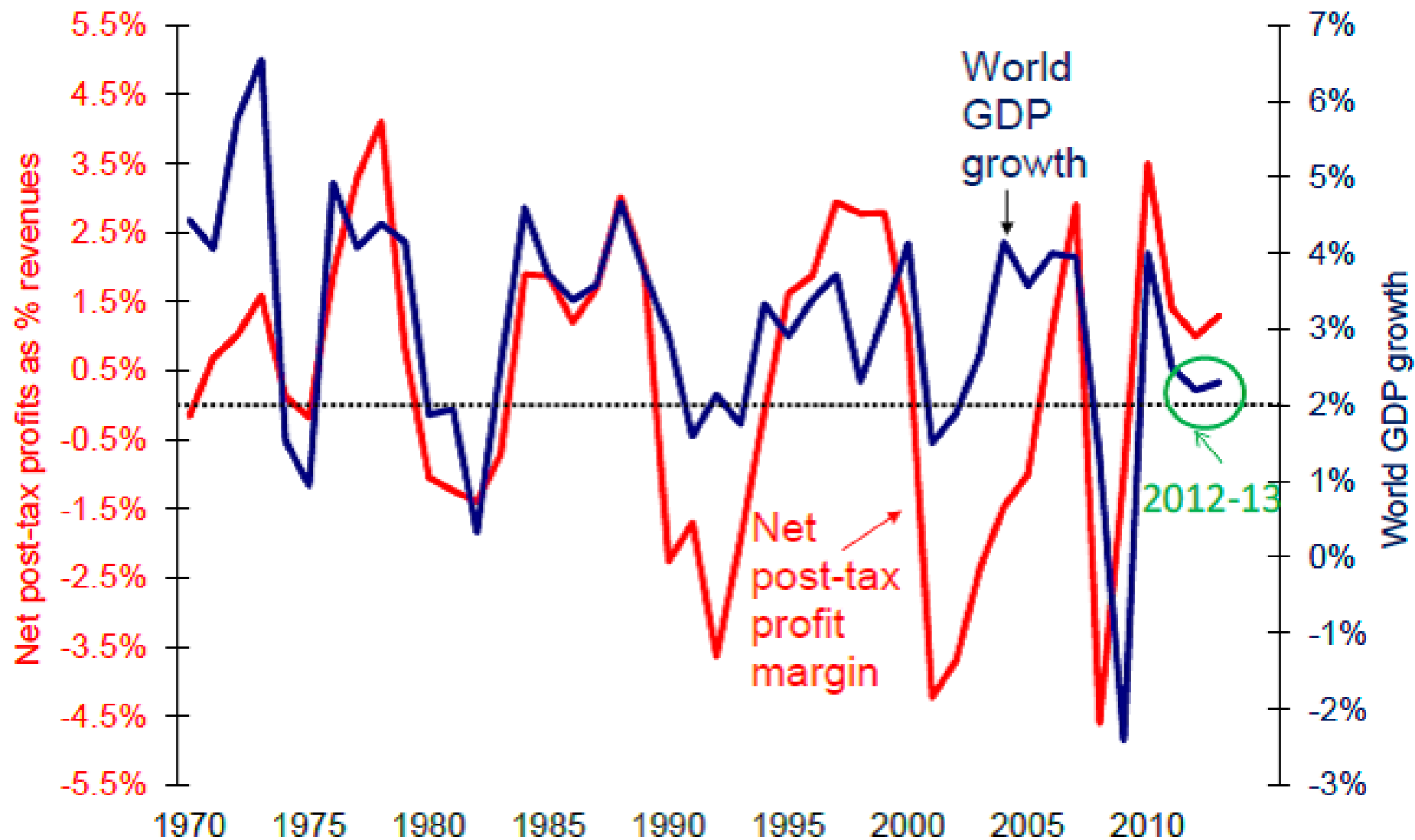
Hertz
GLOBAL
SALE



McGill



World economic growth and airline profit margins



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.



PRICE – Why do airlines offer prices below Fully Allocated Costs?

Internet travel distributors provide instant price transparency.

The screenshot shows a web browser window displaying the Alaska Airlines website. On the left, a sidebar for 'Yapta' is visible, explaining its function and providing an 'Enable Yapta' button. The main content area shows a search for 'Available Flights' with a table of flight options. The table includes columns for fare, flight number, departure/arrival times, and details. The first flight listed is from Seattle (SEA) to Chicago-O'Hare (ORD) on November 21, with a fare of \$1076.00 + taxes, totaling \$1117.60. Other flights include Chicago-O'Hare to New York-LeGuards (LGA) and New York-LeGuards to Chicago-O'Hare.

Yapta Sidebar:

Tag it with Yapta!
You must enable Yapta to tag flights on this site.

Why Use Yapta?

- 1 **BEFORE** you buy: get the best price
- 2 **AFTER** you buy: get refunds & credits

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The Yapta buttons are not a part of any web page provided by the airline or travel site, and neither the Yapta buttons nor Yapta are endorsed, approved, sponsored, or backed by the airline or travel site.

Available Flights:

Fares are quoted in U.S. dollars, per person, round trip, subject to change without notice until held or purchased.

Select Roundtrip Flight or [choose Separate Outgoing and Return Flights](#) [Change Search](#)

[Current Connection](#)

Fare Basis	Rate*	Operated by	Flight	Departure Time Basis: Outgoing / Return	Arrival Time Basis: Outgoing / Return	Details Basis: Duration
\$1076.00 + taxes \$1117.60 total		AA	AS1188	Seattle (SEA) 5:45 am Wed, Nov 21	Chicago-O'Hare (ORD) 11:35 am Wed, Nov 21	Nonstop Coach: More... Duration: 3 hr 50 min
		AA	AS1045	Chicago-O'Hare (ORD) 12:56 pm Wed, Nov 21	New York-LeGuards (LGA) 4:00 pm Wed, Nov 21	Nonstop Coach: More... Duration: 2 hr 10 min Total: 7 hr 55 min
		AA	AS1350	New York-LeGuards (LGA) 5:30 pm Wed, Nov 21	Chicago-O'Hare (ORD) 7:15 pm Wed, Nov 21	Nonstop Coach: More... Duration: 2 hr 45 min
		AA	AS1187	Chicago-O'Hare (ORD) 8:19 pm Wed, Nov 21	Seattle (SEA) 10:45 pm Wed, Nov 21	Nonstop Coach: More... Duration: 4 hr 35 min Total: 8 hr 15 min

The State of the American Airline Ind

Fee Comparison:

	 CHECKED BAGS		 INFLIGHT WIFI	 UNACCOMPANIED MINOR	 TELEPHONE BOOKING	 PETS		 FLIGHT CHANGE
	\$15 FIRST	\$25 SECOND	\$9.95 LAPTOP \$7.95 MOBILE	\$39	\$15	N/A CARGO	\$25 CABIN	\$15 PER LEG \$0 STANDBY
	\$15 FIRST	\$25 SECOND	\$9.95 LAPTOP \$7.95 MOBILE	\$100	\$20	\$150 CARGO	\$100 CABIN	\$50
	\$15 FIRST	\$25 SECOND	\$0 FIRST CLASS \$6 ECONOMY (SELECTED FLIGHTS)	\$75 NON-STOP \$100 CONNECTING	\$15	STARTING AT: \$149 CARGO	\$125 CABIN	\$150
	\$15 FIRST	\$25 SECOND	\$9.95 LAPTOP \$7.95 MOBILE	\$100	\$20	\$275 CARGO	\$150 CABIN	\$150
	\$25 ECONOMY	\$0 BUS/FIRST CLASS	NONE	\$50	\$25	\$100 CARGO	N/A CABIN	DEPENDS ON TICKET TYPE
	\$0 FIRST	\$30 SECOND	LIMITED TRIAL ACCESS	\$75	\$15	N/A CARGO	\$100 CABIN	\$100
	\$15 FIRST	\$25 SECOND	NONE	\$50 NON-STOP \$75 CONNECTING	\$25	\$150 CARGO	\$125 CABIN	\$50
	\$0		LIMITED TRIAL ACCESS	\$25	\$0	N/A CARGO	\$75 CABIN	\$0
	\$19/\$25 1ST ONLINE/AIRPORT \$25 SECOND		NONE	\$100	\$4.90 ALSO ONLINE	N/A CARGO	\$100 CABIN	\$100
	\$15/\$20 1ST ONLINE/AIRPORT \$25/\$30 2ND ONLINE/AIRPORT		NONE	\$99	\$25	\$250 CARGO	\$125 CABIN	\$150
	\$15/\$20 1ST ONLINE/AIRPORT \$25/\$30 2ND ONLINE/AIRPORT		NONE	\$100	\$25	N/A CARGO	\$100 CABIN	\$150



2012 worldwide airline financial results per departing passenger



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.



JANUARY 2007							FEBRUARY 2007							MARCH 2007							APRIL 2007						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6						1	2	3							1	2	3	4	5	6	7
7	8	9	10	11	12	13	4	5	6	7	8	9	10	4	5	6	7	8	9	10	8	9	10	11	12	13	14
14	15	16	17	18	19	20	11	12	13	14	15	16	17	11	12	13	14	15	16	17	15	16	17	18	19	20	21
21	22	23	24	25	26	27	18	19	20	21	22	23	24	18	19	20	21	22	23	24	22	23	24	25	26	27	28
28	29	30	31				25	26	27	28				25	26	27	28	29	30	31	29	30					



Salary and Benefits: 66 days



Fuel: 87 days

MAY 2007							JUNE 2007							JULY 2007							AUGUST 2007						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
		1	2	3	4	5						1	2	1	2	3	4	5	6	7				1	2	3	4
6	7	8	9	10	11	12	3	4	5	6	7	8	9	8	9	10	11	12	13	14	5	6	7	8	9	10	11
13	14	15	16	17	18	19	10	11	12	13	14	15	16	15	16	17	18	19	20	21	12	13	14	15	16	17	18
20	21	22	23	24	25	26	17	18	19	20	21	22	23	22	23	24	25	26	27	28	19	20	21	22	23	24	25
27	28	29	30	31			24	25	26	27	28	29	30	29	30	31					26	27	28	29	30	31	



Maintenance: 26 days



Airport Fees: 35 days

Other: 136 days

SEPTEMBER 2007							OCTOBER 2007							NOVEMBER 2007							DECEMBER 2007						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
						1	1	2	3	4	5	6															1
2	3	4	5	6	7	8	7	8	9	10	11	12	13	4	5	6	7	8	9	10	2	3	4	5	6	7	8
9	10	11	12	13	14	15	14	15	16	17	18	19	20	11	12	13	14	15	16	17	9	10	11	12	13	14	15
16	17	18	19	20	21	22	21	22	23	24	25	26	27	18	19	20	21	22	23	24	16	17	18	19	20	21	22
23	24	25	26	27	28	29	28	29	30	31				25	26	27	28	29	30		23	24	25	26	27	28	29
30																					30	31					

Profit: 15 days



McGill

Source: Montie Brewer



Questions?