TEAM SAI CONSULTING SERVICES

ASA AVIATION SUPPLIERS ASSOCIATION

Why Aircraft Retire

June 25, 2012

AFRA Aircraft Fleet Recycling Association — RECYCLE, RE-SALE, RETIRE

About TeamSAI

- TeamSAI provides innovative solutions to the aviation industry
  - Specializing in strategic management, tactical expertise, and operations support
  - Led by six experienced and actively involved owners / executives
  - The company offers distinct products and services tailored to fit the needs of targeted markets
- TeamSAI Inc. is divided into three synergistic operating entities

TEAM SAI INC
BETTER DIRECTION

TEAM SAI CONSULTING SERVICES

Strategic & Tactical Consulting

- Airline, MRO, Corporate & Airport Management
- Process & Performance Improvements
- Accelerated Change

TEAM SAI M&E SOLUTIONS

Customized On-Going Airline Support

- Technical Services
- Maintenance Management
- Technical Procurement

TEAM SAI MRO DATA SERVICES

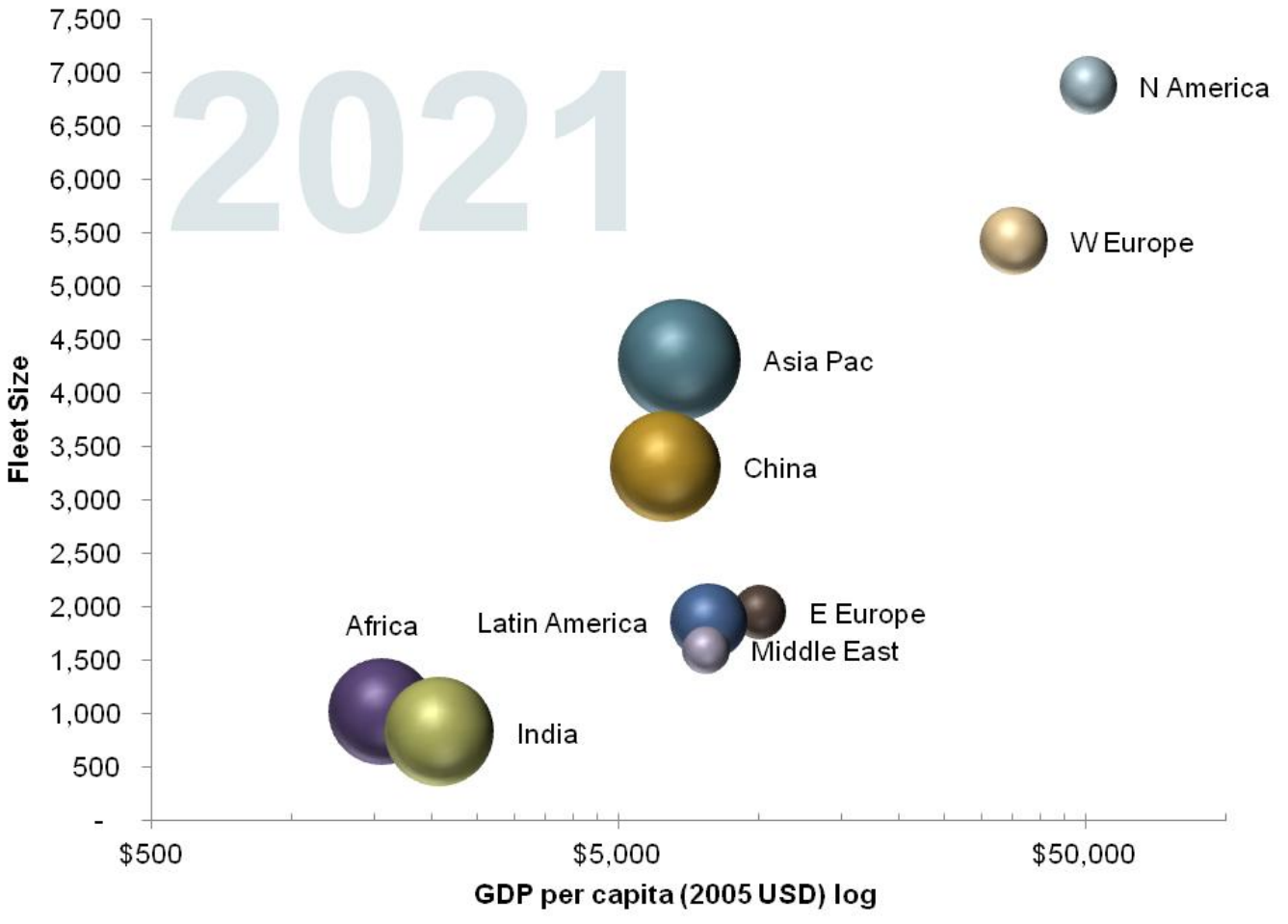
Partners with the Aviation Week Group

- Global MRO Forecasting
- MRO Prospector Data - Industry Leading Market Research

Agenda

- World wide fleet growth trends
- Historical analysis of retirements
- Retirement drivers
  - Trending direction of age
  - Why some aircraft remain in operation
  - Migrations
- Summary

Global fleet growth projections show wide variations



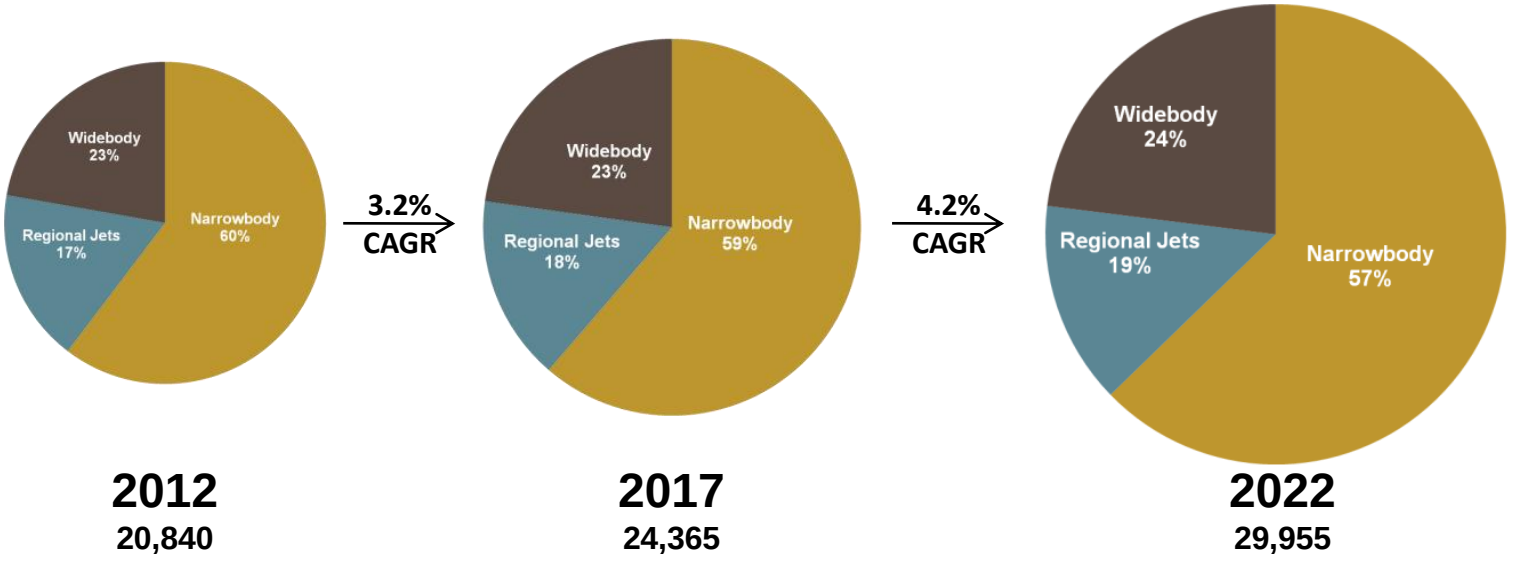
Source: Ascend, Economic Research Service/USDA

Note: bubble size indicates population

- While N America and W Europe have the largest fleets and MRO markets, the growth areas lie in emerging regions
  - India, China, E. Europe
- While these emerging regions are growing fast, their overall size represents just fraction of the total market
- Nevertheless, the fleet forecast clearly indicates a shift to the east which is expected to drive a level of parity when combining
  - The Americas
  - Europe (Western & Eastern)
  - Asia, including China & India

Global recovery is forecast to be segmented with emerging markets leading the way

Globally, long term fleet growth still looks solid



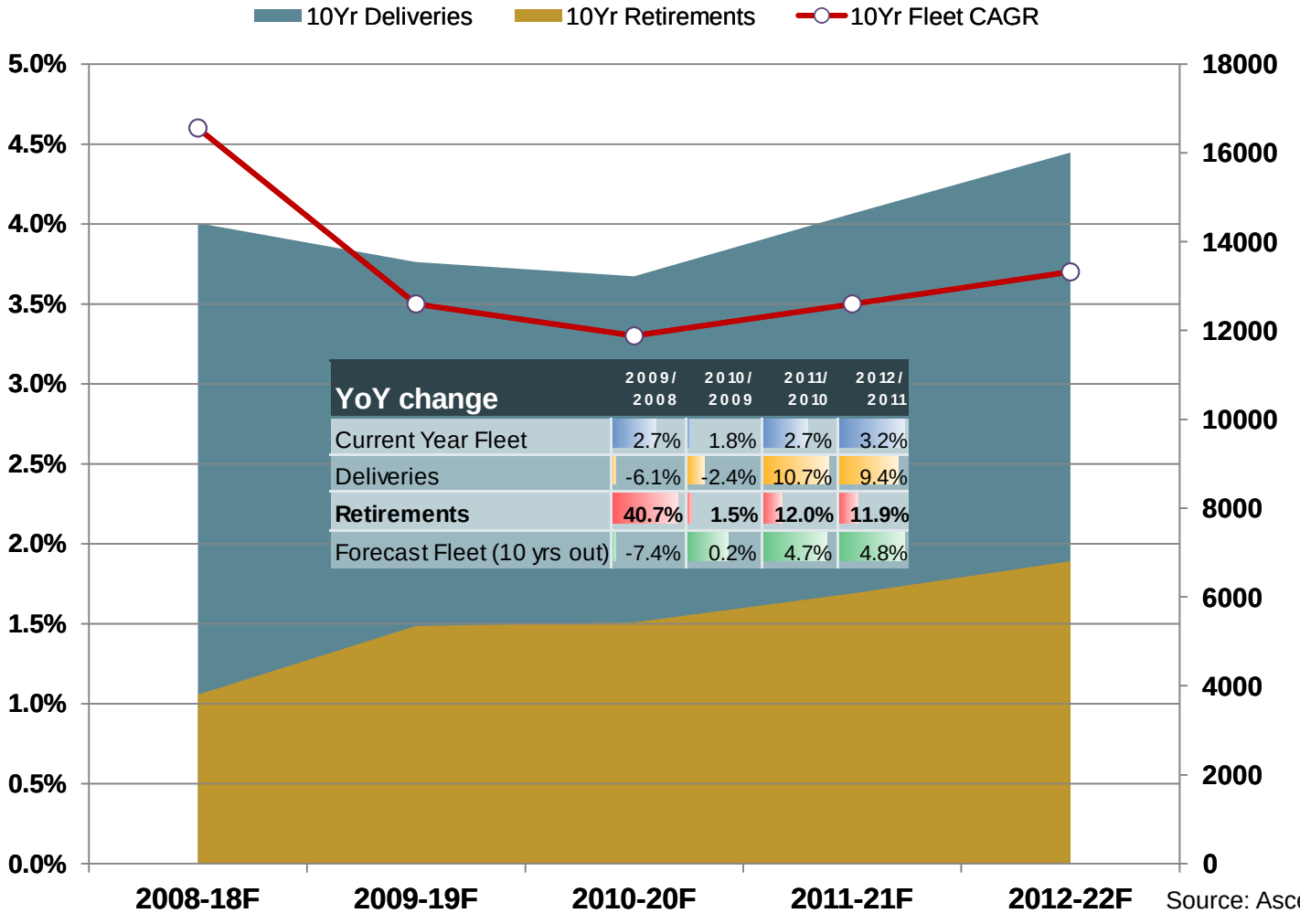
Source: Ascend

- Fleet growth forecast at 3.7% CAGR to 29,955 in 10 years

Drivers
- Population growth and the growing middle class
- Production rate increases (A320, B737, A330, B777)
- New airframes enter market (A350, CSeries, MRJ)
- Neo/MAX efficiency phenomenon

Challenges
- Pressure on yields
- Uncertainty of oil prices
- Weaker cargo flow
- Limits on aircraft financing
- Increased competition to win traffic

How has the outlook for fleet growth changed in recent years?



YoY change	2009/2008	2010/2009	2011/2010	2012/2011
Current Year Fleet	2.7%	1.8%	2.7%	3.2%
Deliveries	-6.1%	-2.4%	10.7%	9.4%
Retirements	**40.7%**	**1.5%**	**12.0%**	**11.9%**
Forecast Fleet (10 yrs out)	-7.4%	0.2%	4.7%	4.8%

Source: Ascend

- The fleet growth forecast has been restrained
- Deliveries will grow the fleet
- But retirements are increasingly expected to keep fleet growth in check
- Average age of fleet has declined since 2009
  - 12.2 to 11.9 years over >20,000 aircraft

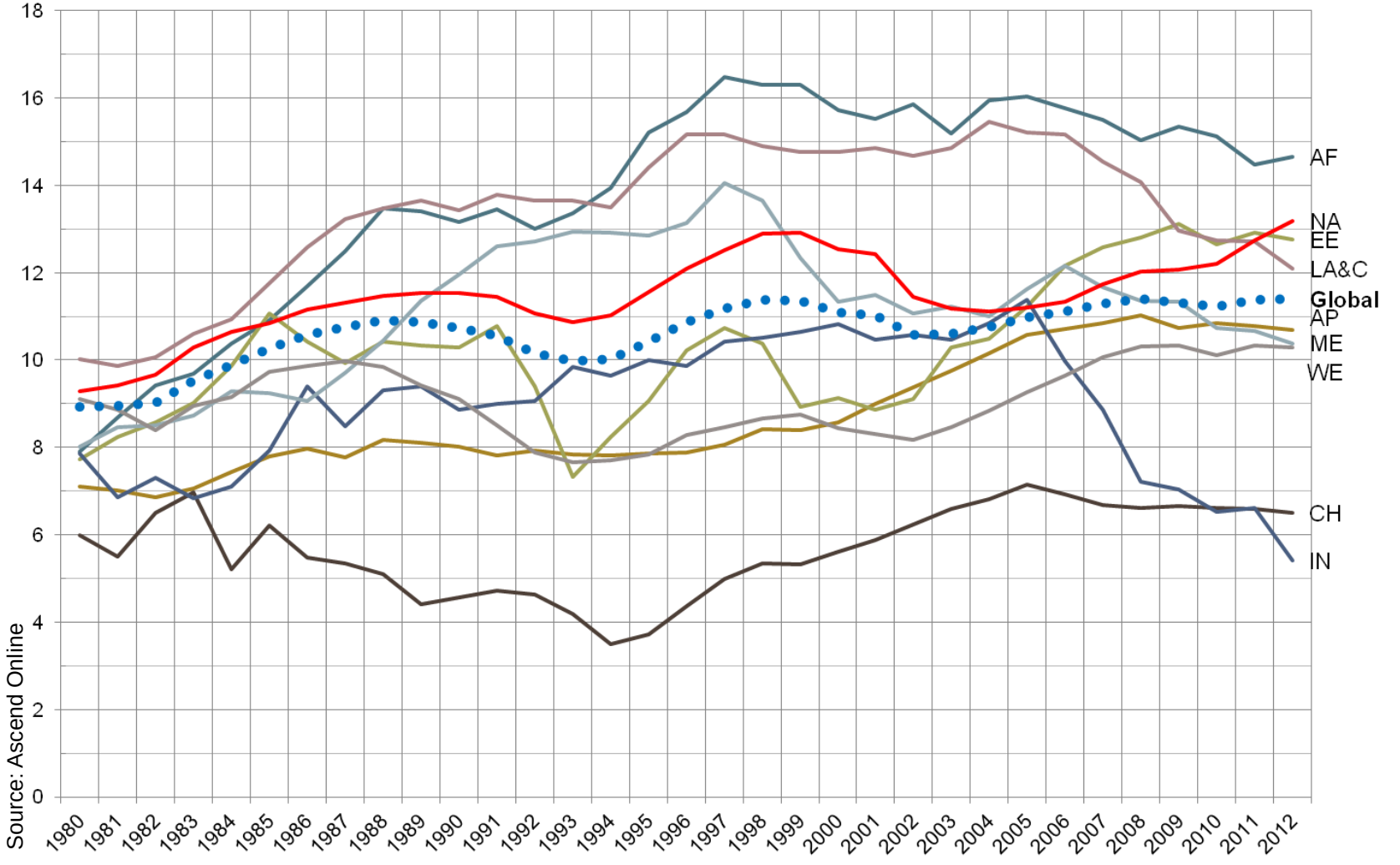
Fleet is increasingly expected to renew itself

Average age of global fleet has remained relatively flat in recent years even as fleet has renewed itself

Historical Average Age of Fleet

1980-2012

In Service / Typical Usage Types



Historical retirements overview

Historical Retirements Aircraft Status	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total
Retirement	162	181	266	229	232	303	317	317	423	458	447	400	3,735
Current Year Fleet (in-service & stored)	18,212	19,189	20,214	20,910	21,535	22,186	22,750	23,426	24,221	24,889	25,602	29,080	
Retirement as % of Current Year Fleet	**0.9%**	**0.9%**	**1.3%**	**1.1%**	**1.1%**	**1.4%**	**1.4%**	**1.4%**	**1.7%**	**1.8%**	**1.7%**	**1.4%**	**20.5%**

Source: Ascend Online

- 20% of the 2000 baseline fleet (commercial jet & turboprop; in-service & stored) was retired by the start of 2012
- Looking forward, we expect a period of increased fleet renewal
  - Increase in both deliveries and retirements
- 30% of the 2012 baseline fleet (commercial jet & turboprop; in-service & stored) is forecasted to retire in ten years time

Looking forward, the largest retirements come from the usual suspects

Variants with most retirements over forecast period by aircraft class

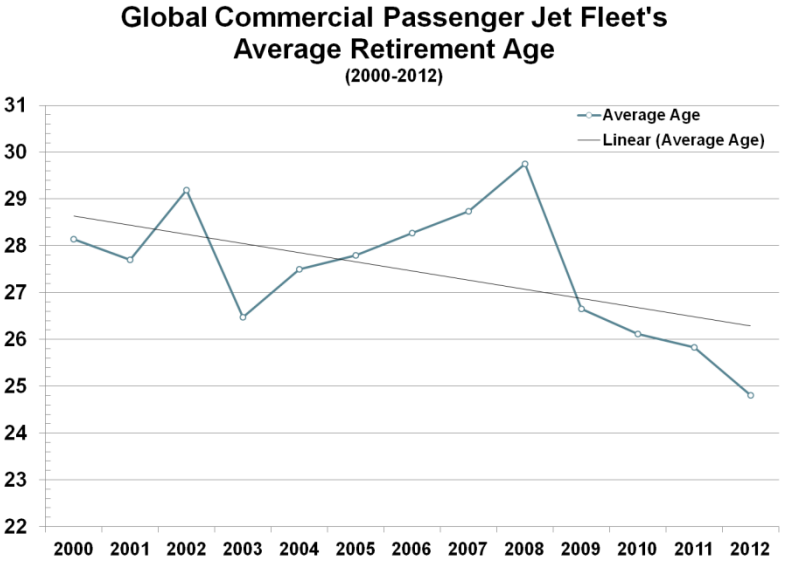
Note: differences due to deliveries and conversions

Usage	Class	Type	2012	Retirements	2022
PAX	**NB**	Boeing 737 (CFMI)	1407	**957**	337
		Boeing (McDonnell-Douglas) MD-80	761	**671**	81
		Airbus A320	2659	**630**	3709
	NB Total		4827	**2258**	4127
	WB	Boeing 767-3/400	656	**438**	120
		Boeing 747-400	394	**286**	83
		Boeing 777-200/300	556	**136**	368
	WB Total		1606	**860**	571
	RJ	Bombardier (Canadair) CRJ	862	**405**	437
		Embraer ERJ-145	638	**289**	339
		Fokker 100	195	**126**	64
	RJ Total		1695	**820**	840
PAX Total			**8128**	**3938**	**5538**
CARGO	**NB**	Boeing 727F	221	**201**	20
		Boeing 737 (JT8D) Freighter	50	**50**	0
		Boeing (McDonnell-Douglas) DC-8F	50	**45**	5
		Boeing 737 (CFMI) Freighter	130	**45**	198
	NB Total		451	**341**	223
	WB	Boeing 747 Classic Freighter	101	**95**	6
		Boeing (McDonnell-Douglas) DC-10F	91	**75**	14
		Airbus A300B4F	52	**52**	0
	WB Total		244	**222**	20
	RJ	BAE SYSTEMS (HS) 146QT	29	**16**	13
		Fokker F28F	1	**1**	0
	RJ Total		30	**17**	13
CARGO Total			**696**	**564**	**243**
Grand Total			**8824**	**4502**	**5781**

Source: Ascend

Where average retirement age is heading in the future

- Average retirement age is getting younger
  - Particularly "last off the line" aircraft
  - Aircraft built at the end of a production run succeeded by newer models and tend to have a shorter useful economic life
- Last decade+ has shown a 2-year drop in the average retirement age
  - Looking only at commercial passenger jet
  - Freighters and turboprops have a different lifespan profile
- Is the average retirement age heading towards 20 years old?
  - If trend continues, suggests every 5 years, retirement age falls by one year



Source: Ascend Online

- Trend is clearly influenced by the post-2008 fuel prices
- Clean sheet narrow body aircraft will continue to impact the trend

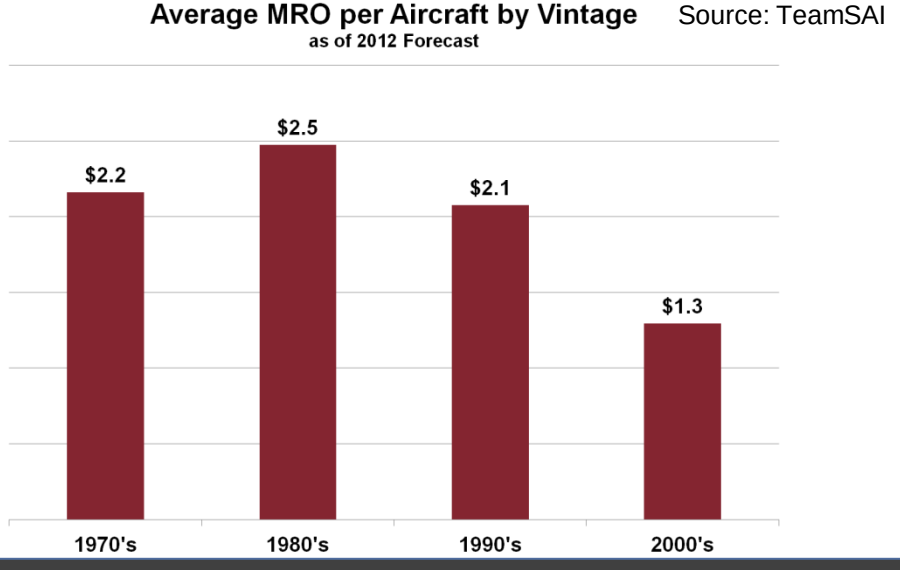
Why some older type variants seem to operate forever

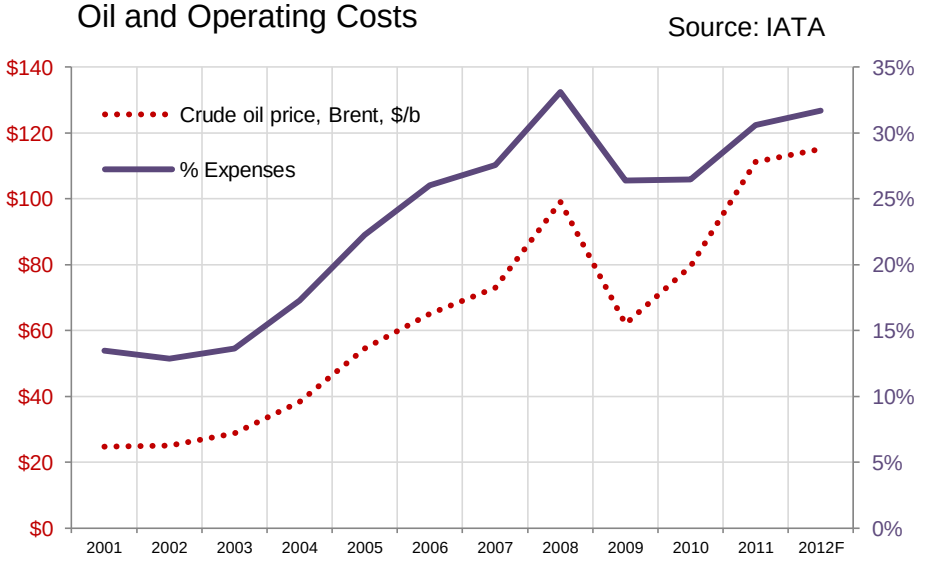
- Fit well into operators' business models
- Niche planes that are difficult to replace
  - 757 and 767 aircraft
- Large supply of engineering support, pilots, and spares
  - 737-300
- Economics of operating an aircraft
  - Tradeoff between low purchase price/lease rate and higher operating & maintenance costs
  - CASM (cost per available seat mile) still competitive

Economics of operating an aircraft

- Introduction of new technology to the market
  - Increased fuel efficiency
  - Increased reliability (particularly for new engines)
  - Lower maintenance costs
    - Longer maintenance intervals
  - NextGen compatibility
- Capacity rationalization
  - The oldest aircraft/aircraft due up for heavy maintenance are the first to be stored/retired

Aircraft Comparison	Fuel Burn Efficiency (Source)
787 vs 767	20% (Boeing)
A320neo vs A320ceo	15% (Airbus)
737 MAX vs 737NG	12-13% (Aspire Aviation)





Decreased migration levels

- Passenger preferences for **new** aircraft
  - New wealth results in changing demands
- Age restrictions on operation of and/or importation of aircraft in some regions
  - BRIC countries (main growth areas) have 10- to 15-year age limits on imported aircraft
  - More than 40 countries in total with age restrictions
  - Impact of age limit tempered by acceptance of aircraft just under limit
  - Some countries (e.g., CH, IN) impose different limitations for passenger and cargo aircraft
- Used aircraft more difficult to finance
  - Decreased demand for second-hand planes from mature market

Country	Age Restriction	
	Operation	Importation
Bangladesh	X	14
Bolivia	X	
Brazil	10-15	
China		10 (pax) 15 (cargo)
Congo DRC	X	16
Egypt		15
Ghana		25
India		15
Indonesia		20
Iran	10	X
Iraq	X	15
Jordan		15
Kazakhstan		20
Kyrgyzstan	40	
Lebanon		15
Libya	20	X

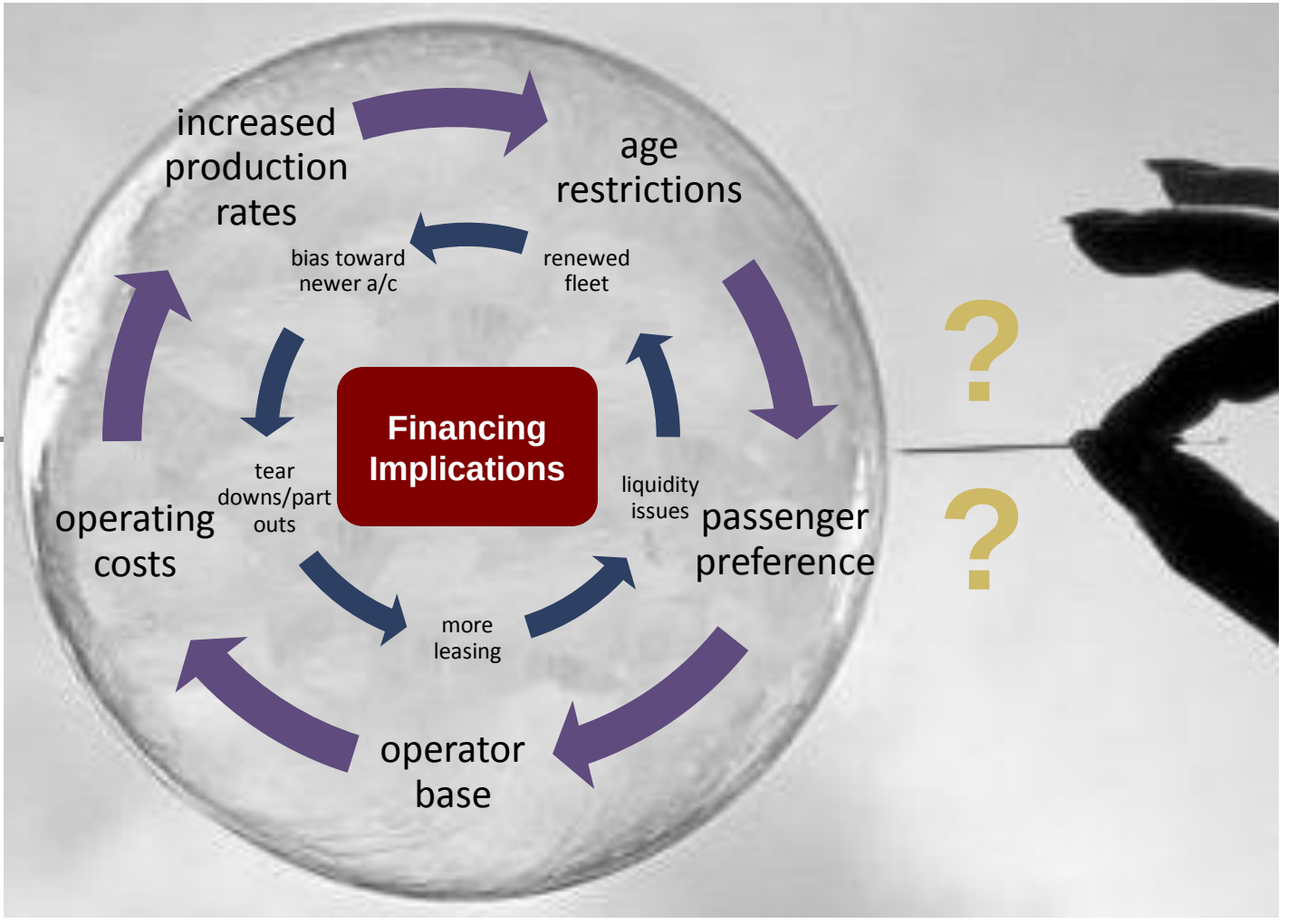
Country	Age Restriction	
	Operation	Importation
Mauritania		10
Malaysia	X	
Mongolia	X	
Nepal		14
Nigeria	20 (operation in airspace) 30 (registration)	22
Pakistan		25
Russia	10	X
Saudi Arabia		21
Sri Lanka		15
Sudan		20
Syria		20
Thailand		14
Turkey		15
UAE	20	
Uganda	X	
Venezuela	X	
Vietnam	X	
Zimbabwe	X	

Source: Airline Fleet Management, Ascend, TeamSAI research

no age limits in place for aircraft in Europe, Canada, Australia and the US

Aircraft valuations have been on the decline for some very interesting reasons

- **Regulation**
- **Leasing**
- **Maintenance & Technology**
- **Supply & Demand**



Many factors influence aircraft retirements

THANK YOU!

Dave Marcontell
President & COO
TeamSAI, Inc.
303-987-3454 Ext. 105
dmarcontell@teamsai.com

WWW.TEAMSAI.COM