BIZJET MARKET INSIGHT

SUPER MID-SIZE, LONG-RANGE & ULTRA-LONG-RANGE SEGMENTS

THE SHARP WINGS

At the 2017 edition of the Corporate Jet Investor conference held in London on 30/31 January, there were a number of interesting comments and questions on current and forecasted production levels of business jets, and their depreciation rates.

In this report The Sharpwings provides some insight to the super mid-size, long-range and ultra-long-range segments with illustrative charts designed to shed some light on the following questions:

Super Mid-Size, Long-Range & Ultra-Long-Range: are these segments overcrowded?

A new paradigm in depreciation rates?

A new cycle?

Current Worldwide Business Jet Fleet*

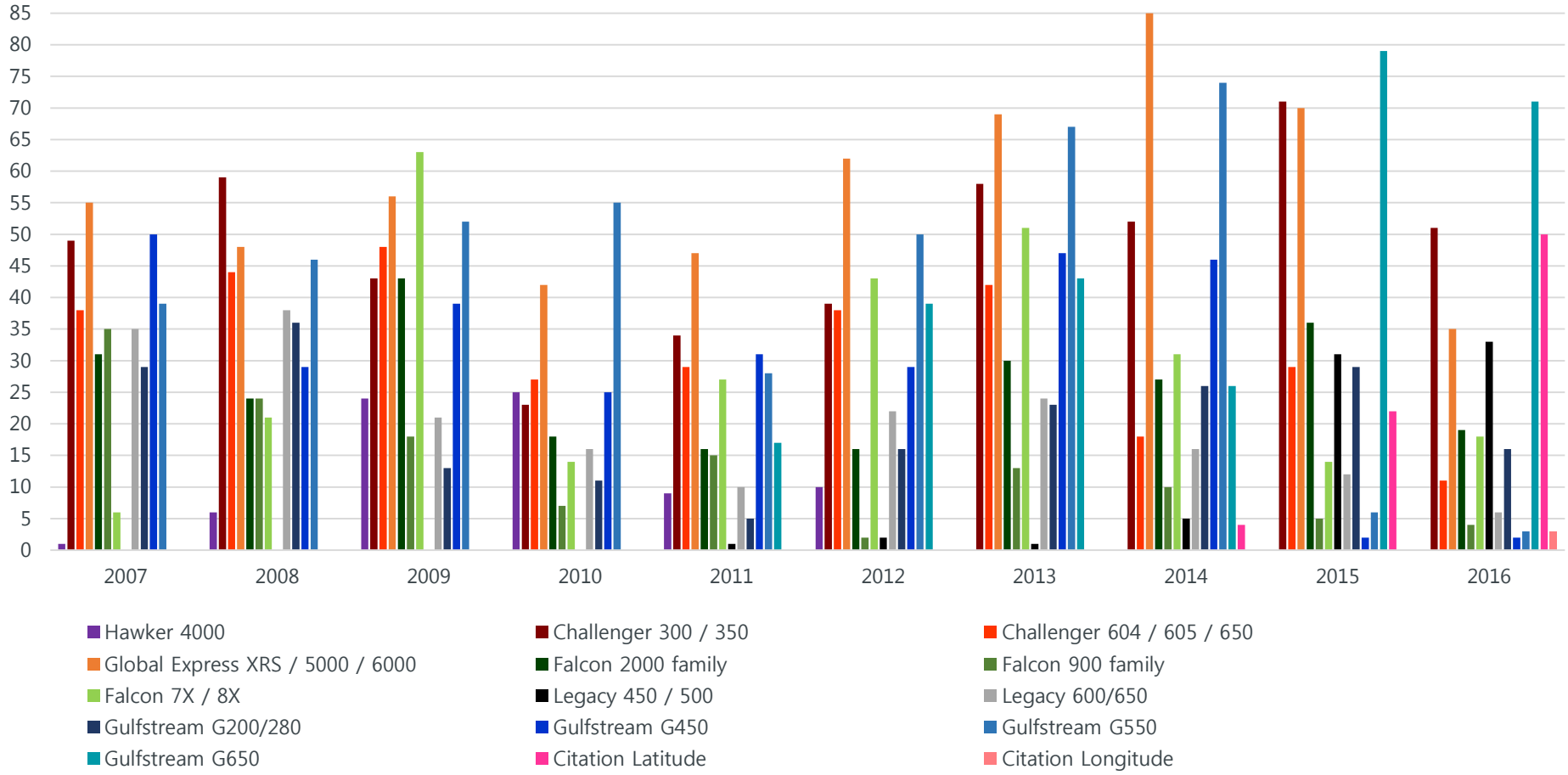
Distribution by Aircraft Model & Year of Manufacture

		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Hawker	Hawker 4000	1	6	24	25	9	10	0	0	0	0
Bombardier	Challenger 300 / 350	49	59	43	23	34	39	58	52	71	51
Bombardier	Challenger 604 / 605 / 650	38	44	48	27	29	38	42	18	29	11
Bombardier	Global Express XRS / 5000 / 6000	55	48	56	42	47	62	69	85	70	35
Cessna	Citation Latitude	0	0	0	0	0	0	0	4	22	50
Cessna	Citation Longitude	0	0	0	0	0	0	0	0	0	3
Dassault Aviation	Falcon 2000 family	31	24	43	18	16	16	30	27	36	19
Dassault Aviation	Falcon 7X / 8X	6	21	63	14	27	43	51	31	14	18
Dassault Aviation	Falcon 900 family	35	24	18	7	15	2	13	10	5	4
Embraer	Legacy 450 / 500	0	0	0	0	1	2	1	5	31	33
Embraer	Legacy 600/650	35	38	21	16	10	22	24	16	12	6
Gulfstream	Gulfstream G200/280	29	36	13	11	5	16	23	26	29	16
Gulfstream	Gulfstream G450	50	29	39	25	31	29	47	46	2	2
Gulfstream	Gulfstream G550	39	46	52	55	28	50	67	74	6	3
Gulfstream	Gulfstream G650	0	0	0	0	17	39	43	26	79	71
	Total	368	375	420	263	269	368	468	420	406	322

Source: JETNET

*: Super mid-size, long-range and ultra-long-range business jets less than 10 years old only

Super Mid-Size & Long-Range / Ultra-Long-Range | Current Worldwide Business Jet Fleet
Distribution by Aircraft Model & Year of Manufacture



Note: Super mid-size, long-range and ultra-long-range business jets less than 10 years old only

Historical In Production Aircraft Models by Manufacturer

2008 – 2020 Evolution

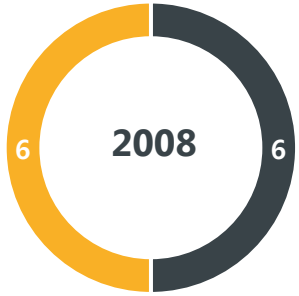
	2008	2012	2016	2020
Bombardier	Challenger 300 Challenger 605 Global 5000 Global Express XRS	Challenger 300 Challenger 605 Global 5000 Global Express XRS / 6000	Challenger 350 Challenger 605 / 650 Global 5000 Global 6000	Challenger 350 Challenger 650 Global 5000 Global 6000 Global 7000 Global 8000
Cessna			Citation Latitude Citation Longitude	Citation Latitude Citation Longitude Citation Hemisphere
Dassault Aviation	Falcon 2000DX Falcon 2000EX EASy / LX Falcon 900DX / EX EASy Falcon 7X	Falcon 2000S Falcon 2000LX Falcon 900LX Falcon 7X	Falcon 2000S Falcon 2000LXS Falcon 900LX Falcon 7X Falcon 8X	Falcon 2000S Falcon 2000LXS Falcon 5X Falcon 7X Falcon 8X
Embraer	Legacy 600	Legacy 600 / 650	Legacy 450 Legacy 500 Legacy 650	Legacy 450 Legacy 500 Legacy 650
Gulfstream	G200 G450 G550	G280 G450 G550 G650	G280 G450 G550 G650 / G650 ER	G280 G500 G600 G650 / G650 ER

Super Mid-Size
Long-Range / Ultra-Long-Range

Whilst the average number of super mid-size, long-range and ultra-long-range business jets manufactured per year has remained roughly constant overall between 2008 and 2016, manufacturers have expanded their product lines in these segments during this period. This trend is predicted to prevail until 2020.

Super Mid-Size & Long-Range / Ultra-Long-Range Business Jets
Overcrowded segments by 2020?

- In Production Super Mid-Sized Models
- In Production Long-Range & Ultra-Long-Range Models



- In Production Super Mid-Sized Models
- In Production Long-Range & Ultra-Long-Range Models

- In Production Super Mid-Sized Models
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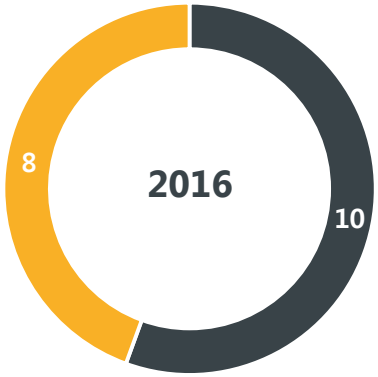
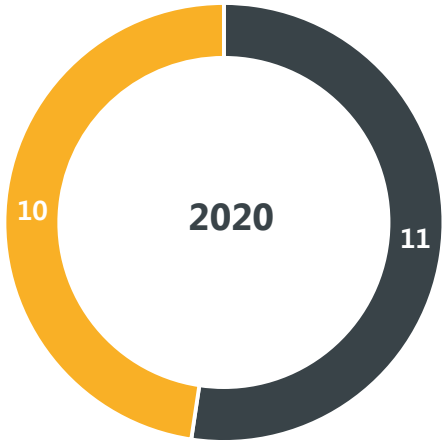


- In Production Super Mid-Sized Models
- In Production Long-Range & Ultra-Long-Range Models



Super Mid-Size & Long-Range / Ultra-Long-Range Snapshot

Models In Production & To Enter The Marketplace By 2020

Super Mid-Size Business Jets

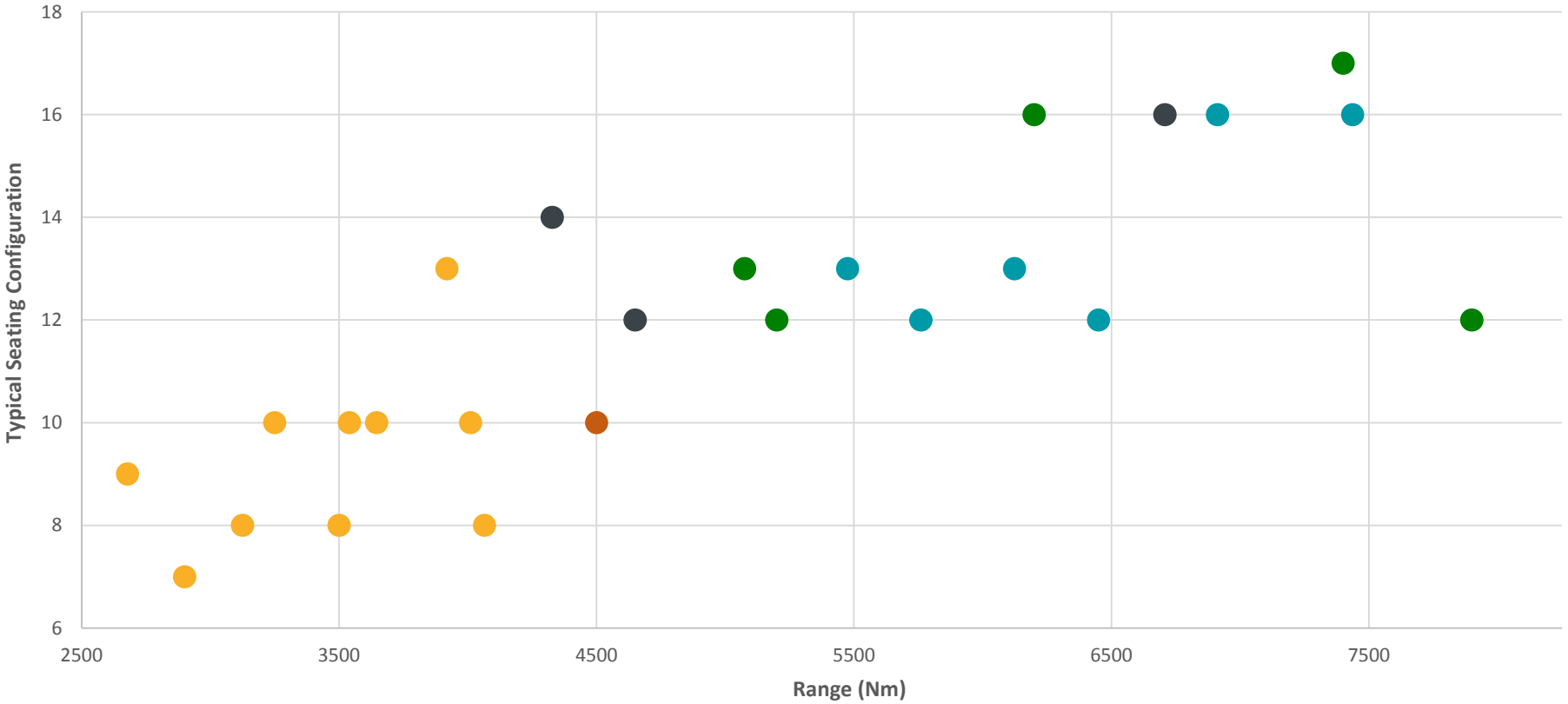
Aircraft Model	Typical Standard Seating Configuration	NBAA Range (Nm)
Challenger 350	10	3,250
Challenger 650	12	4,011
Citation Latitude	9	2,678
Citation Longitude	8	3,500
Citation Hemisphere	10	4,500
Falcon 2000S	10	3,540
Falcon 2000LXS	8	4,065
Legacy 450	7	2,900
Legacy 500	8	3,125
Legacy 650	13	3,919
G280	10	3,646

Long-Range & Ultra-Long-Range Business Jets

Aircraft Model	Typical Standard Seating Configuration	NBAA Range (Nm)
Global 5000	13	5,475
Global 6000	13	6,124
Global 7000	17	7,400
Global 8000	12	7,900
Falcon 900LX	12	4,650
Falcon 5X	12	5,200
Falcon 7X	12	5,760
Falcon 8X	12	6,450
G450	14	4,328
G500	13	5,075
G550	16	6,708
G600	16	6,200
G650	16	6,912
G650ER	16	7,437

Source: B&CA 2016 Purchase Planning Handbook and OEM data

In Production Super Mid-Size, Long-Range & Ultra-Long-Range Bizjets
2016 - 2020 Evolution - Overcrowded segments by 2020?



Super Mid-Size **currently in production** & expected to remain so in 2020	Super Mid-Size **not yet in production** & expected to be so in 2020	Long-Range and Ultra-Long-Range **currently in production** & expected to remain so in 2020	Long-Range and Ultra-Long-Range **not yet in production** & expected to be so in 2020	Long-Range and Ultra-Long-Range **currently in production & not expected to be so in 2020**

Historical Average Retail Values Comparison & Trends

Super Mid-Size – 2006 vintage units

	Challenger 300	Challenger 604	Falcon 2000 EX EASy	Legacy 600		Challenger 300	Challenger 604	Falcon 2000 EX EASy	Legacy 600
2006 Q1	19,212,000	26,500,000	25,750,000	-	**2011 Q3**	13,900,000	14,500,000	19,000,000	14,000,000
2006 Q2	20,000,000	26,500,000	25,750,000	23,600,000	**2011 Q4**	13,700,000	14,200,000	18,500,000	13,700,000
2006 Q3	21,000,000	26,500,000	25,750,000	23,600,000	**2012 Q1**	13,700,000	13,700,000	18,000,000	13,000,000
2006 Q4	21,000,000	26,500,000	27,000,000	23,000,000	**2012 Q2**	13,400,000	13,600,000	17,000,000	12,500,000
2007 Q1	21,500,000	26,500,000	29,000,000	23,000,000	**2012 Q3**	13,150,000	13,300,000	17,000,000	12,900,000
2007 Q2	22,000,000	26,500,000	29,500,000	22,000,000	**2012 Q4**	13,000,000	13,300,000	16,800,000	12,700,000
2007 Q3	22,500,000	26,500,000	30,000,000	22,500,000	**2013 Q1**	12,750,000	12,700,000	16,300,000	11,700,000
2007 Q4	24,000,000	28,000,000	31,000,000	22,700,000	**2013 Q2**	12,000,000	12,400,000	15,800,000	10,700,000
2008 Q1	24,000,000	28,000,000	32,000,000	22,700,000	**2013 Q3**	11,500,000	12,000,000	15,800,000	10,700,000
2008 Q2	24,000,000	27,500,000	32,000,000	22,700,000	**2013 Q4**	11,500,000	11,500,000	15,800,000	10,200,000
2008 Q3	23,000,000	27,500,000	32,000,000	22,500,000	**2014 Q1**	11,500,000	11,000,000	15,800,000	10,000,000
2008 Q4	20,500,000	24,800,000	29,000,000	19,900,000	**2014 Q2**	11,500,000	11,000,000	15,800,000	10,000,000
2009 Q1	18,000,000	24,000,000	25,000,000	19,500,000	**2014 Q3**	11,500,000	11,000,000	15,600,000	9,200,000
2009 Q2	15,000,000	19,000,000	21,000,000	18,000,000	**2014 Q4**	11,500,000	11,000,000	15,300,000	9,000,000
2009 Q3	15,000,000	19,000,000	21,000,000	18,000,000	**2015 Q1**	11,500,000	11,000,000	15,300,000	9,000,000
2009 Q4	15,000,000	17,500,000	21,000,000	17,000,000	**2015 Q2**	11,000,000	10,500,000	14,300,000	8,500,000
2010 Q1	15,000,000	16,900,000	20,500,000	16,000,000	**2015 Q3**	10,500,000	10,000,000	14,000,000	8,500,000
2010 Q2	15,000,000	16,500,000	20,500,000	15,500,000	**2015 Q4**	10,000,000	9,500,000	13,000,000	8,000,000
2010 Q3	14,500,000	15,500,000	20,000,000	14,500,000	**2016 Q1**	10,000,000	9,500,000	13,000,000	7,500,000
2010 Q4	14,200,000	15,500,000	19,500,000	14,500,000	**2016 Q2**	9,000,000	8,750,000	12,500,000	7,000,000
2011 Q1	14,200,000	14,500,000	19,000,000	14,000,000	**2016 Q3**	8,500,000	8,000,000	11,500,000	7,000,000
2011 Q2	14,200,000	14,500,000	19,000,000	14,000,000	**2016 Q4**	8,500,000	7,800,000	11,000,000	6,800,000

Source: Aircraft Bluebook HVR (for indication only)

Historical Average Retail Values Comparison & Trends

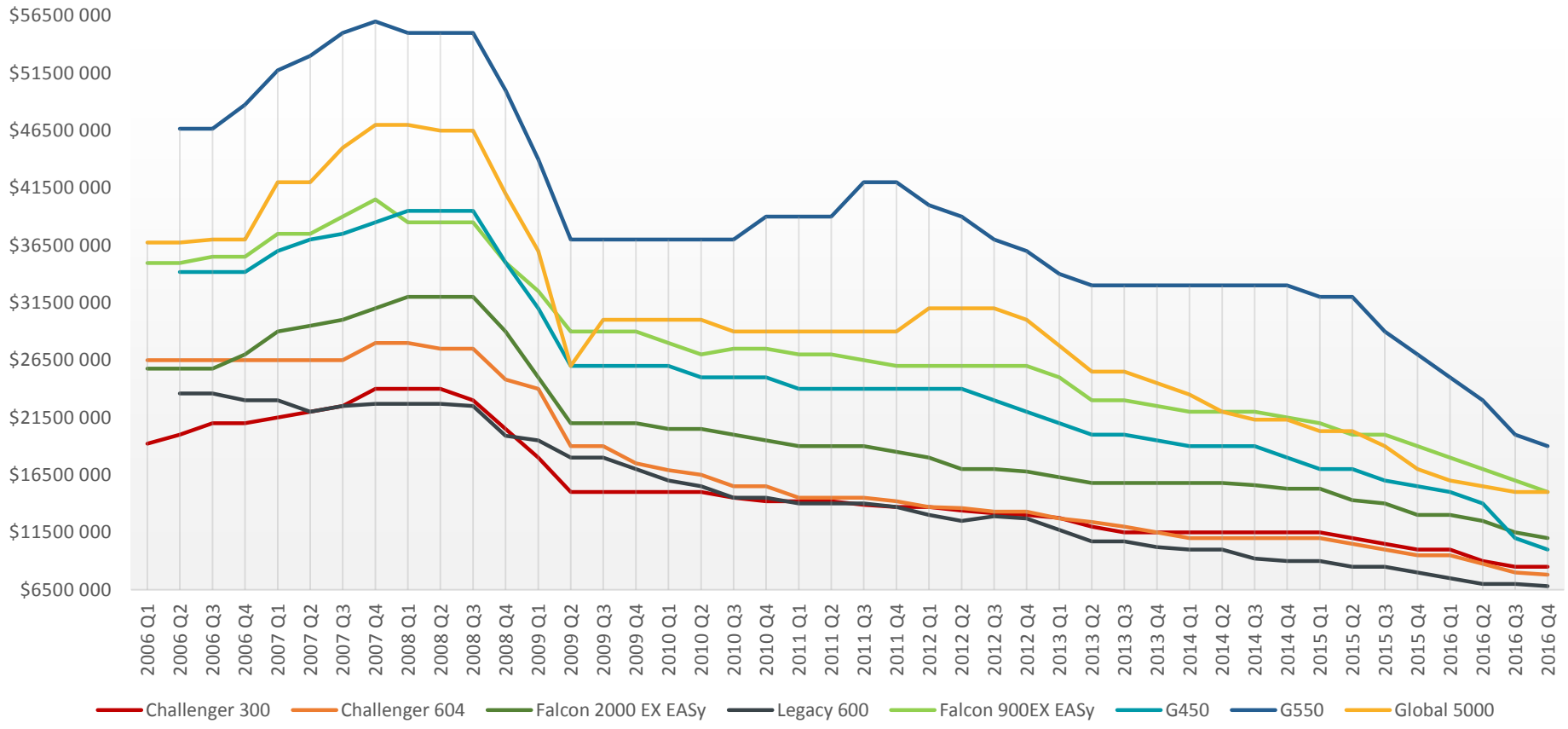
Long-Range & Ultra-Long-Range – 2006 vintage units

	Falcon 900EX EASy	G450	G550	Global 5000		Falcon 900EX EASy	G450	G550	Global 5000
2006 Q1	34,950,000	-	-	36,750,000	**2011 Q3**	26,500,000	24,000,000	42,000,000	29,000,000
2006 Q2	34,950,000	34,170,000	46,665,000	36,750,000	**2011 Q4**	26,000,000	24,000,000	42,000,000	29,000,000
2006 Q3	35,500,000	34,170,000	46,665,000	37,000,000	**2012 Q1**	26,000,000	24,000,000	40,000,000	31,000,000
2006 Q4	35,500,000	34,170,000	48,750,000	37,000,000	**2012 Q2**	26,000,000	24,000,000	39,000,000	31,000,000
2007 Q1	37,500,000	36,000,000	51,750,000	42,000,000	**2012 Q3**	26,000,000	23,000,000	37,000,000	31,000,000
2007 Q2	37,500,000	37,000,000	53,000,000	42,000,000	**2012 Q4**	26,000,000	22,000,000	36,000,000	30,000,000
2007 Q3	39,000,000	37,500,000	55,000,000	45,000,000	**2013 Q1**	25,000,000	21,000,000	34,000,000	27,750,000
2007 Q4	40,500,000	38,500,000	56,000,000	47,000,000	**2013 Q2**	23,000,000	20,000,000	33,000,000	25,500,000
2008 Q1	38,500,000	39,500,000	55,000,000	47,000,000	**2013 Q3**	23,000,000	20,000,000	33,000,000	25,500,000
2008 Q2	38,500,000	39,500,000	55,000,000	46,500,000	**2013 Q4**	22,500,000	19,500,000	33,000,000	24,500,000
2008 Q3	38,500,000	39,500,000	55,000,000	46,500,000	**2014 Q1**	22,000,000	19,000,000	33,000,000	23,500,000
2008 Q4	35,000,000	35,000,000	50,000,000	41,000,000	**2014 Q2**	22,000,000	19,000,000	33,000,000	22,000,000
2009 Q1	32,500,000	31,000,000	44,000,000	36,000,000	**2014 Q3**	22,000,000	19,000,000	33,000,000	21,300,000
2009 Q2	29,000,000	26,000,000	37,000,000	26,000,000	**2014 Q4**	21,500,500	18,000,000	33,000,000	21,300,000
2009 Q3	29,000,000	26,000,000	37,000,000	30,000,000	**2015 Q1**	21,000,000	17,000,000	32,000,000	20,300,000
2009 Q4	29,000,000	26,000,000	37,000,000	30,000,000	**2015 Q2**	20,000,000	17,000,000	32,000,000	20,300,000
2010 Q1	28,000,000	26,000,000	37,000,000	30,000,000	**2015 Q3**	20,000,000	16,000,000	29,000,000	19,000,000
2010 Q2	27,000,000	25,000,000	37,000,000	30,000,000	**2015 Q4**	19,000,000	15,500,000	27,000,000	17,000,000
2010 Q3	27,500,000	25,000,000	37,000,000	29,000,000	**2016 Q1**	18,000,000	15,000,000	25,000,000	16,000,000
2010 Q4	27,500,000	25,000,000	39,000,000	29,000,000	**2016 Q2**	17,000,000	14,000,000	23,000,000	15,500,000
2011 Q1	27,000,000	24,000,000	39,000,000	29,000,000	**2016 Q3**	16,000,000	11,000,000	20,000,000	15,000,000
2011 Q2	27,000,000	24,000,000	39,000,000	29,000,000	**2016 Q4**	15,000,000	10,000,000	19,000,000	15,000,000

Source: Aircraft Bluebook HVR (for indication only)

Historical Average Retail Values Comparison

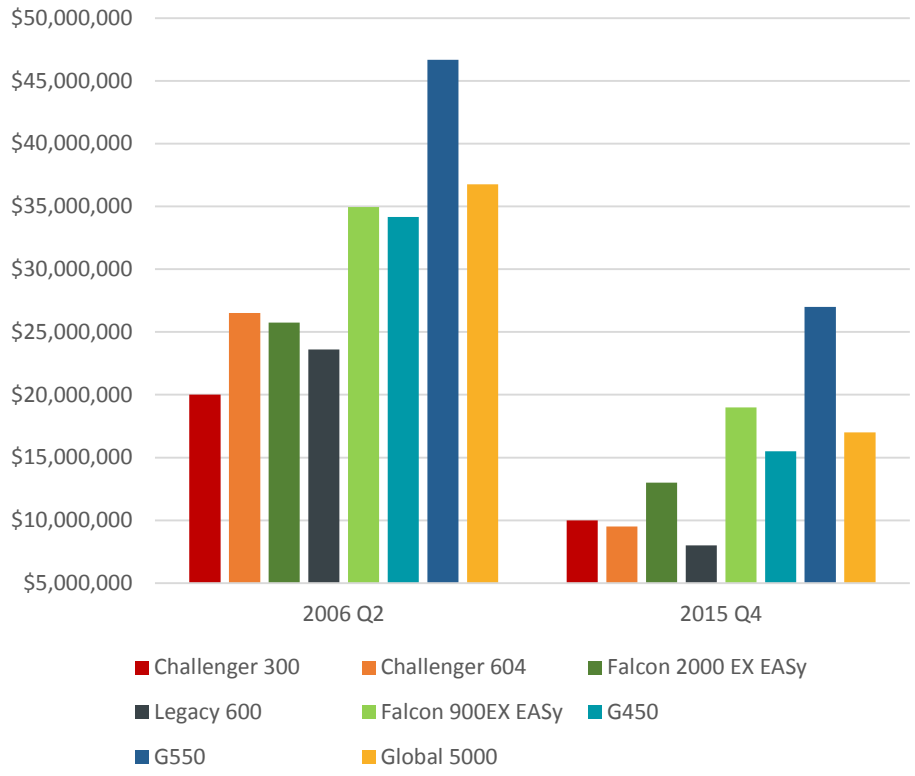
2006 vintage units - A recent shift in depreciation rates?



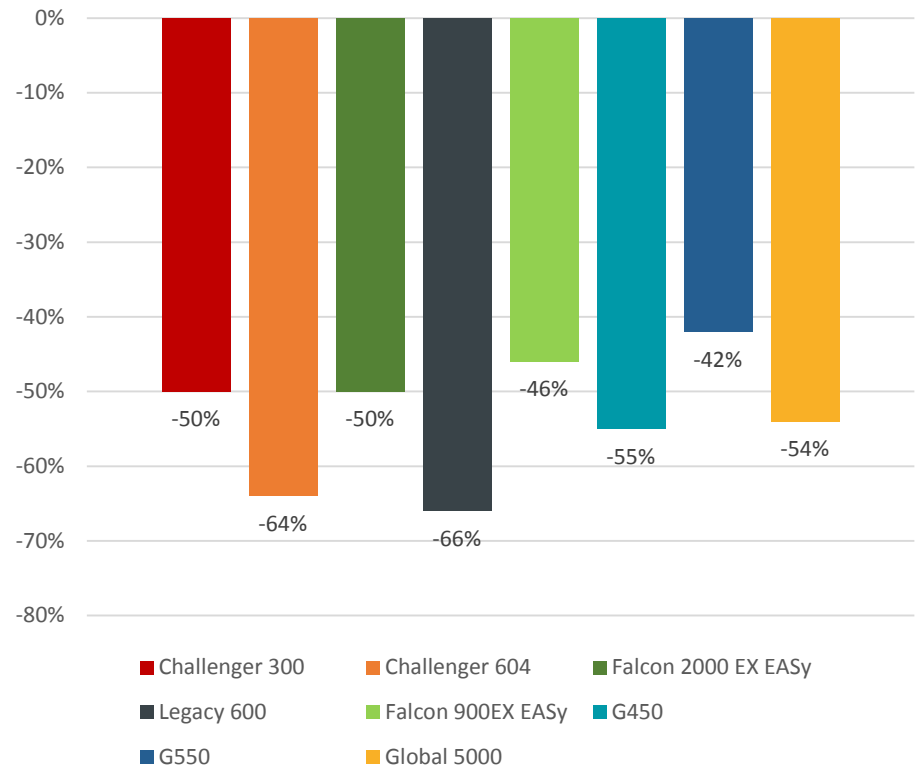
Historical Average Retail Values – Historical Trends until 2015 Q4

A recent shift in depreciation rates? Or an adjustment to reflect prevailing market?

Historical Average Retail Values Comparison
Between 2006 Q2 and 2015 Q4
2006 vintage units



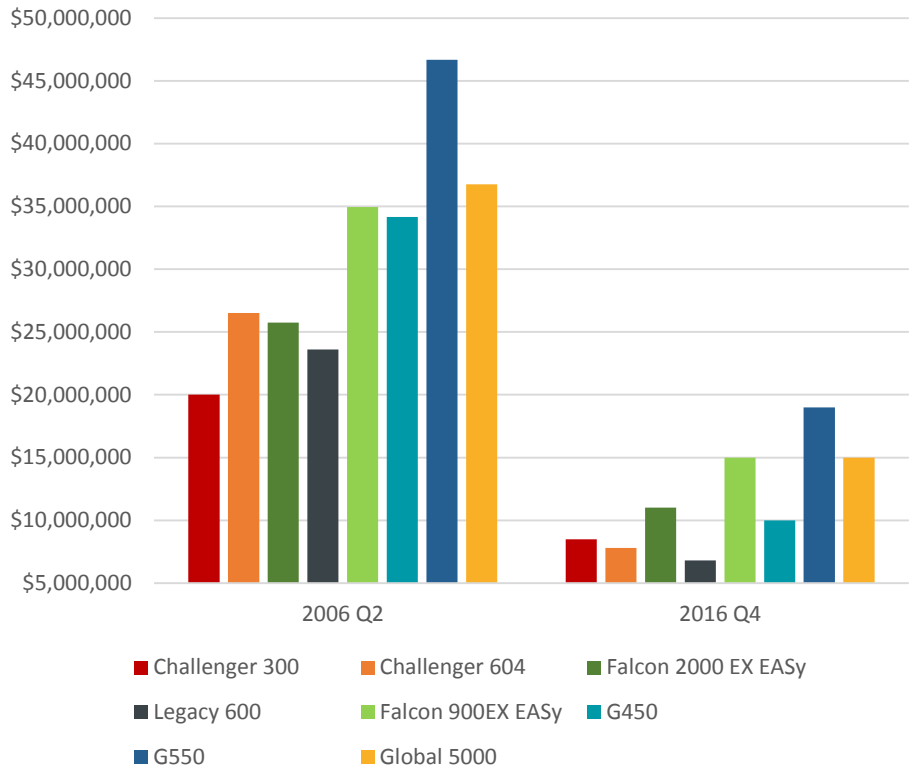
Historical Average Retail Values Variation
Between 2006 Q2 and 2015 Q4
2006 vintage units



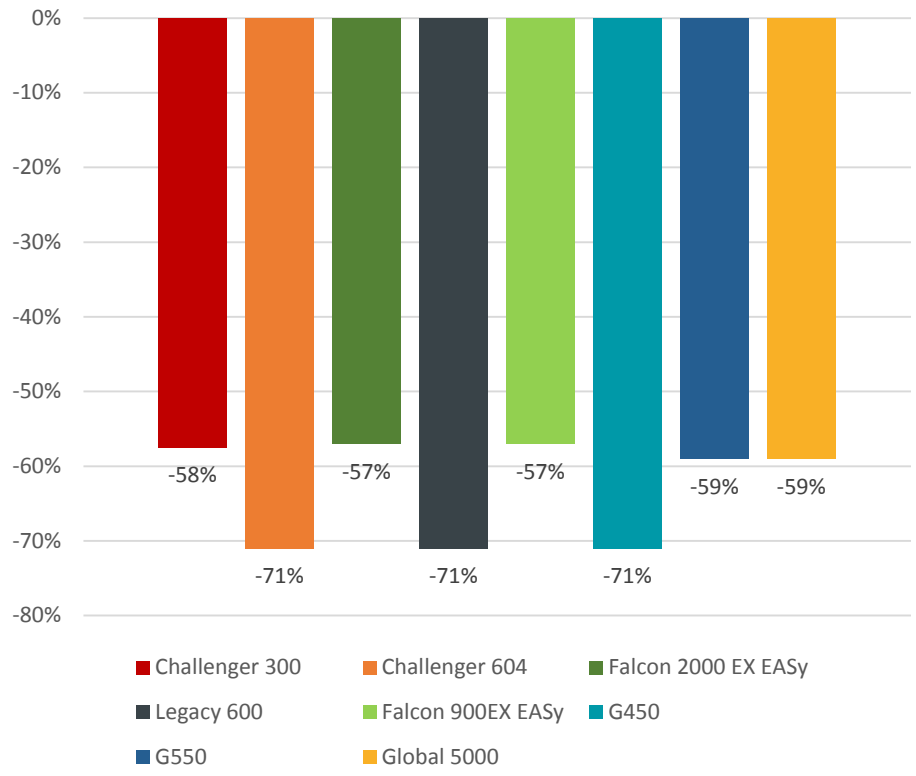
Historical Average Retail Values – Historical Trends in 2016 A Year Later…

A recent shift in depreciation rates? Or an adjustment to reflect prevailing market?

Historical Average Retail Values Comparison
Between 2006 Q2 and 2016 Q4
2006 vintage units



Historical Average Retail Values Variation
Between 2006 Q2 and 2016 Q4
2006 vintage units



Conclusion

Super Mid-Size, Long-Range & Ultra-Long-Range: overcrowded segments?

A new paradigm in depreciation rates?

A new cycle?

Whilst overall the annual shipment of super mid-size, long-range and ultra-long-range business jets by OEMs has remained roughly constant between 2008 and 2016, the number of models offered by the manufacturers in these segments has increased by 50% over this period: from 12 models in 2008 to 18 models in 2016. By 2020, it will have increased by 75% with the introduction of no less than 3 new models within the next 3 years.

In fact, through these segments, the business jet market has spent the last 8 years seeking renewed growth after the 2008-2009 crisis, but with rather limited success. So what OEMs now need is demand for new aircraft in these segments to pick-up again.

Will Donald Trump's election favour business aviation and stimulate demand as many expect? Arguably, Donald Trump is pro-business aviation.

But what matters even more is the macroeconomic climate. And Donald Trump's election brings with it a great deal of uncertainty; let alone the energy prices which remain at relatively low level.

So, despite some positive factors (a pro-business aviation President and a warming of the relations between Russia and the US for instance), a rebound in demand for super mid-size, long-range and ultra-range-long range business jets is anything but guaranteed.

Super mid-size, long-range and ultra-long-range business jet segments enjoyed unprecedented growth rates in the last decade, but along different trajectories, and they have now entered a new cycle where demand is slower. What were once lucrative segments have become increasingly competitive, whilst demand has been slowing down and even fallen.

Until there are some more robust signals that this can change in the right direction, **The Sharpwings** expects values of pre-owned aircraft in these categories to remain under pressure and therefore, for certain models, some further correction in values and depreciation rates will be evident.

Note about Average Retail Values

All retail values contained in this report are generated from on-line valuation tools. Whilst they provide a rapid set of values, they may ignore key elements specific to each individual aircraft which, taken together, produce a significant upward or downward impact on the individual market value. This applies in particular to pre-owned aircraft as the scope of such variances will typically increase with aircraft age.

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