

The ishka View

Ishka Valuations A review of the ARJ21 Programme June 2021

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The ARJ21 Fleet continues to grow

Over 50 aircraft delivered to seven airlines to date, serving over 100 routes on stage lengths between 200 and 900 miles (average 470 miles)

Airline	Current Fleet
Chengdu Airlines	25
Air China	6
Genghis Khan Airlines	5
OTT Airlines	5
Jiangxi Air	4
China Southern	3
China Express	3
	51

2021 deliveries	Year to date	Rest of year (estimate)
OTT Airlines	3	3
Air China	2	4
Chengdu	2	4
China Express	1	
Jiangxi Air	1	
China Southern		5
Genghis Khan		6
	9	22

*Excludes COMAC and China FGAC aircraft

Increase in delivery rate anticipated in second half of 2021, which could take total airline fleet to over 70 aircraft

Analysing the ARJ21 – The Aircraft and the OEM

Specification		Payload / Range fit for purpose
Engines		GE CF34 popular, reliable, mature
Production Rate		Potential to exceed 25 per year from 2021
Production Capacity		Second line adds 30 per year
		Total capacity 55 per year
Production Experience		Untested levels of production
Government / Shareholder Support		Strong policies and encouragement
OEM data		Building market confidence by providing support / reliability data

	Positive		Improving		Observation		Needs attention
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Analysing the ARJ21 – OEM considerations

Product Support		Domestic market provides the opportunity to build a comprehensive support network
Timing / Delays		Service introduction behind schedule
Technology		Need to continue product improvements e.g. new flight deck /avionics suite
Certification		FAA / EASA certification would expand international market potential

	Positive	Improving	Observation	Needs attention
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Analysing the ARJ21 – Market Size

Market Size, and Home Market Access

- **Certification issues make international sales a challenge**
- **Home market is sufficiently large to enable ARJ21 to be built in volume**

Passenger traffic forecast (Airbus GMF 2019-2038)			
Traffic flow	2018-2028 CAGR	2028-2038 CAGR	2018-2038 CAGR
China Domestic	6.5%	5.6%	6.0%
Intra- Western Europe	2.4%	2.2%	2.3%
USA Domestic	2.1%	2.0%	2.0%

“connections beyond the major cities will offer the strongest level of opportunity for regional aircraft in the next 20 years. Tier 2 and Tier 3 markets in China are underserved and are a potential growth market for regional aircraft”

Bombardier data 2016/17

Market Types	Potential Routes	Currently Served	Daily Flights	Competition on route	YOY Growth
Tier 1 - Tier 1	171	91%	> 10	Extreme	9%
Tier 1 - Tier 2	969	68%	> 3	High	9%
Tier 1 - Tier 3	2,584	22%	1	Moderate	16%
Tier 2 - Tier 2	1,275	26%	1	Moderate	14%
Tier 2 - Tier 3	6,936	5%	1	Low	33%
Tier 3 - Tier 3	9,180	0.3%	0.3	Very Low	43%
Total	21,115	10%	2		11%

Note: CAGR based on non-oriented leg RPK values

Analysing the ARJ21 – Market Performance

Orderbook		Est. 270+ firm orders, and approx. 670 commitments in total
Customer Base		Sales are encouraging - 23 customers including the ‘Big 3’ Latest Orders – 50 for China Express, 30 for CALC for ASEAN market. Lessor exposure growing (ICBC, SPDB etc)
Deliveries		6 in 2018, 13 in 2019, 24 in 2020, needs to continue growth
Customer Concentration		High concentration in one country can impact residual values, but if domestic market is large enough, it can be supportive
Backlog		10+ years to deliver at full production
Competition		New build: Embraer / Airbus / Sukhoi (Mitsubishi Spacejet on hold) Used fleets: Embraer / Bombardier Limited sales success to date by external OEMs in China regional market

	Positive	Improving	Observation	Needs attention
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Analysing the ARJ21 – Market Values

Datapoints

- **2021 Delivery Values for ARJ21 – indications are \$22.0m - \$24m range**
- **List Price – understood to be in the order of \$38.0m**

Lease Rate / Residual Value Assumptions

- **Primary Lease 12 years, secondary lease 6 years, Residual Value = Engines x2**
- **Chinese airline customer base = credit quality good to average**

Closest Competitor – Embraer E175-E1

- **New delivery values for E175-E1 – indications are \$22.0m – 24.0m range**
- **660+ delivered, 130 backlog, sales ongoing**

**Ishka current expectation is that the ARJ21 population can reach 240+ aircraft.
As the production rate improves, this could grow further.**

Analysing the ARJ21 – Current and Future Values

Current Market Value on Delivery: 2021 vintage ARJ21-700 STD variant: \$22m
Forecast Values show improvement over 2020 as production and deliveries increase

ARJ21-700 STD, 2021 VINTAGE	
Year	Base Value (US \$m)
2021	22.33
2022	20.22
2023	18.31
2024	16.58
2025	15.01
2026	13.59
2027	12.31
2028	11.14
2029	10.09
2030	9.13
2031	8.27

Ishka Future Value forecast profile for a 2021 vintage ARJ21 is presented in constant 2021\$ terms, and assumes half-life condition after three years

Thank you

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Aviation. Acumen. Attitude.



Please Contact Ishka if you have any questions or wish to discuss further
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