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Still Flying High

India's Aerospace Manufacturing and MRO Opportunity, Evaluated Through an Underwriting Discipline



A joint research report by ValueQuest Investment Advisors and Aerospace India Association

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OUTLAY OF THE REPORT

Contents

This report opens with the order book and the sectors of continuing opportunity, then works through what has changed since July 2025 across defence, civil and military MRO and the geopolitics beneath the thesis. It closes with the demand-side evidence, the three-vector value-chain map and ValueQuest's own underwriting lens, applied in full.

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THE REPORT IN NUMBERS

10 years

Roughly, for both Airbus and Boeing backlogs, expressed as years of production at current delivery rates, August 2026 **Section 1**

₹7.85 lakh crore

Union Budget 2026-27 allocation to defence, a record, with roughly three-quarters of capital acquisition earmarked for domestic industry **Section 3**

18% to 5%

Cut in the GST rate on MRO services, with the 13% revenue royalty discontinued; expected to lower MRO costs by 10 to 20% **Section 5**

US$45.75 billion

Global military aviation MRO market in 2026, growing fastest in Asia-Pacific **Section 6**

327

Firm aircraft orders at Farnborough 2026, against some pre-show forecasts of roughly 800 **Section 9**

15 years

Roughly the average commercial fleet age today, up from roughly 13 years before COVID-19 **Section 12**

THE REPORT IN BRIEF

India's aerospace opportunity, **evaluated through an underwriting discipline**

> *Still flying high, fourteen months on.*

India's opportunity in the global aerospace value chain sits where the industry's own structural shortfall in Tier-2/3 manufacturing capacity is most acute, engine components, MRO tooling, re-life and retrofit, common systems. This report, prepared jointly by ValueQuest Investment Advisors and the Aerospace India Association, evaluates that opportunity, through the lens of dhanda, banda and bhav, against a defence budget, an MRO policy push, a cohort of newly listed and long-listed comparables, and the industry's own record at Farnborough 2026. It does not price, value or recommend any security, fund or other asset; it sets out what the data shows, what is genuinely new, and where the underwriting discipline says caution is warranted, across defence and civil MRO.

HOW THE REPORT IS ORGANISED

01 **The opportunity, fourteen months on.**
SECTIONS 1 TO 5

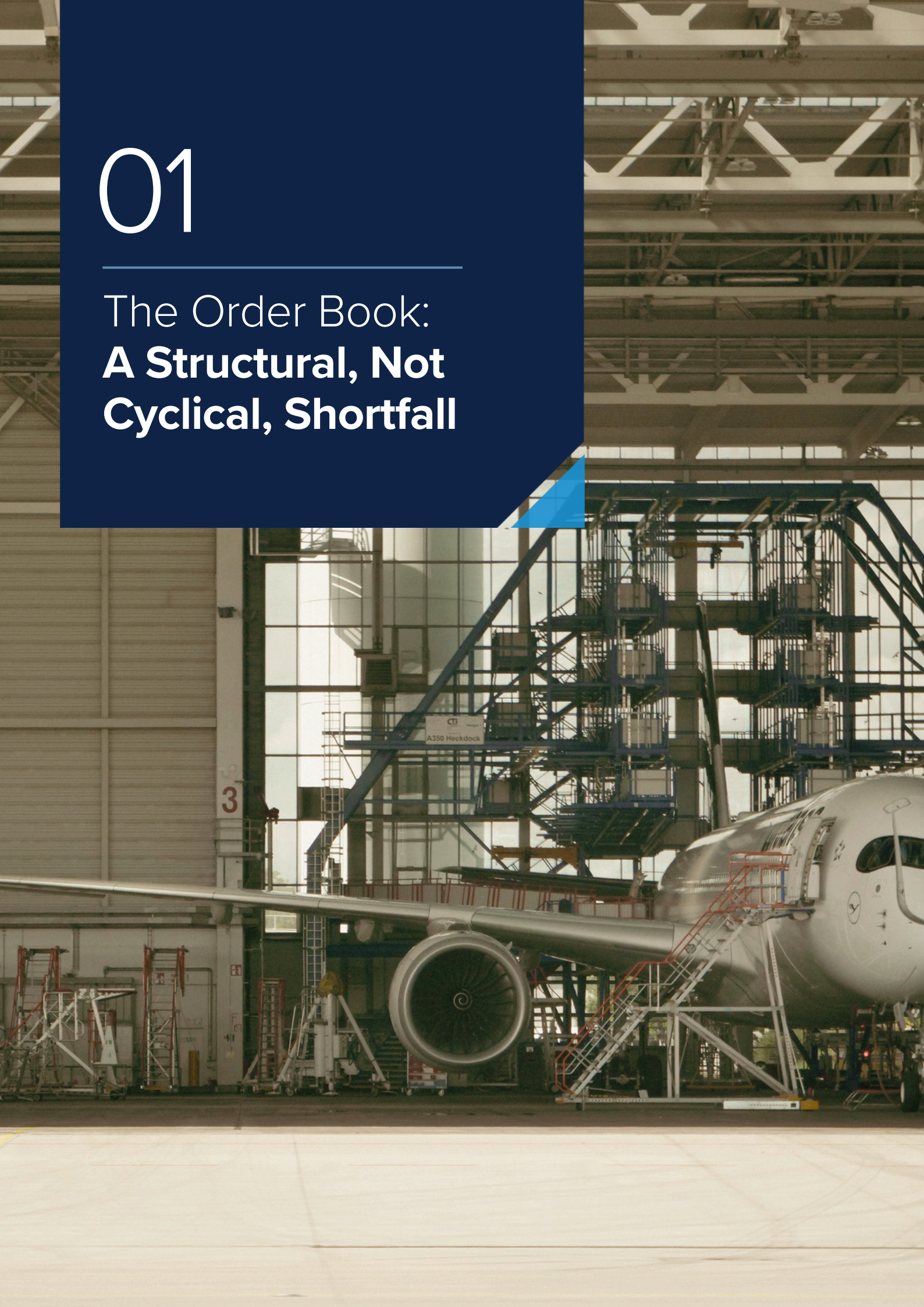
02 **The second layer beneath the thesis.**
SECTIONS 6 TO 9

03 **Demand, vectors and the underwriting lens.**
SECTIONS 10 TO 15

This report does not price, value or recommend any security, fund or other assets.

01

The Order Book: **A Structural, Not Cyclical, Shortfall**



SECTION 01

The Order Book: **A Structural, Not Cyclical, Shortfall**

Our earlier report *Flying Higher* (*The Indian Aerospace Manufacturing Sector - Spreading its Wings*) central claim was structural, not cyclical: pandemic-era attrition among the smaller, family-run Tier-2 and Tier-3 suppliers that historically served global OEMs left the industry without enough hands once air traffic recovered, and that gap has not closed yet.[A] Aircraft backlogs stood at 10 to 12 years in mid-2025, with average delivery times stretched from roughly six years pre-pandemic to nearly eight; Airbus and Boeing were each still projecting more than 40,000 new deliveries through the early 2040s.[A] Fourteen months later, none of that has reversed with aircraft backlogs still standing at roughly 10 to 12 years in mid-2026, the same band the industry has held since late 2023, as the fuller decade-long data later in this section confirms. OEMs are still de-risking their supply chains away from China on IP-security grounds, engine values and lease rates are still climbing, widebody engines most sharply. GE90-115B full-life values now exceed US$35 million and Trent 700 freshly overhauled units trade at US$17 to 20 million, both up on constrained spare-engine supply and MRO-capacity bottlenecks rather than any single OEM's own execution [2, 3], and the qualified-supplier queue India's Tier-2/3 manufacturers are working through is even longer. These engine figures are secondary-market values that independent appraisers assign to used engines, not OEM list or contract prices for new ones. New-engine pricing works differently: engine makers typically sell new engines at, or close to, a loss and earn their return over three to four decades of aftermarket parts and service, often under fixed cost-per-flight-hour contracts.[4] The secondary-market premium is therefore a direct read on the shortage of serviceable engines rather than on what an OEM charges for a new one; Section 2.2 returns to what that pricing model means for where value accrues.

The MRO-capacity bottleneck has become severe enough that independent appraisers are recording sharp divergence in the underlying market dynamics of the two dominant narrowbody engine families.[5]

While current-generation engine values have largely stabilised, Pratt & Whitney's PW1100G-JM (GTF) fleet continues to face acute downward pressure on half-life valuations due to extensive maintenance adjustments driven by ongoing powder-metal inspections, hospital shop visits, and parts shortages.[5, 6] This defect has forced an unprecedented fleet management plan requiring repetitive inspections at intervals of roughly 2,800 to 3,800 flight cycles, with 600 to 700 engines mandated for removal fleet-wide between 2023 and 2026.[6] This severe operational disruption has left abnormal levels of the A320neo fleet parked or in storage, forcing parent company RTX to book a massive US$3 billion pre-tax charge in the third quarter of 2023 alone against the programme to cover customer fleet disruptions and incremental long-term contract costs. [5, 6]

CFM's LEAP, by contrast, continues to be modelled largely as a new asset on an availability basis, priced against expected revenue-generating flight hours rather than a mandated, dated fleet-wide inspection campaign, even though it too is generating real unscheduled removals of its own from early-run durability shortfalls, on top of shop-visit durations that are running longer than planned, rather than a single defined regulatory action comparable to GTF's mandated inspection campaign (Section 2.2)[A]. [2, 7] IBA's own mid-2026 engine-value update confirms the asymmetry directly, noting that both families face elevated time-on-wing challenges in the near term while treating PW1100G's forward value specifically around its known upgrade and inspection path, rather than on the generic basis as LEAP.[5]

> ***That is not a normal end-of-life retirement pattern; it is a direct, market-priced confirmation of the same structural engine and MRO-capacity shortfall this report has argued since Flying Higher.***

The parts scarcity, which is visited later in the report for military systems also, is now visible in a starker form than shop-visit queues or lease rates. Airlines and lessors are dismantling relatively young, still-airworthy narrowbodies purely for their engines and components. Spirit Airlines retired two A320neos, delivered in December 2021 and July 2022, in the first half of 2025, at four and three-and-a-half years old. Dublin-based EirTrade Aviation acquired both for teardown in Arizona, extracting PW1100G engines and in-demand line-replaceable and buyer-furnished-equipment components that were repaired and back in service, redistributed from EirTrade's Dallas hub, within weeks.[9] Aircraft of this vintage would ordinarily have two more decades of revenue-generating life ahead of them; instead, with roughly a third of the global A320neo fleet grounded awaiting engine shop visits, a serviceable PW1100G now carries a market value of roughly US$20 million and a monthly lease rate of about US$200,000, enough that the two engines alone can out-earn the aircraft they power, and AirInsight estimates 20 to 30 A320neo-family aircraft, worth a combined US$2 to 3 billion, may be parted out on this same basis by 2027.[9]

That is not a normal end-of-life retirement pattern; it is a direct, market-priced confirmation of the same structural engine and MRO-capacity shortfall this report has argued since *Flying Higher* now visible in airframes barely out of their delivery slots, not only in ageing widebodies. Prior to the Spirit teardowns, the title for the youngest new-technology airframes ever scrapped belonged to a pair of IndiGo Airbus A321neos, which were torn down at just six years old to relieve localised component blockages. India has seen a version of the same practice closer to home: before its 2022 sale to the Tata group, a financially constrained Air India kept part of its fleet grounded and moved parts between aircraft to keep the rest flying, and needed around 30,000 spare parts to return 13 grounded Boeing 787s to service.[10] Similarly, the severe operational burdens of the GTF supply chain forced EgyptAir to prematurely abandon a portion of its fleet, resulting in the first-ever Airbus A220 being parted out in mid-2025 at only five years of age after the airline found the recurring grounded-aircraft costs impossible to absorb.

Against that backdrop, what has changed since the last report is less the roster of names than the traction behind it. Azad Engineering (listed December 2023) and Unimech Aerospace (listed December 2024) were already investable, India-listed expressions of the thesis alongside Dynamatic Technologies and PTC Industries when *Flying Higher* was published in July 2025, and all four have simply built on that traction in the fourteen months since. Aequs, which listed in December 2025, is the one name that has genuinely joined the cohort since the original report.[11] Section 2 below works through the sectors of continuing opportunity in turn; Section 3 works through what has genuinely opened up since July 2025; Sections 4 and 5 take defence and civil MRO in turn, since both have moved furthest; Section 6 turns to military MRO and the readiness pressures reshaping it; Section 7 turns to the geopolitics beneath the thesis; Section 8 sets out where the underwriting discipline says caution is warranted; Section 9 closes the original argument with a live test of that same discipline against Farnborough 2026; Sections 10 through 12 turn to the demand side directly, traffic and seat-capacity data, the super-long-haul narrowbody shift the A321XLR represents, and a reframing of the whole opportunity into three vectors, OEM, MRO and Spares, the last of which this report has not previously named on its own terms; Section 13 adds a short set of international MRO comparables built around exactly that spares-and-MRO vector; and Sections 14 and 15 close the report by setting out, and then applying, ValueQuest's own Dhanda-Banda-Bhav and SCALE-UP underwriting framework on its own terms.

The order book itself has only lengthened since Flying Higher July 2025 snapshot. As of August 2026, Airbus holds 9,362 unfilled orders and Boeing 6,748, together representing roughly ten years of production at current delivery rates, and the composition of that backlog is instructive for where India's Tier-2/3 opportunity concentrates.[12]

Narrowbody demand dominates both order books (7,571 A320neo-family aircraft at Airbus, 4,811 737s at Boeing). Boeing's widebody book is nominally the larger of the two (1,163 787s plus 696 777s, a combination of 777X and current generation 777 Freighters, against Airbus's 890 A350s and 333 A330s), but it is the lower-quality backlog of the pair: more than a third of it sits behind a 777X programme that is inching toward certification with many delays and bottlenecks[B], while Airbus's A350 and A330 lines are both in steady series production and delivering against their own order books today rather than waiting on a certification date.

> ***A decade of supply-chain disruption has, in effect, set the industry's delivery capacity back by about ten years.***

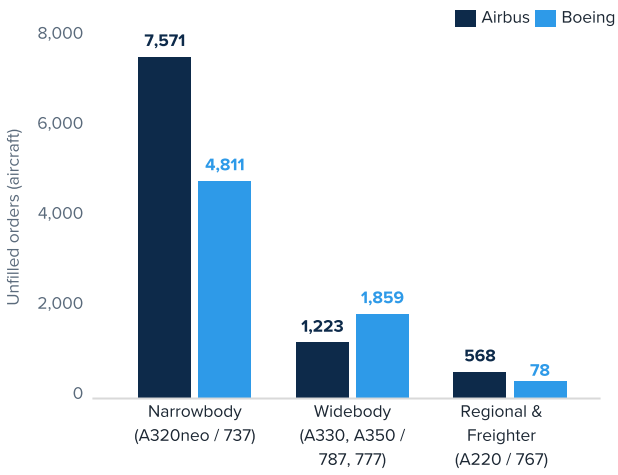
However, the A330 line has had its own recent stumble on quality rather than certification: Airbus nearly halted A330neo deliveries for three months over the summer of 2026. The disruption came to light during a pre-delivery inspection when a stray tool was discovered inside the aircraft structure of a horizontal tail plane assembly manufactured at Airbus's Spanish facilities. This foreign object debris (FOD) discovery forced the planemaker to conduct mandatory inspections on all A330s moving through the production process, causing monthly handovers to virtually cease. Airbus recorded zero A330 deliveries for June and July, with the disruption only easing on 11th August when a single handover was made to Taiwan's Starlux Airlines. Consequently, the programme's year-to-date output dropped over 31% compared to its baseline pace, leaving it running significantly behind its target rate through August.[14]

Boeing's 767 line (78 orders, sustained mostly by freighter and tanker demand) and Airbus's A220 (568 orders) round out a regional and freighter segment that maps directly onto the re-life and freighter-conversion opportunity area this report revisits in Section 2.3.

The tanker share of that 767 line carries its own well-documented execution risk: the KC-46 Pegasus programme has cost Boeing more than US$7 billion in cumulative losses against its fixed-price US Air Force contract, chiefly on remote-vision-system and boom-rigidity defects that have repeatedly delayed a permanent fix, and the type's own fleet-wide mission-capable rate has fallen alongside the rest of the readiness picture Section 6 documents (Exhibit 13); a reminder that a full order book is not, on its own, evidence of a clean production and support record behind it. None of these change the structural read *Flying Higher* set out, it simply confirms that the shortfall in global assembly capacity these backlogs represent has kept building for another fourteen months, with no sign yet of a cyclical demand peak underneath it.

EXHIBIT 1A

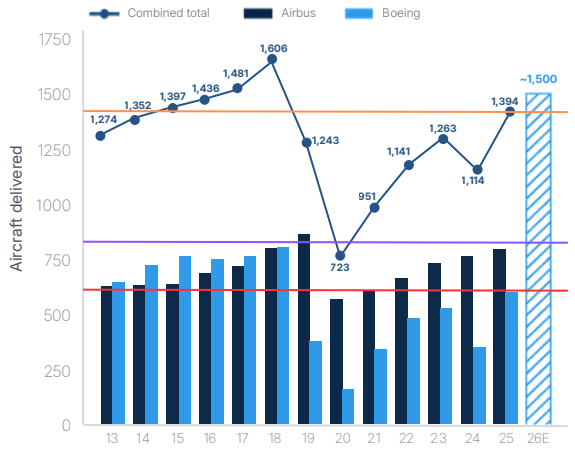
Airbus and Boeing unfilled orders by aircraft category, August 2026.



Source: Flight Plan / Forecast International [12]

EXHIBIT 1B

Airbus and Boeing annual aircraft deliveries, 2013–2025, with combined total and indicative 2026 level.



Source: Aerospace India Association, Aerospace Update 2026.[15]

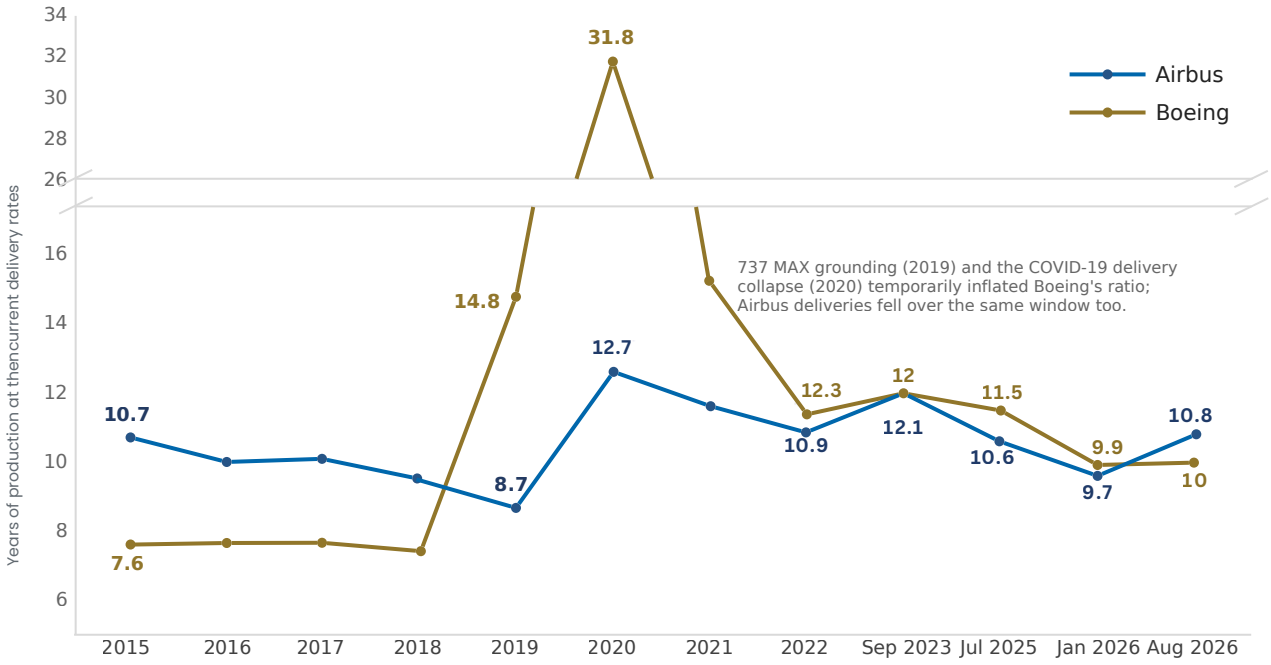
Deliveries tell the same story from the other side of the ledger. Combined Airbus and Boeing deliveries in 2025 came to roughly 1,390 aircraft, essentially the level the two OEMs reached in 2015 (Exhibit 1b): a decade of supply-chain disruption has, in effect, set the industry's delivery capacity back by about ten years. The recovery is still incomplete; even on current projections, combined 2026 output will remain below the roughly 1,600 aircraft delivered in 2018.[15]

That sequencing matters for the thesis. Before Airbus and Boeing can work down the backlog or meet post-COVID demand growth, they first have to get combined output back to its 2018 level, and that requires new capacity across the whole value chain, component manufacturing, sub-assembly and maintenance, not only at final assembly. Aircraft and engine OEMs are accordingly looking for that capacity across Asia, India included. How much of it India captures will depend on sustained policy focus on the sector, on industrial capacity being built ahead of demand, and on Indian suppliers meeting global requirements on quality, cost, delivery and scale, the same qualification test the rest of this report applies company by company. The pull is already visible on the ground: GE Aerospace alone now works with more than 2,200 suppliers across India, over 300 of them feeding its Pune plant, and has committed US$44 million to Indian facilities over the past two years.[16]

Measured the way *Flying Higher* itself measured it; backlog expressed as years of production at then-current delivery rates, rather than the raw unit count, a fuller decade of data sharpens this report's structural read. From 2015 through 2018, before the 737 MAX grounding and the pandemic scrambled delivery rates, Boeing ran a comparatively lean backlog of roughly 7.4 to 7.7 years of production, while Airbus's ran meaningfully longer at roughly 9.5 to 10.7 years.[17] Boeing's own ratio then spiked dramatically, to 14.8 years in 2019 as the MAX grounding halted deliveries against a still-full order book, and to 31.8 years in 2020 as COVID-19 collapsed deliveries further still, a denominator effect, not a demand signal, that says more about how few aircraft Boeing could hand over in those two years than about airline appetite for new aircraft.[17] What matters more for the thesis is what happened once deliveries recovered and that distortion unwound: rather than reverting to Boeing's old sub-eight-year norm, both OEMs' ratios settled, from late 2023 onward, into essentially the same 10-to-12-year band. Both OEMs' backlogs peaked, on this post-distortion measure, around 12 years in late 2023; Flying Higher own “10 to 12 years” mid-2025 snapshot captured the start of a moderation that continued into early 2026, before ticking back up to roughly 10 years for each OEM by August 2026 as new orders again outpaced the modest recovery in delivery rates.[12, 18] The unit backlog has kept climbing throughout this later period, Airbus alone added over 1300 net aircraft to its order book between September 2023 and August 2026. Sustained production challenges then lead to backlogs sitting well above the industry's own pre-2019 baseline. That is exactly the structural-not-cyclical reading this report carries forward, now anchored to eleven years of the same single-source metric rather than one snapshot.

EXHIBIT 2

Airbus and Boeing backlog, years of production at then-current delivery rates, 2015 to August 2026.



Source: Flight Plan / Forecast International, annual and monthly reports.12, 17, 18

[A] CFM56 is itself the reference case for this pattern of early-run durability shortfalls maturing out over time. The engine's own early in-service years included a fan-blade flutter failure mode on the uprated CFM56-3 that ground-based certification testing of the era had not replicated: full-power operation above roughly 27,000 feet (8230 m) induced abnormal fan-blade vibration and high-cycle fatigue, causing an outer fan-blade panel to separate in flight and precipitating the Kegworth accident of 8 January 1989, after which in-flight testing of newly designed or significantly redesigned turbofans became a mandatory part of certification. Separately, CFM56 also went through recurring high-pressure-turbine blade cracking and a flame-out susceptibility in heavy precipitation and hail in its first years of service, needing roughly four generations of turbine-blade redesign before single-crystal blades and revised fan, spinner and booster-bleed geometry resolved both problems. None of that early-service record stopped CFM56 from maturing into the dispatch-reliability benchmark the rest of the narrowbody engine market is still measured against today, the same maturation curve LEAP is presently on. [7, 8]

[B] Certification delay is only part of the 777X's overhang: roughly forty already-built airframes assembled ahead of that certification date now need years of further rework before they can be delivered in a certified configuration, and at least one has been scrapped outright rather than reworked. Boeing scrapped WH007, the seventh 777-9 built, in late summer 2025; it had sat dormant, unflown, at Paine Field since 2019 rather than be brought up to current certified standard. Boeing has taken roughly US$15 billion in cumulative 777X accounting charges to date, including a US$4.9 billion reach-forward loss taken alongside an October 2025 announcement pushing the type's commercial debut back to 2027.[13]



02

Sectors of **Continuing Opportunity**

SECTION 02

Sectors of **Continuing Opportunity**

2.1

Common Systems and Structural Castings: Still the Core of the Cohort

This remains the best-populated, best-evidenced part of the opportunity, and the reason is structural: hydraulics, thermal management, and structural forgings and castings all require exceptional engineering precision and extended certification processes, which yields a concentrated supplier landscape and dependable profit pools once a supplier is qualified.[1, 11]

Dynamatic Technologies is the sharpest illustration, sole global Tier-1 supplier of Airbus A320/A330 flap-track-beam assemblies and complete Airbus A220 door systems, sole supplier of Boeing P-8 Poseidon power-and-mission cabinets, and holder of both an Airbus Global Supplier Award (2021) and a Boeing Defense & Space Global Supplier of the Year award (2023). PTC Industries, through its Aerolloy Technologies subsidiary, has signed landmark titanium-casting agreements with both Airbus (A320neo/A330neo/A350) and Dassault Aviation (Rafale) within the last year. Azad Engineering's forgings qualify across nine-plus global OEMs including GE, Honeywell, Mitsubishi Heavy Industries and Siemens Energy, though roughly 90% of its revenue is reportedly tied to industrial gas-turbines rather than aviation applications specifically.[11] Because its aerospace work is engine work, Exhibit 22 maps Azad to the engine ecosystem rather than to common systems. In general, the aeroderivative nature of land-based turbines makes crossing over into aviation easier, we remain cautious of the disproportionate exposure of land-based gas turbines to the data center build-out opportunity.

Rangsons Aerospace, a Bengaluru-based Tier-1 supplier of fluid-conveyance systems (rigid aviation tubes and flexible hose assemblies) and space- and aircraft-qualified thermal-management hardware (compact heat exchangers and cold plates) to Boeing, GE Aerospace, Collins, Lockheed Martin, Honeywell and Parker, is a further name in this same archetype. Furthermore, via a satellite-terminal and steerable-antenna product line sold into defence and space programmes, Rangsons is one of the few India-based businesses this report can point to with genuine SATCOM capability (Section 2.4 below).[19] Unlike other names in this section, Rangsons is unlisted, and ValueQuest itself holds an equity stake in the company, invested through its Tristar Fund.[20]

2.2

The Engine Ecosystem: Still the Preferred Entry Point

It must be noted that in new aircraft programmes, and especially widebodies, risk-sharing partnerships are now de facto standard. Partnerships of this kind exist because pushing a new engine to the higher thrust and lower fuel-burn a new widebody programme demands is both extraordinarily expensive and genuinely uncertain. It means larger fans, higher bypass ratios, and turbine-inlet temperatures, blade and casing materials pushed to the edge of what is provable at the time of launch, and can run into several billion dollars of design, certification and flight-test spend before a single production unit is delivered, carrying real technical risk of the kind the CFM56 and LEAP discussion above illustrates. The volumes involved compound the problem: a single widebody programme typically sells in the hundreds to low thousands of aircraft over its life of about 30 years in production, a fraction of a narrowbody's run, so that multi-billion-dollar bill has far fewer units across which to amortise it. As a result, neither an airframer nor an engine maker will commit that capital without a guarantee of the resulting programme's full volume; few airframers, in turn, are willing to absorb that scale of cost and schedule risk entirely on their own balance sheet either.

Structuring it instead as a dedicated partnership with a single engine maker, rather than spreading it thinly across several competing engine options, lets the airframer move a large share of the development, certification and warranty risk off its own books and onto the engine OEM; in return, the OEM that shoulders that risk typically wins sole-supplier status on the resulting aircraft for the life of the programme, including MRO and spares, turning a large, front-loaded technology bet into a long-run, largely exclusive revenue stream once the programme reaches maturity, with enough guaranteed volume behind it to justify the initial outlay. This has

become the norm on recent widebody programmes: the A350 (Trent XWB), the A330neo (Trent 7000) and the 777X (GE9X) are all single-source aircraft, with the 787 (GEnx or Trent 1000) the main dual-source exception. It is of note that GE Aerospace risk-shared the development of the 777-300ER, 777-200LR and 777F, making the GE90 the exclusive powerplant on those variants[c].

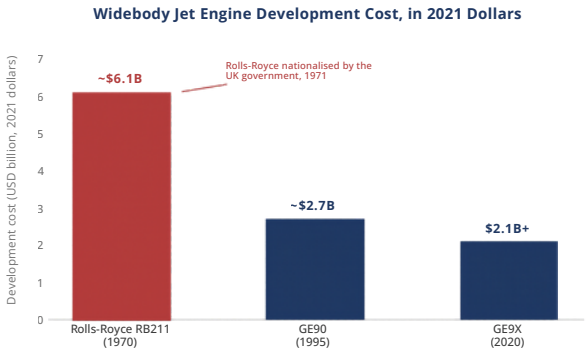
The scale of that upfront bet has itself escalated sharply across engine generations, which is exactly why risk-sharing has moved from a financing choice to close to a structural necessity. Early turbofans such as Pratt & Whitney's JT3D, a derivative of the 1950s-vintage J57 military core, developed in an era of far simpler materials science, no computer-aided design and lighter certification rules, were comparatively inexpensive to bring to market next to what followed. The first true high-bypass widebody turbofan, Rolls-Royce's three-shaft RB211, pushed straight into the billion-dollar range: its development cost had risen to roughly £170 million by September 1970, nearly double the original estimate, and on the order of US$870 million in the money of the day, and that overrun, compounded by the failure of the engine's original carbon-fibre (Hyfil) fan blades in bird-strike testing, drove Rolls-Royce into insolvency and forced the UK government to nationalise it in February 1971: the starkest illustration in the industry's history of what an engine maker absorbing this scale of cost and technical risk alone can do to its own balance sheet.[22, 23] By the 1990s, a clean-sheet large-twin-engine widebody powerplant built around new composite materials cost a broadly similar amount in its own right: GE Aerospace's GE90 programme cost roughly US$1.5 billion to develop.[24] Today, a fully new engine generation regularly exceeds that again: GE has stated it invested more than US$2 billion developing the GE9X for the 777X, separately committing a further US$4.3 billion (plus US$1.1 billion outside the US) in 2017 toward GE9X- and LEAP-related manufacturing capacity alone, a distinct, additional capital commitment layered on top of the development bill itself.[24] Pratt & Whitney is estimated to have spent on the order of US$10 billion developing its geared-turbofan (PW1000G/GTF) architecture, likely the most expensive single engine programme on record to date, and the same programme behind the GTF fleet-management inspection campaign discussed in Section 1; that programme is left out of the widebody comparison below, since it is a narrowbody engine with its own separate, powder-metal-contamination-driven materials issue rather than a like-for-like data point.[22] Restated in 2021 dollars to correct for that intervening inflation, the comparison inverts in places: RB211's bill equates to roughly US$6.1 billion, comfortably the largest of the three in real terms, against GE90's roughly US$2.7 billion and GE9X's a little over US$2.1 billion, a reminder that part of the apparent modern-day escalation in nominal terms is simply a cheaper dollar, even as engines themselves have also grown genuinely more expensive to develop. RB211's real-terms lead is not simply an artefact of that inflation adjustment, however: its inflated total also carries the genuine cost of a protracted, overrun-plagued development, the near-doubling of the original estimate and the Hyfil fan-blade failure discussed above among them, rather than reflecting a like-for-like, on-schedule programme merely priced in older money. Exhibit 3 sets the widebody figures out on this inflation-adjusted, 2021-dollar basis.

> ***For a market this constrained, on an installed base this large, a credible India-based independent engine-MRO entrant would not be competing for scraps; it would be filling a gap the OEMs themselves are already outsourcing.***

[c] Boeing's exclusive-engine model itself predates the 777: Boeing launched the 737-300 (737 Classic) in March 1981 with CFM International's CFM56-3 as its sole engine, CFM International being the GE/Snecma (now Safran) 50/50 risk- and revenue-sharing joint venture formed in 1974, and every 737 generation since has kept that single-engine-source structure.[21] What the second-generation 777 (777-200LR, 777-300ER and 777F) did that the 737/CFM56 arrangement had not was bring an equivalent exclusive, risk-shared model to a flagship, long-haul widebody for the first time: GE alone invested roughly US$500 million developing the higher-thrust GE90-110B1 and GE90-115B variants specifically for these three models, in return for sole engine-supplier status, Boeing agreed not to offer a competing engine on these models, making the GE90-110B1/-115B family the only engines ever certified to power them. That is a materially different arrangement from the original 777-200/-200ER, which offered airlines a genuine three-way choice between GE, Pratt & Whitney and Rolls-Royce engines. Airbus adopted the same exclusive model soon after, and the road to it is itself a useful illustration of the volume economics behind this whole structure. GE Aviation initially secured exclusivity for a scaled-down GE90 derivative on the A340-600 in April 1996, but walked away from the deal in 1997 rather than commit roughly US$1 billion in development cost against a single application's limited volume; Rolls-Royce then proposed the more cost-effective Trent 500, which Airbus selected in June 1997 as the sole engine for the A340-500/600 (launched December 1997; in service 2002-03), a widebody-specific engine that, unlike the original A340-200/300's CFM56-5C, offered no second engine choice. Airbus went on to make exclusivity the norm on its next two widebody programmes: the purpose-built Rolls-Royce Trent XWB was selected in July 2006 to power the A350 XWB exclusively, and the Rolls-Royce Trent 7000 was selected as the sole engine for the 2014-launched A330neo, replacing the three-way GE/Pratt & Whitney/Rolls-Royce choice the original A330 had offered; Airbus's own stated rationale was that qualifying a second engine type on one airframe itself adds several hundred million dollars to a programme's development cost.[21]

EXHIBIT 3

Widebody jet engine development cost by programme and era, adjusted to 2021 US$.



Adjusted from nominal spend to 2021 USD using US CPI (multipliers: 1970→2021 x6.98, 1995→2021 x1.78, 2020→2021 x1.05).
Narrowbody engines (e.g. CFM LEAP, P&W PW1000G/GTF) are excluded as not like-for-like.

Source: Construction Physics, "Why It's So Hard to Build a Jet Engine"; Rolls-Royce RB211 and General Electric GE9X (Wikipedia); NASA Spinoff 1996 (GE90); US CPI inflation data.[22, 23, 24]

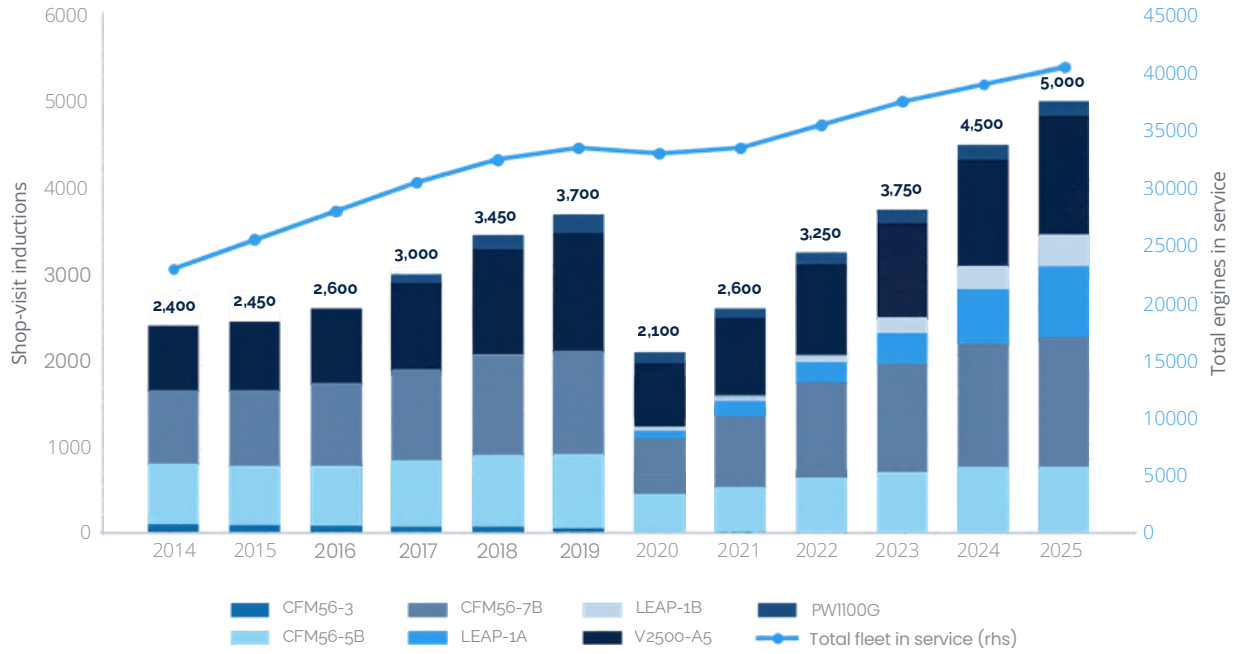
Flying Higher preference for engines over aerostructures was a bet on the dynamics described in the previous paragraphs. Engines are the single most valuable system on an aircraft, but their economic weight is better measured over a programme's life than at the point of sale: engine makers typically sell new engines at, or close to, a loss, at deep discounts to list price, and earn their return on decades of aftermarket parts and service[4], and, with the exclusivity models, are tied to an airframe for the life of the programme, spanning three to five decades. On IBA's figures and AIA's internal research, the engine pair on a new A320neo, an aircraft valued at around US$55 million, is priced at roughly US$6 million per shipset after OEM discounts, and on a 787 at around US$160 million, at roughly US$18 million, discounts on new engines that typically run at around 80% of list price. That is a fraction of what a single scarce, serviceable engine now commands in the secondary market.[25, 26] Azad Engineering's turbine machining (cold sections) relationships with GE and Siemens Energy, together with its direct aero-engine contracts with Rolls-Royce and Pratt & Whitney Canada[27, 28], sit closest to this pool among listed names, and the genuinely India-domiciled, IP-holding engine-component or engine-MRO-tooling business, the archetype *Flying Higher* explicitly said it preferred to own, already has a listed representative in Unimech Aerospace, whose precision gas-turbine engine tooling business supplies the licensed engine-MRO tool ecosystem built around global licensees such as AGSE, across more than 2,500 SKUs. What remains open is a step further down the same value chain: an actual engine-overhaul operating capability, rather than the tooling that feeds one. Section 5 below flags the clearest present opening on that front: Adani's MRO platform is openly seeking an engine-maintenance partner, which is as close as the cohort currently comes to a named door into that specific pool. That aftermarket position belongs to the engine OEMs rather than the airframers, which is why airframers are now openly pressing for a share of it[4]; and engine maintenance is the largest single slice of the MRO wallet, forecast at around 51% of India's commercial MRO spend over the coming decade.[29] Engine maintenance has also become sharply more expensive. AIA's internal research indicates that engine maintenance costs have roughly doubled over the past five years[26], and public data point the same way: a Reuters analysis of US Department of Transportation data found engine labour, repair and materials spending at six large US airline operations up about 68% between 2019 and 2025, against a roughly 10% rise in hours flown, with overhaul costs for the new-generation LEAP and GTF engines rising about twice as fast as for the CFM56 and V2500 engines they replace.[30]

The capacity crunch that opening would step into is severe and well documented. Narrowbody engine shop-visit inductions more than doubled globally between 2014 and 2025, from roughly 2,400 to around 5,000 a year, as the CFM56 and V2500 generations mature into heavy overhaul age at the same time as the newer LEAP and GTF families are driving unplanned removals of their own; LEAP engines averaged an estimated 230 days in shop in 2025, against a 100-to-120-day norm for a medium-scope repair, and only 15% of LEAP work is currently performed outside OEM-controlled shops.[2] GE Aerospace has responded with roughly US$1 billion committed to global MRO capacity expansion, and Rolls-Royce has begun outsourcing Trent 700 work to third parties (Sanad AeroTech, and a joint venture with Air China) rather than absorb it all in-house, both of which are OEMs conceding they cannot clear this backlog alone.[2] None of that capacity is yet Indian. For a market this constrained, on an installed base this large, a credible India-based independent engine-MRO entrant

would not be competing for scraps; it would be filling a gap the OEMs themselves are already outsourcing. The scarcity value this generates is now visible in secondary-market pricing: GE90-115B full-life engine values exceed US$35 million and freshly overhauled Trent 700 units trade at US$17 to 20 million, both driven by the same constrained spare-engine supply and MRO turnaround times rather than by underlying aircraft demand, a direct, market-priced illustration of the pricing power *Flying Higher* expected this archetype to carry.[3]

EXHIBIT 4

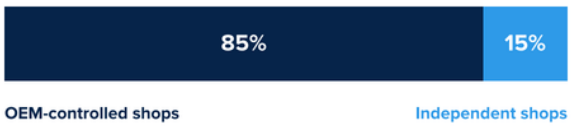
Narrowbody engine shop-visit inductions by engine sub-type, with total fleet in-service, 2014–2025.



Source: IBA, "Engine MRO: Rising Demand, Limited Capacity," 2026.[2, 25]

EXHIBIT 5

Share of LEAP engine shop visits by provider type, 2025; independent-shop share nearly doubled from 2024.



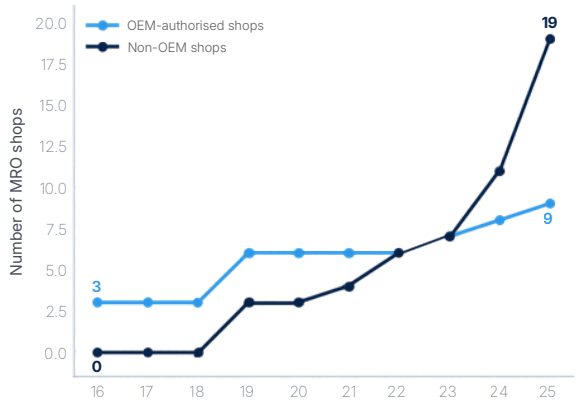
Source: IBA, "Engine MRO: Rising Demand, Limited Capacity," 2026.[2]

The shop count behind that share tells the same story with a sharper edge. Non-OEM shops qualified to support the CFM LEAP fleet did not exist before 2019; by 2025 there were 19 of them, against just 9 OEM-authorised shops over the same period. Independent capacity has not just caught up, it has overtaken the OEM channel in the number of shops qualified to do the work, even though OEM-controlled shops still capture the larger share of actual shop visits (Exhibit 5 above).[25] That gap between shop count and shop-visit share is itself the opportunity: qualification is opening faster than OEM-controlled volume is ceding it, which is exactly the kind of widening, still-early door a new India-based independent entrant could still walk through.

Where that independent capacity is sitting is itself instructive, because it is concentrated in exactly the high-traffic, OEM-distant regions this parts and turnaround-time squeeze would predict. Singapore's ST Engineering is expanding shop floor, office and warehousing space specifically to handle an anticipated surge in CFM56 heavy-maintenance and LEAP quick-turn volumes over the next one to two years. Indonesia's GMF AeroAsia , also building out LEAP-variant capability, has its own chief executive warning openly that the global shortage of engine materials and piece parts is a multi-year, not a transient, problem, with repair lead

EXHIBIT 6

OEM- vs non-OEM-supported MRO shops for CFM LEAP engines, 2016–2025.



Source: IBA Insight.[25]

times on some new-generation programmes now exceeding 200 days and showing no sign of shortening.[31] Latin America's equivalent is Aeroman, based at El Salvador International Airport: across seven hangars capable of servicing up to 64 narrow- and widebody aircraft at once, it runs its own component backshops; structures, composites, seats, avionics, machining and heat treatment among them, giving it comprehensive parts-refurbishment capability on-site rather than dependence on OEM-controlled supply, and a geographic franchise serving US, Central and South American operators who would otherwise have to send work back toward OEM home bases in North America or Europe.[32] Both regional clusters are independent, spares-refurbishment-driven MRO in the sense this report has used the term throughout, capacity built around servicing and re-certifying existing parts rather than around an OEM's own production or licensing chain, and both sit deliberately far from where the OEMs themselves are based, which is precisely why they are absorbing the overflow those OEMs cannot clear alone.

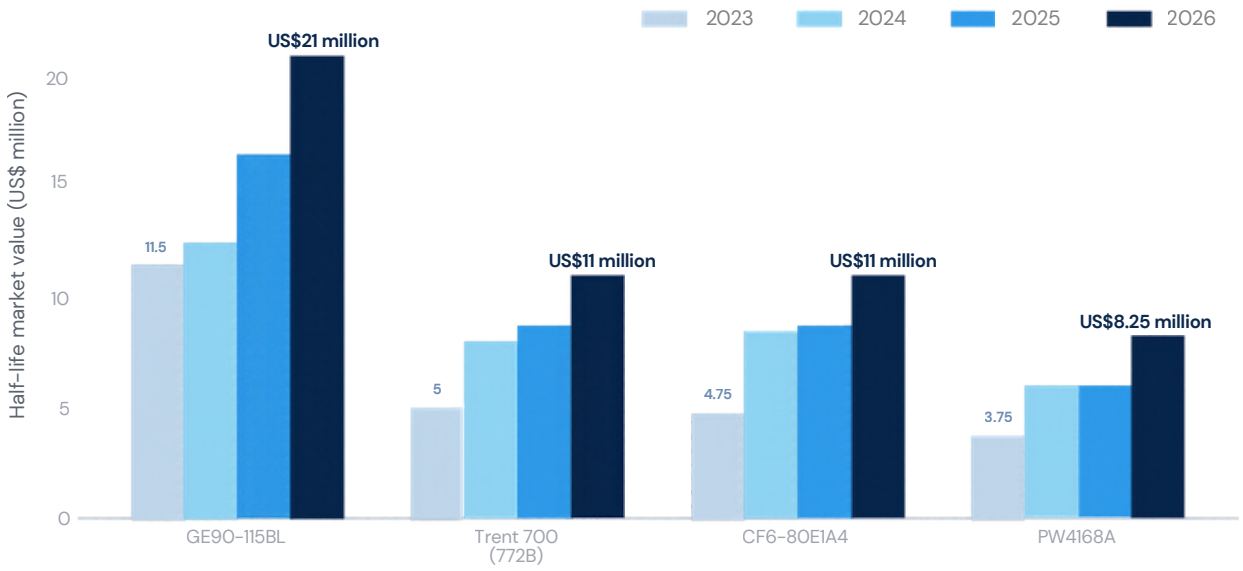
The OEM-affiliated side of the same map looks different in kind, not just in ownership. Singapore Aero Engine Services (SAESL), a joint venture between Rolls-Royce and SIA Engineering Company, and, on its own account, the only Trent-engine MRO able to support the full Trent 500/700/800/900/1000/XWB family has committed roughly US$242 million to new Singapore facilities expected to add around 500 jobs, on top of an existing capacity to overhaul more than 300 Trent engines a year and repair over 80% of engine components across five accredited component shops.[33] That is the same geography as the independent clusters above, Asia, close to the world's fastest-growing traffic base, but a different model: OEM-controlled IP and licensing rather than independent qualification, mirroring the Sanad AeroTech and Air China arrangements Rolls-Royce has used to outsource Trent 700 work elsewhere.[2] For a market this short of capacity, both models are expanding at once rather than competing for the same pool of work, which is consistent with this section's broader point: the gap is large enough, and durable enough, that OEM MRO and independent, spares-based MRO are both growing into it rather than displacing one another. An India-based entrant, on the evidence above, would be entering a capacity race that is already global rather than trying to dislodge an incumbent. This is an observation about where capacity is being added, not a recommendation of a standalone independent engine MRO in India: on this report's reading, the more plausible Indian routes into engine overhaul run through an OEM licence or joint venture, or through a partnership with an existing platform such as Adani's (Section 5), rather than through independent, spares-based qualification from a standing start.

IBA's own half-life valuation series, a different, longer-horizon basis than the full-life and freshly-overhauled figures cited above, but directly comparable across time shows the same scarcity value compounding steadily rather than spiking once. GE90-115BL half-life values have risen from roughly US$11.5 million (2023) to US$21 million (2026), and Trent 700 and CF6-80E1A4 half-life values have both moved from the US$5 million range to US$11 million over the same three years, with even the smaller PW4168A pool up from US$3.75 million to US$8.25 million.[25] Every widebody engine type IBA tracks has moved in the same direction, which is the clearest evidence that this is a structural repricing of scarce, certified engine assets rather than a one-off spike in any single type.

> ***Scarcity value is not a widebody-only story or even an engine-family-only story. It tracks the specific variant's remaining installed base and parts pool.***

EXHIBIT 7

Widebody engine half-life market value evolution, 2023–2026.



Source: IBA Insight.[25] Values are per engine, not per shipset, on IBA's half-life basis (half the time to the next shop visit and half the life-limited-part life remaining) and, per standard appraisal convention, exclude the value of any OEM maintenance agreement attached to the engine.

The same scarcity dynamic shows up beyond widebodies, once the lens widens to the regional, turboprop and legacy narrowbody engines that make up the bulk of the world's flying fleet. Exhibit 8 breaks out the change in market value and lease rate between H1 2025 and H1 2026 by specific engine variant, and the dispersion within a single airframe family is the more useful signal than any single average: on the A320ceo, the still-common CFM56-5B/3 is roughly flat to firming, while the less common V2500-A5 and V2500-A5 Select variants are both declining on average in market value and lease rate, and on the 737NG, the newer CFM56-7BE is firming (+4% average market value) while the older CFM56-7B is flat to declining. Scarcity value, in other words, is not a widebody-only story or even an engine-family-only story, it tracks the specific variant's remaining installed base and parts pool, which is exactly the kind of qualification-and-certification barrier this framework's Sovereign-Procurement-Contractor and Qualified-Global-Supplier archetypes are built to price.

At the same time, new-generation engines such as the LEAP and PW1100G families continue to face time-on-wing challenges, contributing to elevated aircraft-on-ground (AOG) levels and sustained demand for spare engines.[5] IBA has also modelled a value profile for the PW1100G's upcoming Advantage and Hot Section Plus (HS+) upgrades, indicating future value upside linked to those upgrade programmes (Exhibit 9 on page 18). On IBA's forecast at 0% inflation, a standard PW1133G carries a half-life base value of roughly US$16.7 million in 2026, against about US$18 million for an HS+ engine and about US$18.7 million for an Advantage engine, and the gap widens over the decade, to roughly US$11 million, US$13 million and US$15.5 million respectively by 2036. For the PW1100G fleet, in other words, an engine's value increasingly depends on the upgrade path it has taken.[5]

2.3 Re-Life, Retrofit and Freighter Conversion: Moving From Thesis to Capacity

Flying Higher flagged re-life and retrofit as a high-barrier, persistent-backlog opportunity, since regulatory controls on passenger-to-freighter conversion keep competition genuinely limited. A year on, this has moved from thesis to announced capacity: Adani's consolidated Air Works–Indamer platform is explicitly building P2F conversion capability alongside its base-maintenance business (Section 5), which is the first concrete India-side capacity

EXHIBIT 8

Engine market-value (MV) and lease-rate (LR) change by variant, H1 2026 versus H1 2025 (Min/Avg/Max).

Aircraft Type	Engine	MV Min	MV Avg	MV Max	LR Min	LR Avg	LR Max
Regional and Turboprop							
Bombardier CRJ	CF34-8C	2%	2%	4%	0%	0%	0%
Embraer E170/175	CF34-8E	2%	2%	5%	0%	0%	0%
Embraer E190/195	CF34-10E	-1%	0%	0%	0%	0%	0%
ATR42	PW120	0%	2%	14%	0%	0%	0%
DHC-8 Q400	PW150	0%	0%	0%	4%	4%	4%
Airbus A220	PW1500G	2%	3%	5%	8%	8%	9%
Airbus A320ceo Family							
Airbus A320ceo	CFM56-5B/P	0%	0%	3%	-4%	0%	3%
Airbus A320ceo	CFM56-5B/3	-1%	0%	4%	-3%	4%	14%
Airbus A320ceo	CFM56-5B/3 PIP	-9%	-1%	1%	0%	9%	23%
Airbus A320ceo	V2500-A5	-15%	-7%	-3%	-9%	-6%	-1%
Airbus A320ceo	V2500-A5 Select	-9%	-7%	-6%	-3%	-1%	0%
Boeing 737NG Family							
Boeing 737NG	CFM56-7B	-2%	-1%	0%	0%	0%	0%
Boeing 737NG	CFM56-7B/3	-2%	1%	5%	-5%	-4%	-3%
Boeing 737NG	CFM56-7BE	2%	4%	10%	0%	0%	0%

Source: IBA Insight, engine market-value and lease-rate benchmarking data, as supplied to ValueQuest, August 2026.[25]

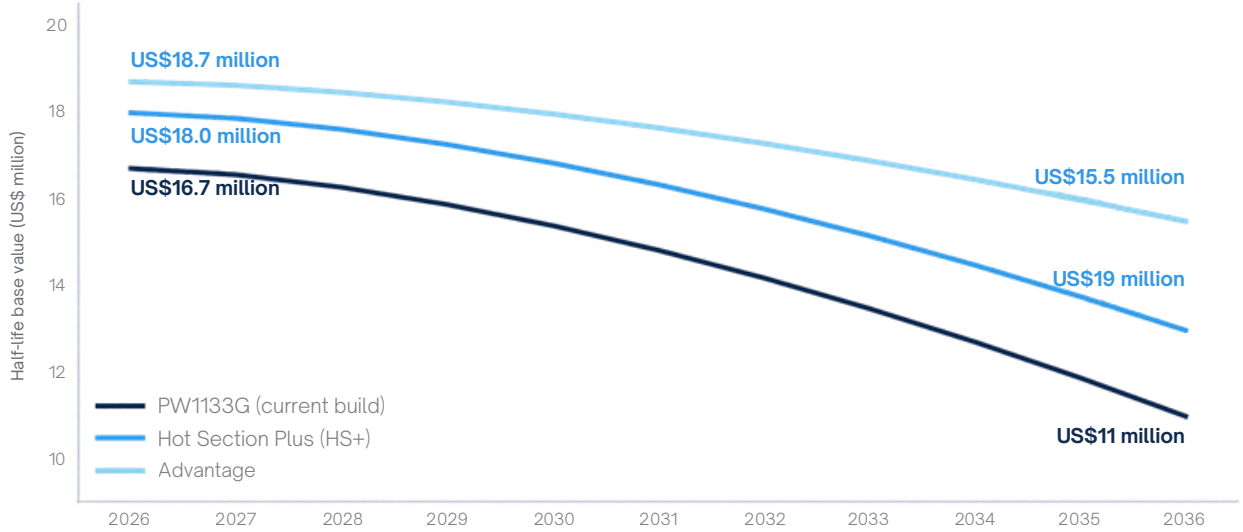
commitment in this opportunity area since the original deep dive.

The demand side of that bet has, if anything, tightened further. The widebody freighter market remains structurally tight rather than oversupplied: 777-300ER and A330-300 conversion feedstock is scarce enough that lessors report more requests than aircraft available to convert, and the binding constraint is not conversion-programme capacity but engine availability, GE90-115B-powered 777-300ERs are held back from conversion because shop-visit downtime and cost on that engine discourage operators from retiring the airframe in the first place, a feedstock problem that will only ease as more airframes age into conversion eligibility.[34] A 2012-vintage 777-300ER freighter is valued at roughly US$83.5 million and an A330-300P2F at roughly US$47 million, both expected to firm further as AI-infrastructure and semiconductor freight (offsetting a softer e-commerce base) adds a new, less cyclical demand driver on top of the conversion queue itself.[34] None of the current cohort is a conversion-programme operator, but the read-through for Adani's build-out is favourable: a genuine feedstock and engine-availability bottleneck, not a demand question, is what is limiting how fast this opportunity area can be served.

The older 747-400 freighter fleet provides a useful cross-check on how tight the broader widebody cargo market already is. Rather than shrinking as it ages, the active factory-built 747-400F/ERF fleet has held remarkably steady in a roughly 125-to-150-aircraft band since January 2024. Over that same timeframe, the

EXHIBIT 9

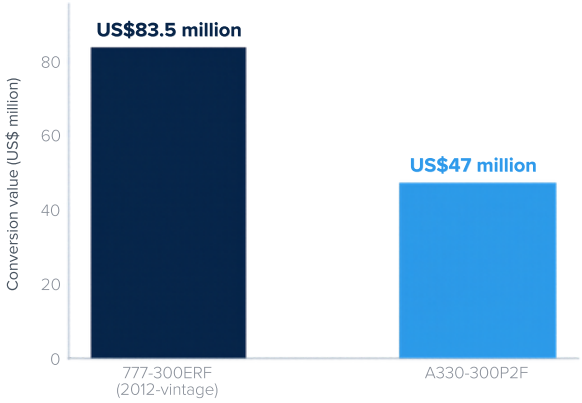
PW1133G half-life base value forecast, 2026–2036 (0% inflation): current build versus Hot Section Plus (HS+) and Advantage upgrades.



Source: IBA Insight, as published in IBA, "IBA Engine and Lease Rate Update, H1 2026."[5]

EXHIBIT 10

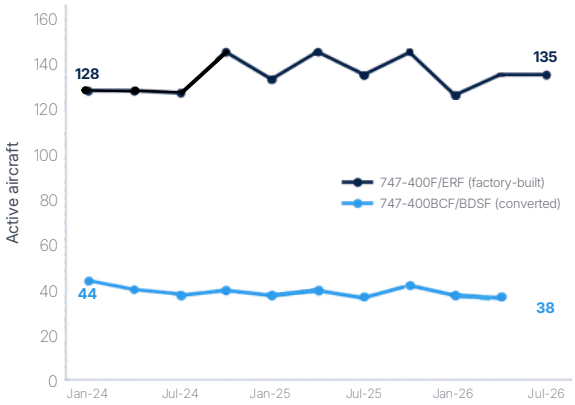
Widebody freighter conversion values, 2026.



Source: IBA, "The Widebody Cargo Market, Where Are All the Aircraft?"[34]

EXHIBIT 11

Freighter-configured Boeing 747-400 active fleet, January 2024–July 2026.



Source: IBA Insight.[25]

smaller fleet of converted 747-400BCF/BDSF platforms has remained similarly stable at 35 to 45 active aircraft.

Neither series shows the retirement wave that an ageing, out-of-production type would normally experience under standard market conditions.[25] This trend is entirely consistent with the 777-300ER and A330-300 feedstock scarcity described above. Operators are not retiring older widebody freighter capacity because they cannot find near-term replacements; instead, they are keeping these quad-jets flying to absorb a capacity shortfall that the new-generation assembly and conversion queues cannot yet fulfil.

2.4

Civilian Satcom and Communication Suites: Still Mostly Narrative, With One Disclosed Exception

Both areas remain conceptually intact, the proliferation of in-flight connectivity and the extension of aircraft service lives both plausibly drive durable, certification-gated demand, but neither has produced an independent, named, funded India counterparty in the cohort yet. The nearest adjacent evidence is the space-tech sector's SBS-III programme, which anchors three named private firms to a funded government satellite-surveillance commitment. The one direct exception is Rangsons Aerospace, whose satellite-terminal and steerable-antenna product line is a genuine, operating SATCOM capability sold into defence and space programmes (Section 2.1), but Rangsons is unlisted, and ValueQuest holds an equity stake in it through its Tristar Fund.[19, 20] Civilian satcom proper, outside that one disclosed holding, and communication-suite retrofits specifically, remain watch items rather than positions until a comparable, independent, funded counterparty appears.

03

New **Since July 2025**



SECTION 03

New Since **July 2025**

Five developments since the original deep dive change the opportunity set rather than merely confirming it.

01

A record domestic-procurement earmark

The Union Budget 2026-27 allocated a record ₹7.85 lakh crore to defence, with ₹2.19 lakh crore in capital outlay and ₹1.39 lakh crore (roughly three-quarters of capital acquisition) is earmarked for procurement from domestic defence industries, alongside customs-duty exemptions on imported raw materials for aircraft MRO.[35] This is a direct, quantified tailwind for the Sovereign-Procurement-Contractor archetype and for any Tier-2/3 supplier feeding it.

₹7.85 lakh crore
record defence allocation, Union Budget 2026-27

02

An MRO policy package that has moved from announcement to construction

The GST rate on MRO services was cut from 18% to 5%, the government's 13% revenue royalty on MRO operations was discontinued, and land-lease terms were extended. Together they are expected to cut MRO costs by 10 to 20%.[36] Section 5 sets out what has broken ground since.

18% to 5%
GST on MRO services, royalty discontinued

03

A visible engine-supply bottleneck inside the flagship indigenisation programme itself

GE Aerospace's F404-IN20 production line, idled after 2016, took roughly five years to restart following the 2021 order, and Tejas Mk1A deliveries to the Indian Air Force remain gated on engine availability despite the airframe itself clearing over 64% indigenous content.[37] This is simultaneously evidence for Flying Higher's engine-ecosystem thesis, the chokepoint is exactly where the deep dive said pricing power would concentrate and a fresh, concrete illustration of the dependency risk Section 4 below discusses.

5 years
to restart the F404 line after the 2021 order

04

A landmark fighter-engine technology transfer moving the same chokepoint onto a longer runway

GE Aerospace and Hindustan Aeronautics are finalising a deal to transfer roughly 80% of the F414 engine's manufacturing technology and intellectual property to HAL, with a dedicated Indian production facility targeted to deliver its first indigenous unit by 2029 and an initial domestic run of 99 engines to power the Tejas Mk2 and the first two AMCA squadrons.[38] It is the first US fighter-engine technology transfer of this depth to India, a genuinely different arrangement from the licensed-production terms Russia set for earlier platforms. Section 7 below reads what this shift in supplier geography does, and does not, resolve.

80%
of F414 engine technology and IP transferred to HAL

05

A second listed comparable, and a sharper valuation reference set

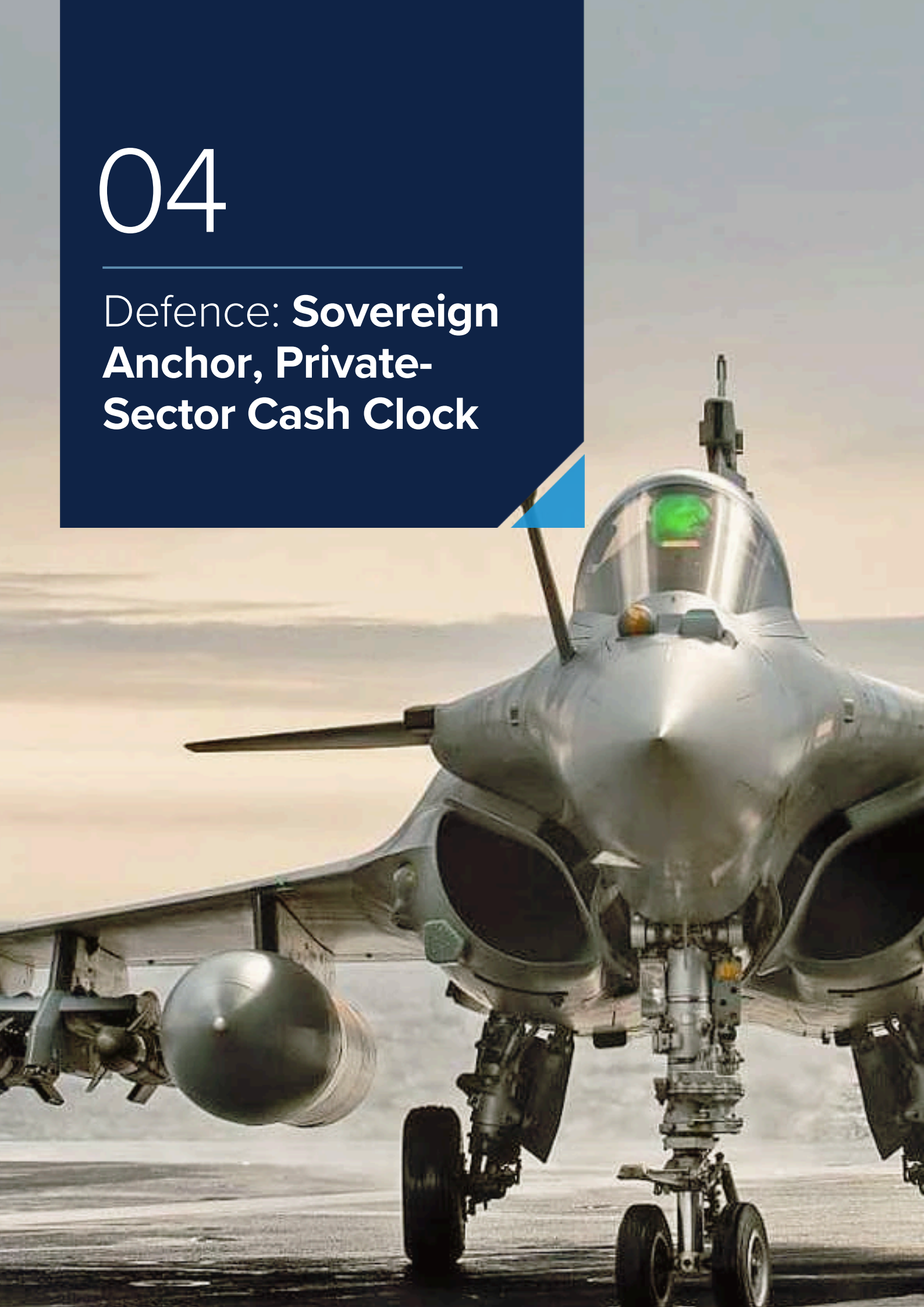
Aequs's December 2025 IPO, priced at roughly 109.4x FY25 EV/EBITDA, well above listed peers Azad Engineering (64.9x), Unimech Aerospace (53.1x at listing) and Dynamatic Technologies (41.8x), gives the cohort its richest single valuation reference point at the time.

109.4x
FY25 EV/EBITDA at Aequs's December 2025 IPO

Source: ValueQuest Research

04

Defence: **Sovereign Anchor, Private-Sector Cash Clock**



SECTION 04

Defence: **Sovereign Anchor, Private-Sector Cash Clock**

The bull case for defence manufacturing is not speculative and has continued to build: Hindustan Aeronautics' profit after tax rose from roughly ₹3,239 crore in FY21 to ₹9,116 crore in FY26, Bharat Electronics' from ₹2,099 crore to ₹6,062 crore, and Bharat Dynamics' from ₹258 crore to ₹420 crore, with all three re-rated by public markets once DAP-2020 assured order flow.[11] The Union Budget 2026-27's ₹1.39 lakh crore domestic-procurement earmark extends that order-flow assurance further.[35] What it does not resolve and what the private suppliers beneath the DPSUs still absorb directly is the pace at which that order visibility becomes cash: over 80% of the capital employed by private defence companies sits in inventory awaiting time-consuming pre-dispatch inspection, and L1 lowest-bid pricing compresses margins even on contracts already won.[11]

The GE F404 episode is worth reading as more than a single-programme delay. It shows that the sovereign order-flow assurance DAP-2020 provides does not, by itself, close India's dependence on a small number of foreign-controlled chokepoints. Here, a single US engine manufacturer's willingness to restart a mothballed production line.[37] For a private Indian supplier positioned as a Sovereign-Procurement Contractor, the practical implication is to treat Underlying policy support and Secured demand as necessary rather than sufficient: a statute and a budget line do not by themselves guarantee that every input further up the supply chain. ValueQuest's own underwriting work already reads India's DPSU cohort as trading at roughly 1.3x its seven-year through-cycle EV/EBITDA average following the DAP-2020-driven re-rating an AMBER cyclical-bhav tier calling for staged entry and a hurdle-rate add-on, not a change of view on the underlying dhanda.[11]

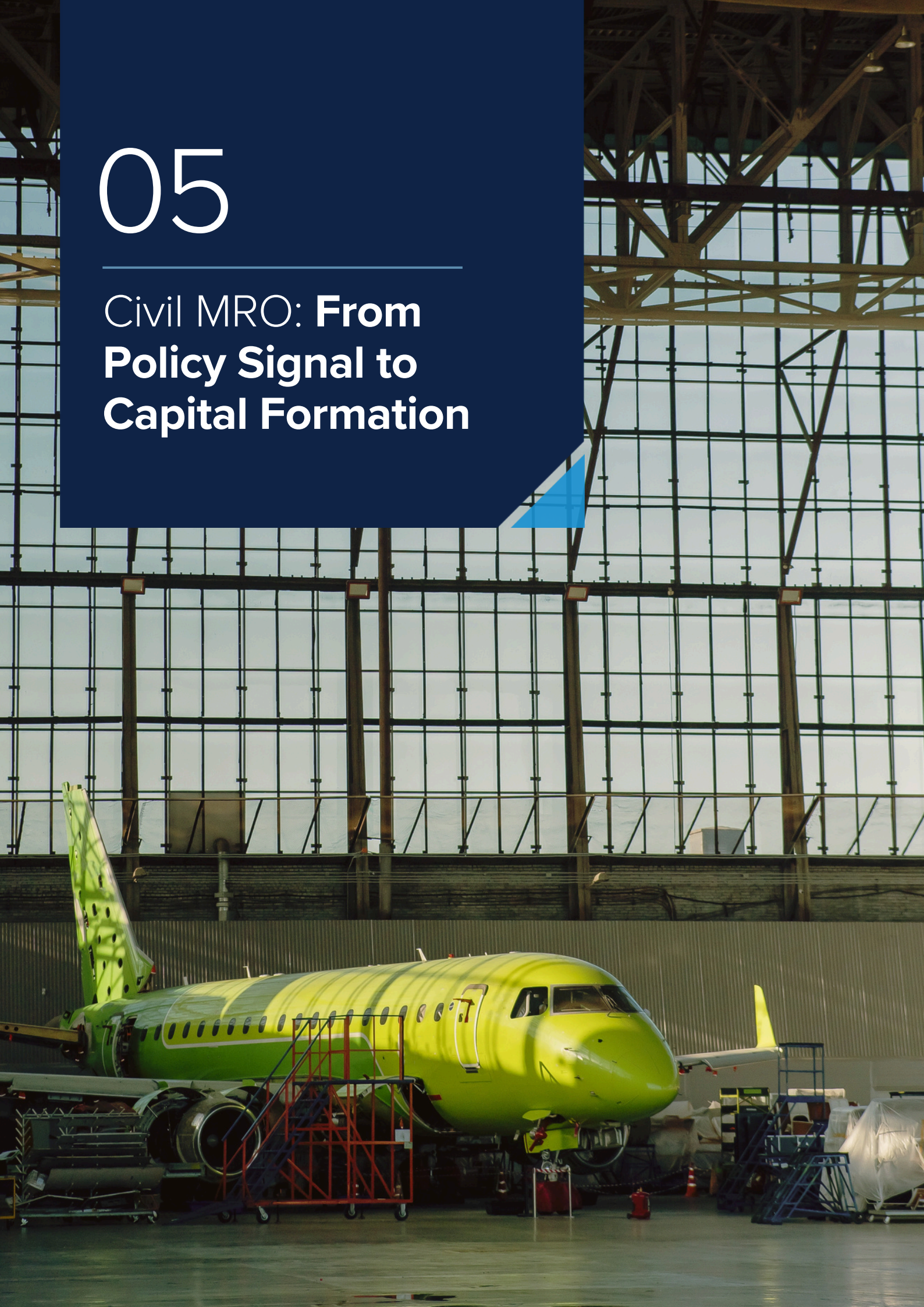
The pipeline behind that order flow is also widening in a way *Flying Higher* could not have anticipated. India's roughly US$35 billion agreement for 114 Dassault Rafale fighters is structured so that only the first 20 arrive in flyaway condition from France. The remaining 94 are to be built domestically on the first Rafale production line ever located outside French sovereign territory, led by Tata Advanced Systems, with indigenous-content requirements starting near 40% and rising to 55 to 60% in later batches.[39] Sovereign-Procurement-Contractor demand of this kind, a named, funded, statute-backed programme with a multi-year localisation ramp is exactly the dhanda profile the SCALE-UP framework (Section 14) scores well; it also means the Tier-2/3 supply chain feeding Tata's Adibatla line is a name-generating opportunity to watch over the next several years, in the same way DAP-2020 itself generated HAL, BEL and BDL's re-rating. Section 7 takes up the geopolitics behind this shift in full.



> ***A statute and a budget line do not by themselves guarantee every input further up the supply chain.***

05

Civil MRO: **From Policy Signal to Capital Formation**



SECTION 05

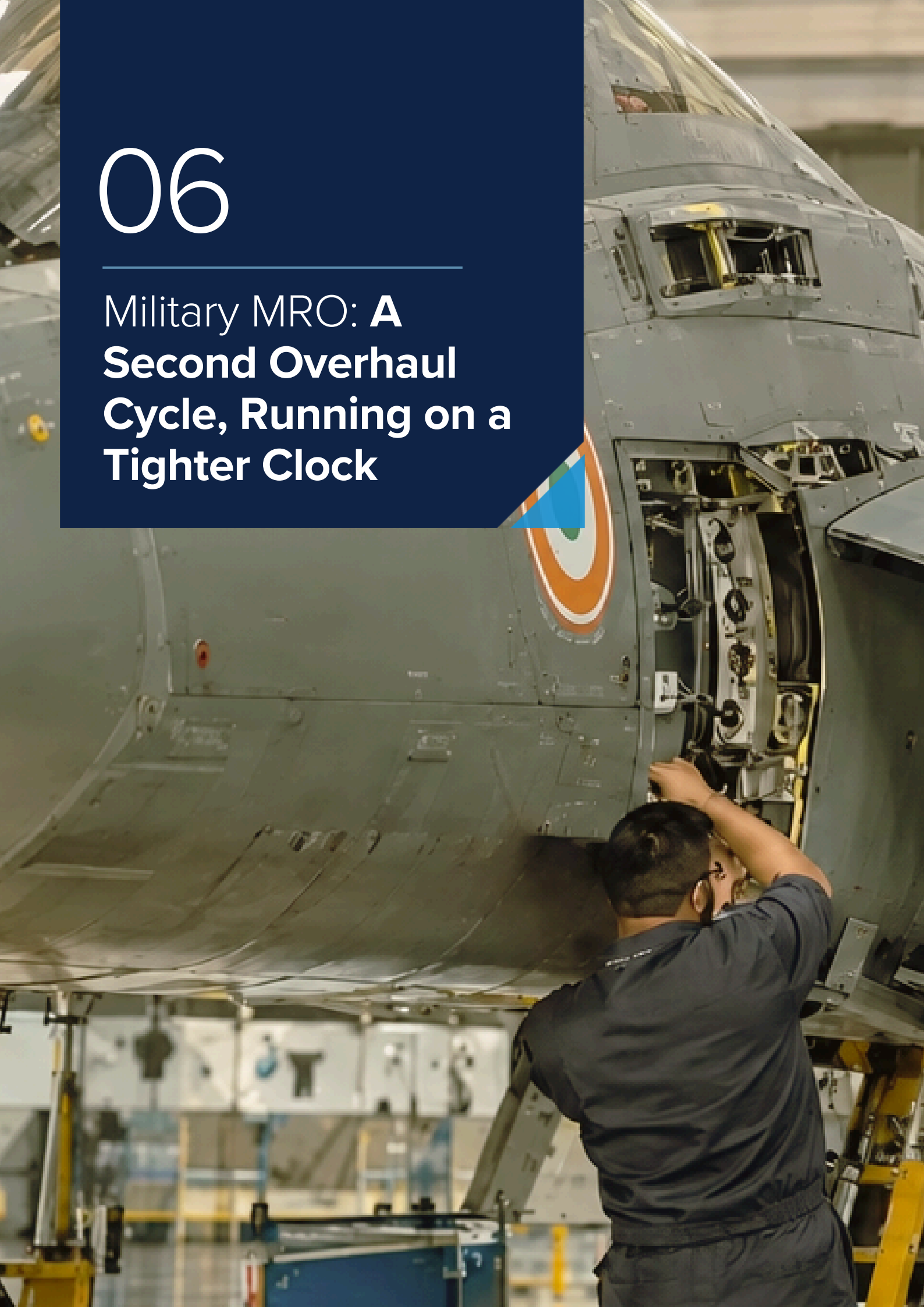
Civil MRO: **From Policy Signal to Capital Formation**

Flying Higher's own caution on civil MRO was specific: airlines spend roughly 10 to 15% of revenue on MRO, over 90% of it is outsourced to Singapore, the UAE and, until recently, Turkey, and MRO operations need large, airport-adjacent land parcels that are genuinely scarce in India, which is a real constraint, not a policy problem alone.[1] The deep dive's one qualification was that MRO tooling, especially for engines, sits behind a licence-protected, high-margin, high-barrier moat unlike the land-gated business of base maintenance itself.[1]

> ***The underwriting read should not change simply because the headlines have.***

A year on, the policy side of that equation has moved decisively. The GST rate on MRO services fell from 18% to 5%, the government's 13% MRO revenue royalty was discontinued, and land-lease terms were extended, a package expected to cut MRO costs by 10 to 20%.[36] At this time India's commercial fleet, roughly 750 aircraft as of the original deep dive, is on track to more than double within five years, putting India on a path to the world's third-largest fleet.[1, 36] Capital has followed: Air India has broken ground on a 35-acre mega-MRO facility at Bengaluru's Kempegowda International Airport with Singapore's SIA Engineering Company as strategic development partner, targeting over 1,200 skilled engineering jobs and support for some 200 Karnataka SMEs;[40] HAL and Airbus have formalised an MRO joint venture for the A320 family, and Haveus Aerotech has opened a ₹450 crore ATR-focused MRO facility in Karnataka;[36] and the Adani Group has consolidated Air Works (acquired for roughly ₹400 crore enterprise value in December 2025) with Indamer Technics into a single platform spanning line and base maintenance, with landing-gear overhaul, painting and passenger-to-freighter conversion in its stated build-out and, notably, an openly stated search for an engine-maintenance partner.[41]

The underwriting read should not change simply because the headlines have. Since maintenance itself remains a land-, capital- and OEM-licence-gated business rather than an IP-driven one, closer to an infrastructure or services investment than to any of the five capital archetypes this framework applies (Section 14), which is why the current wave of MRO capital formation is being led by an airline (Air India, with a foreign MRO partner) and a diversified infrastructure conglomerate (Adani), not by a Tier-2/3 manufacturer scaling organically. The one item worth tracking closely is Adani's explicit, still-unfilled search for an engine-maintenance partner: an Indian company that could fill that specific gap would sit squarely inside the higher-margin, licence-protected corner of MRO that *Flying Higher* always preferred, and would extend the cohort's existing engine-MRO exposure to date limited to Unimech Aerospace's tooling business (Section 2.2) into actual overhaul capability for the first time.



06

Military MRO: **A Second Overhaul Cycle, Running on a Tighter Clock**

SECTION 06

Military MRO: **A Second Overhaul Cycle, Running on a Tighter Clock**

Flying Higher and Section 5 above both read MRO as a civil-aviation story, airline fleets, GST cuts, land-adjacency constraints. That framing understates the opportunity. Global military aviation MRO is itself a market of comparable scale to India's entire civil MRO ambition, and it is being pulled forward by two forces that have nothing to do with airline traffic growth: rising defence budgets across Asia, and a fast-deteriorating readiness picture in the world's largest air force that is a preview of the sustainment burden every operator of ageing, combat-flown fleets carries.

6.1

The Market: Larger Than It Looks, and Growing Fastest in Asia

The global military aviation MRO market is valued at roughly US$45.75 billion in 2026 and is forecast to reach US$51.75 billion by 2031, a modest headline 2.5% CAGR that understates real dispersion beneath it.[42] Fixed-wing platforms account for 59.72% of the market, and engine overhaul alone is 42.12% of MRO revenue, the same licence-protected, high-margin corner of the business *Flying Higher* already preferred in the civil context, and the one Adani's platform is still searching for a partner to fill (Section 5).[42] Asia-Pacific is the fastest-growing region, at a 4.32% CAGR through 2031, against North America's still-larger 37.35% share of the market today, a gap that is closing on the back of China's steady US$314 billion defence allocation and Japan's 21% increase in its 2024 defence budget to US$55.3 billion, both cited directly in the same market analysis alongside India's own US$2.34 billion MiG-29 overhaul joint venture as evidence of the regional shift.[42] For a cohort already positioned around Sovereign-Procurement-Contractor and Qualified Global Supplier archetypes, this is a second, distinct order-flow pool sitting alongside new-build defence procurement (Section 4), sustainment of aircraft already in service, rather than construction of aircraft not yet delivered.

6.2

India's Own Military MRO Moment: MIHAN, and a Russian Supply Problem

India's own version of this story broke into the open in mid-2025 and has continued to develop since: US-based Coastal Mechanics, in partnership with Reliance Defence, signed a US$2.34 billion agreement to overhaul and modernise more than 100 Indian MiG-29 UPG and MiG-29K fighters (the Indian Air Force operates over 50 of the former, the Navy around 40 of the latter), alongside roughly 100 Jaguar strike aircraft, Apache AH-64 attack helicopters and Swedish-designed L-70 air-defence guns, based at the same MIHAN hub in Nagpur that already hosts the civil MRO activity discussed in Section 5.[43] The commercial logic is stated plainly in the reporting: with Russia three years into a war with Ukraine, India has found it increasingly difficult to source spare parts for its Russian-origin legacy fleet through the original supply chain, and has turned to a Western contractor to keep those airframes flying instead.[43] This is the military-MRO mirror of the supplier-diversification story Section 7 below sets out for new-build procurement with the same Russian-dependency problem, showing up on the sustainment side of the fleet rather than the acquisition side, and resolved the same way: bring a qualified Western or India-based alternative in to close the gap. It is also, concretely, a second and different reason MIHAN's build-out matters to this cohort beyond the civil-MRO capacity Air India and Adani are adding there.

6.3

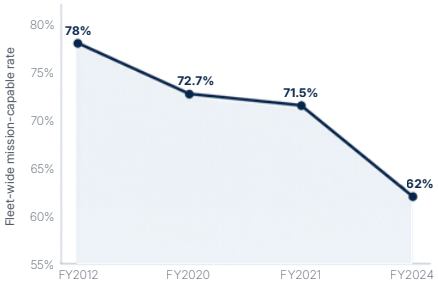
The Readiness Backdrop: Why Militaries Are Buying More Sustainment

The demand side of this market is not abstract, though the evidence for it here is American by necessity rather than by choice: the US is used through this section as a worked example specifically because it is one of the few militaries that publishes fleet-wide readiness data in this level of detail, not because the underlying dynamic is a US-specific one.

The US Air Force's own fleet-wide mission-capable rate, the share of aircraft able to perform at least one assigned mission at any given time, fell from 78% in fiscal 2012 to 71.5% in fiscal 2021 to 62% in fiscal 2024, the lowest level in recent memory, while overall aircraft availability across the fleet fell from 73% to 54% between 1994 and 2024 as the average aircraft age nearly doubled, from roughly 17 years to nearly 32.[44] The pattern is not confined to any one platform type or mission set.

EXHIBIT 12

US Air Force fleet-wide mission-capable rate, FY2012–FY2024.



Source: US Air Force / GAO readiness reporting, as compiled in defence press coverage.[44]

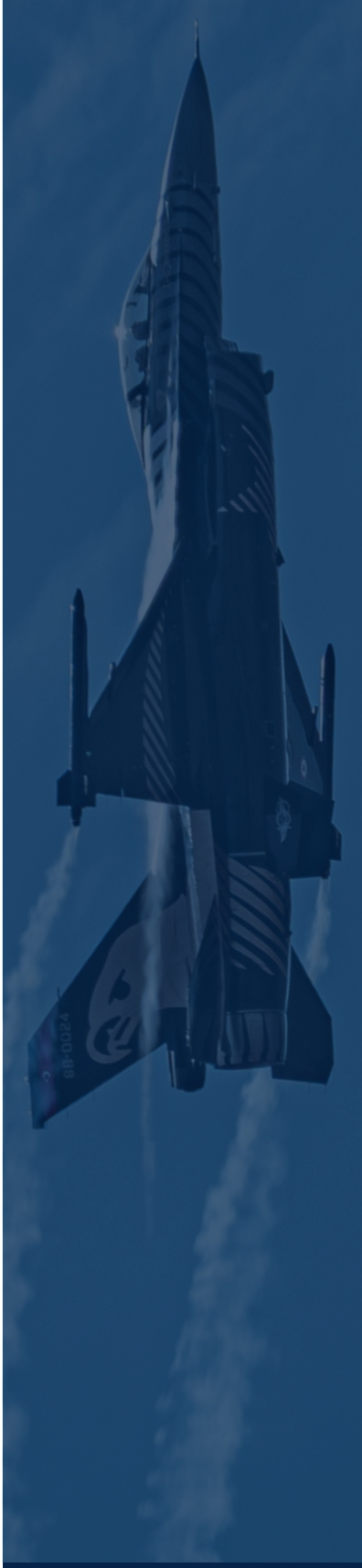
Exhibit 13 breaks the same decline out by aircraft type. Every platform shown has moved in the same direction over the same window, regardless of role, age or manufacturer, from front-line fighters to tankers to trainers to bombers, which is the clearest evidence that this is a fleet-wide sustainment problem rather than a handful of troubled individual programmes.

EXHIBIT 13

Selected US Air Force mission-capable rates by aircraft type, FY2021 vs most recent reported year.

Aircraft Type	Role	FY2021	Most Recent	Change
F-35A	Multirole fighter	38% (fully mission capable)	25%, FY2025 (fully mission capable)	–13 pts
CV-22 Osprey	Tiltrotor / special ops	n/a, no comparable baseline	30.45%, FY2024	n/a
F-16C	Fighter (single-seat)	~72%	64%, FY2024	–8 pts
F-16D	Fighter (two-seat)	69%	59%, FY2024	–10 pts
KC-46	Aerial tanker	65%, FY2023	61.05%, FY2024	–4 pts
T-38C Talon	Advanced trainer	63%	55%, FY2024	–8 pts
A-10 Warthog	Close air support	72%	67%, FY2023–24	–5 pts
B-52H Stratofortress	Long-range bomber	59%	54%, FY2024	–5 pts

Source: FY2021 and most-recent-year figures as reported by the US Air Force and GAO, compiled in defence press coverage, 2026.[44]



> *Age and supply-chain stress convert into an MRO opportunity years before, and independently of, whatever happens to new-aircraft order books.*

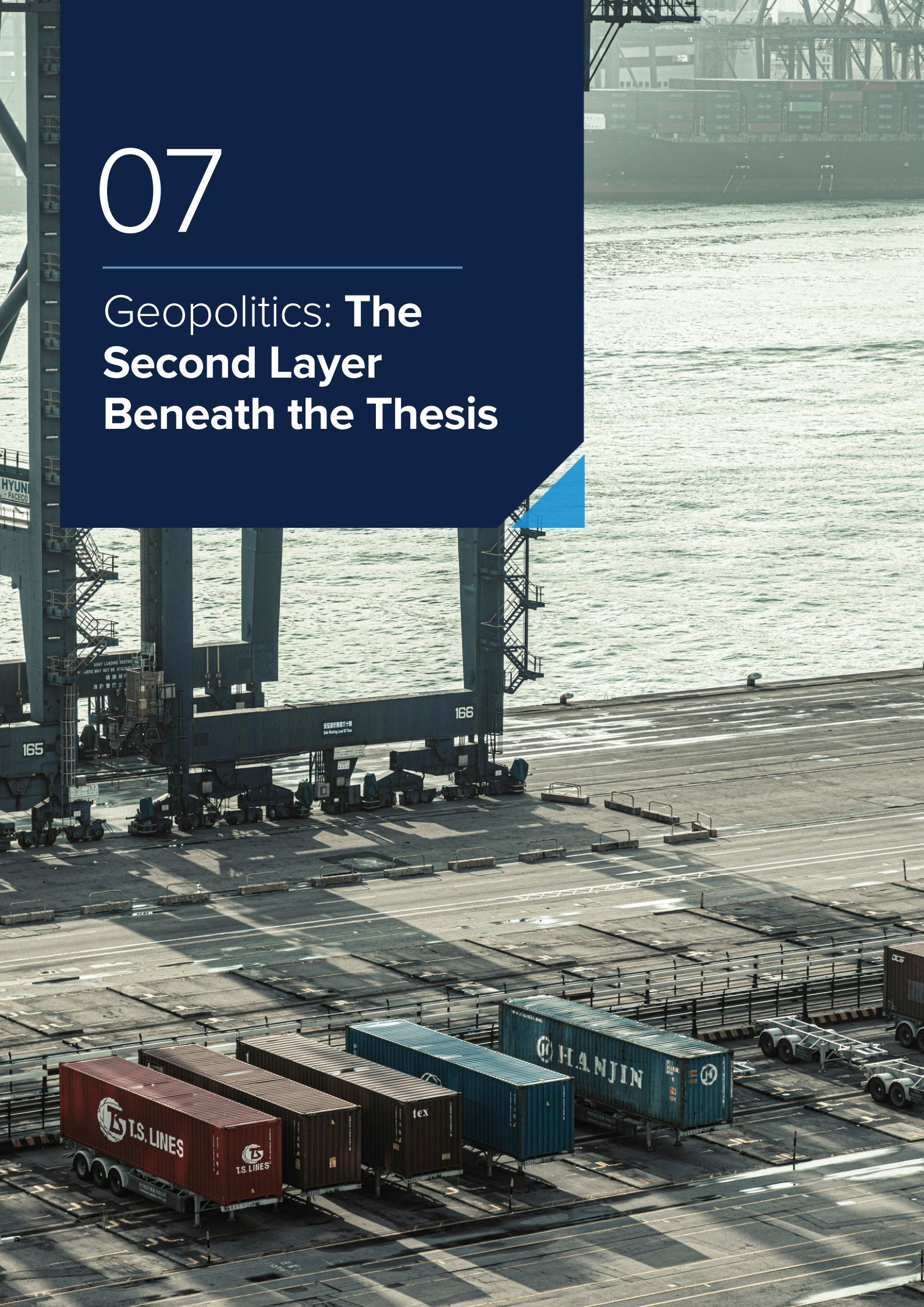
The KC-46 row in Exhibit 13 is worth pausing on directly, since it ties back to the tanker programme's own troubles this report flagged in Section 1: the same Remote Vision System and boom-rigidity defects behind Boeing's cumulative losses on the fixed-price contract are also, concretely, a parts problem. GAO reporting attributes part of the KC-46 and legacy KC-135 tanker fleet's own maintenance delays to critical shortages of key parts, and traces this specifically to the KC-46's bespoke military systems: the boom, the Remote Vision System, the defensive suite, are bespoke to the KC-46 and cannot rely upon the large global parts base for the legacy 767. Further, high use cadence has seen these immature systems suffering greater breakdowns in real world operations.[45] That exposure is compounding as the commercial 767 itself phases out from underneath the programme: passenger-variant production ended over a decade ago, and Boeing has set 2027 as the end date for 767-300F freighter production, a deadline Congress has since moved to extend but not reverse leaving the KC-46 on track to become the last 767 variant still in production. A tanker programme that is already years behind its own delivery schedule is, on current plans, set to keep needing 767-specific parts well after the wider commercial fleet and production line that would otherwise have supplied them has wound down.[46] This is not a tanker-specific problem, or even a US Air Force-specific one within this exhibit. The GAO's own 2026 cross-domain readiness review finds parts shortage or delay a pervasive sustainment challenge across virtually every aircraft type it tracks. The F-35 fleet, Army and Air Force transport types such as the CH-47F and C-130J, and, beyond aircraft entirely, ground vehicles across both the Army and the Marine Corps are all affected and parts scarcity, not any single programme's mismanagement, as the common thread behind the readiness decline Exhibit 12 and Exhibit 13 both document.[47]

The F-35A is worth separating out because its trajectory is the sharpest and the best-documented. GAO reporting puts the F-35 fleet's fully mission-capable rate (able to perform every assigned mission, not merely one) at 38% in fiscal 2021, falling to just 25% by fiscal 2025, even as the broader mission-capable rate (at least one assigned mission) fell from 67% to 44% over the same period.[48] The Joint Program Office's own estimate is that an additional US$13.7 billion is needed through fiscal 2031 beyond previously planned sustainment funding to arrest the decline, roughly US$11.5 billion to close the gap between budgeted and actual sustainment costs, and a further US$2.2 billion for a dedicated support-and-reset strategy. The programme itself is presently projecting a roughly US$1.2 billion annual affordability gap by the mid-2030s between what sustainment costs and what the services say they can afford.[48]

None of this is a reason to expect a comparable near-term windfall for Indian suppliers specifically. F-35 sustainment spend is a US-programme story, not an India one. What it demonstrates is the underlying dynamic this section opened with: a large, combat-flown, increasingly aged fleet generates a sustainment bill that grows faster than the fleet itself, and that bill does not respect the acquisition budget's own priorities. It is the same dynamic India's own Russian-origin legacy fleet is now working through via the Coastal Mechanics-Reliance Defence deal above, at a fraction of the US programme's scale but following an identical logic: age and supply-chain stress convert into an MRO opportunity years before, and independently of, whatever happens to new-aircraft order books. For a cohort built mostly around new-build component supply, this is the argument for treating military and civil MRO; the licence-protected, engine-and-airframe-overhaul corner of it above all, as a structurally growing adjacent pool in its own right, not a lesser cousin of new-aircraft manufacturing.

07

Geopolitics: **The Second Layer Beneath the Thesis**



SECTION 07

Geopolitics: **The Second Layer Beneath the Thesis**

Flying Higher's own demand driver was already geopolitical, even if the deep dive did not name it that way: OEMs are diversifying their supply chains away from China specifically on IP-security grounds, wary of components or built-to-print parts being repurposed for military use or exposed to compromise.[1] Fourteen months on, that single driver has widened into at least three separate, live geopolitical fronts, each of which now sits underneath any position taken in this cohort.

7.1

India's Own Supplier-Base Diversification

The first of those fronts runs inside India's own defence procurement, where the same logic pushing OEMs away from a single dominant, geopolitically exposed supplier is playing out at the sovereign level. Russia's share of India's arms imports fell from roughly 70% in 2011–15 to about 40% in 2021–25, with France and Israel the principal beneficiaries at 29% and 15% respectively; India remains the world's second-largest arms importer, at roughly 8.2% of the global total.[49] The clearest expression of that shift is the roughly US$35 billion, 114-aircraft Rafale programme discussed in Section 4, with 94 aircraft to be built in India.[39] Running alongside it is the GE-HAL F414 engine technology transfer (Section 3). This is the first US fighter-engine transfer of this depth to India, structured on manufacturing-partnership terms rather than the licensed-production terms Russia set for earlier platforms such as the Su-30MKI.[38] Both are genuine diversification away from a single legacy supplier, and both are also a fresh illustration of the same lesson the GE F404 episode already taught: diversifying a supply chain relocates concentration risk rather than eliminating it. A France-and-US-weighted defence-import base is not obviously less exposed to a single point of failure than a Russia-weighted one was. It simply moves where that point sits, and moves it toward two OEM relationships whose export-control and tariff politics are considered separately below.

> ***Diversifying a supply chain relocates concentration risk rather than eliminating it.***

7.2

Tariffs and Trade Policy: A Live, Unresolved Risk

The second front is more immediate than the first, because it bears on export revenue directly rather than on where India sources its own defence hardware. On 9 July 2026 the US administration issued a Section 232 proclamation covering commercial aircraft, jet engines and parts, citing national-security concerns over "decades of foreign government market intervention" in aerospace manufacturing; it opened a 180-day negotiation window with trading partners, after which tariffs may follow if agreements are not reached, with no tariffs imposed as of this report.[50] Separately, and specifically for India, a 25% additional duty on Indian imports was removed in February 2026 following a bilateral joint statement, but an 18% reciprocal tariff under a separate executive order remains pending implementation; aircraft parts are among the categories reportedly under negotiation for a carve-out from that reciprocal rate, alongside generic pharmaceuticals and gems and diamonds, contingent on an interim agreement being concluded.[51] This is not a background risk for the cohort but a direct one. Azad Engineering exports roughly 80% of revenue, chiefly to Japan, the US and Europe; Aequs's aerospace customers are almost entirely Airbus, Boeing and their Tier-1 partners; and Dynamatic Technologies and PTC Industries are each qualified suppliers into US and European OEM programmes.[11] An unresolved reciprocal-tariff track, or a Section 232 outcome that does not carve out aerospace parts specifically, would compress margins across most of the cohort simultaneously, in a way no single company's own execution could offset. A broader question is also whether an industry built on globalization can ever be insulated adequately from national silos in production and procurement.

7.3

Materials: A More Nuanced China Story Than "Oversupply"

The third front is the one this report's own underlying framework had already flagged, if in blunter terms than the picture that has since emerged. Section 8 below repeats that thesis-level risk, "sustained oversupply from Chinese manufacturers in materials and components".[11] However, the current picture is more specific, and more nuanced, than that phrase alone suggests. Chinese aerospace-grade titanium sponge exports are projected to grow roughly ten-fold by 2030, but the immediate driver is OEMs diversifying away from Russian titanium rather than a China-led price war, and Chinese material is gaining ground mainly in standard structural grades rather than the premium, engine- and landing-gear-grade titanium that commands the certification barriers prized in the aerospace industry. China is nonetheless adding an estimated 110,000 tonnes of annual capacity, which could pressure commodity-grade pricing well before it reaches qualified aerospace-engine applications.[52]

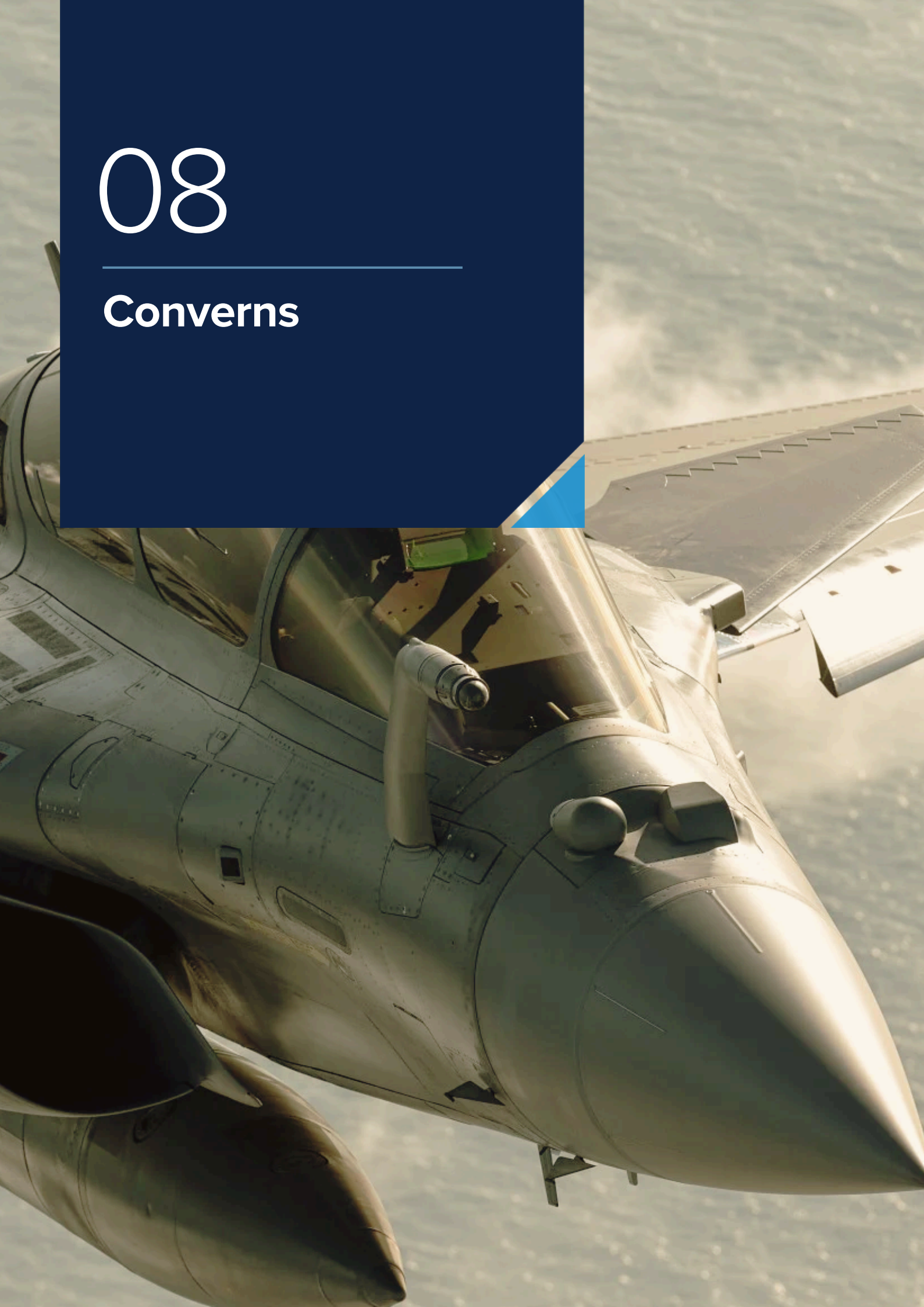
The practical read for the cohort is that a supplier working in premium, engine-adjacent grades such as Azad Engineering's turbine forgings or PTC Industries' Aerolloy titanium castings for Airbus and Dassault is materially less exposed to this specific pressure than one competing in commodity structural-grade forgings or castings, where margin compression is the more realistic medium-term risk.

Taken together, five geopolitical developments deserve tracking alongside the company-specific concerns in Section 8:

- A tariff or export-control escalation that specifically targets aerospace-parts trade with India, reversing the interim carve-out currently under negotiation
- A stalling or renegotiation of the GE-HAL F414 transfer on grounds unrelated to India's own execution and affected by export-control policy, US domestic politics, or a change in the bilateral relationship
- Chinese structural-grade titanium capacity additions compressing pricing for commodity forgings and castings before Indian suppliers can move further up the certification curve
- A disruption to India's continuing Russian-platform inventory (spares, sustainment, legacy fleets) as New Delhi diversifies new procurement toward France and the US, given how much of the operational fleet remains Russian-origin
- Regional escalation along India's own contested borders, or in the Taiwan Strait and South China Sea that redirects capital and components toward emergency procurement rather than the funded, multi-year programmes this framework prefers to underwrite

08

Converns



SECTION 08

Concerns

None of the above changes ValueQuest's own underwriting red lines. Capacity built ahead of qualification, a reported backlog that is indicative rather than funded, break-even economics requiring near-full utilisation, a national-capability narrative with no named counterparty, and capital or customers dependent on ungoverned related-party arrangements all remain reasons for deeper diligence rather than an automatic pass.[11] Applied to the current cohort, to what has changed since July 2025, and to the geopolitics set out in Section 7, several concerns stand out.

At the level of the current cohort, a handful of concerns predominate. Engine supply remains a single point of failure even at the sovereign level: GE's F404-IN20 line sat idle for years before a lengthy restart, and Tejas Mk1A deliveries to the Indian Air Force remain gated on engine availability despite the airframe itself having cleared a majority indigenous-content threshold. Valuation has run ahead of demonstrated execution across nearly the whole cohort, with several names pricing in a multi-year ramp that has not yet played out, a valuation problem to size and stage around, not a reason to doubt the underlying structural demand. Governance deserves the same scrutiny for an illiquid holder with no near-term exit. Several companies also pair credible, named OEM relationships with no consolidated, disclosed backlog figure, since real qualification is not the same as a modelled, funded revenue path, and that gap needs closing directly with each company rather than assumed. And the civil MRO opportunity remains constrained less by capital than by land: base maintenance needs large, airport-adjacent parcels that are genuinely scarce in India, which is why the current wave of MRO investment is airline- and conglomerate-led rather than a Tier-2/3 entry point in its own right.

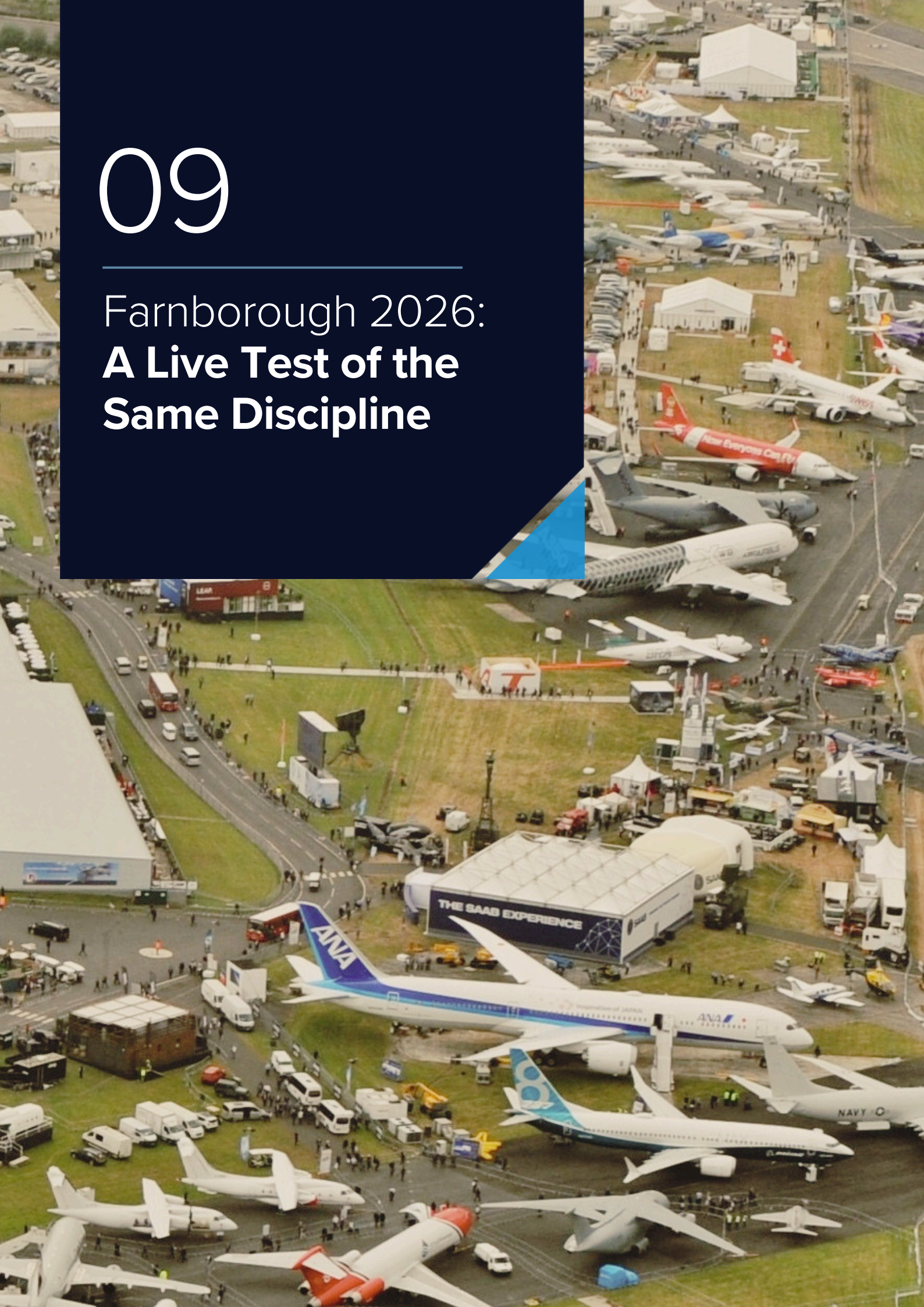
Two further concerns sit above any single company. The thesis-level risks flagged since *Flying Higher*'s original publication are unchanged, and if anything more relevant the richer the cohort's pricing gets: a global aviation or industrial downturn, a reprioritisation of the defence budget away from capital expenditure, a rise in the cost of capital that disproportionately hits long-duration, pre-profit businesses, and a compression in the public-market multiples currently supporting several listed comparables. Finally the geopolitics set out in Section 7 bear directly on a cohort that is substantially export-dependent: an unresolved US reciprocal-tariff track and a live Section 232 aerospace-parts proclamation, a possible stall in the GE-HAL F414 technology transfer, and any disruption to India's Russian-origin legacy fleet as procurement diversifies toward France and the US would each cut against a different leg of the current thesis.



> ***Real qualification is not the same as a modelled, funded revenue path.***

09

Farnborough 2026: **A Live Test of the Same Discipline**



SECTION 09

Farnborough 2026: **A Live Test of the Same Discipline**

The Farnborough International Airshow (20–24 July 2026) gives this report an unusually well-timed check against its own thesis, since it is the one recurring event where the whole order book, the whole engine market and India's own aerospace ambitions are all on display in the same week. The show closed with 327 firm aircraft orders, a modest improvement on 2024 but well short of the roughly 800 orders some pre-show forecasts expected. Lessors, not airlines, wrote the largest tickets: SMBC Aviation Capital's single order for 200 aircraft (100 Boeing 737 MAX and 100 Airbus A320neo-family jets) accounted for more than 60% of the show's entire order count on its own, alongside smaller Boeing wins (Vietnam Airlines, Aerolíneas Argentinas, AerCap) and Airbus wins (flynas, BermudAir, BOC Aviation).[53] Read against Section 1's own backlog-years series, a 327-order show is squarely consistent with a market normalising within an already-long backlog rather than either reversing it or re-accelerating it. The order count moves the numerator only modestly, and this report's structural read does not turn on any single air show.

The engine side of the show is the more direct confirmation of this report's own thesis. Pratt & Whitney disclosed more than 800 GTF engine deliveries so far in 2026 against a backlog exceeding 8,000 units, and BOC Aviation alone placed orders for up to 220 further GTFs and 300 CFM LEAP engines at the show.[53] Those are the same engine families and the same order-of-magnitude scarcity this report has already documented in Section 2.2, a backlog measured in the thousands of units against shop-visit capacity this report's own IBA-sourced data (Exhibits 4 through 9) shows straining to keep pace. Farnborough 2026 is best read as the industry confirming that scarcity from its own order desks rather than adding a new data point to it.

> ***The order book is normalising rather than reversing, and the engine bottleneck remains, on the OEMs' and engine-makers' own numbers, as tight as this report has described it.***

India's presence at the show is the more interesting test, because it is a live instance of the narrative-versus-funded-counterparty distinction this report's own framework is built to draw. Hindustan Aeronautics led an India Pavilion, with FICCI and SIDM delegations alongside it, displaying scale models of the Tejas light combat aircraft, the Prachand light combat helicopter, the Rudra and Dhruv NG helicopters, and stating publicly that it was “seeking to deepen cooperation” with GE Aerospace, Honeywell, Safran, Eaton Aerospace and Martin-Baker on engines, avionics and MRO, and that it aimed to “play a key role in addressing critical supply-chain challenges.”[54] No signed deal, MOU, or named funded counterparty accompanied HAL's announcements; by design or otherwise, that part of India's presence was a showcase of capability and intent, not a transaction. For the first time, the Aerospace India Association (AIA) established a dedicated pavilion at the Farnborough International Airshow to showcase the growing capabilities and available manufacturing capacities of India’s private aerospace sector. The initiative facilitated business engagements and resulted in the signing of several contracts and Memoranda of Understanding (MoUs) across aerospace manufacturing. The AIA pavilion, in Hall 4, was inaugurated by HAL's Chairman and Managing Director and featured 34 Indian companies and organisations, among them several names this report tracks: Aequs, Azad Engineering, Unimech Aerospace and Rangsons Aerospace. AIA, launched in December 2024 with Dr S. Dwarakanath as Director General, has set itself decade-long targets of raising India's share of the global aerospace supply chain from under 1% to 10%, civil aerospace exports from under US$2 billion to US$20 billion, and domestic value addition from 15–30% to over 60%.[55] That is a different kind of evidence from HAL's statements of intent, and this report's own discipline applies to it in the same way (with the disclosure that AIA is a co-author of this report): the pavilion's contracts and MoUs move from the watch list into cohort evidence as their counterparties, scope and values are disclosed.

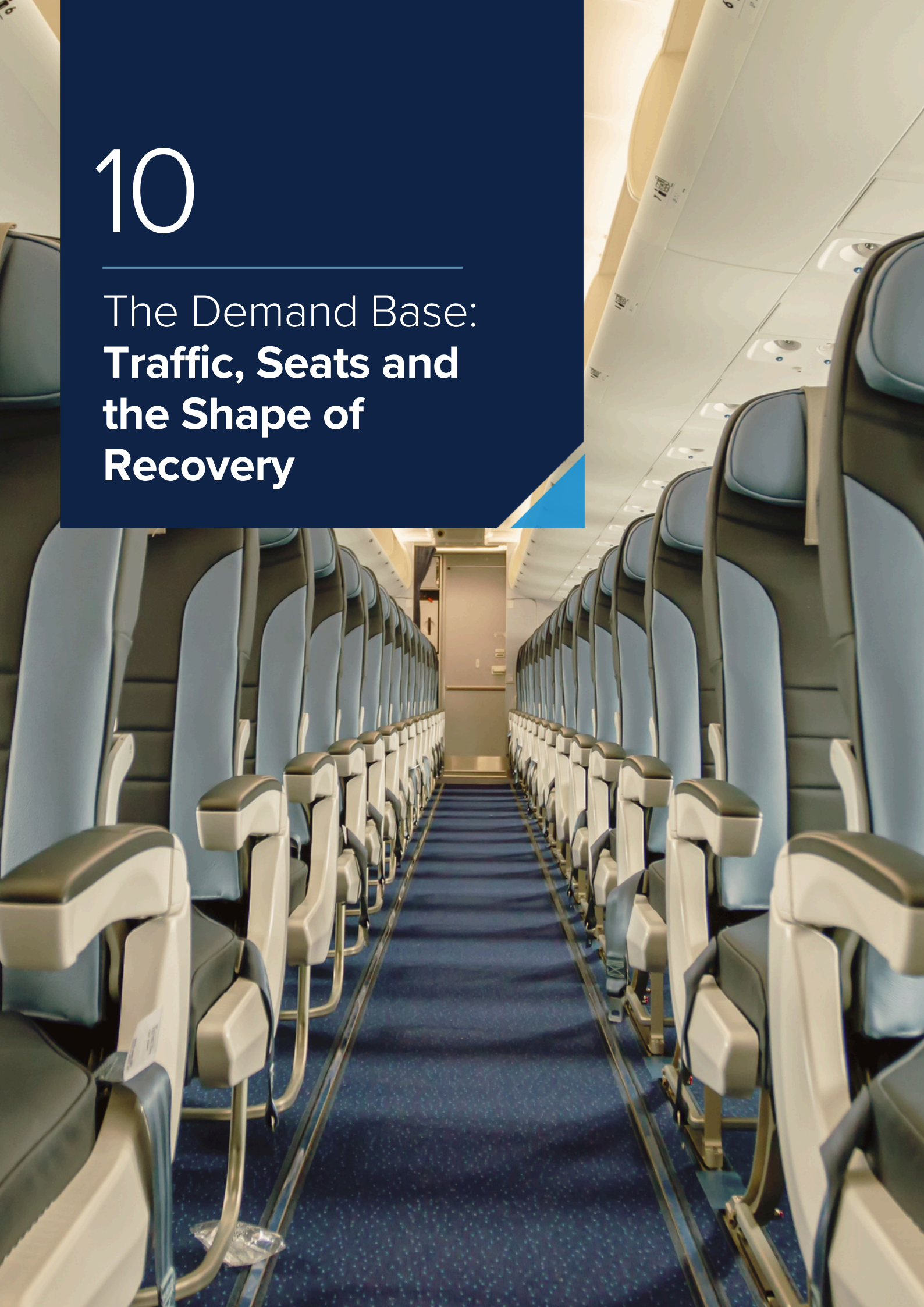
None of this moves anything in Sections 1 through 8. If anything, Farnborough 2026 is a useful, independently timed confirmation of both halves of this report's thesis at once: the order book is normalising rather than reversing, and the engine bottleneck documented throughout this report remains, on the OEMs' and engine-makers' own numbers, as tight as this report has described it. India's own aerospace ambitions, at least as expressed at Farnborough, remain where this report's underwriting discipline says to leave them until the private-sector agreements signed there are named and sized: on the watch list, not yet in the cohort.



Aerospace India Association (AIA) takes flight at Farnborough International Airshow 2026

10

The Demand Base: **Traffic, Seats and the Shape of Recovery**



SECTION 10

The Demand Base: **Traffic, Seats and the Shape of Recovery**

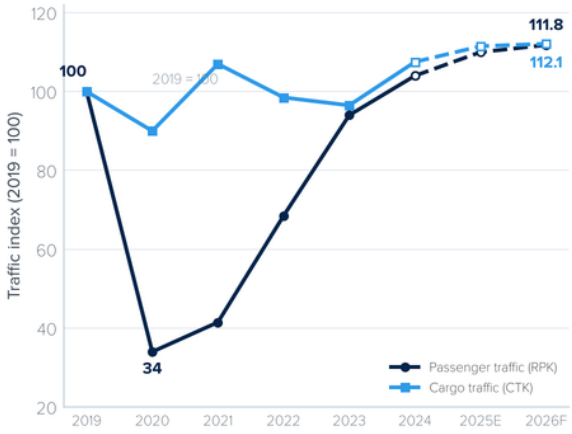
Everything in Sections 1 through 9 documents a supply-side shortage: too few aircraft, too few engines, too little qualified MRO capacity. That shortage is only worth underwriting if the demand sitting behind it is real, broad-based and still growing, rather than a narrow post-pandemic bounce that has already run its course. This section sets out the traffic and capacity evidence directly: how passenger and cargo demand have developed since 2019, and how the available seats and capacity behind that demand split between short/medium-haul and long-haul flying.

Global passenger traffic (revenue passenger kilometres, or RPK) collapsed to roughly a third of its 2019 level in 2020, and did not fully recover that lost ground until 2023 to 2024; on an indexed basis (2019 = 100), RPK reached 94.0 in 2023, 104.0 in 2024, and is on track for 109.5 in 2025 and 111.8 in 2026. This recovery has now run three full years past its starting point, not a one-off snap-back.[56] Cargo traffic (cargo tonne kilometres, or CTK) took a shallower initial hit as international freight was in demand through the early pandemic, but has moved far more erratically since: down 9.9% in 2020, up 18.8% in the 2021 e-commerce and supply-chain-disruption surge, down again in 2022 and 2023 as ocean freight normalised and that surge unwound, then back to growth in 2024 through 2026F.[56] The passenger recovery, in other words, has been the more linear and more durable of the two; the cargo recovery has been the more volatile, a distinction worth holding onto given how directly it bears on the freighter-conversion economics already discussed in Section 2.3.

> ***Airlines are filling a larger share of every seat they fly than at any point in the industry's history, at the same time as they cannot get enough new seats delivered.***

EXHIBIT 14

Global passenger (RPK) and cargo (CTK) traffic, indexed to 2019 = 100, 2019–2026F.



Source: IATA, Industry Statistics fact sheet.[56]

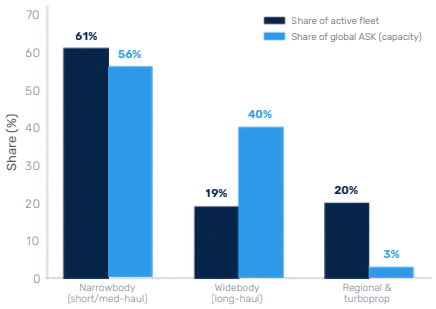
The clearest sign that this recovery is a genuine demand story rather than an artefact of capacity discipline is the load factor: passenger load factor hit a record 82.6% in 2019, collapsed to 65.2% in 2020, and has since climbed to fresh records every year since 2023, reaching 83.4% in 2024, an estimated 83.5% in 2025 and a forecast 84.0% in 2026.[56] Airlines are filling a larger share of every seat they fly than at any point in the industry's history, at the same time as the order-book evidence in Section 1 shows they cannot get enough new seats delivered. Both facts point the same way, toward demand that is outrunning supply rather than a market quietly normalising back to its old shape.

"Seats available" is itself a more layered question than a single traffic number can answer, because narrowbody and widebody aircraft serve structurally different markets. Narrowbody jets such as the Airbus A320 and Boeing 737 families fly mainly short and medium-haul routes and make up roughly 61% of the active commercial fleet, but only 56% of global available seat kilometres (ASK), since each aircraft covers a shorter distance per flight.

Widebody jets fly mainly long-haul routes, represent only about 19% of the active fleet, yet account for nearly 40% of global ASK, with each widebody flight carrying, on average, roughly 60% more seats over more than three times the distance of a narrowbody flight. Regional jets and turboprops make up the remaining fifth of the fleet but barely 3% of ASK.[57] Exhibit 15 sets that split out directly.

EXHIBIT 15

Share of active fleet vs. share of global available seat kilometres (ASK), by haul-length segment.



Source: Airbus/IATA fleet and capacity data, as compiled in "Deep Dive – HEICO Corp."[57]

The other half of the "seats available" picture is how much more productive the existing fleet has become. Airbus estimates that passenger aircraft with more than 100 seats were around 50% more productive in 2024 than in 2004: the in-service fleet grew from 12,800 to 22,380 aircraft over that period, average daily utilisation rose from 8.2 to 10.2 block hours, seats per flight increased from 162 to 185, and load factor climbed from 73% to 83%.[57] That combination of more aircraft, flown more hours per day, carrying more seats each, filled more fully is exactly the densification pattern this report's Section 1 backlog thesis predicts: airlines are extracting every available unit of capacity from a fleet that supply constraints will not let them grow as fast as they would like. This is also, as Section 12 below sets out, the single biggest reason older aircraft are staying in service and generating aftermarket demand for longer than they used to.



11

Super-Long-Haul Narrowbodies: **The A321XLR and the Blurring of Short and Long-Haul**



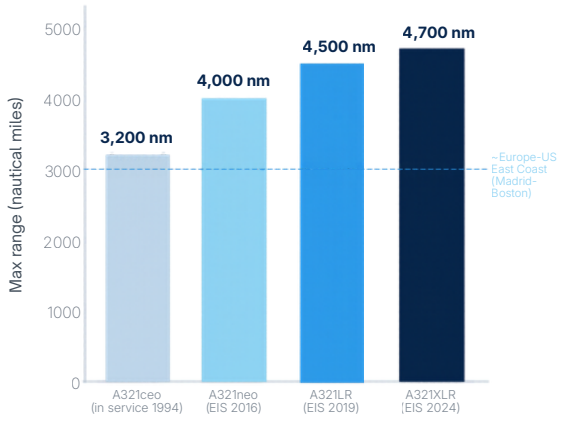
SECTION 11

Super-Long-Haul Narrowbodies: **The A321XLR and the Blurring of Short and Long-Haul**

Section 10's narrowbody/widebody split describes the industry as it has looked for decades: short- and medium-haul flying on a single-aisle jet, long-haul flying on a twin-aisle one. The Airbus A321XLR is the clearest evidence yet that this split is no longer a fixed feature of the market. Certified and entering service in November 2024 with launch customer Iberia, the A321XLR extends the A321 family's range from roughly 3,200 nautical miles on the original A321ceo, to 4,000 nm on the A321neo, to 4,500 nm on the 2019-vintage A321LR, to 4,700 nm on the XLR itself. This is enough to fly Madrid to Boston, or New York to most of Western Europe, nonstop, on an aircraft with a single aisle and no dedicated widebody cabin crew requirements.[58, 59] Exhibit 16 sets that progression out.

EXHIBIT 16

Airbus A321 family range progression, 1994–2024.



Source: Airbus specifications, as compiled in Airways Magazine.[58]

The order book and route network behind that range figure have moved from a single launch customer to a genuinely global operator base within about eighteen months. More than 500 A321XLRs have been ordered globally, with the production backlog already extending into the 2030s.[59] Exhibit 17 sets out the current operator base as of early 2026.

Two things about that operator list matter for this report's own thesis beyond the aircraft's technical achievement. First, the A321XLR is not a new engine platform and it flies the same LEAP-1A and PW1100G-GTF engine families that already anchor this report's engine-ecosystem thesis in Section 2.2, so every A321XLR delivered is incremental demand pressure on an engine pool this report has already shown to be scarce, not a new qualification hurdle for India's Tier-2/3 suppliers to clear. Second, IndiGo's presence on the operator list is directly relevant to this report's own India focus: it is the clearest evidence that an Indian carrier is underwriting the same long-haul-from-a-narrowbody bet as Iberia, American, Air Canada and Qantas, which means India's own MRO and spares build-out (Sections 5, 6 and 12) should expect to service a domestic fleet flying meaningfully longer average sectors than its narrowbody predecessors did. This is a different utilisation and maintenance-interval pattern than the short-haul A320/A321 flying that this report's common-systems thesis (Section 2.1) was originally built around, and one that MRO providers and parts suppliers are still building an operating history against, given how recently the type entered service.

EXHIBIT 17

Airbus A321XLR current operators, order sizes and route networks, as of March 2026.

OPERATOR	ORDER SIZE	ROUTES / SERVICE ENTRY	CONFIGURATION
Iberia (launch customer)	Undisclosed within wider A321 order	First delivery 30 Oct 2024; first flight 6 Nov 2024, Madrid–Boston (transatlantic)	Not disclosed
American Airlines	50 aircraft	First US operator, 18 Dec 2025; JFK–Los Angeles, JFK–Edinburgh (Mar 2026); JFK–San Francisco and Boston–LAX planned later in 2026	155 seats — 20 business, 12 premium economy, 123 economy
Air Canada	30 aircraft	First delivery early Mar 2026; Calgary–Montreal domestic from 1 May 2026; transatlantic Montreal–Palma de Mallorca, Toulouse, Edinburgh, Dublin from Jun 2026	182 seats — 14 business, 168 economy
Qantas	16 aircraft (internationally configured)	Domestic Australian service through 2026; international debut Brisbane–Manila, Oct 2026	Not disclosed
Aer Lingus	Undisclosed within wider order	Transatlantic routes from Dublin, focused on secondary North American cities	Not disclosed
IndiGo, Wizz Air, Qanot Sharq (Uzbekistan)	Additional confirmed operators	Route networks not yet fully disclosed as of this report	Not disclosed

Source: The Flying Engineer, "Airbus A321XLR 2026: First Airlines & Long-Haul Impact," March 2026.[59]

12

Three Vectors: **OEM, MRO and Spares, Completing the Value-Chain Map**



SECTION 12

Three Vectors: **OEM, MRO and Spares, Completing the Value-Chain Map**

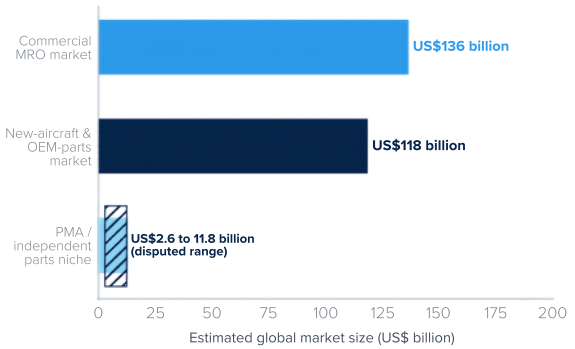
This report has, to this point, organised India's opportunity the way *Flying Higher* originally did: by opportunity area (Exhibit 22) and by sector (Section 2). A simpler and, at this stage of the thesis, more useful frame is to collapse all of it into three vectors: OEM (new-aircraft and new-engine manufacturing content, Sections 2 through 4), MRO (civil and military maintenance, repair and overhaul, Sections 5 and 6), and Spares (the replacement-parts and aftermarket-components layer sitting beneath both). Since the first two already have named, investable India exposure and the third, on the evidence below, does not yet, despite being a real and sizeable market.

The market-sizing cascade in Exhibit 18, drawn from the market research on HEICO, shows why spares is a distinct vector rather than a subset of MRO. Global new-aircraft and OEM-parts revenue was approximately US$118 billion in the most recently measured year; the global commercial MRO market: labour, line maintenance, heavy airframe checks, engine shop visits and the replacement parts consumed inside all of it was approximately US$136 billion, up 8% on the prior year and forecast by Oliver Wyman to approach US$193 billion by decade's end.[57] Within that MRO figure sits a narrower layer still: parts manufactured under FAA Parts Manufacturer Approval (PMA) as independently developed, lower-cost alternatives to OEM parts. Published estimates of that PMA layer's size disagree by more than fourfold. One puts it at roughly US$2.6 billion in 2025, another at US$11.8 billion, because the studies measure different scopes (factory-new independent PMA alone versus a broader definition including licensed PMAs, general aviation and military applications). HEICO's own management describes PMA as “somewhere around 1%-2%” of the entire replacement-parts market, genuinely small next to OEM and MRO, but growing faster than the fleet itself and, unlike the OEM and MRO vectors, not yet populated by a single named India entrant.[57]

> ***Every one of those extra years of service is a year of incremental parts, repair and overhaul demand.***

EXHIBIT 18

OEM, MRO and Spares (PMA/independent alternative parts), the three vectors sized.



Source: Oliver Wyman/IATA market sizing, as compiled in “Deep Dive – HEICO Corp.”[57]

The reason this vector is worth naming now, rather than waiting for an India-listed comparable to appear, is the same “old aircraft” dynamic Sections 1 and 10 already document. HEICO's own research frames fleet age as one of its clearest organic growth drivers: a new aircraft generates little PMA revenue in its first years, since OEM support is strongest and maintenance needs are lowest immediately after delivery, and “the addressable opportunity expands as platforms mature and operators focus more closely on maintenance economics.”[57] The same delayed-delivery, extended-lead-time dynamic this report has used since Section 1 to explain a lengthening order backlog also, mechanically, keeps the in-service fleet older for longer: average fleet age has risen from roughly 13 years before COVID-19 to around 15 years today, and IATA estimates the industry's own lower retirement rate between 2019 and 2025 kept 2,397 aircraft in service that would otherwise have left the fleet.[57]

Every one of those extra years of service is a year of incremental parts, repair and overhaul demand; the same structural shortage this report has read as an OEM and MRO opportunity throughout is, read from the spares vector, also a tailwind for exactly the kind of business Exhibit 18's narrowest bar represents.

Two US-listed companies illustrate contrasting strategic answers to that same opportunity, and neither is yet replicated by an India-domiciled name. Exhibit 19 sets them out side by side.

EXHIBIT 19

HEICO Corporation and TransDigm Group: two spares-vector archetypes.

METRIC	HEICO CORPORATION	TRANSDIGM GROUP
FY2025 revenue	$4.49 billion consolidated (Flight Support Group ~70% of sales and operating income)	$8.83 billion net sales, up 11% year-on-year
Profitability	~$690 million FY2025 net income; FSG operating margin 24.1%, ETG 23.0%	EBITDA As Defined (TransDigm's own adjusted metric) margin of 53.9%, up from 52.6% a year earlier
Aftermarket-parts portfolio	~20,000 FAA-approved PMA products, 500-plus added annually	~300,000 parts — roughly 15x HEICO's portfolio
Comparable aftermarket-parts revenue	~$2.0 billion (including HDG)	"somewhat more than" $2.8 billion — more portfolio items generating less revenue per item than HEICO's
Strategic model	Independently developed, FAA-approved alternative (PMA) parts — a genuine, lower-cost substitute for OEM parts, concentrated where installed volume and replacement frequency justify certification cost	Sole-source, proprietary, often monopoly-priced parts acquired through aggressive M&A — pricing power from ownership of the original design, not from undercutting it
Structure	Decentralized, founder/family-linked serial acquirer (Flight Support and Electronic Technologies Groups); commercial aviation ~58% of revenue, defence/space ~31%	Centralized industrial roll-up built on private-equity-style M&A discipline; roughly even split between commercial OEM and aftermarket revenue
Market capitalisation (mid-Sep 2026)	~$41.8 billion	~$63.0 billion

Source: HEICO Corporation FY2025 results and "Deep Dive – HEICO Corp." research compilation[57]; TransDigm Group, "Fiscal 2025 Fourth Quarter and Year-End Results"[60]; companiesmarketcap.com/Nasdaq market-capitalisation data, mid-September 2026[61].

The two companies compete less directly than their shared "aftermarket parts" label suggests. HEICO wins by re-engineering and independently certifying a genuine substitute for a specific, high-volume OEM part, then selling it at a discount the airline is happy to take. TransDigm wins by owning the original, sole-source design outright and pricing it as the structural monopoly that ownership creates. Read through this report's own underwriting framework (Section 14), a genuine India-based entrant into either model would sit closer to a Proprietary Technology Platform than a Qualified Global Supplier. Economic ownership of the part's own design or approval is the moat here, not an OEM qualification. Secured demand would need to be evidenced the same way this report insists on everywhere else: a named, funded airline or MRO customer contract, not a market-size narrative borrowed from HEICO's or TransDigm's own results. No name in the current cohort (Section 2) sits in this vector today. On the evidence in this section, that is the gap in the value-chain map most worth watching next alongside civilian satcom and communication suites (Sections 15 and 2.4).

13

The MRO Vector, Illustrated: **Certified Maintenance of Older Types as its Own Business Model**



SECTION 13

The MRO Vector, Illustrated: **Certified Maintenance of Older Types as its Own Business Model**

Section 12 named MRO as one of three vectors alongside OEM and Spares but described it mainly in India-specific terms (Sections 5 and 6). A short set of international comparables is worth adding here because, taken together, they show the same ageing-fleet dynamic already documented in Sections 10 and 12. Average commercial fleet age rising from roughly 13 to 15 years since 2019, and IATA's own estimate that 2,397 aircraft were kept flying past 2019–2025 that would otherwise have retired, has already produced a recognisable, investable business model elsewhere. These are independent groups built specifically around certified maintenance, teardown and parts support for older, out-of-production or ageing-in-service aircraft and engine generations, rather than around the newest types. None of the four companies below is India-domiciled, and none changes the underwriting read for India's own cohort (Section 2). The point is what they demonstrate about the model's durability, not about India specifically.

APAS, A Professional Aviation Services, is a single corporate group spanning two facilities: a Santiago, Chile complex at the international airport, and a Miami, Florida repair station.[62] The Chile site alone covers more than 55,000 square metres, close to 600,000 square feet, across three hangars, with five complete C-Check lines under roof plus four tail-out positions (nine parallel maintenance lines in total), dedicated engine and component shops (oxygen, hydraulics, avionics, wheels and brakes, composites), and NDT, calibration and bonded-warehousing support, built up over more than 30 years of operation and focused specifically on Airbus A320-family (ceo and neo) and Boeing 737 fleets.[63] The Florida site is a separate, FAA/EASA Part 145-certified repair station handling component-level mechanical, electrical, avionics and landing-gear repair, piston and turbine engine service, non-destructive testing, DER-approved repairs beyond OEM specification, used-serviceable-material supply and 24/7 AOG support.[64] Between the two sites, APAS holds approvals from DGAC Chile, the FAA, and the civil aviation authorities of Argentina, Mexico, Colombia and the Dominican Republic. It is worth being precise about what this group is and is not: on its own account, APAS does not manufacture aircraft components. It is a maintenance, repair and overhaul business end to end solution provider, across both its Chile and Florida sites, not a manufacturing-and-MRO hybrid.[64]

AerSale, headquartered in Coral Gables, Florida, makes the same bet in a more vertically integrated form: whole-aircraft and whole-engine trading and leasing, teardown of retired airframes and engines for used serviceable material (USM), a dedicated PMA parts-manufacturing business, and MRO (its TechOps segment, with facilities across Arizona, New Mexico and Tennessee) all under one roof, deliberately positioned around the CFM56 and V2500-generation engines and the airframes built around them rather than the newest LEAP/GTF-powered types.[65] AerSale's own management is explicit about why: its CFO has attributed the strength of the aftermarket business directly to “aging global fleets,” resilient passenger demand and OEM-driven supply-chain constraints that keep older aircraft flying longer than they otherwise would, the same dynamic Section 10 documents industry-wide, and USM revenue alone exceeded US$120 million in the most recently reported year, more than half of the company's Asset Management segment.[66]

> ***Whatever India-based entrant eventually occupies this space would be filling a proven demand pool, not creating one.***

GA Telesis, headquartered in Fort Lauderdale, Florida with operations on six continents, runs a comparably integrated model at larger scale; parts distribution, aircraft and engine leasing and finance, component and landing-gear MRO, and a dedicated engine-overhaul operation in Helsinki, anchored on a similar logic of feeding a global network with used serviceable material

recovered from ageing narrowbody teardowns, A319s among the most recent programmes.[67]

Aeroman, the El Salvador-based independent airframe MRO already introduced in Section 2.2, rounds out the set: seven hangars, up to 64 aircraft serviced at once, and in-house component backshops built to support Airbus, Boeing and Embraer types for operators across the Americas.[32] Exhibit 20 sets out the four side by side.

EXHIBIT 20

Independent MRO and aftermarket business models built around older-generation aircraft and engine types.

COMPANY	BASE	BUSINESS MODEL	OLDER-TYPE FOCUS / SCALE
APAS	Santiago, Chile + Miami, Florida	Airframe, engine and component MRO across two FAA/EASA-approved sites; no manufacturing	A320-family (ceo/neo) and 737 line, heavy and component work; ~600,000 sq ft, nine parallel maintenance lines in Chile[62,63,64]
AerSale	Coral Gables, Florida + Arizona, New Mexico, Tennessee	Vertically integrated: whole-asset trading/leasing, teardown for used serviceable material (USM), PMA parts manufacturing, and MRO (TechOps) under one roof	CFM56/V2500-generation engines and the airframes built around them; USM revenue exceeded $120 million in the most recently reported year, over half of Asset Management segment revenue [65,66]
GA Telesis	Fort Lauderdale, Florida (operations on six continents)	Integrated parts distribution, leasing/finance, MRO (component, landing gear) and engine overhaul (Helsinki)	Legacy narrowbody teardown and used-serviceable-material supply (A319 among recent programmes) feeding a global parts network; a “billion-dollar” aftermarket ecosystem by its own description [67]
Aeroman	El Salvador (see also Section 2.2)	Independent airframe MRO with in-house component backshops (structures, composites, seats, avionics)	Airbus, Boeing and Embraer narrow- and widebody types for US, Central and South American operators; seven hangars, up to 64 aircraft [32]

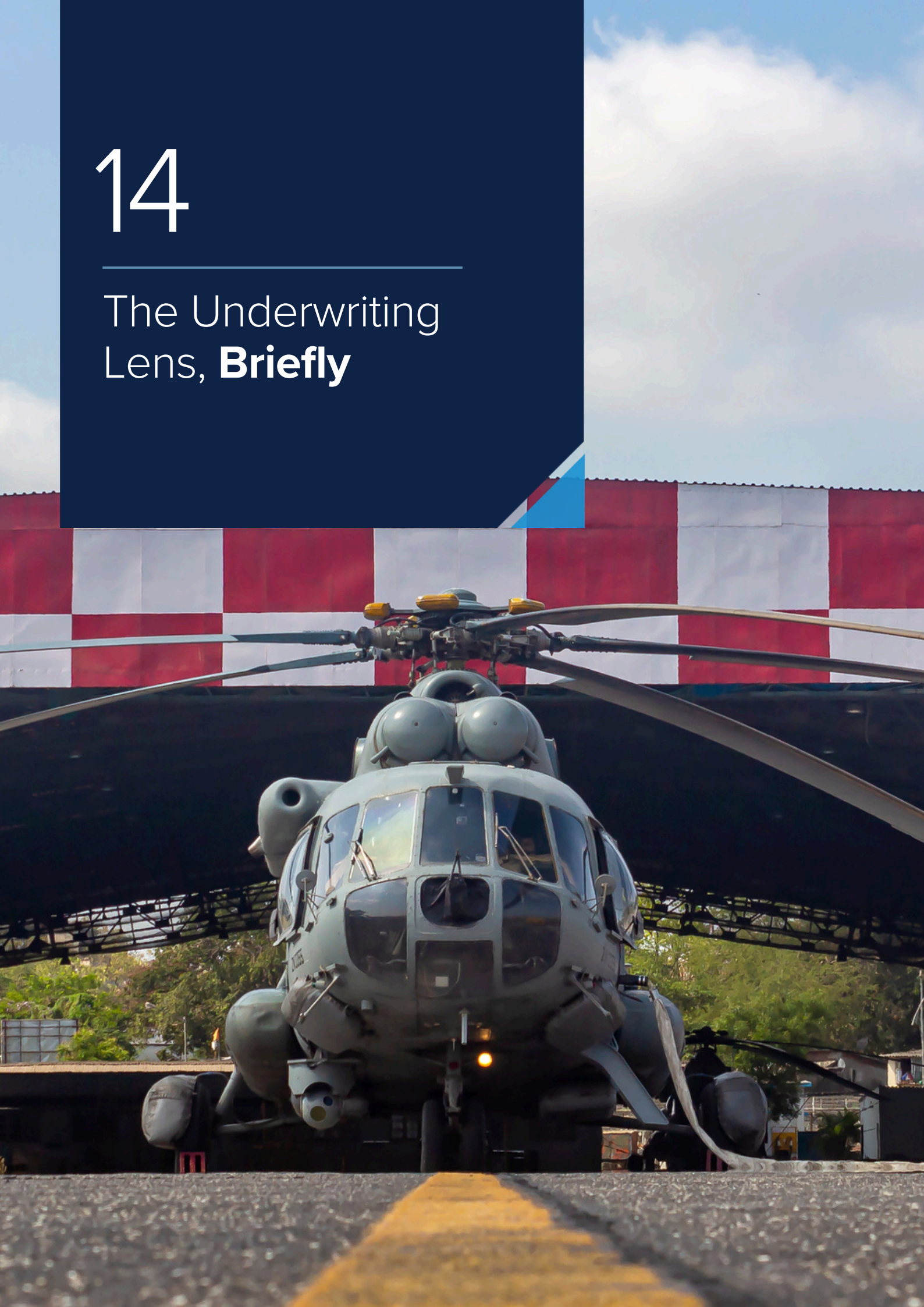
Source: Company disclosures: APAS Chile and APAS Florida corporate sites [62, 63, 64]; AerSale corporate site and investor commentary [65, 66]; GA Telesis corporate site[67]; MRO Holdings' Aeroman facility profile[32].

The reason this belongs in its own section rather than folded into the Asia/Latin America discussion in Section 2.2 is what it demonstrates about durability rather than about India specifically. Four independent groups, spanning Chile, the United States and El Salvador, and organised around different combinations of the same core activities: certified airframe and component MRO, engine and whole-asset teardown, used-serviceable-material supply, and in two cases dedicated PMA manufacturing. Each is a direct bet that the world's ageing narrowbody fleet keeps flying, and keeps needing certified maintenance and parts, for longer than the OEMs' own new-build delivery schedules can replace it. That is exactly the pattern this report's own traffic, utilisation and retirement data already document industry-wide (Sections 10 and 12)

and the pattern behind the independent-shop capacity growth already discussed for CFM LEAP and CFM56 engines in Section 2.2.[2, 31] None of this changes the underwriting read for India's own cohort as no name in Section 2 occupies this position today but it is a useful external check on the thesis itself: the same ageing-fleet, capacity-scarce dynamic this report identifies in India's engine-ecosystem and civil-MRO opportunity areas (Sections 2.2 and 5) is, on the evidence of four independently viable businesses built substantially around it, large and durable enough to sustain standalone operators in several different geographies already. This in the opinion of the authors is the clearest available evidence that whatever India-based entrant eventually occupies this space would be filling a proven demand pool, not creating one.

14

The Underwriting Lens, **Briefly**



SECTION 14

The Underwriting Lens, **Briefly**

Having set out the sectors of continuing opportunity, what is genuinely new since July 2025, defence and civil and military MRO, the geopolitics beneath the thesis, this report's own concerns, and the Farnborough and demand-side evidence that follows from all of it, we now step back and set out in full the underwriting lens and capital archetype map behind that reading, which is drawn from ValueQuest's own internal research.[11] This section summarises the framework on its own terms, and Section 15 then applies it directly to *Flying Higher's* own opportunity map.

14.1

Dhanda, Banda, Bhav: Three Questions, Asked in Order

The discipline asks three questions of any business, in a fixed sequence, because a company that fails an earlier one cannot be rescued by a good answer to a later one.

1

Dhanda (the business)

does the business itself clear a financeable, defensible route to scale? This is assessed against a seven-point checklist, SCALE-UP, set out below.

2

Banda (the promoter)

can the promoter be trusted with the capital? This looks at governance quality, related-party and connected-capital structures, share-pledging history, and disclosure candour, independent of how good the underlying business looks.

3

Bhav (the price)

does the price already assume the answer to both of the above? A business that passes dhanda and a promoter who passes banda can still be a poor investment if the price has run ahead of what either has actually delivered.

One rule follows directly from the ordering: a confirmed, quantified banda red flag, a related-party structure large enough to require its own shareholder vote, for instance, is treated as decline-worthy on its own for a holder with no ready exit, rather than something a sufficiently attractive dhanda or bhav can offset. This report calls that rule the Illiquidity-Adjusted Decline Standard, and applies it directly in Section 8.

14.2

SCALE-UP: The Seven-Point Dhanda Checklist

Dhanda itself is scored against seven criteria, each abbreviated to a letter of SCALE-UP:

- **Secured demand:** is the revenue anchored to a funded, named counterparty and contract, or only to a plausible market narrative? A value pool with no named buyer scores as narrative under this test, however large the addressable market looks, until a funded counterparty is identified, the narrative-discipline test this report applies throughout.
- **Capital continuity:** can the business fund its own growth through the cycle without repeated, dilutive capital raises on unfavourable terms?
- **Approvals and qualification:** does the business hold the certifications, licences or OEM qualifications (AS9100, NADCAP, an OEM supplier approval) that make it difficult for a customer to simply re-qualify a cheaper alternative?
- **Liquidity and cash conversion:** does revenue convert into cash on a reasonable cycle, or does it sit trapped in inventory, receivables or pre-dispatch inspection for extended periods?
- **Economic ownership:** does the company own the IP, process or design it executes, or is it a build-to-print executor of someone else's drawings? Ownership is what converts a qualified supplier into a pricing-power business.
- **Underlying policy support:** is government policy, a duty structure, a procurement mandate, a tax incentive, a genuine, durable tailwind, or an assumption doing more work in the model than in reality?

- **Provenance of validation:** is the OEM or government relationship independently verifiable (a public contract, a disclosed supply agreement), or does it rest on the company's own unverified claim? This is deliberately distinct from Secured demand: that test asks whether a funded, named contract exists at all; this one asks who is vouching for it, an exchange filing, an OEM or government announcement or an audited disclosure, as opposed to management's own account of the same relationship.

14.3

Five Capital Archetypes

SCALE-UP scores travel differently depending on where a business sits in the value chain, so the framework groups businesses into five archetypes, each with a different natural ceiling on economic ownership and a different set of criteria that tend to bind hardest:

- **Qualified Global Supplier:** a certified Tier-2/3 manufacturer selling into global OEM programmes on the strength of its qualifications; the archetype most of the current aerospace cohort sits in, where Approvals and qualification is the moat and Economic ownership is the swing factor between a commodity executor and a pricing-power supplier.
- **Sovereign-Procurement Contractor:** a business whose demand is anchored to a domestic government or defence procurement programme; Secured demand and Underlying policy support score well by construction, but Liquidity and cash conversion is often the binding constraint given inspection-driven payment cycles.
- **Proprietary Technology Platform:** an IP-owning business monetising its own design or software rather than executing someone else's; Economic ownership is naturally high, but Secured demand is the discipline's main check against crediting a plausible-sounding platform with no named, funded customer.
- **High-Capex Process Manufacturer:** a capital-intensive processing business, smelting, forging, heavy fabrication, where scale and asset utilisation, not proprietary IP, drive margin; Capital continuity and through-cycle bhav discipline matter most, since these businesses are the most exposed to being financed and priced as if today's cycle were permanent.
- **Data or Services Layer:** an asset-light business monetising data, software or services layered on top of a physical value chain, MRO software, fleet analytics, sustainment-as-a-service; the least represented archetype in the current aerospace cohort, and one to watch as India's MRO and defence-sustainment capacity (Sections 5 and 6 above) matures.

This report has already applied these definitions throughout, to the cohort of companies in Section 2 and to the concerns raised in Section 8, without requiring any other ValueQuest research as background; Section 15 next applies them once more directly to *Flying Higher*'s own opportunity map.

15

Translating the Value-Chain Map **into an Underwriting Lens**



SECTION 15

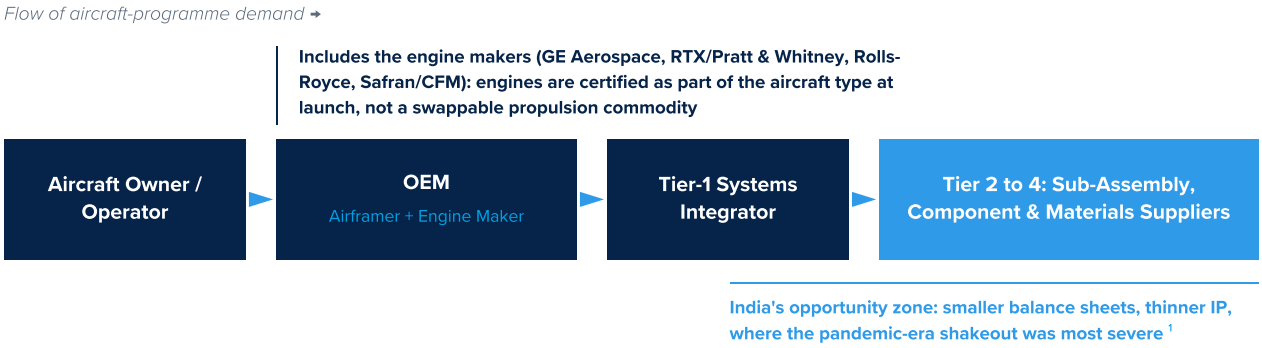
Translating the Value-Chain Map **into an Underwriting Lens**

Flying Higher mapped the aerospace value chain from aircraft owner down through OEM, Tier-1 systems integrator, and Tier 2 through 4 sub-assembly, component and materials suppliers, and located India's opportunity in Tiers 2 through 4, where balance sheets are smaller, IP is thinner, and the pandemic-era shakeout was most severe.[1] The OEM tier itself is worth being precise about: it is not just the airframers. GE Aerospace, RTX/Pratt & Whitney, Rolls-Royce and Safran/CFM sit inside that same tier, because a modern aircraft programme certifies its engine as part of the aircraft type at launch, the A320neo's LEAP-1A/PW1100G choice and the 737 MAX's single-source LEAP-1B both illustrate the point, rather than treating propulsion as a generic, swappable commodity a customer specifies afterward. That integration is exactly why this report treats the engine ecosystem (Section 2.2 above) as carrying the highest pricing power of any archetype in Exhibit 22: an engine maker's leverage over the supply chain is inherited from the OEM tier it is certified into, not bolted on downstream of it.[1] Exhibit 21 sets that fuller value chain out as a single diagram, since the shorthand of "Tier 2 through 4" is easier to underwrite once it is seen as a sequence of hand-offs rather than a category label. The framework set out in Section 14 gives that same map a company-level underwriting lens.

> ***Nearly everything investable today sits in common systems and structures or the adjacent engine-component pool, precisely where Flying Higher expected durable pricing power.***

EXHIBIT 21

The aerospace manufacturing supply chain, as mapped by Flying Higher, with the engine makers folded into the OEM tier and India's opportunity zone marked.



Source: ValueQuest, "The Indian Aerospace Manufacturing Sector, Spreading Its Wings" (July 2025).[1]

Read this way, *Flying Higher* four opportunity areas, re-life and retrofit, civilian satcom, common systems, and communication suites, plus its preferred engine ecosystem and its more cautious civil MRO read, sit at very different distances from the five archetypes set out in Section 14. That distance is itself part of the underwriting read, not a shortcoming of the framework: an area that slots cleanly into one archetype is easier to underwrite on this discipline's own terms than one that sits between two, or resists the categorisation altogether. Common systems and the engine ecosystem are the cleanest fits, which is exactly where *Flying Higher* expected durable pricing power to concentrate. Civil MRO is the clearest case of the opposite: its moat is land, an OEM licence and working capital rather than proprietary IP or a defensible qualification barrier, which puts it closer to an infrastructure business than to any of the five archetypes, and is precisely why *Flying Higher* own read on it was more cautious than on the rest of the map. Exhibit 22 sets out where each area sits, the underwriting read that follows, and the names or evidence already in the cohort.

EXHIBIT 22

Flying Higher's opportunity map, read through the underwriting framework.

OPPORTUNITY AREA (FLYING HIGHER, JUL 2025)	FIT WITH THE ARCHETYPE LENS	UNDERWRITING READ TODAY	INDIA NAMES / EVIDENCE IN THE COHORT
A — Re-life, retrofit and freighter conversion	A close fit as Qualified Global Supplier today, drifting toward Proprietary Technology Platform as conversion IP accumulates	Secured demand and Provenance score well once a conversion STC or OEM mandate is held; Economic ownership is the swing factor — a licensed conversion programme carries pricing power a pure build-to-print mandate does not	Adani's Air Works–Indamer platform is explicitly building passenger-to-freighter capacity alongside base maintenance (Section 5)
B — Civilian satcom and connectivity	A conditional fit as Proprietary Technology Platform — the label only holds once a named, funded programme is anchoring the revenue	Passes Secured demand only where a launch-customer contract exists; otherwise scores as narrative under this framework's narrative-discipline test (Section 14) until a funded counterparty is named	Rangsons Aerospace's satellite-terminal and steerable-antenna line is the one genuine SATCOM capability this report can point to — but it is unlisted, and a ValueQuest portfolio holding (Section 2.1)
C — Common systems and structures (hydraulics, thermal management, structural castings, aerostructures)	The cleanest fit in the map: Qualified Global Supplier at entry, and Sovereign-Procurement Contractor where the same tooling also serves DAP-2020 programmes	The archetype's natural home — certification (AS9100/NADCAP) is the moat, and Economic ownership improves once a company holds its own casting or forging process rather than only executing OEM drawings	Dynamatic Technologies (sole-source Airbus A220 doors, A320/A330 flap-track-beams); PTC Industries/Aerolloy (Airbus and Dassault titanium castings); Rangsons Aerospace (fluid-conveyance systems and thermal-management hardware for Boeing, GE Aerospace, Collins, Lockheed Martin, Honeywell and Parker — unlisted; a ValueQuest portfolio company, see Section 2.1)
D — Communication suites and legacy-system upgrades	A workable fit as Qualified Global Supplier, capped by Economic ownership where drawings remain OEM-owned	A narrower, still-emerging India value pool; no named subject in the current cohort sits primarily here	Watch item rather than a current holding — flagged in Flying Higher as a stable, moderate-competition niche riding the same retrofit and freighter-conversion wave as Area A
Engine ecosystem (components and MRO tooling)	A strong fit as Qualified Global Supplier, with the highest Economic-ownership ceiling of the group once qualified, given engines' tighter tolerances and thinner supplier base	Flying Higher's own preferred entry point — higher qualification barriers than aerostructures translate into real pricing power; India's near-term exposure is mostly through forged/cast engine components rather than assembled engines or licensed engine-MRO shops, which remain largely un-Indianised	Unimech Aerospace's gas-turbine and airframe MRO tooling — supplied to the licensed engine-MRO tool ecosystem built around global OEMs, such as AGSE — is the cohort's clearest listed representative; Azad Engineering's precision turbine airfoils sit here too — it now holds direct aero-engine contracts with Rolls-Royce (defence engines) and Pratt & Whitney Canada [27,28], though roughly 90% of revenue is still reportedly tied to industrial gas turbines for GE, Siemens Energy and others [11]; Adani's MRO platform is openly seeking an engine-maintenance partner (Section 5) — the clearest open door for actual overhaul capability
Civil MRO — base maintenance and airframe overhaul	The weakest fit of the six: an infrastructure/services business first, and only marginally any of the five archetypes (see discussion above)	Flying Higher's own caution holds: land and airport-adjacency are genuinely scarce, and licensed engine-MRO tooling remains the higher-margin, higher-barrier corner of the segment relative to plain airframe base maintenance	Air India–SIA Engineering (Bengaluru); Adani Air Works–Indamer; HAL–Airbus A320 MRO joint venture; Haveus Aerotech's ATR facility (Section 5)

Two patterns stand out. First, nearly everything investable today sits in Area C (common systems and structures) or the adjacent engine-component pool — precisely where Flying Higher expected durable pricing power, because certification is the moat and a small, qualified group of suppliers holds real leverage over OEMs that cannot easily re-qualify a replacement. Second, Areas B and D, and civilian satcom and communication suites more specifically, remain thin on named, investable India exposure, not because the opportunity has disappeared, but because too much of what is written about them still reads as narrative rather than a funded, named counterparty, which is exactly the distinction the narrative-discipline test set out in Section 14 is built to catch. Area B has one partial exception, Rangsons Aerospace's SATCOM line (Section 2.1), which presently has defence applications but has the potential for civilian use cases.



Where **This Leaves the Thesis**

Flying Higher core call, that a structural, supply-side shortage in global Tier-2/3 aerospace capacity would open a durable window for qualified Indian suppliers, with the greatest pricing power concentrated in engines and licence-protected MRO tooling, reads, fourteen months on, as substantially intact and now substantially evidenced: a second listed comparable, a record domestic-procurement budget line, an MRO policy package that has moved into construction, a widening geopolitical realignment in India's own supplier base, and a cohort of named companies against which the dhanda-banda-bhav discipline can actually be applied rather than merely described. The opportunity set is also wider than the cohort's current names suggest: systems and avionics, and electro-mechanical components and sub-assemblies, are further areas where Indian suppliers have room to grow into the same OEM supply chains, even if named, investable India exposure there is still thin. What has changed is not the thesis but its price, its governance texture, and the geopolitical machinery underneath it, several of the best-evidenced names in the cohort are also among the most richly priced, one of them carries a connected-capital flag despite genuinely strong technical validation (Section 8), and the same diversification away from a single dominant supplier that is opening India's opportunity is also relocating, not removing, single-point-of-failure risk. The underwriting task from here is less about finding the opportunity, which *Flying Higher* already did, and more about sizing and staging into it company by company, instrument by instrument, exactly as ValueQuest's broader dhanda-banda-bhav discipline (Section 14) sets out to do.

Sections 10 through 12 add one further layer to that task rather than a new one: the traffic and seat-capacity evidence confirms the demand underneath the backlog is real and still broadening rather than spent, the A321XLR shows that demand reshaping the industry's own short-haul/long-haul boundary in ways that reinforce this report's existing engine-scarcity thesis rather than complicate it, and the OEM-MRO-Spares reframing names the one vector, spares and PMA aftermarket parts, where India does not yet have an investable name alongside HEICO and TransDigm's own contrasting playbooks. The realistic route into that vector is not to copy either playbook directly: neither a HEICO-style independent-PMA platform nor a TransDigm-style sole-source roll-up is a business India's aerospace cohort can credibly stand up from a standing start, since both rest on decades of accumulated FAA approvals, OEM relationships and, in TransDigm's case, a specific M&A-financing discipline that has no domestic analogue yet. The more plausible path runs through the OEM vector this report has already mapped: India goes deeper into Tier-2/3/4 manufacturing first, the common-systems, structural-castings and engine-component qualification this report has tracked since Section 15, and the spares opportunity is one this cohort grows into from that base outward, alongside the OEMs it already supplies, rather than a business built to compete with HEICO or TransDigm on their own terms from day one. That sequencing, OEM depth first, spares adjacency second, is this report's clearest single addition to the watch list going into the next twelve months.

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Notes

Notes

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