

The Demise Of Commercial Aerostructures

What happened?

Presentation to



18 March 2025

Beverly Hills, CA

Kevin Michaels – Managing Director & Founder

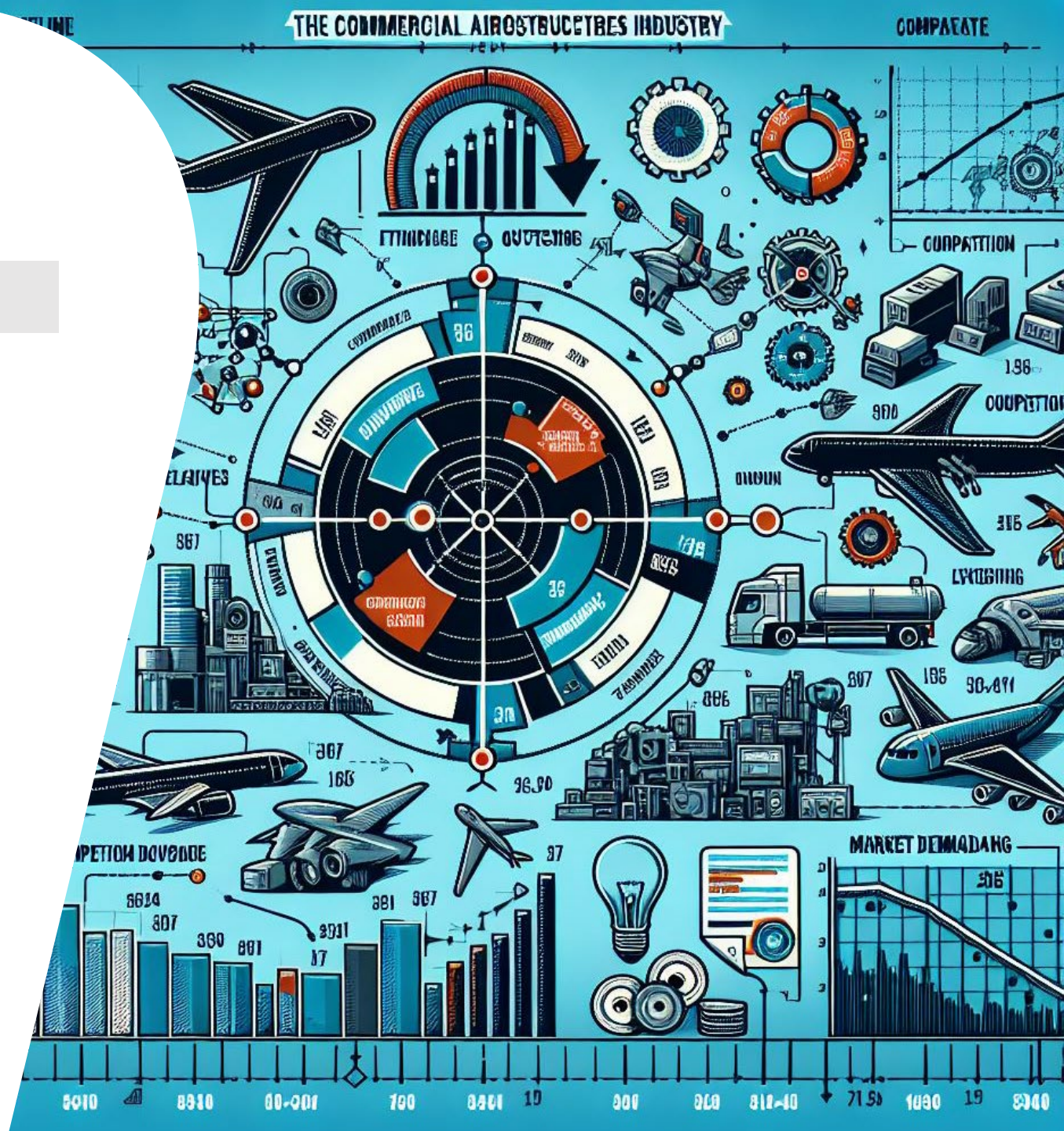


Agenda

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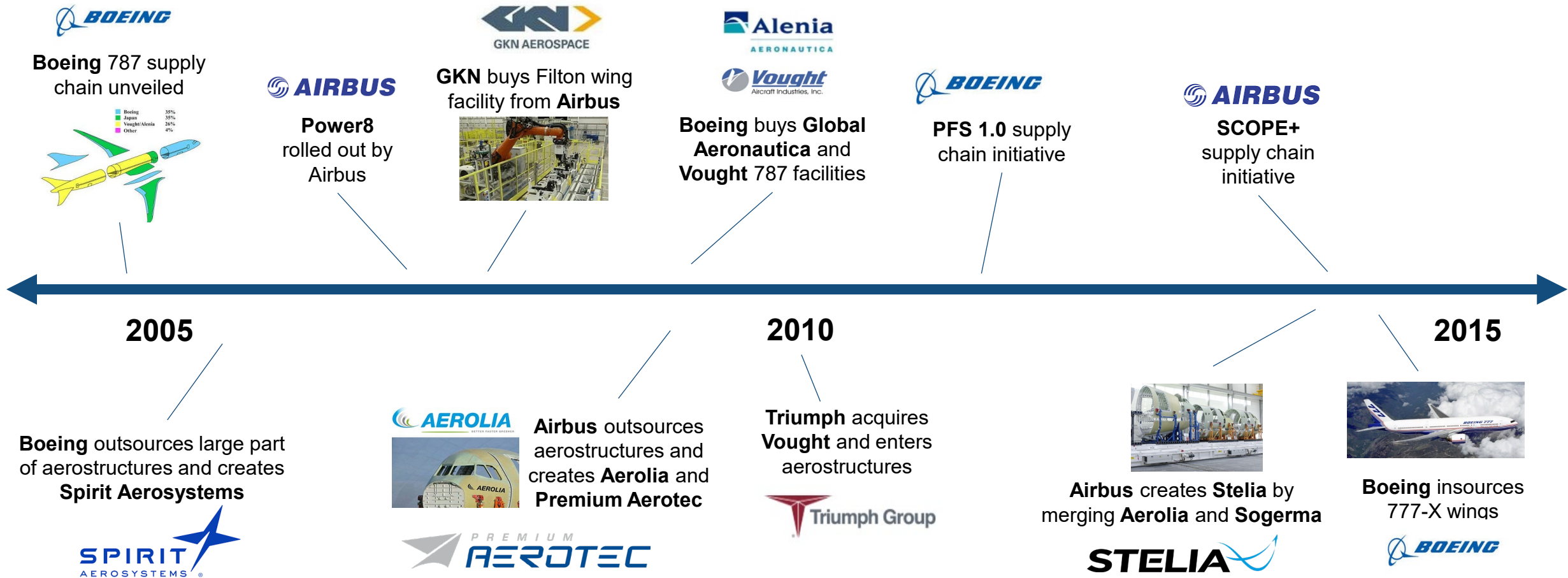
Why did it happen?

What's next?



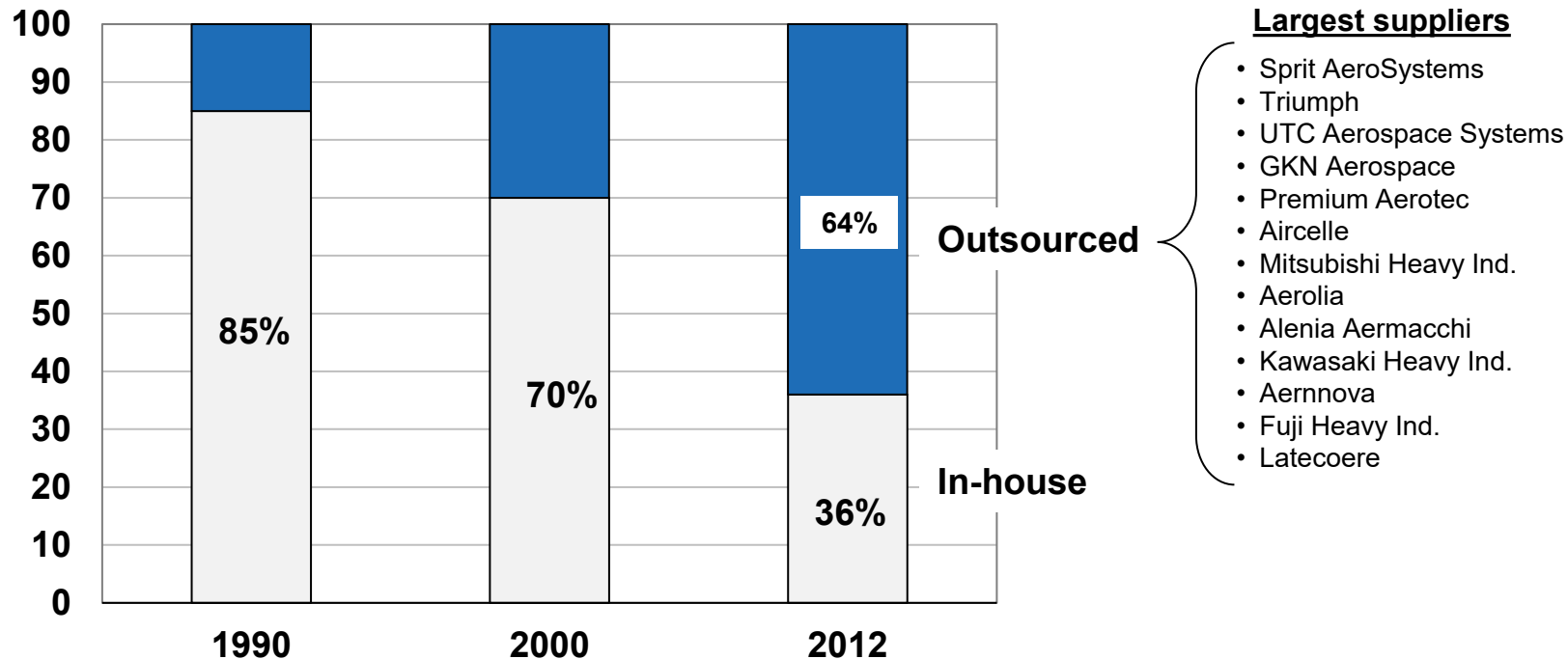
2005 – 2015 was a period of significant OEM outsourcing and new, aggressive supply chain initiatives

Timeline of key events in commercial aerostructures



By 2012, aerostructures outsourcing reached 64% and Tier 1s had many design-build contracts

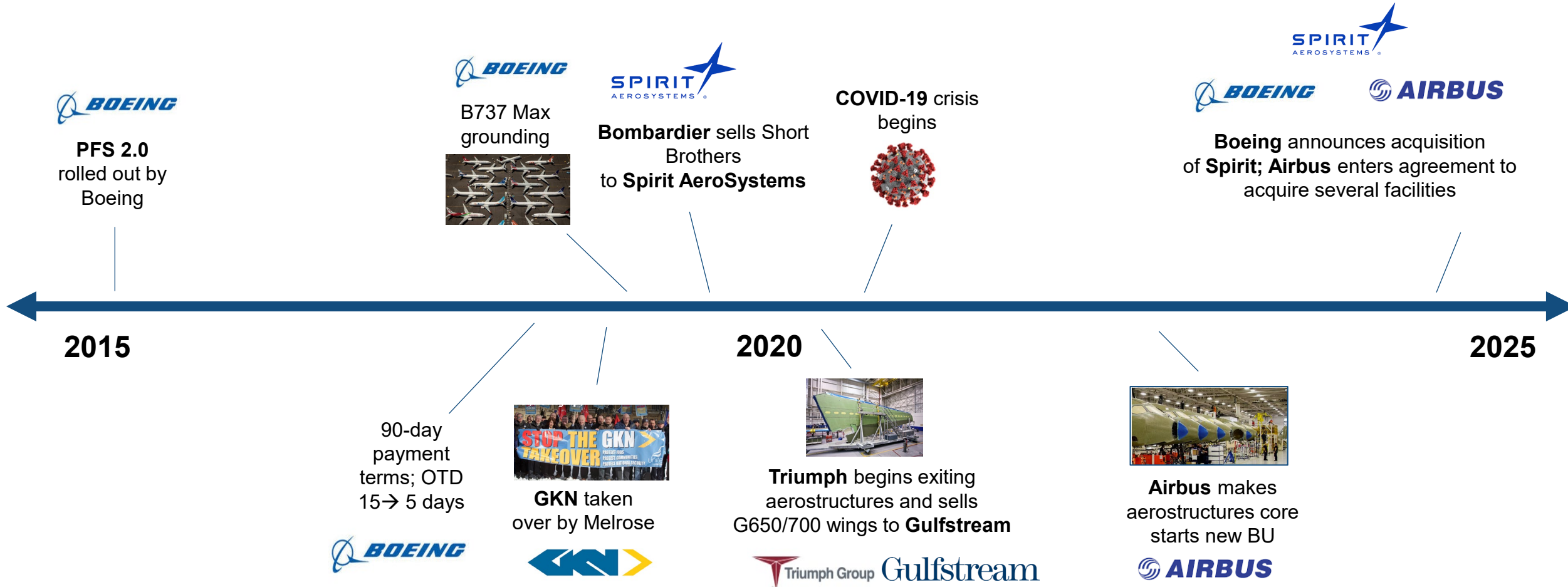
Aerostructures outsourcing by value: 1990 -- 2012



- › The aggressive outsourcing of the prior decade reached 64% by 2012
- › Many of these contracts were design-build; the largest tier 1s bulked up on design capability
- › White sheet 737 and A320 replacements with heavy use of composites and outsourcing anticipated

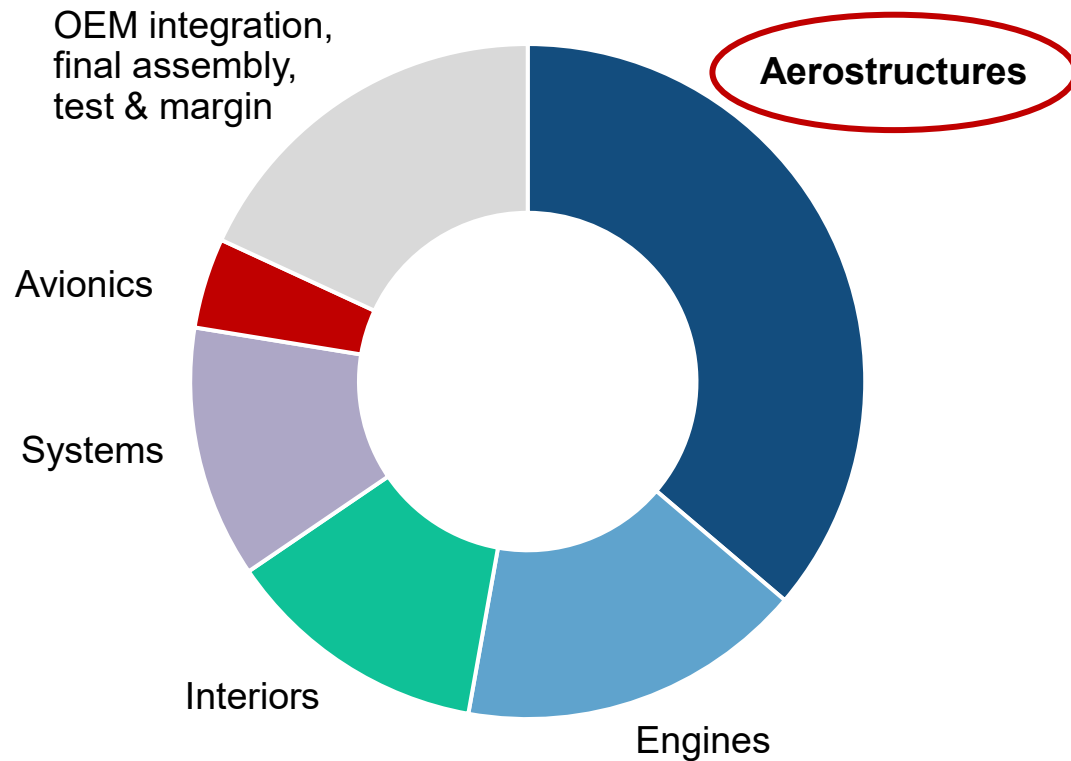
2015 to the present saw two major production shutdowns as vertical integration takes hold

Timeline of key events in commercial aerostructures

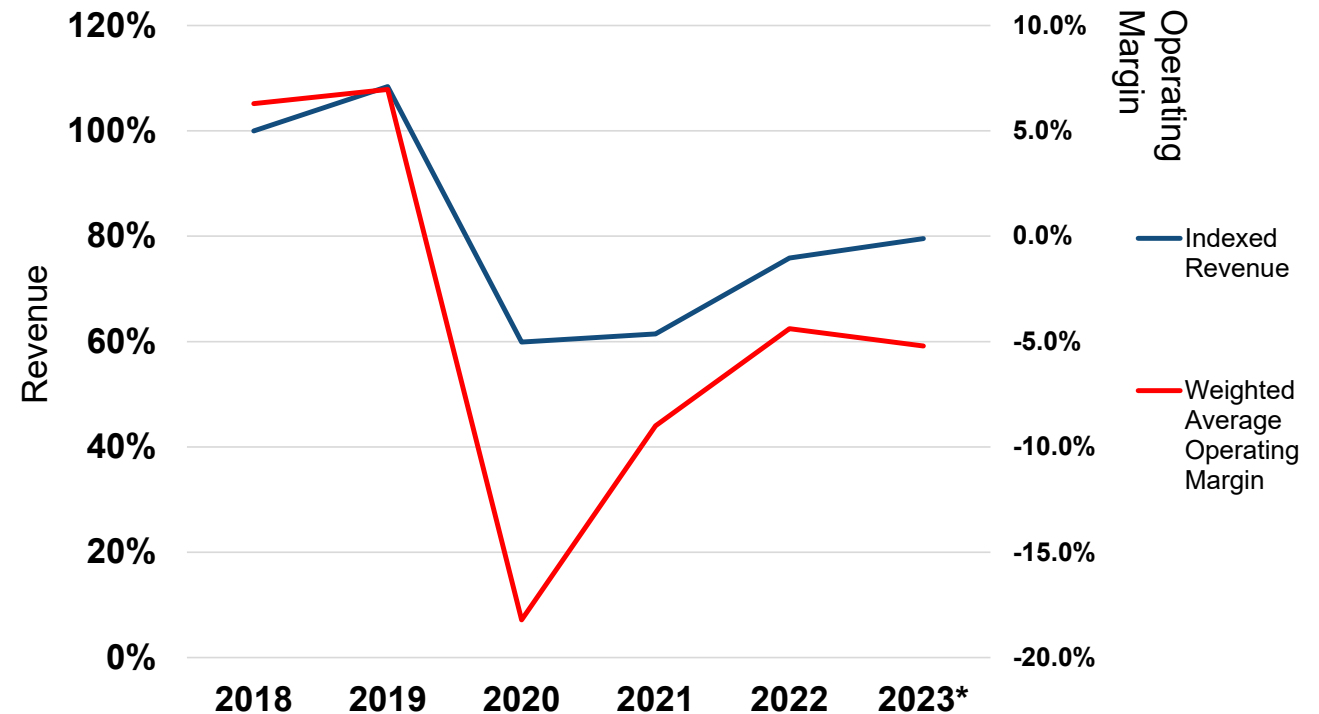


The result is that major aerostructures suppliers – which address 35% of a jetliner's cost structure -- cannot earn an adequate financial return

Typical jetliner cost structure



Aerostructures Revenue Operating Margin Index* 2018-2023 (Indexed to 2018)



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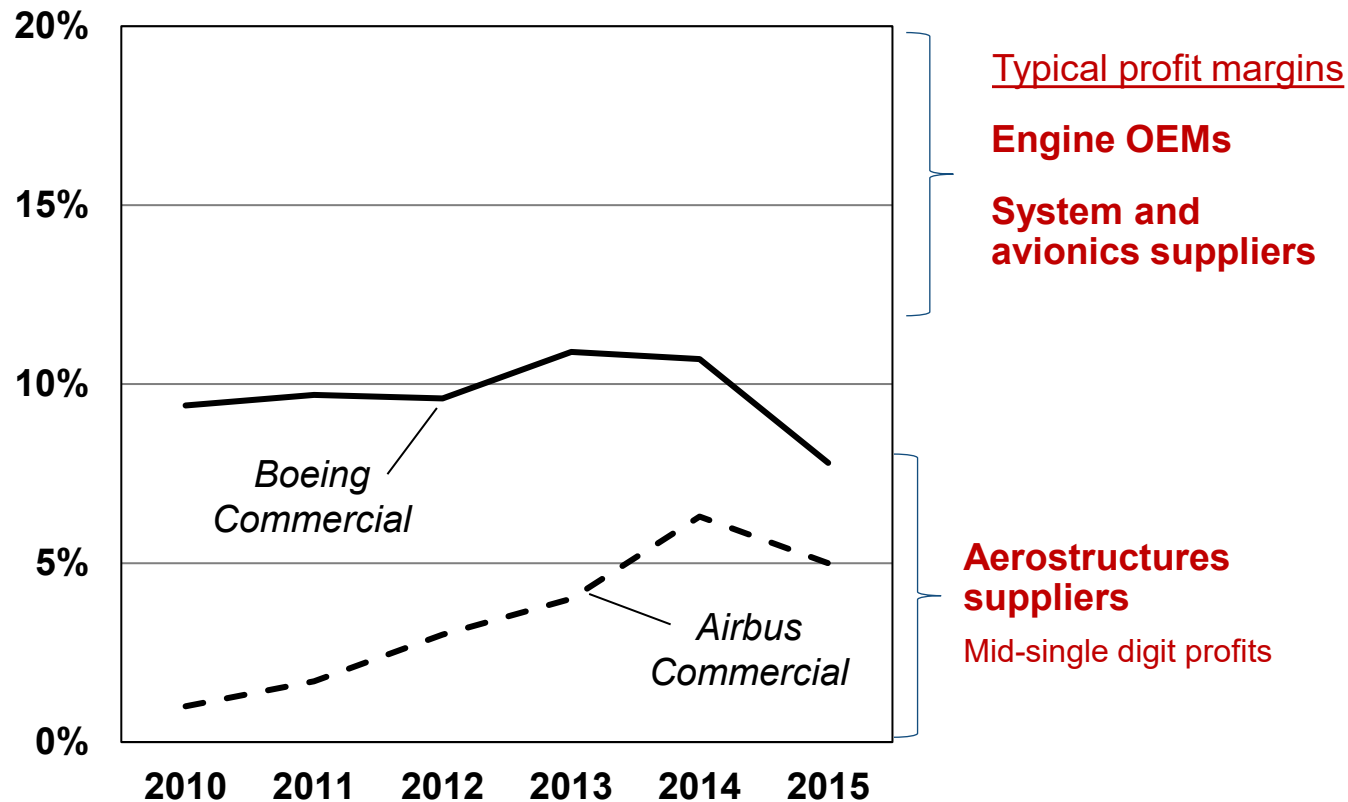
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OEM supply chain initiatives attempted to shift profit pools with unilateral price reductions and commercial concessions

OEM and Tier 1 Supplier Profit Margins – early 2010s

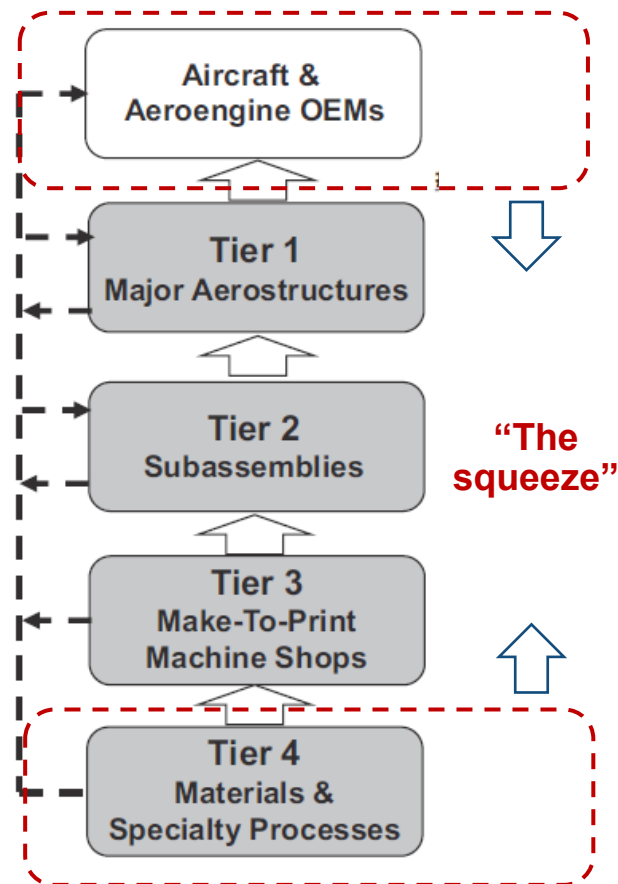


Figures are EBIT (Airbus) and Operating Profit (Boeing)

- › OEMs in the early 2010 recognized that many suppliers earned considerably higher margins without corresponding risks
- › This led to a variety of initiatives – Power8, Partnering for Success 1 & 2, and Scope+ which had common elements
 - Unilateral price reductions
 - More favorable commercial terms
 - Increased aftermarket access or royalties
 - “No fly lists” for non-conforming suppliers
- › Tier 1 aerostructures suppliers were much less profitable and double-digit price reductions often made contracts unprofitable

Tier IV consolidation increased their pricing power versus aerostructures suppliers; this put them in a squeeze

Aerostructures supply chain



Precision Castparts – Major Acquisitions 1999 - 2016

| Tier 4 Raw Material & Processes | Tier 2 & Tier 3 Machining, parts, subassemblies | Fasteners |
|--|--|--|
| Wyman Gordon (1999) Cannon-Muskegon (2003) Specialty Metals Corp (2005) Caledonian Alloys (2007) Carlton Forge Works (2009) Titanium Metals - TIMET (2012) SOS Metals (2014) Schultz Steel (2016) | Primus International (2011) Tru-Form (2011) Klune Aerospace (2012) Centra Industries (2012) Heroux Devtek – aerostructures (2012) Synchronous Aerospace (2012) Aerospace Dynamics (2014) Noranco (2015) | SPS Technologies (2003) Cherry Aerospace (2007) PB Fasteners (2012) Permaswage (2013) |

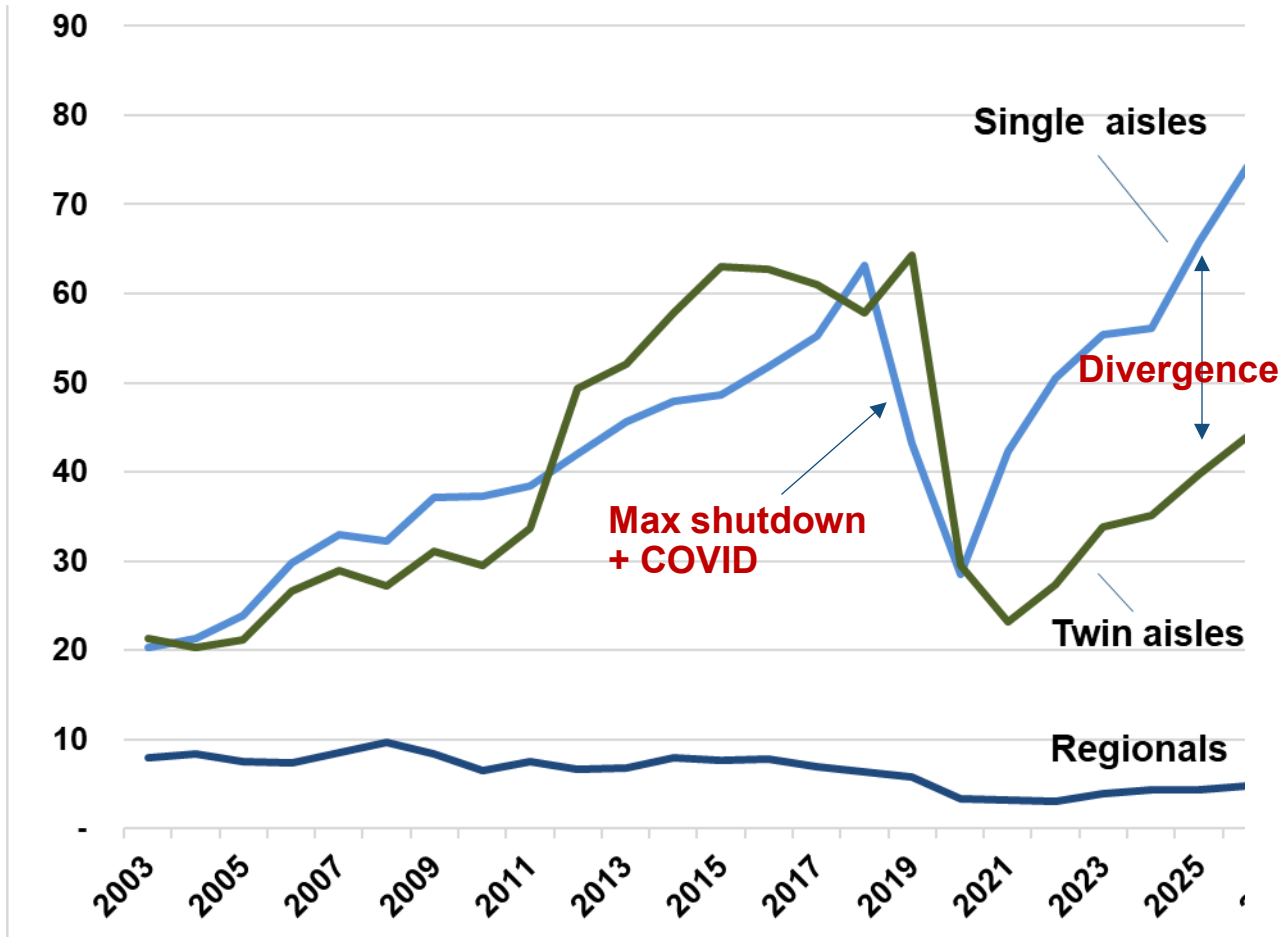
- › Consolidation in Tier IV included raw materials, forgings, castings, machining and fasteners
- › Alcoa, ATI and others followed suit
- › Consolidated Tier IV suppliers **increased pricing power versus aerostructures suppliers**
- › OEM downward price pressure and Tier IVs created a squeeze on Aerostructures suppliers

Berkshire Hathaway bought PCC for \$37B



The decline of twin aisle production, COVID & the Max production shutdown negatively impacted aerostructures volume

Air transport deliveries (2024 \$B)



Boeing 777



- › Raw material buy weight*: ~1,400K lb.
- › Raw material fly weight: ~304K lb.

Boeing 737 NG



- › Raw material buy weight*: ~370K lb.
- › Raw material fly weight: ~73K lb.

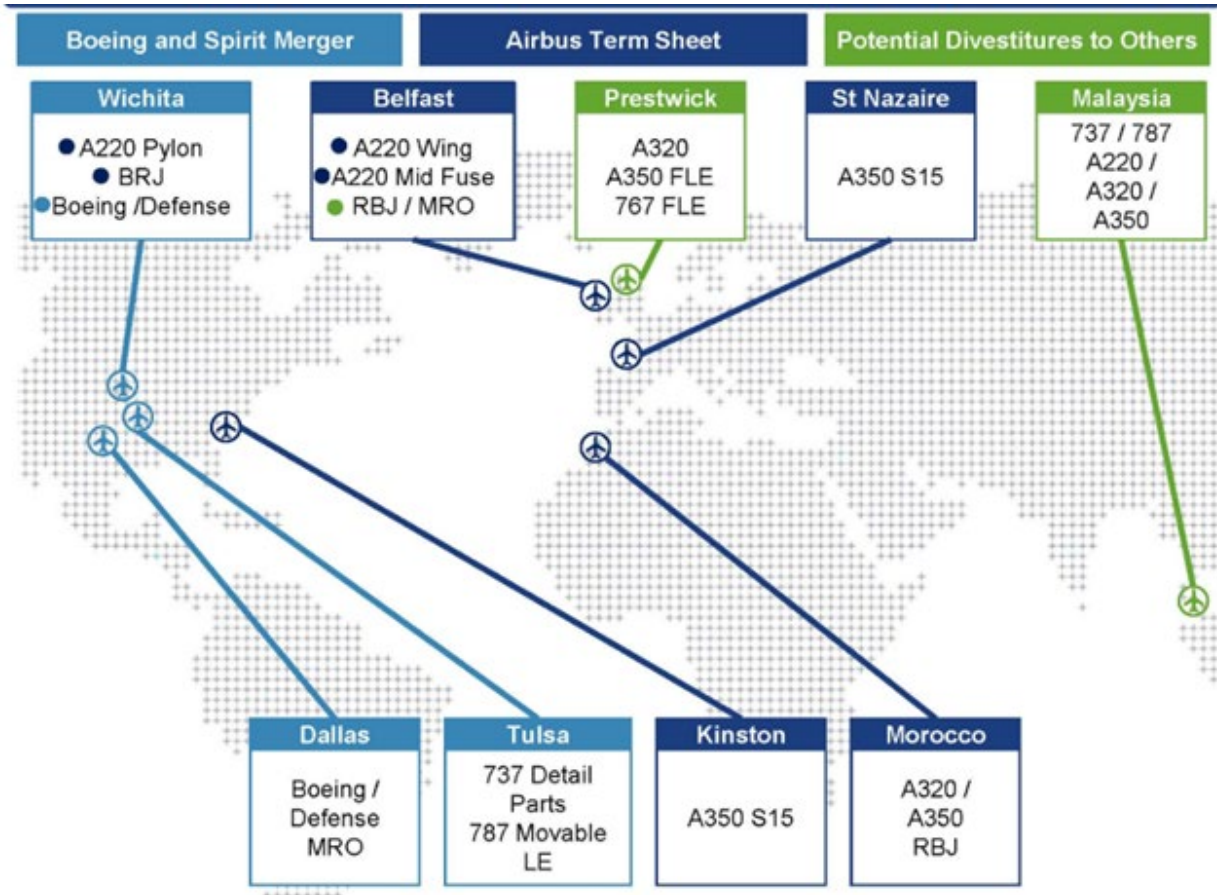


**Twin aisles 4X
single aisle weight**

* Without engines

Supplier overreach harmed Tier 1s in some instances

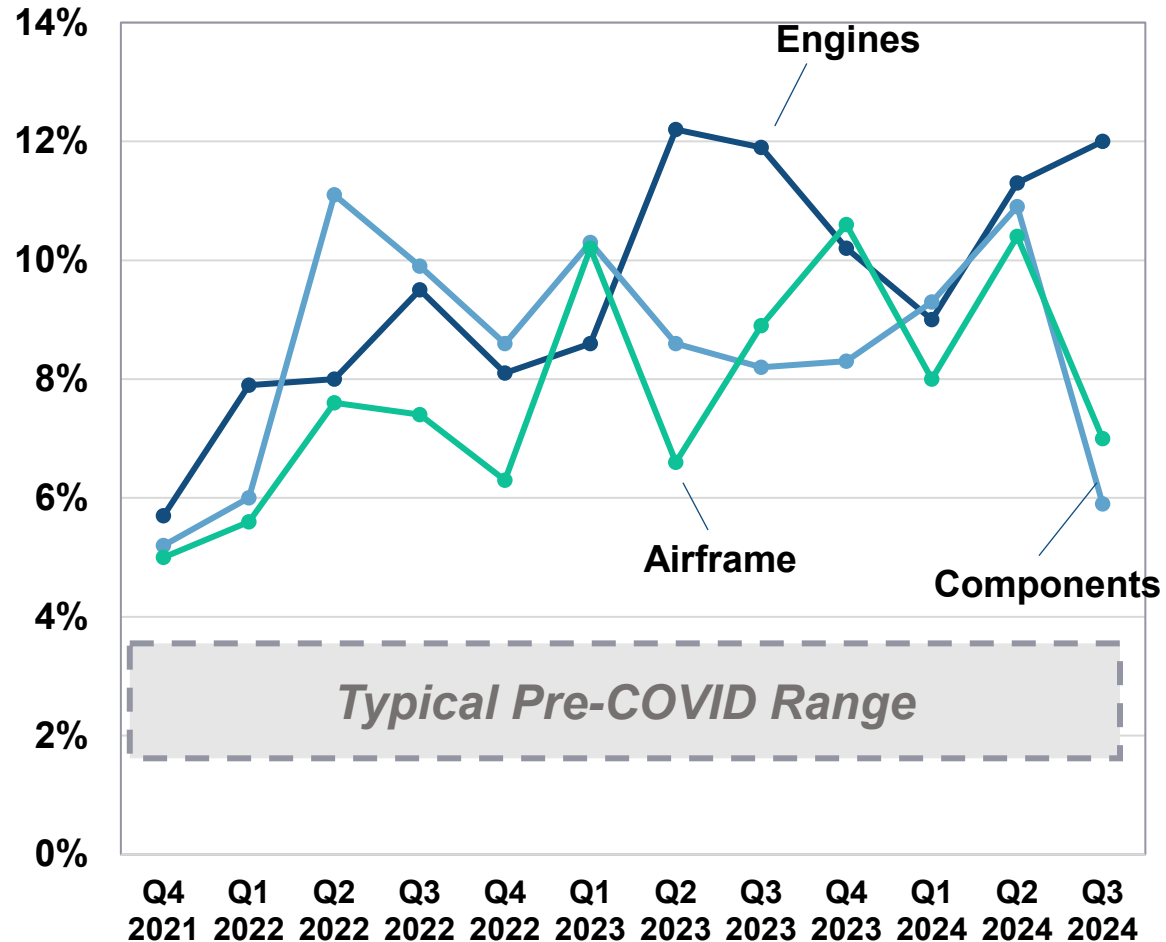
Spirit AeroSystems' Footprint



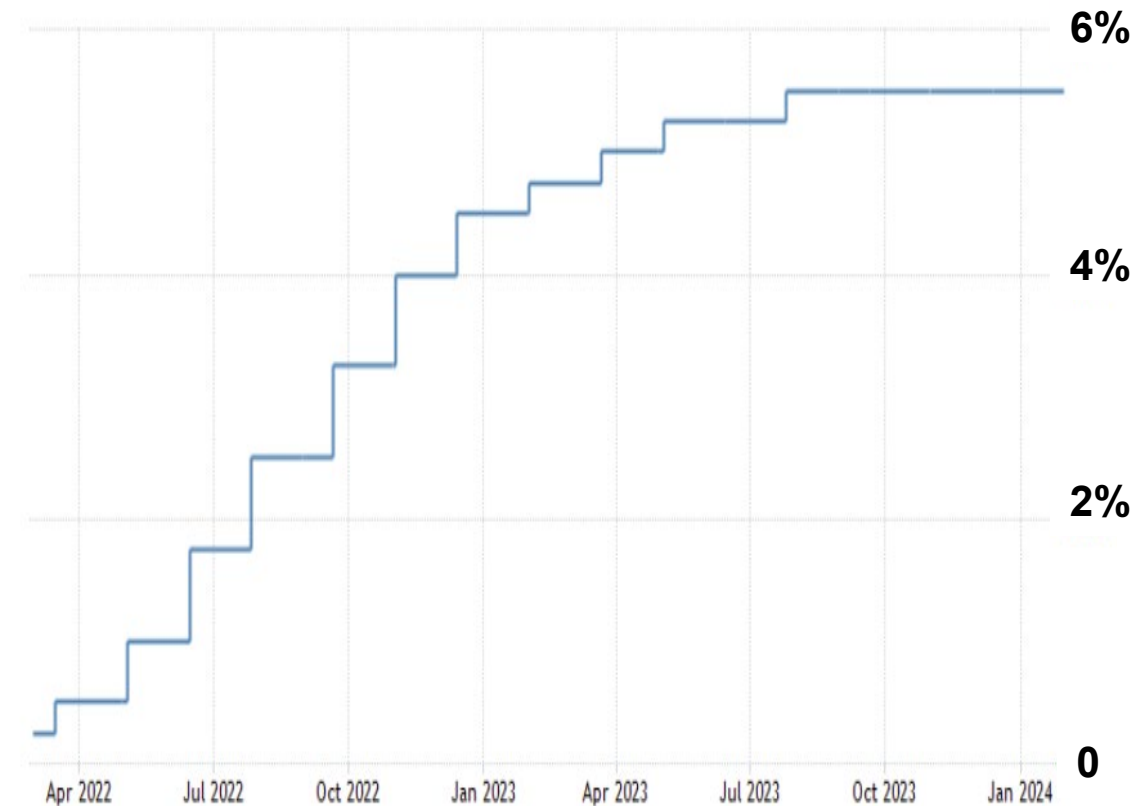
- › The largest aerostructures suppliers pursued global footprints with aggressive revenue diversification
 - Civil
 - Military
 - MRO
- › In addition, they added engineering capability to pursue design-build contracts
- › The forthcoming Spirit divestiture points to the lack of true synergy between its facilities
- › Economies of scale in aerostructures are at the site level, not the corporate level

Inflation from post-COVID shortages and rising interest rates hit suppliers hard – particularly those with limited protection contracts

Surveyed YoY Commercial Aftermarket Material Price Changes

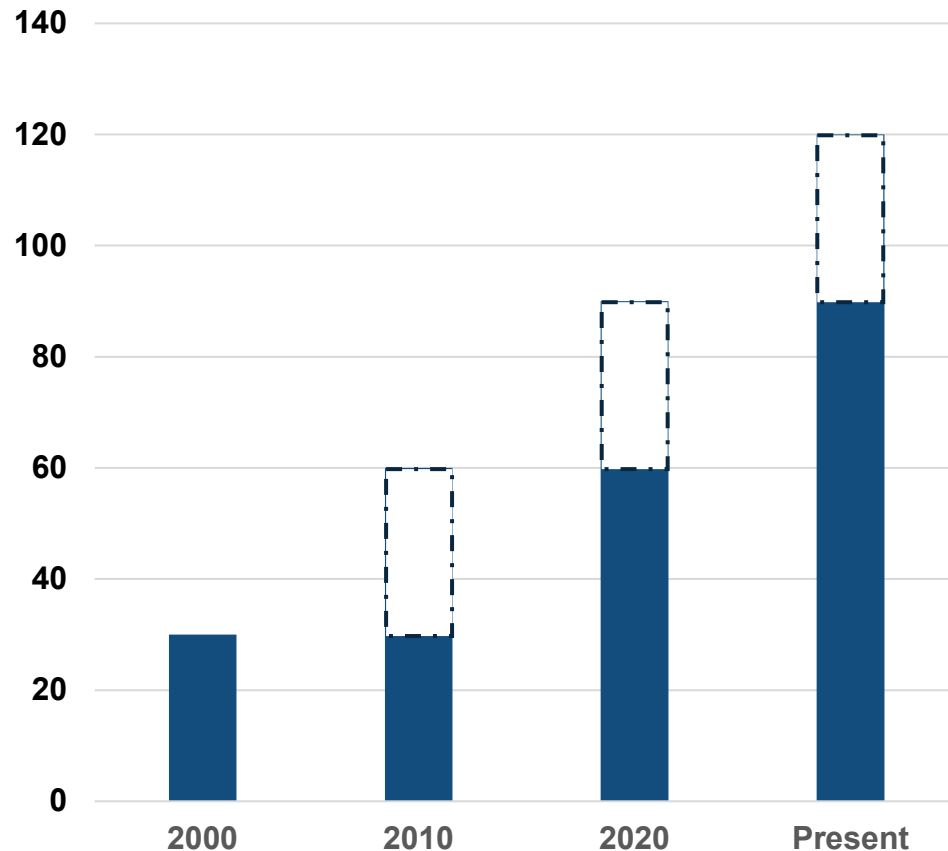


US Federal Funds Interest Rate April 2022 – Jan 2024 (%)



Increasing payment terms coupled with higher interest rates has created a working capital shortage with will influence production increases

US Commercial Aerospace Supplier Payment Terms (days)



Source: AeroDynamic Advisory, US Federal Reserve

European suppliers – working capital cliff



- › European governments supported sub-tiers during the COVID crisis with loans...which are now coming due
- › Coupled with a higher cost of capital, the Airbus ramp-up will strain suppliers and push some to insolvency

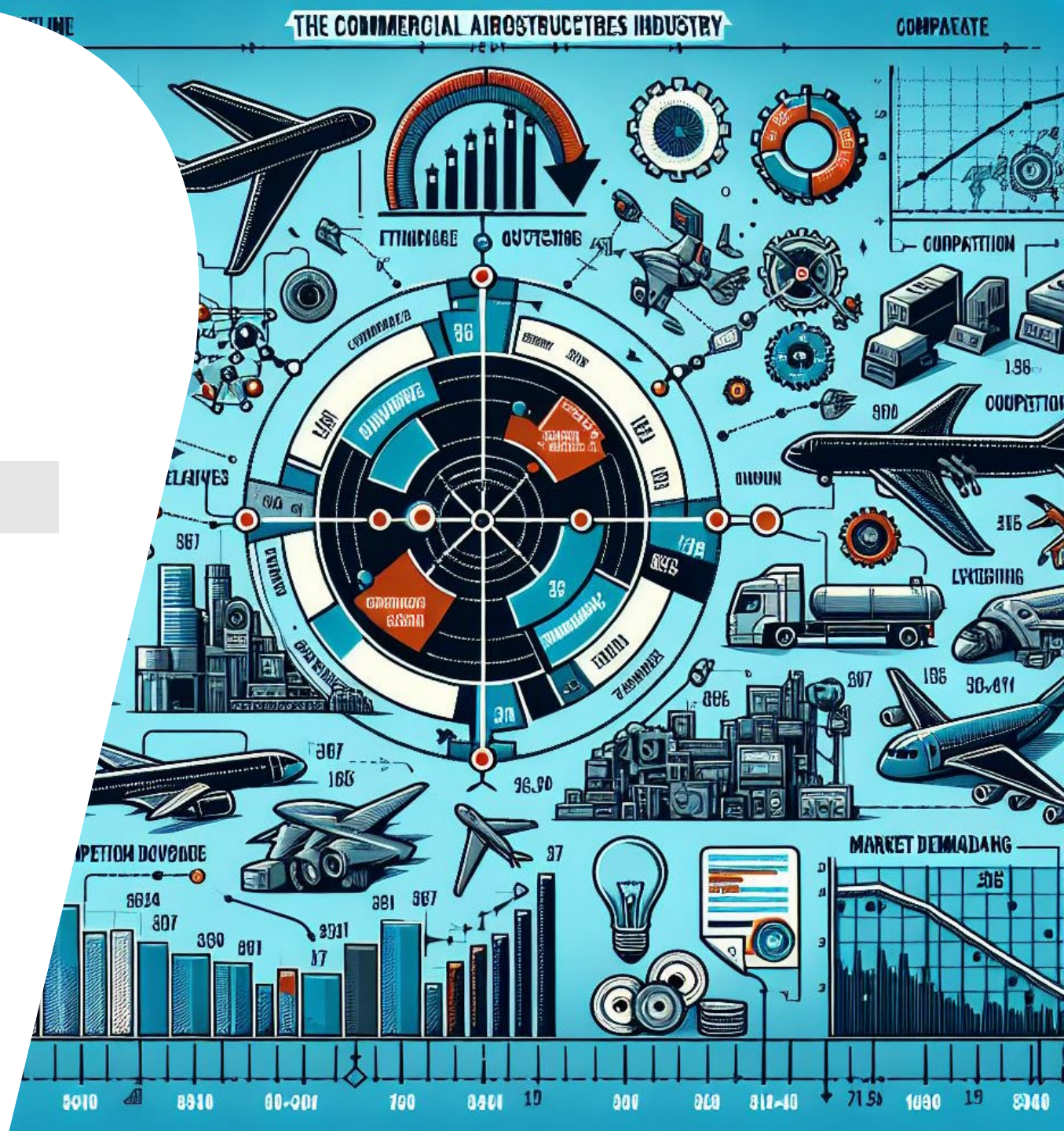
Sub-tier suppliers experiencing working capital shortage

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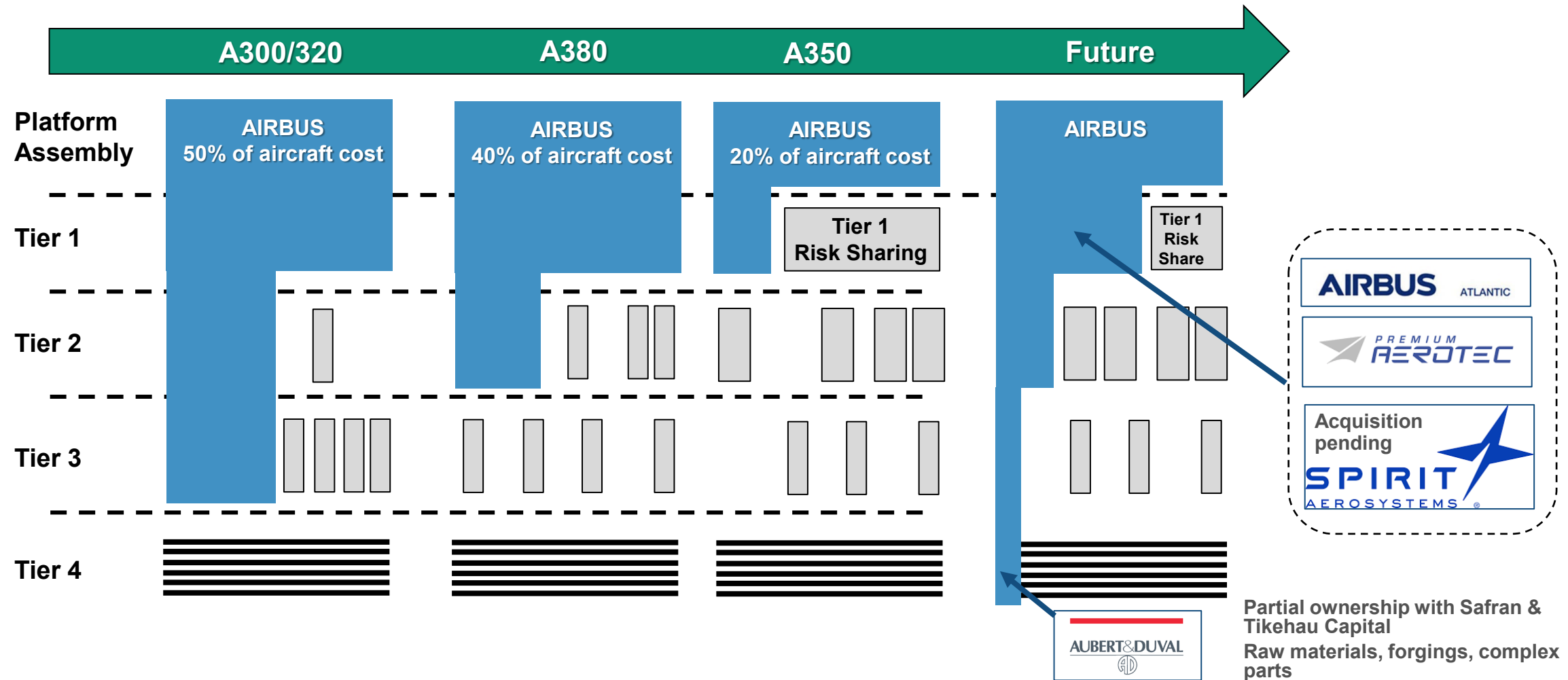
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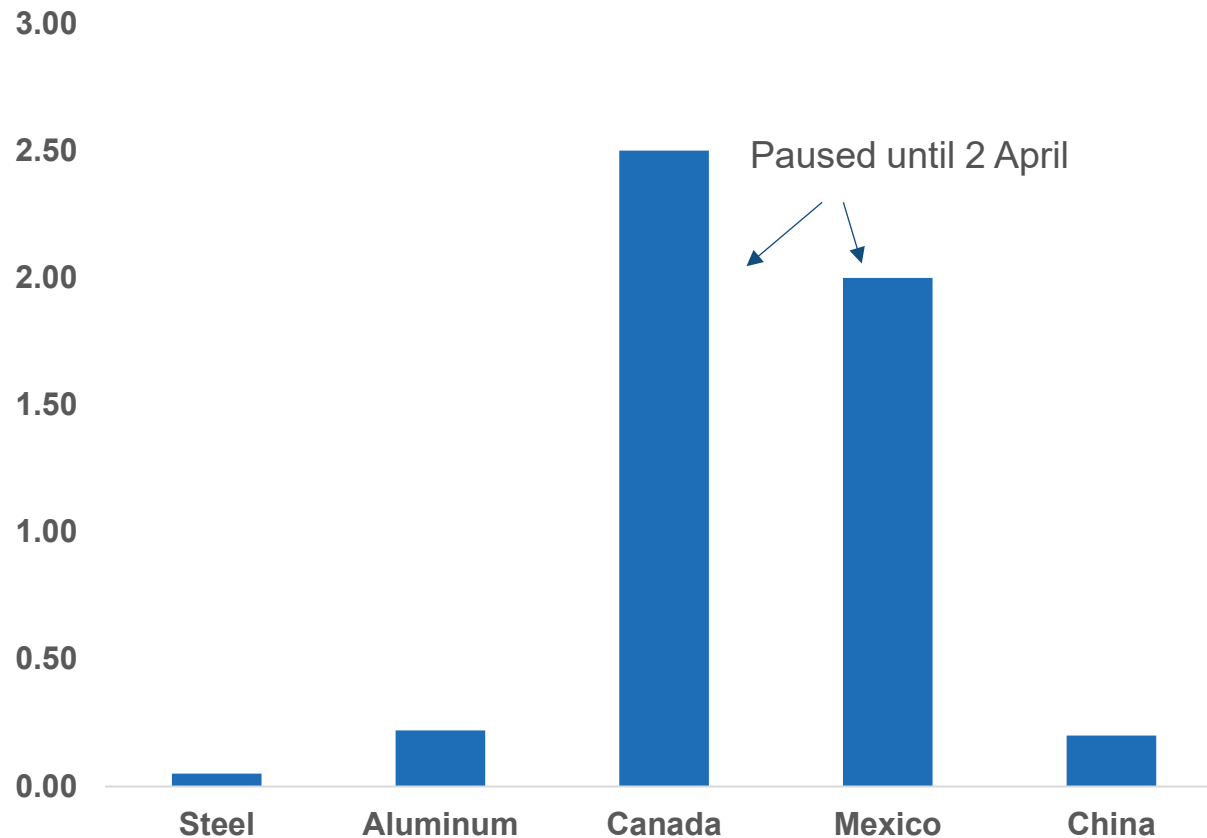
OEM aerostructures vertical integration will continue and could intensify

Airbus: evolution of aerostructures supply chain



US tariffs will contribute to the trend of supply chain regionalization

US Aerospace Industry – Cost Of Tariffs* (\$B)
\$5.0 Billion



* Based on single border crossing

- › Post-COVID supply chains put a greater emphasis on supply chain resiliency and regionalization
- › The recently announced tariffs will only increase the sense of regionalization
- › Bombardier reduced dependence on Asian suppliers and demonstrated solid supply chain performance in recent years

New aerostructures suppliers will emerge from countries seeking to grow their aerospace industries



- › Many countries wish to expand their presence in aerospace and aerostructures is usually the starting point
- › There could be a changing of the guard with new suppliers as major Tier 1s struggle
- › On exception is the Japanese “heavies” which exhibit patient capital and long-term investment horizons

Focused Tier 1-2 aerostructures suppliers investing in processes and automation can prosper – even in the challenging environment

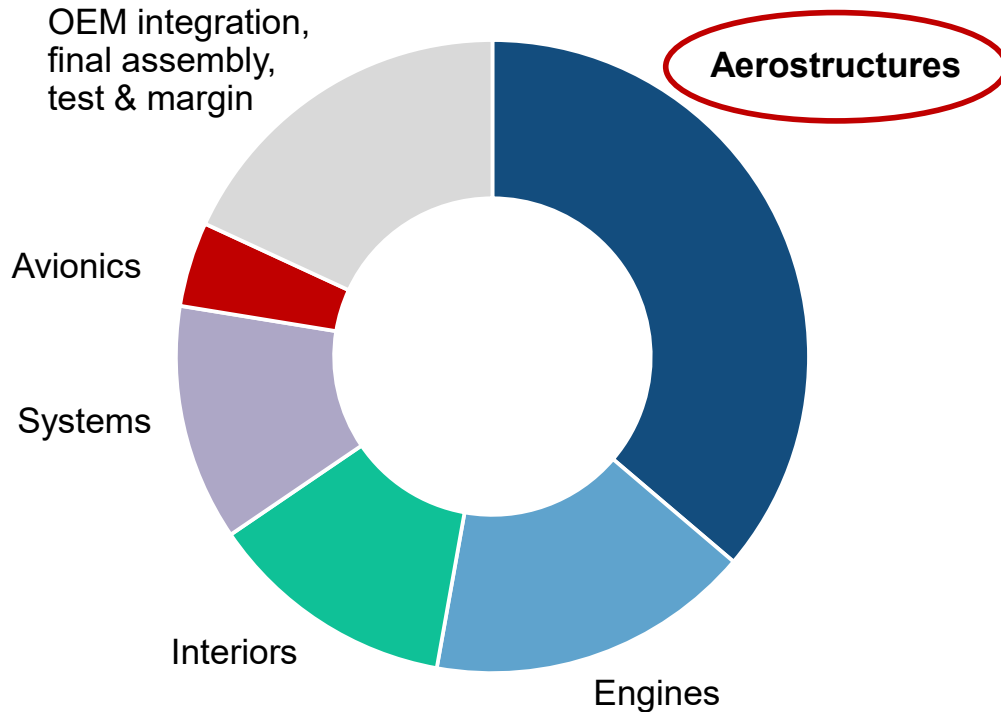


- › There are examples of aerostructures suppliers that have invested in automation and production technology...and achieved significantly reduced labor content
- › Diversification into the kinder military market is a common part of their playbook
- › Aircraft OEMs will still need risk sharing partners, however the work packages should be smaller



What is needed to mend the aerostructures ecosystem is a “Supplier New Deal”

Typical jetliner cost structure



- › Aerostructures suppliers will continue to struggle unless OEMs change the rules to allow an adequate return on capital
- › Elements of the “new deal” could include:
 - Pricing adjustments
 - Lower payment terms
 - More generous delivery windows / fewer penalties
 - Better provisions for tariffs and inflation
- › Prices must go up for Tier 1 aerostructures to regain footing – and for aircraft OEMs to pursue lofty production rate goals

Thank You!



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