

Global Aerospace & Defense

Bernstein University

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See Disclosure Appendix of this report for important Disclosures and Analyst Certifications

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Global Aerospace & Defense

Split between commercial aerospace and defense, but most commercial companies also do defense work

Commercial aerospace

- Global customer base, global supplier base
- Demand driven by global GDP and airline profitability
- Business streams divided between original equipment (OE) and aftermarket
- Aftermarket is hot due to life extensions as new deliveries fall short
- Current issue: Challenges at Boeing and Airbus to ramp production to meet demand

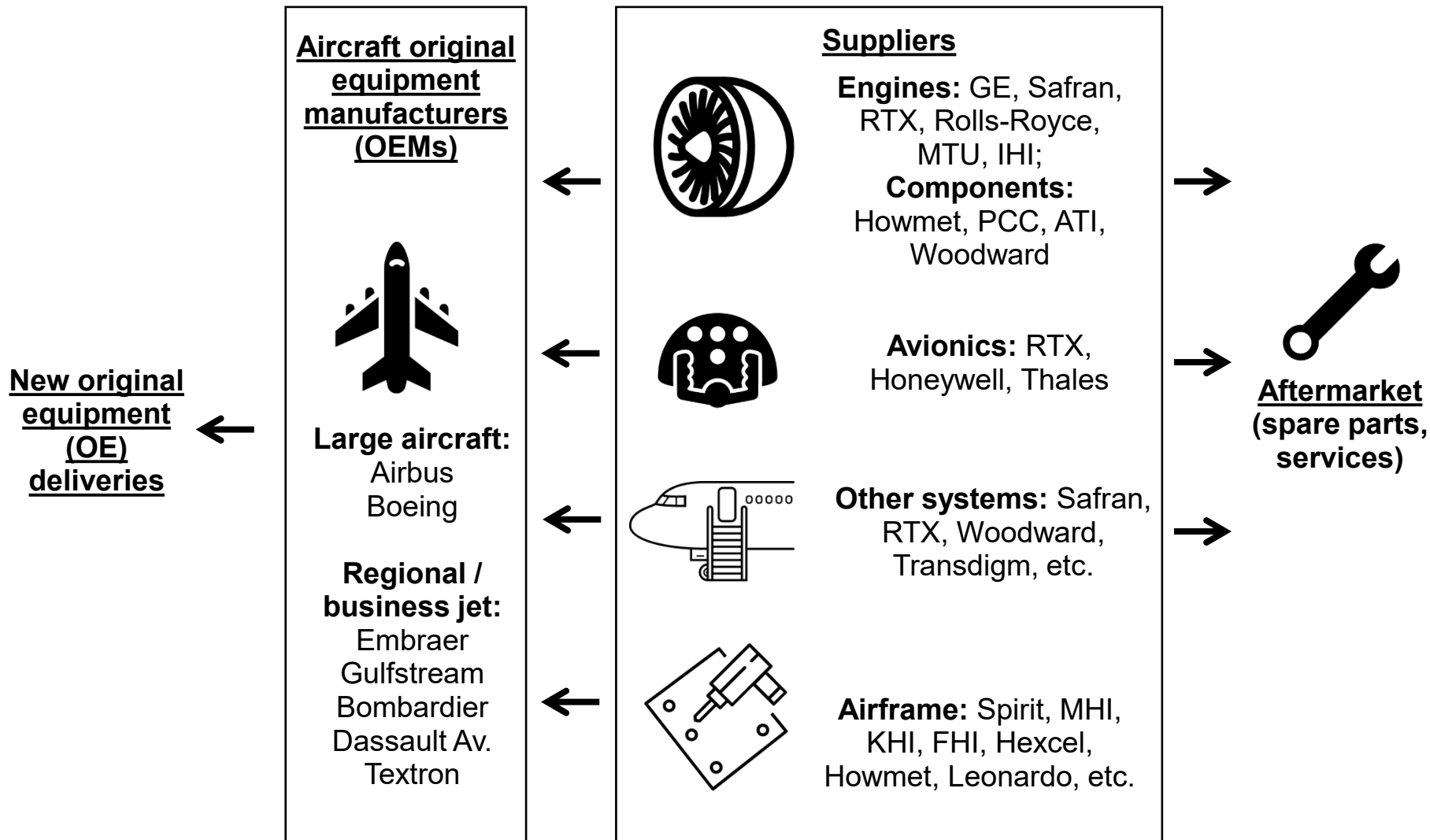
Defense

- Customer is the government / defense department
- Budgets driven by geopolitical tensions
- Stock performance driven by budget growth and FCF spread
- Wars can be catalyst
- Defense budget hit record high – Who gets \$1tn?



Commercial Aerospace

Commercial aerospace industry value chain



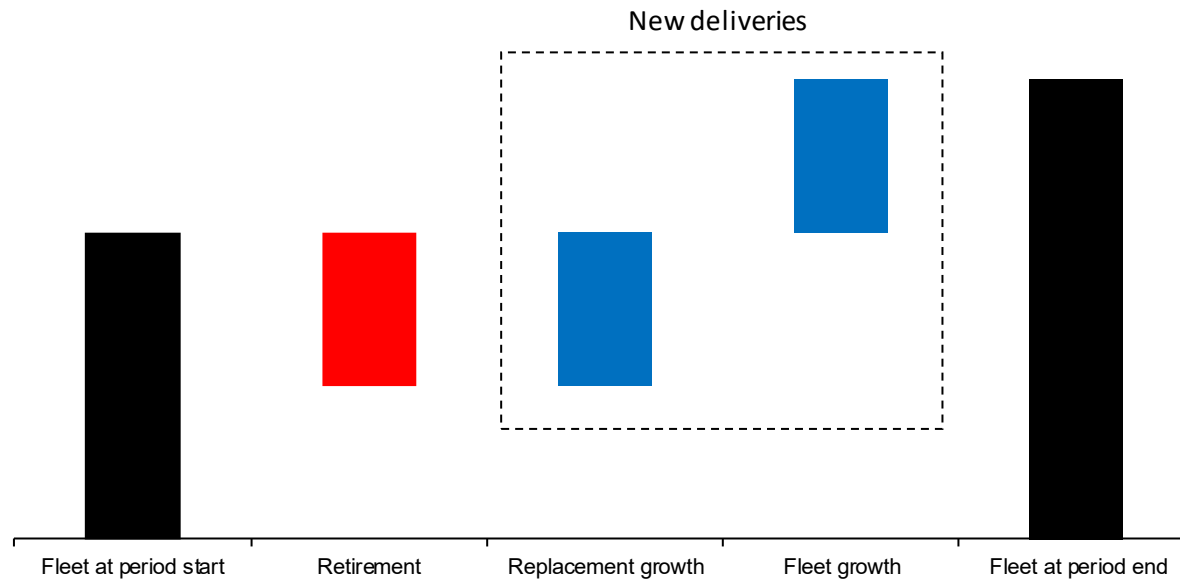
Drivers of new OE deliveries: Fleet growth and replacement



Fleet growth: higher levels of air travel

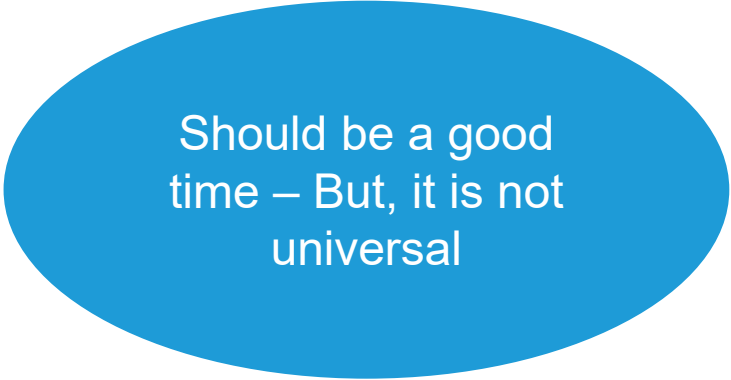


Replacement growth: new platforms



Questions for the next five years

- Can extraordinary aircraft demand be sustained?
- Why can't Boeing and Airbus deliver?
- Aging – Is 20 the new 15?
- Engines – Who has the power?
- Should MRO be afraid?
- Will there ever be a new airplane?



Should be a good time – But, it is not universal


Do you remember this?

Mid-2019 – Where we were

- 9 years of traffic growth above 5%; China a key driver
- 8 years of airline profitability; Oil no longer a problem with \$60bbl Brent
- 737MAX to 57/month in 2020; A320 to 63/month in 2021
- A350 at 10/month, 787 goes to 14/month
- GTF problems of 2018 largely resolved
- GE/Rolls 60/40 split on 787
- Boeing's New Midsize Aircraft (NMA) in airline discussions
- COMAC C919 far behind 2016 EIS date

A different world today

Mid-2019 – Where we were

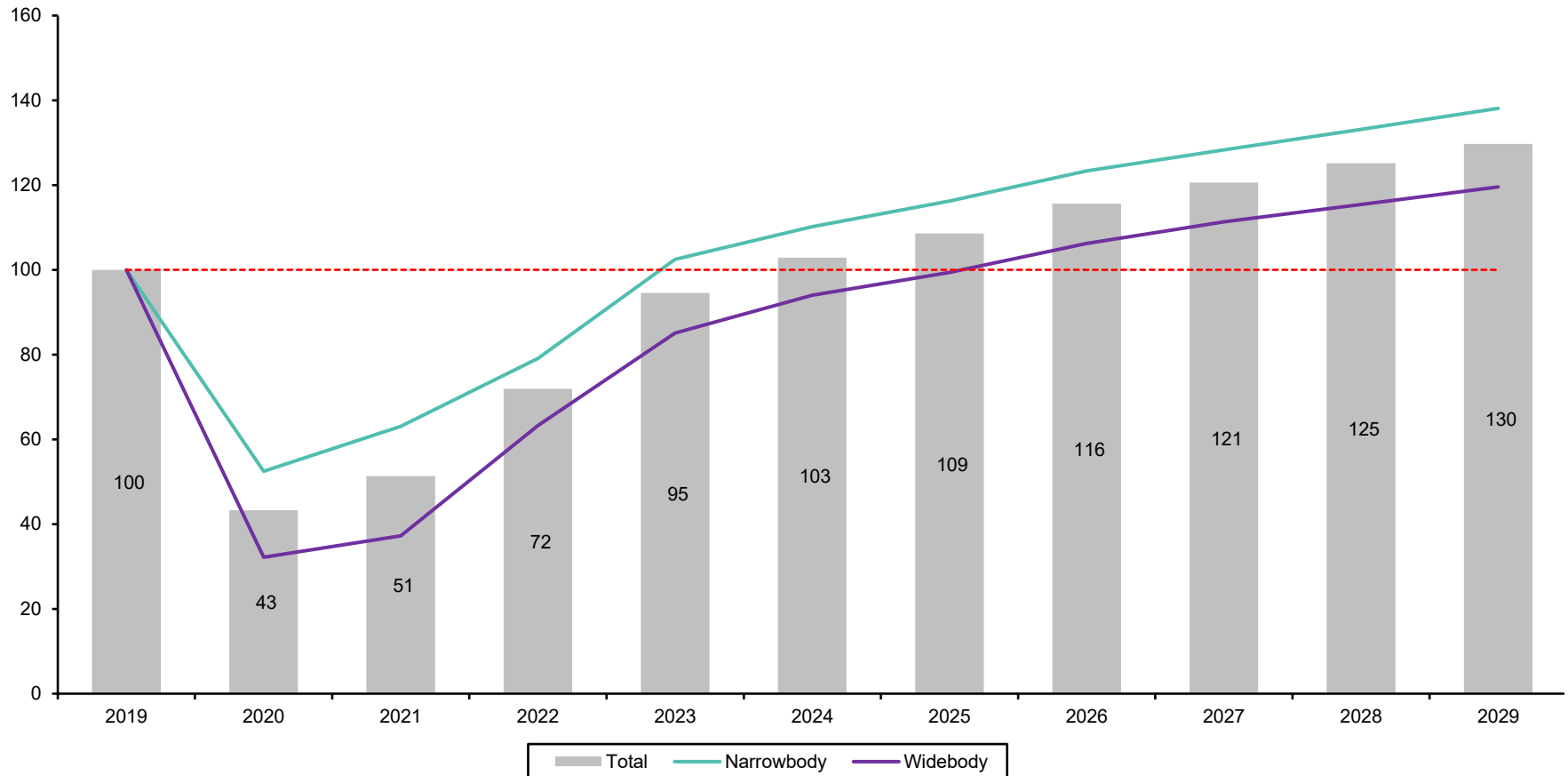
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- 

What happened?

- COVID crushes traffic growth; Outbound Chinese tourism halted
- Airlines park fleets, slash operations; losses and bailouts
- 737MAX grounded; A320 rates down to 40/month; no MAX-7 or MAX10 cert yet
- 787 nonconformities halt production; A350 rates slashed; 777X delayed
- New GTF problems emerge
- GE's GEnx dominates 787
- NMA killed; no new Boeing or Airbus airplane before 2035
- COMAC C919 delivers 7 years late

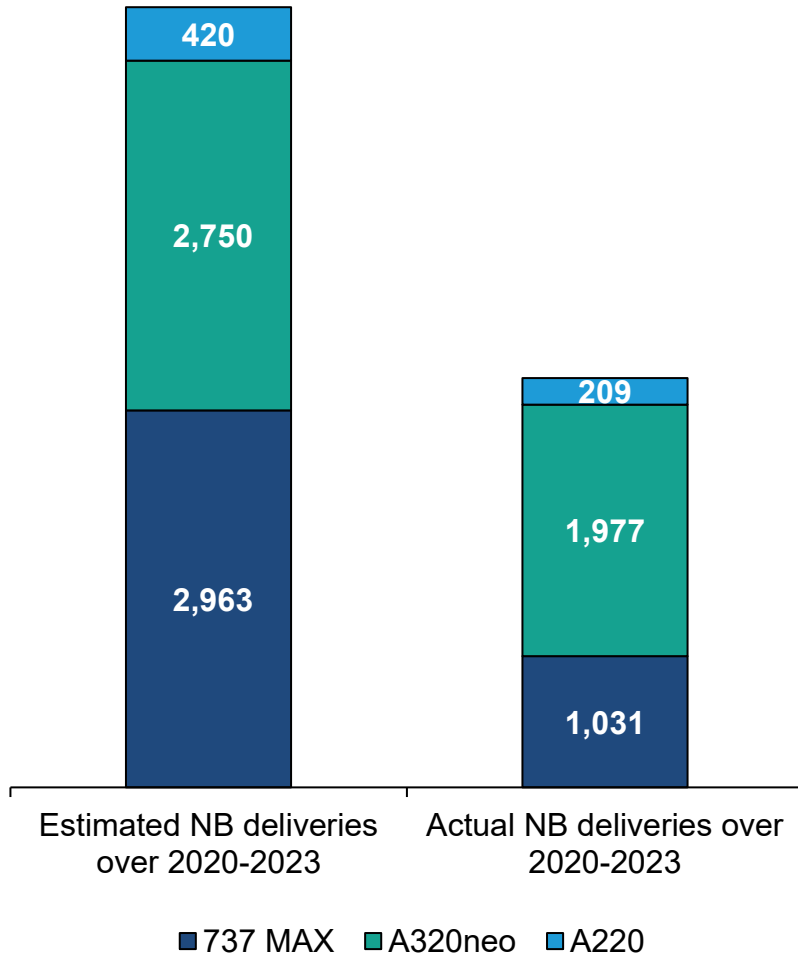
Recovery nearly back to 2019 – But, that is not what matters

ASK history and Bernstein forecast

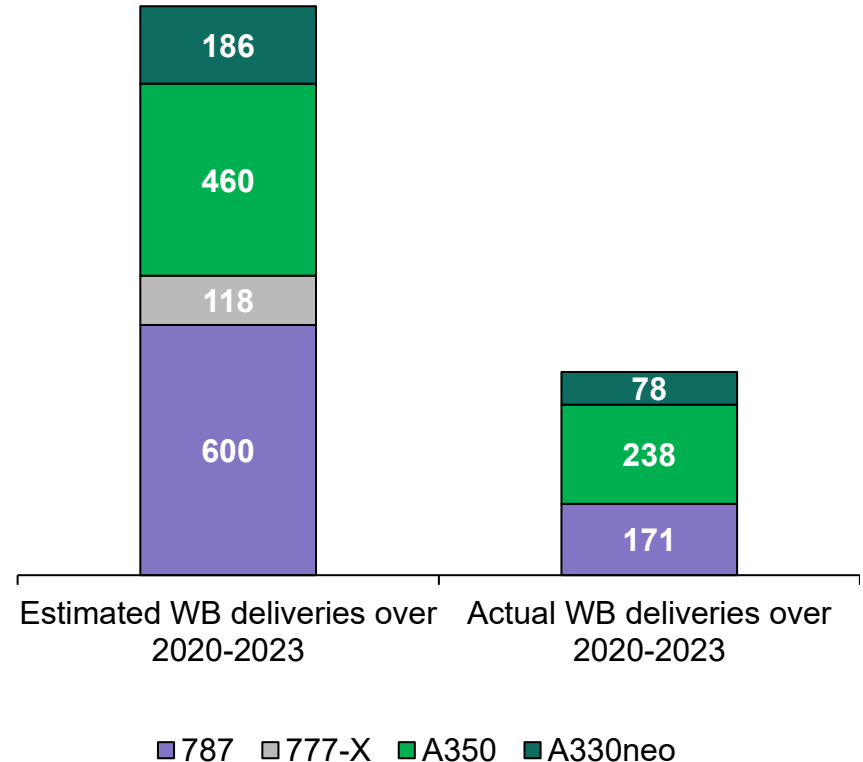


Estimated 2020-23 deliveries versus what was actually delivered

Narrowbodies



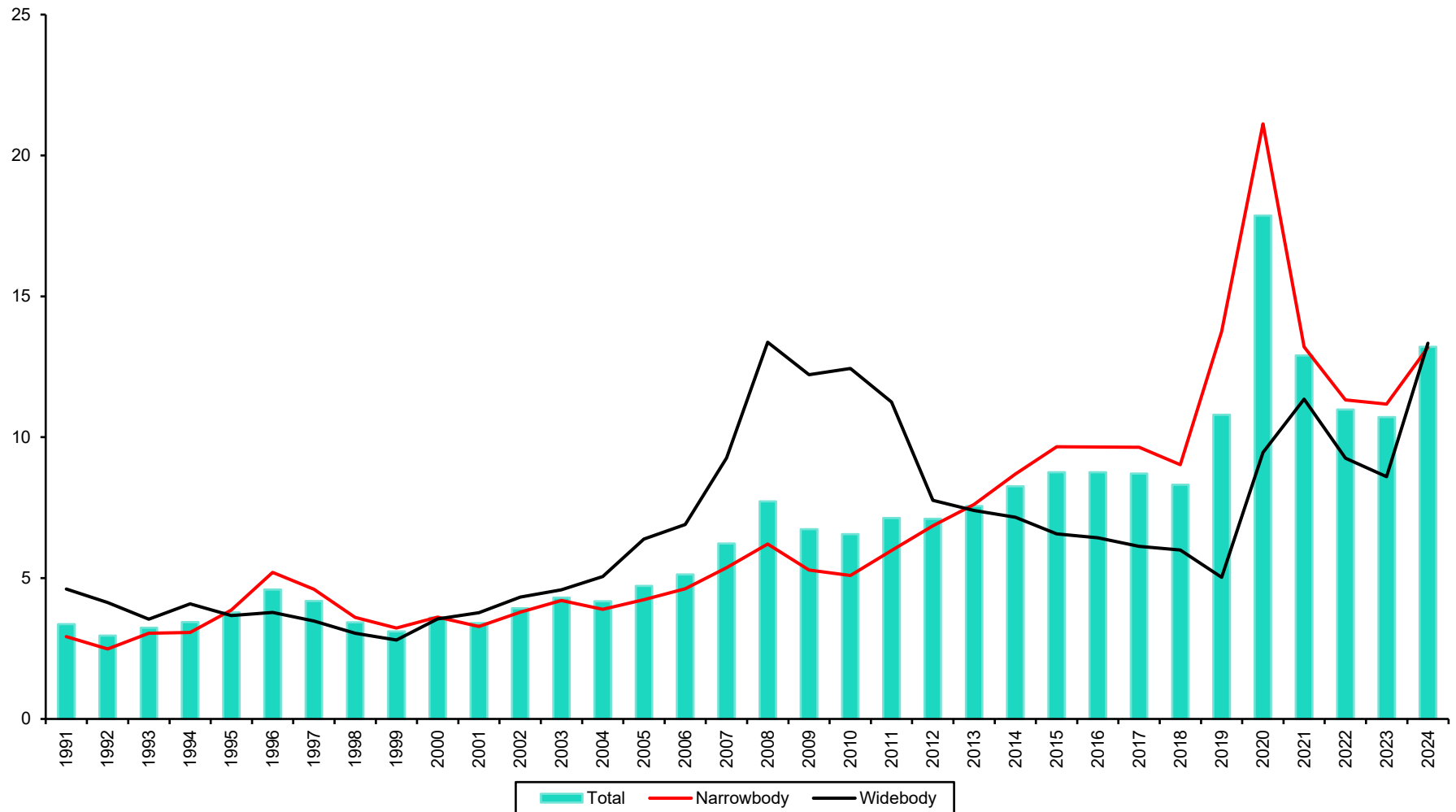
Widebodies



Source: IBA, company reports, Bernstein estimates and analysis

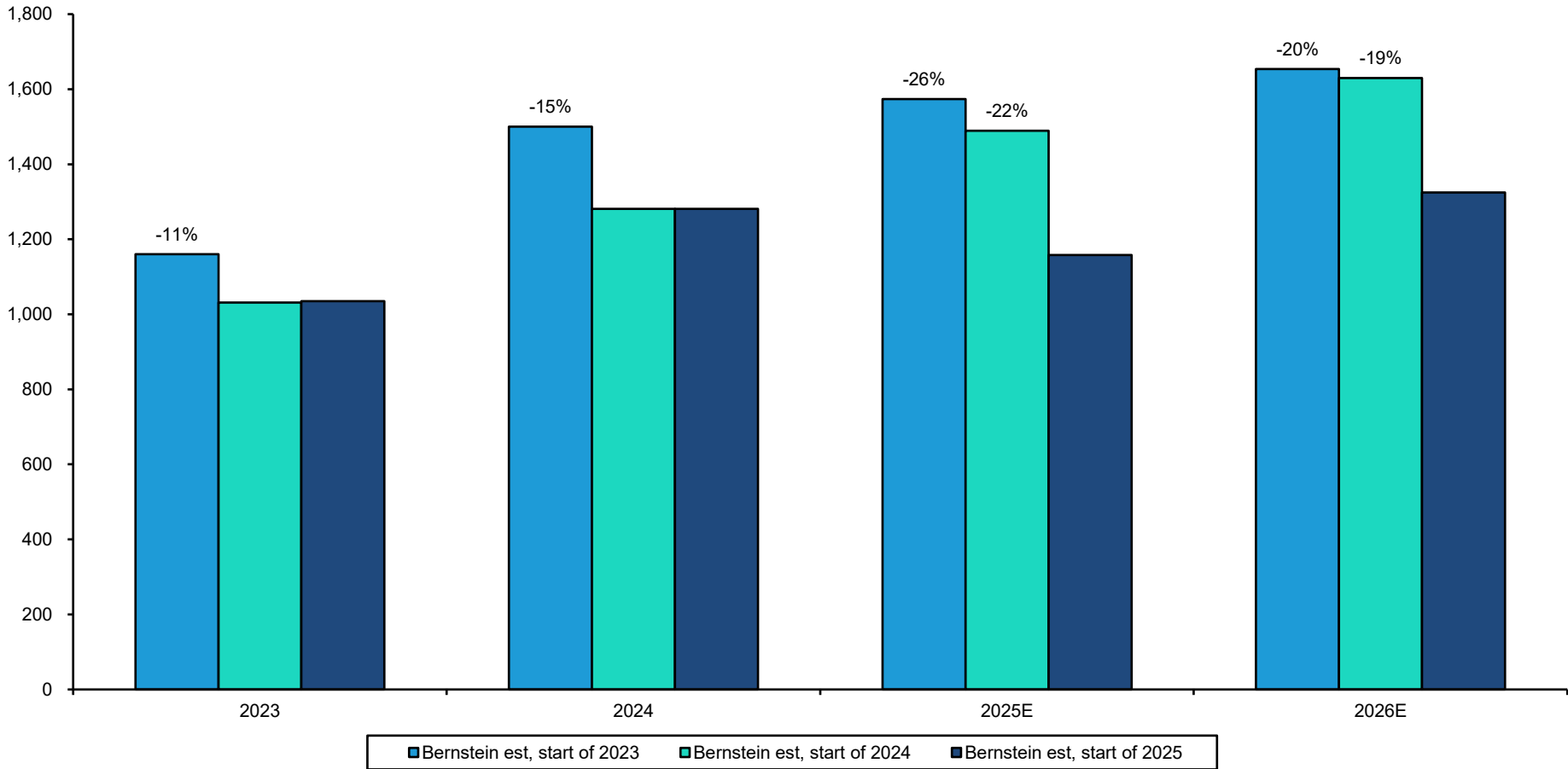
Backlog far into the future

Airbus and Boeing combined year-end backlog / deliveries



Airbus and Boeing Deliveries Continue to Slide Right

Bernstein narrowbody aircraft delivery forecast over the last 18 months



Airbus lead share, but Boeing recovery underway

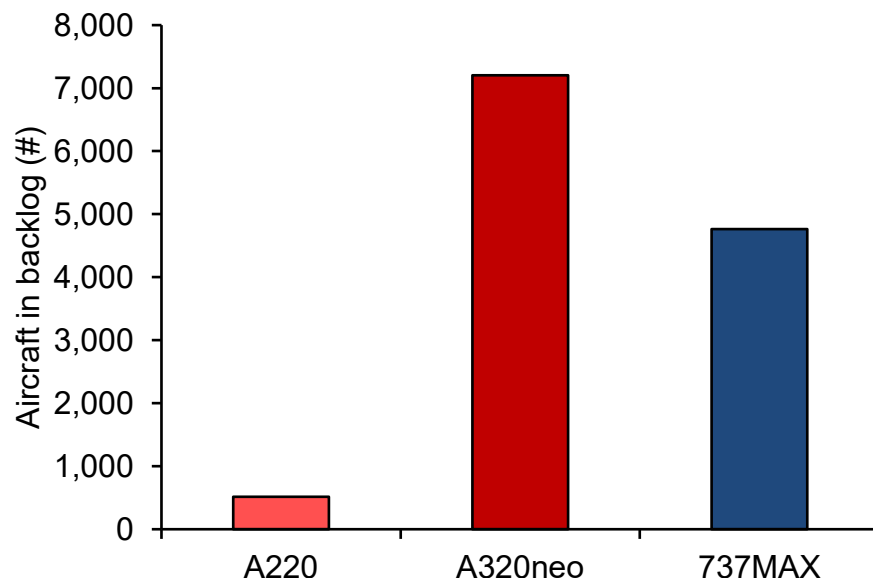
Airbus – Lead in narrowbodies; supply chain challenges

- Fighting supply chain; LEAP deliveries
- Slow margin expansion and cash generation
- Space charges; Spirit integration issues

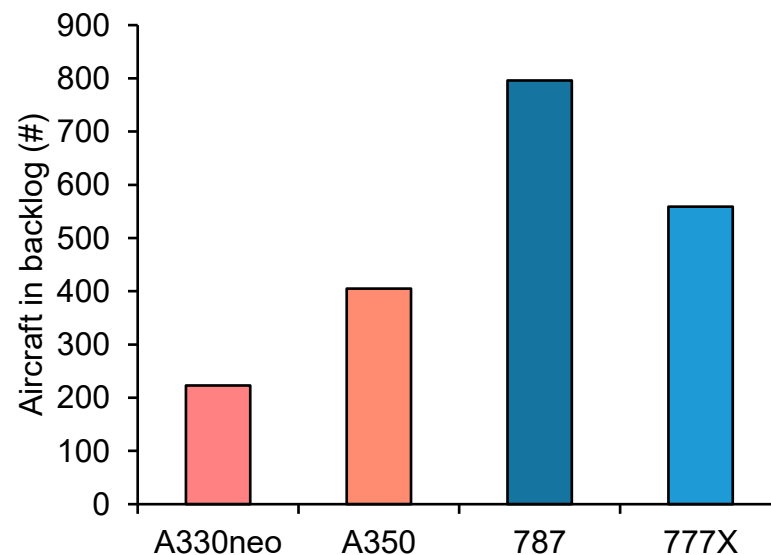
Boeing – Recovery underway

- 737MAX progressing toward ramp
- 787 ramp underway
- 777X, MAX-7, MAX-10 certification slippage
- Expect cash growth in 2027-28

Narrowbody backlogs

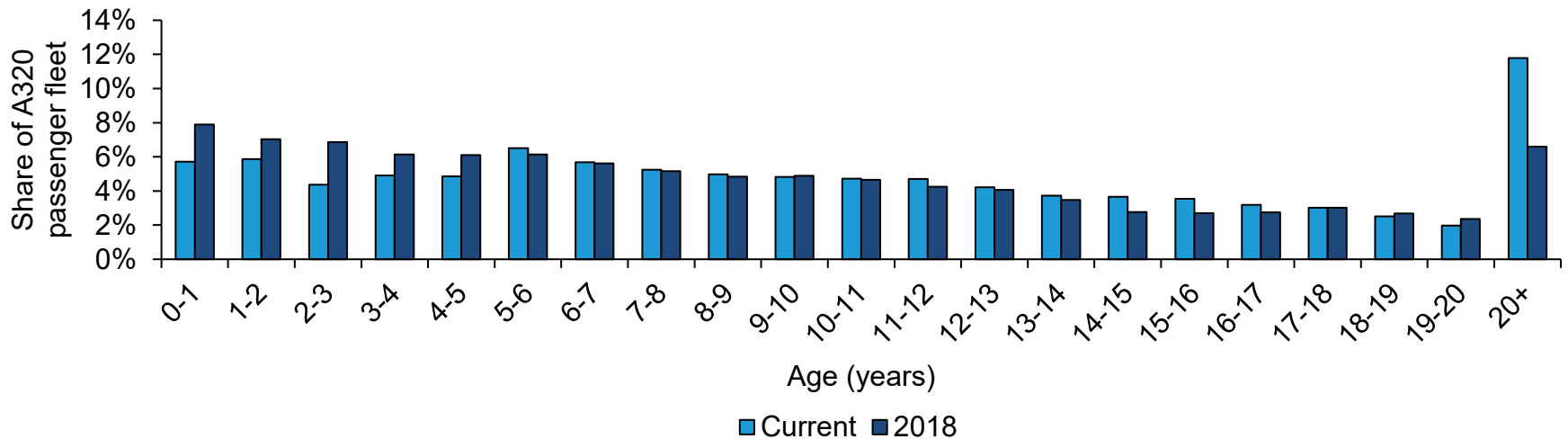


Widebody backlogs

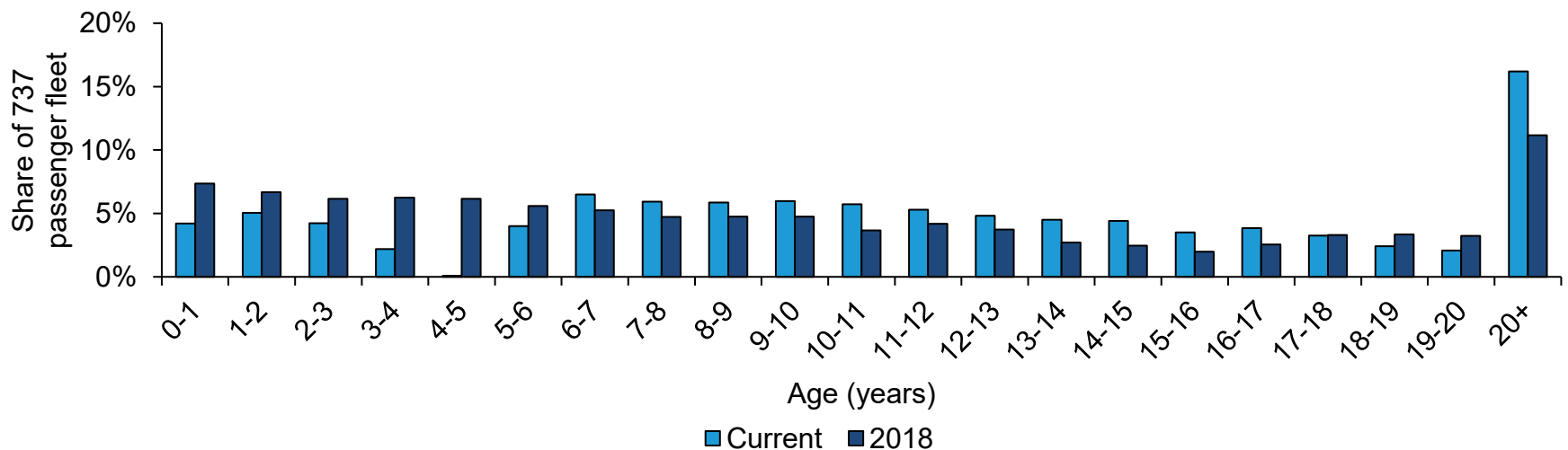


Midlife Crisis – Is 20 the New 15?

A320 Family Passenger Fleet Age Profile

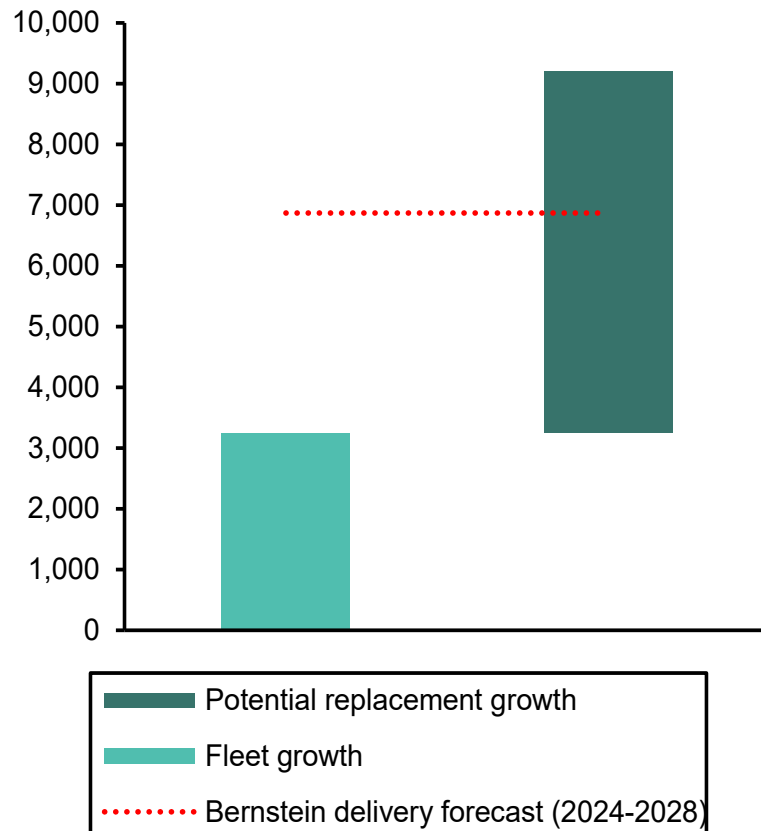


737 Family Passenger Fleet Age Profile

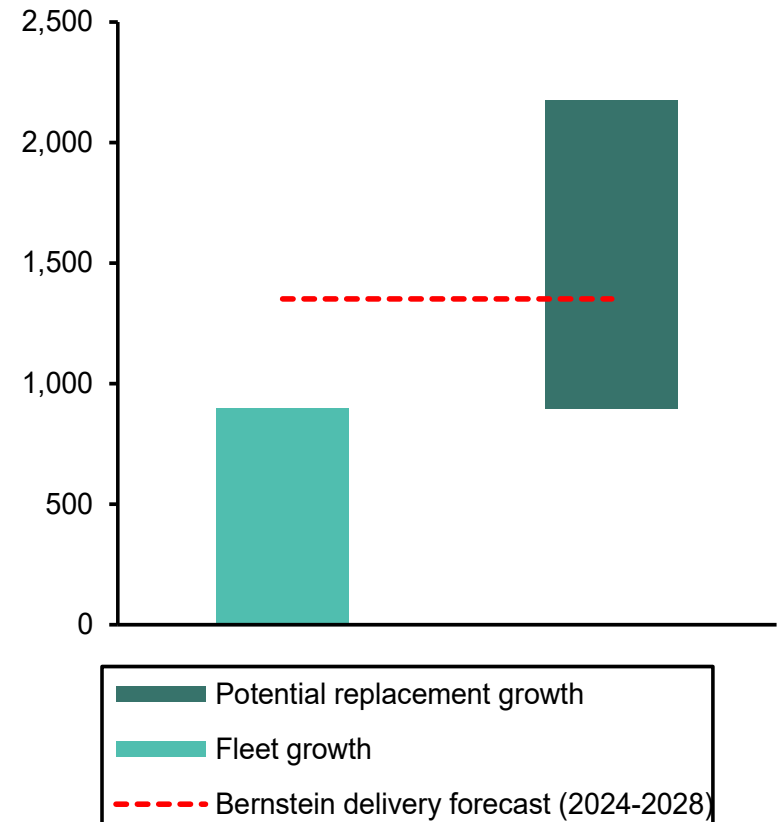


Demand through the decade – Replacement, not fleet growth

Narrowbodies – Five-year delivery outlook



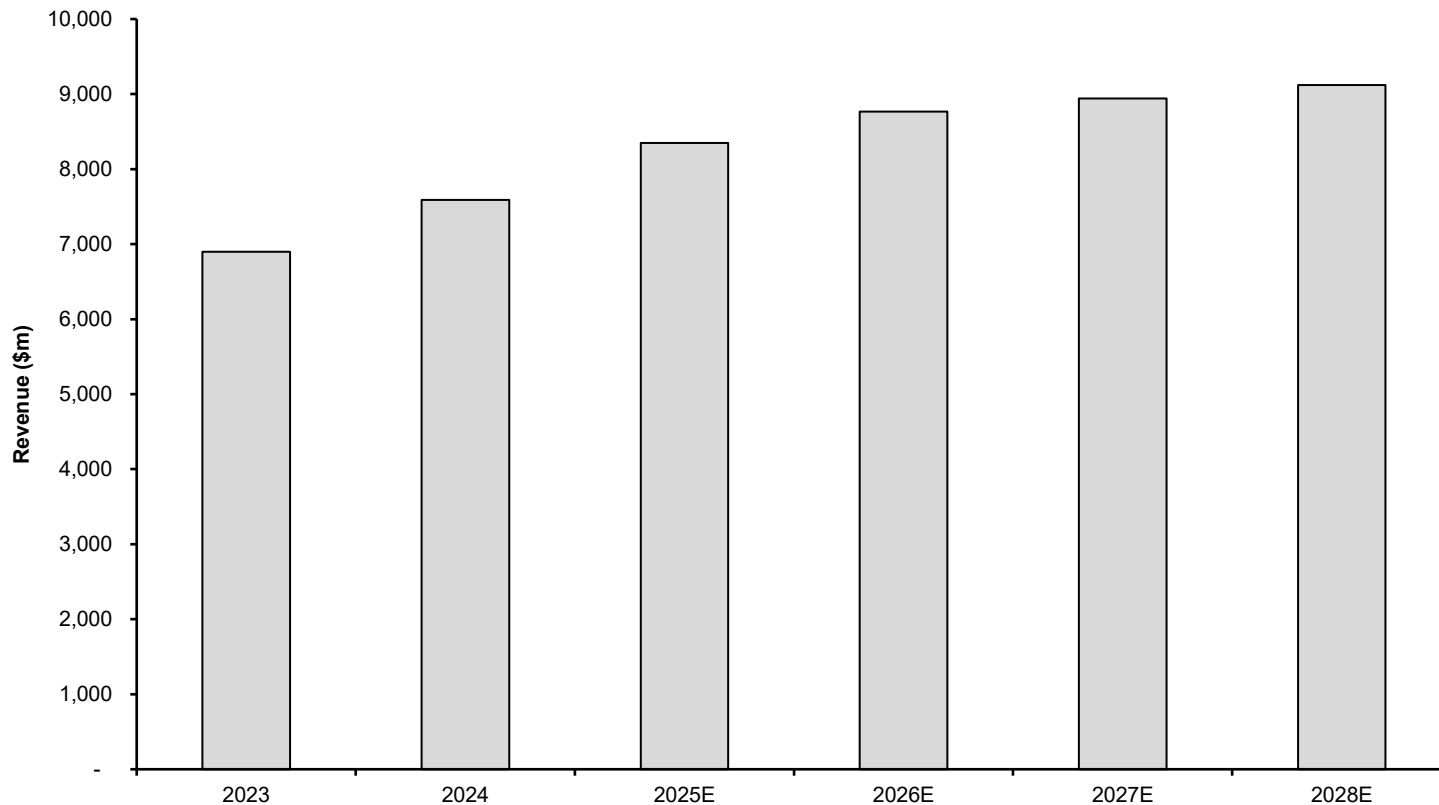
Widebodies – Five-year delivery outlook



Legacy engine MRO continues as aircraft lives extend

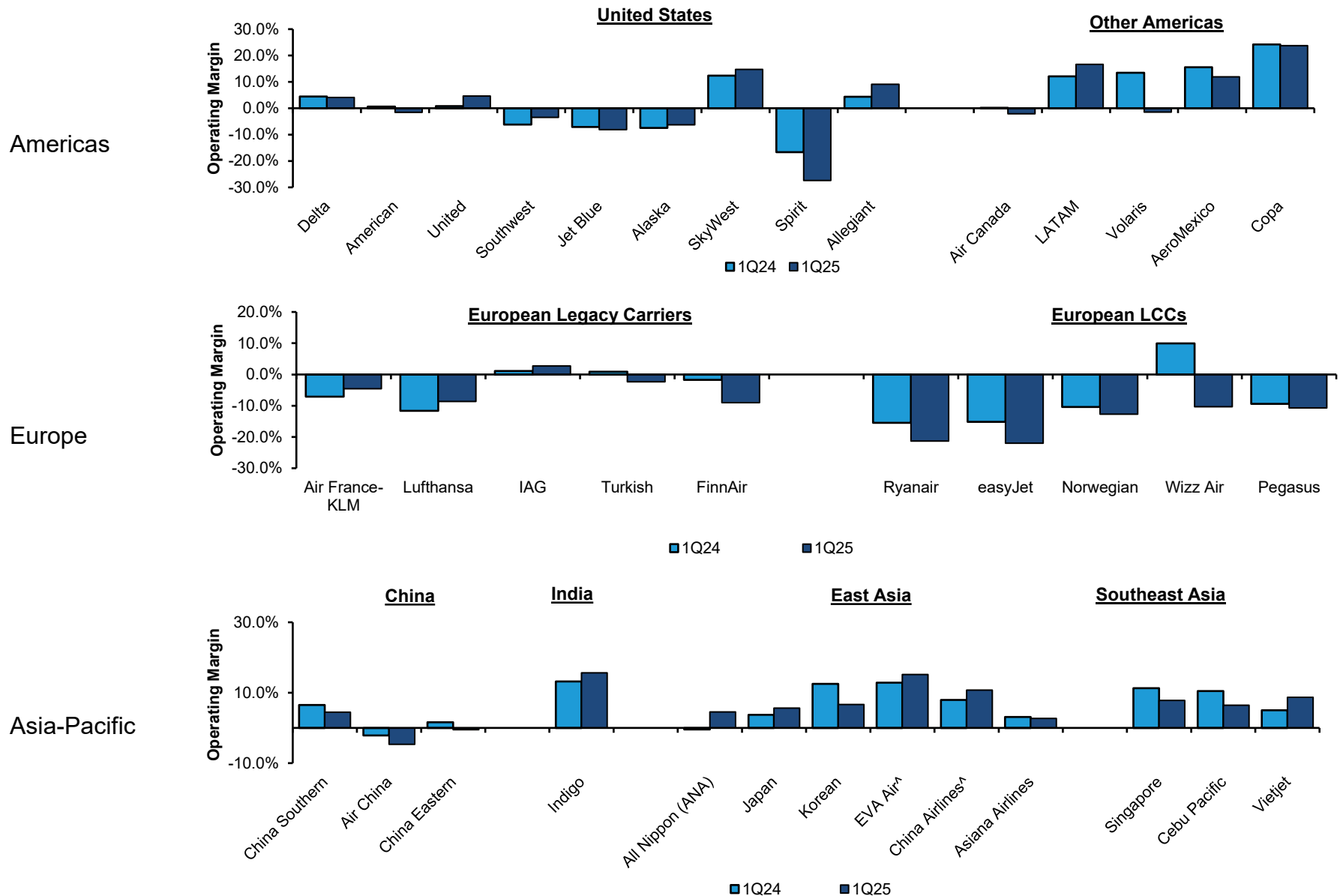
Example: CFM56 Aftermarket Revenue Forecast

Is there a
conspiracy?



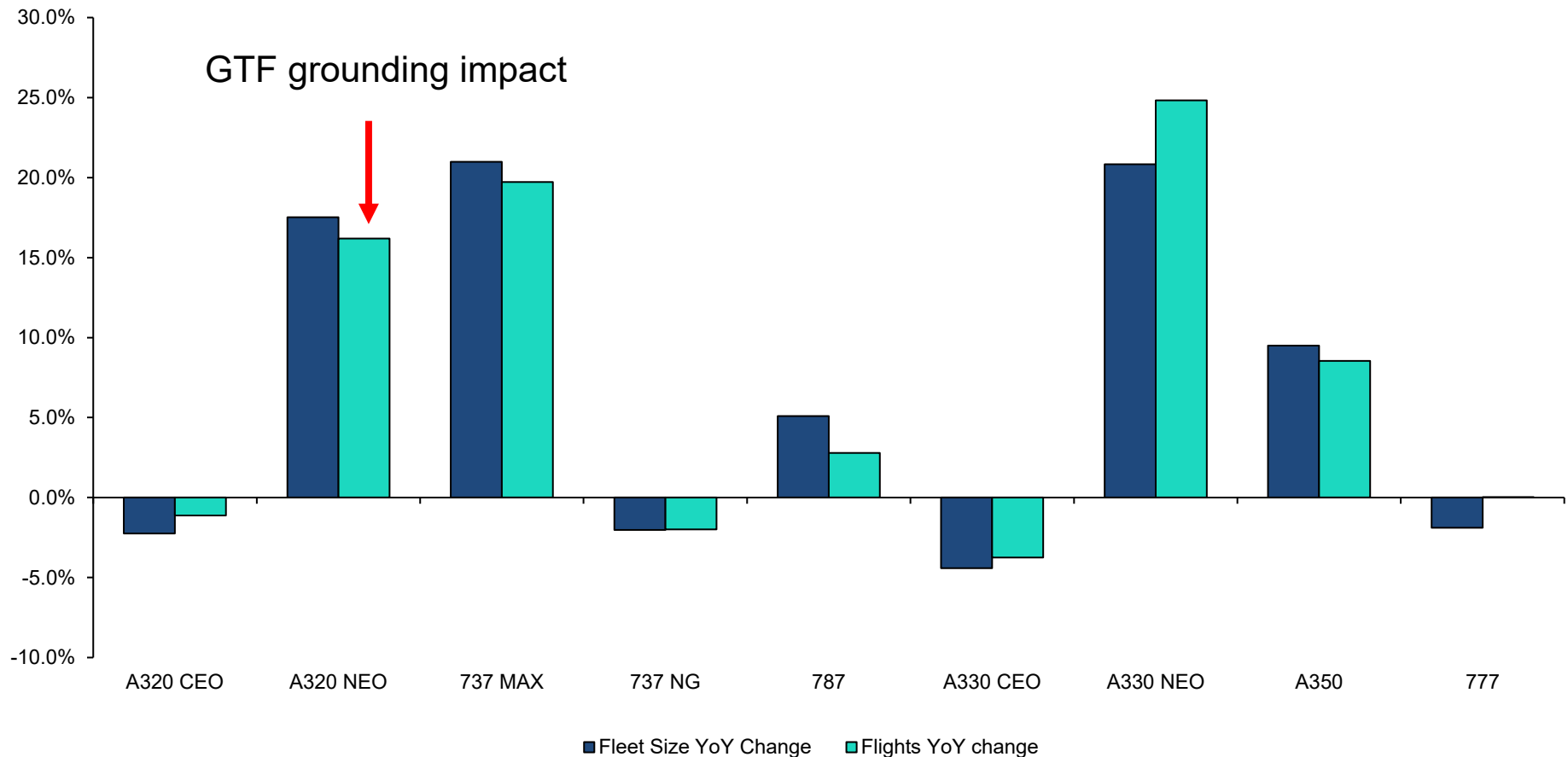
Source: Company reports; Bernstein estimates and analysis

Airline profitability
















Utilization improved – Except for GTF grounding

YoY change in Fleet size to Flights for Apr-May



Load factors generally solid, except North America

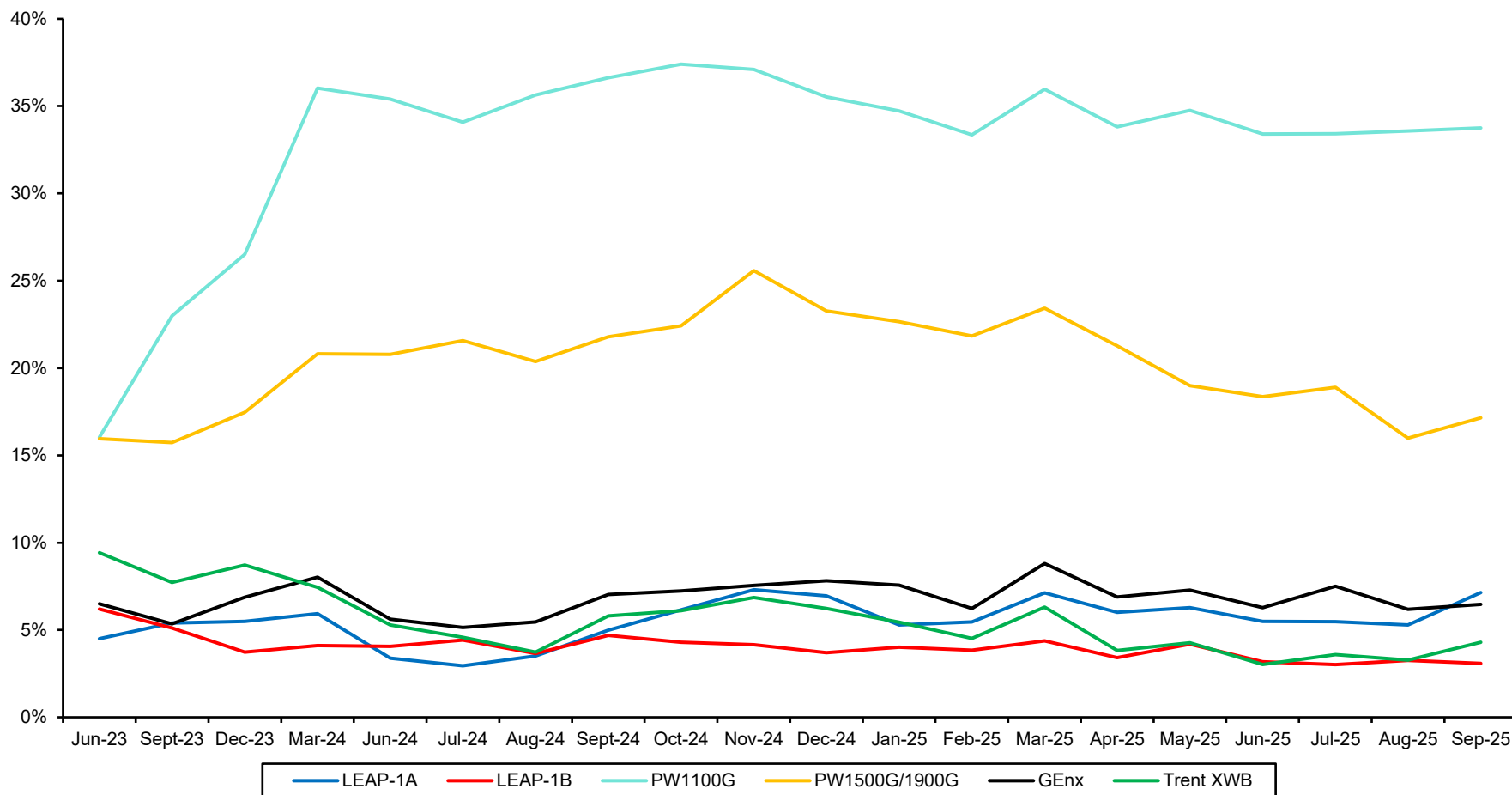
Load factor (%) by region – Jan 25 change versus 2023

	Africa	Asia Pacific	Europe	Latin America	Middle East	North America	Total Market
<i>Dec-23</i>	73.2%	81.2%	85.1%	82.7%	78.2%	82.9%	82.1%
<i>Jan-24</i>	73.1%	80.8%	78.2%	85.0%	79.9%	79.9%	79.9%
<i>Dec-24</i>	76.0% 	83.3% 	86.5% 	83.0%	80.5% 	85.0% 	84.0% 
<i>Jan-25</i>	75.9% 	84.2% 	79.8% 	83.3% 	83.9% 	80.5% 	82.1% 

Geared Turbofan – Fighting powdered metal and more; Major LEAP issues largely resolved

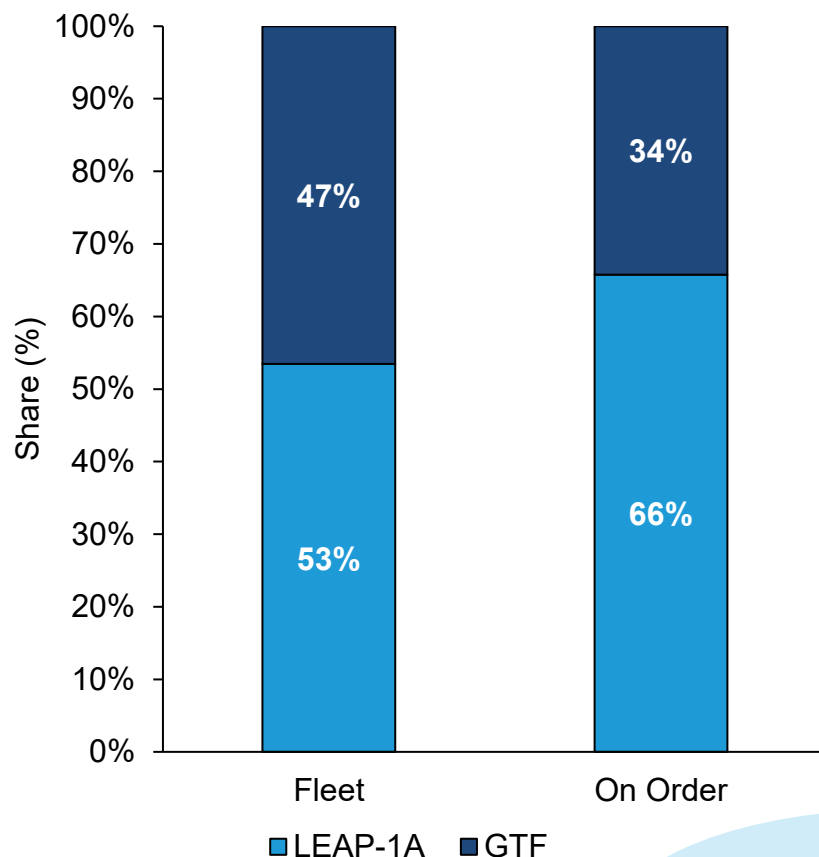
Parked and stored aircraft, % fleet

HPT blade degradation in harsh environments on both

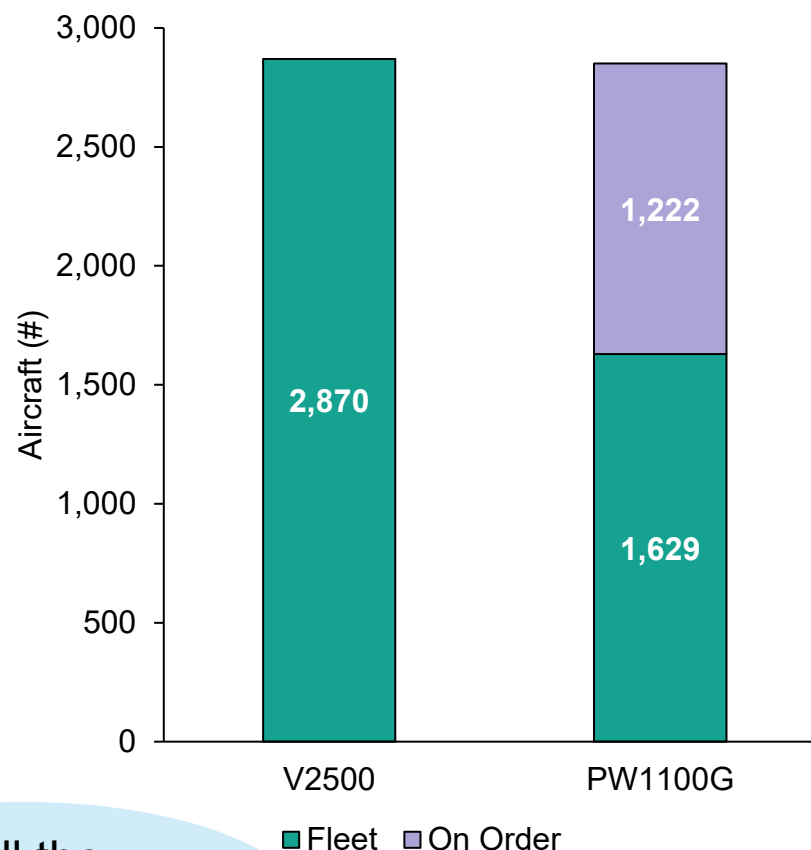


GTF share sliding – But, still a big program and LEAP constrained

A320neo family - GTF vs LEAP-1A, share of aircraft in fleet & on order (%)



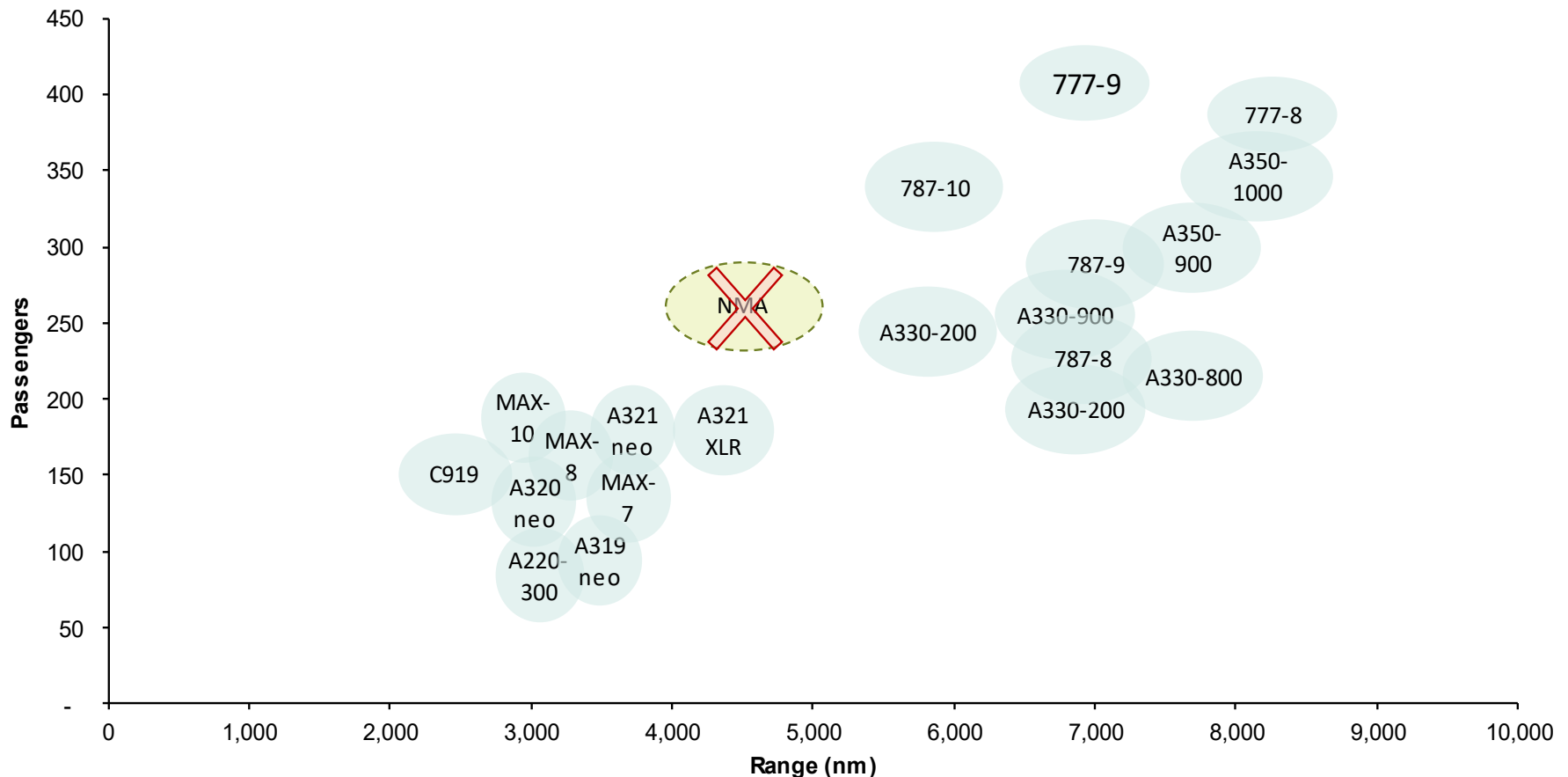
V2500 and GTF on the A320 family - Number of airplanes in fleet and on order



Will the
Advantage solve
the issues?

New airplane? Expect nothing before 2038

Range vs. passengers for programs in production and test



New airplane in 2038 - Look to the engines

Open rotor?

- Progress on CFM's RISE?
- Can bladeout issue be solved?
- Integration with aircraft?



Ducted Geared Turbofan?

- Pratt GTF, higher gear ratio?
- Rolls' Ultrafan?

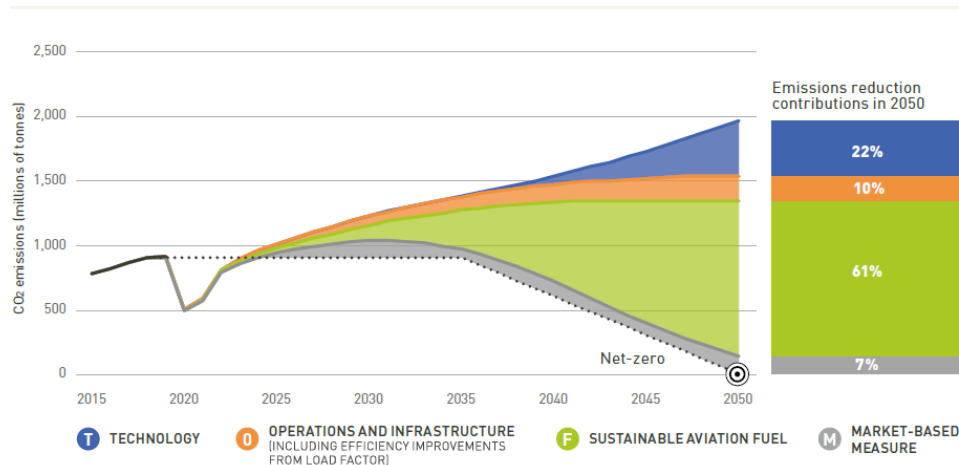


- Amount of fuel burn improvement?
- Aircraft design?
- Dual source possible?
- Can competitor catch up?
- Radical alternatives (e.g., JetZero)?
- Alternative fuels timing (e.g., hydrogen, hybrids)

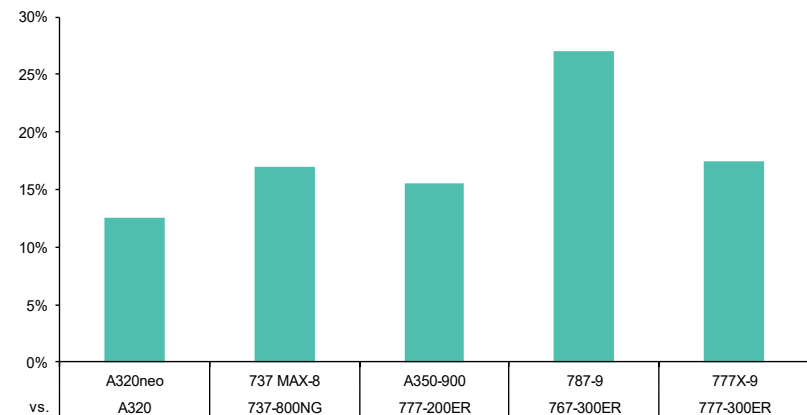
ESG: New technology, decarbonization: Progress will be slow

- Improving existing engine technologies: ongoing, but takes 10+ years for successive generations
- Sustainable aviation fuel (SAF): can be used on existing aircraft technologies, but key issue is lowering production cost
- Hydrogen propulsion: cost, aircraft design, infrastructure challenges
- Electric aircraft: structurally limited to short-range applications (<500 miles) due to battery physics

CO2 emissions reduction roadmap: net zero by 2050

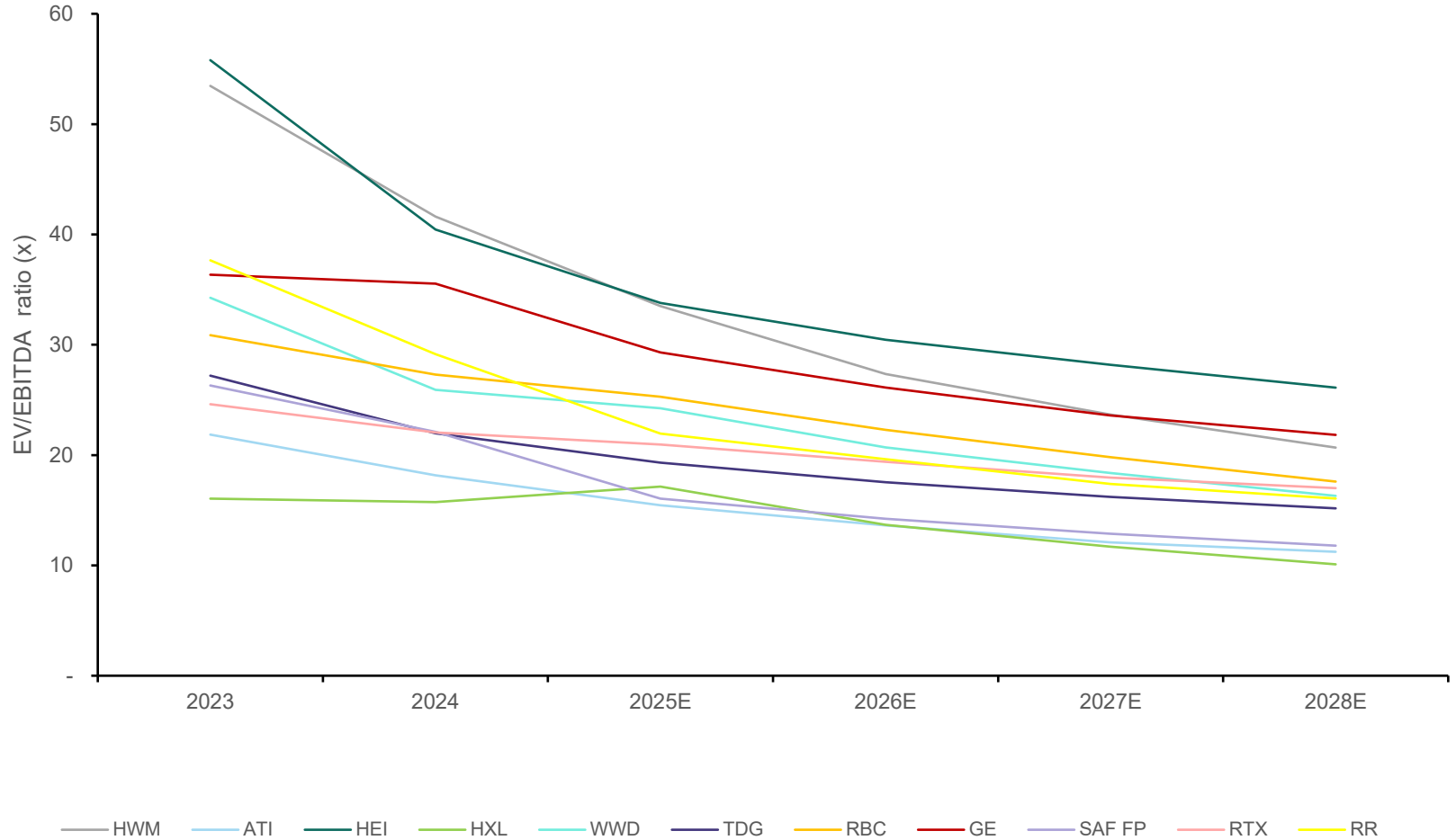


Emission benefits of new vs. old aircraft models



Source: ATAG, ICCT, Bernstein analysis

Commercial Valuation Perspective



Note: ATI, HEI, HXL, WWD, TDG, RBC are not covered by Bernstein, consensus estimates are used.

Source: Company reports, Bloomberg, Bernstein and analysis

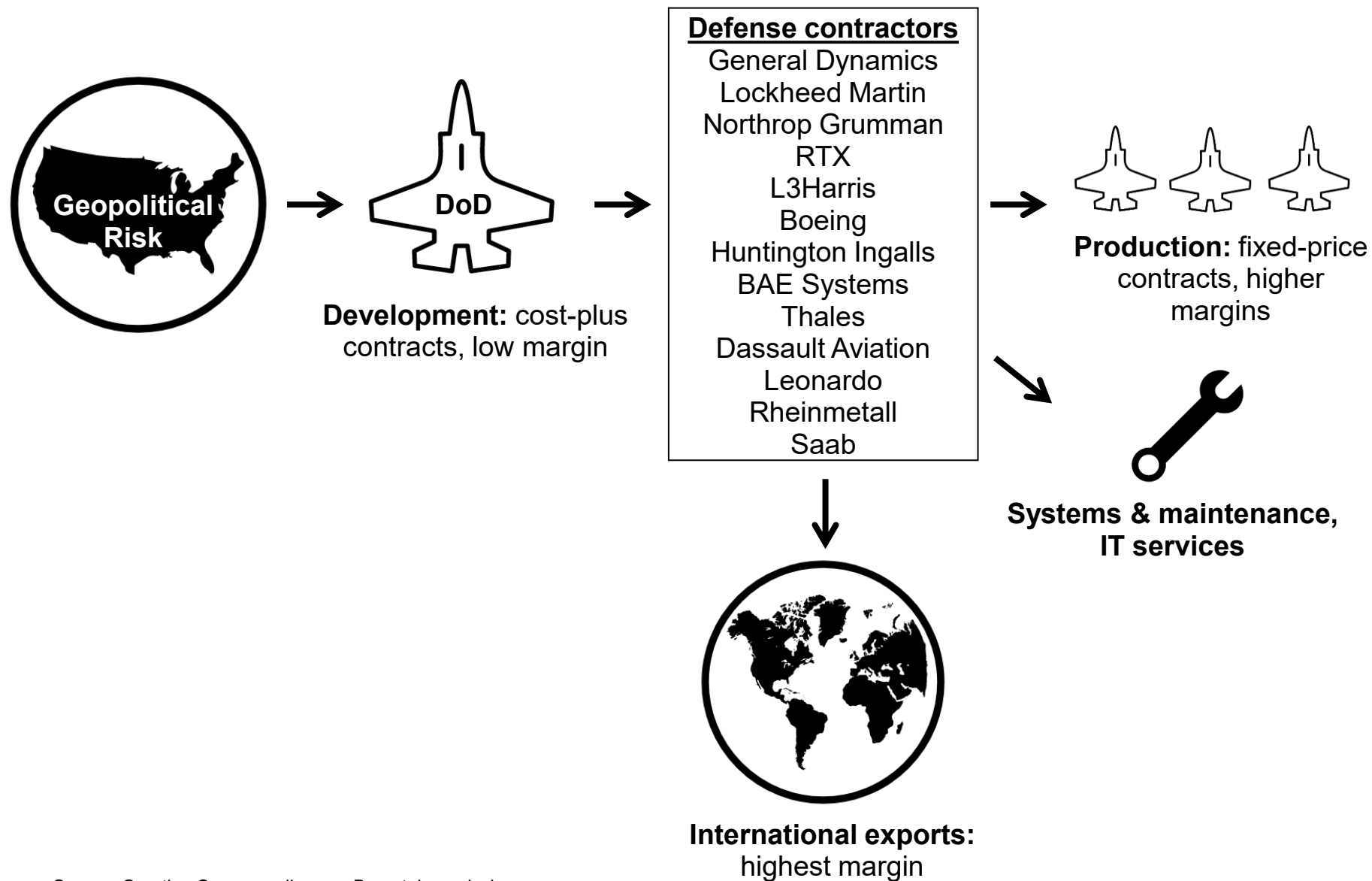
Now what?

- How long can aircraft backlogs build?
- How fast can Boeing and Airbus execute to ramp up production?
- How long will midlife aircraft be extended?
- When will Pratt resolve its GTF challenges? Can LEAP get rates up?
- What will the next airplane look like? Will COMAC ever get there?



Defense

Defense industry drivers

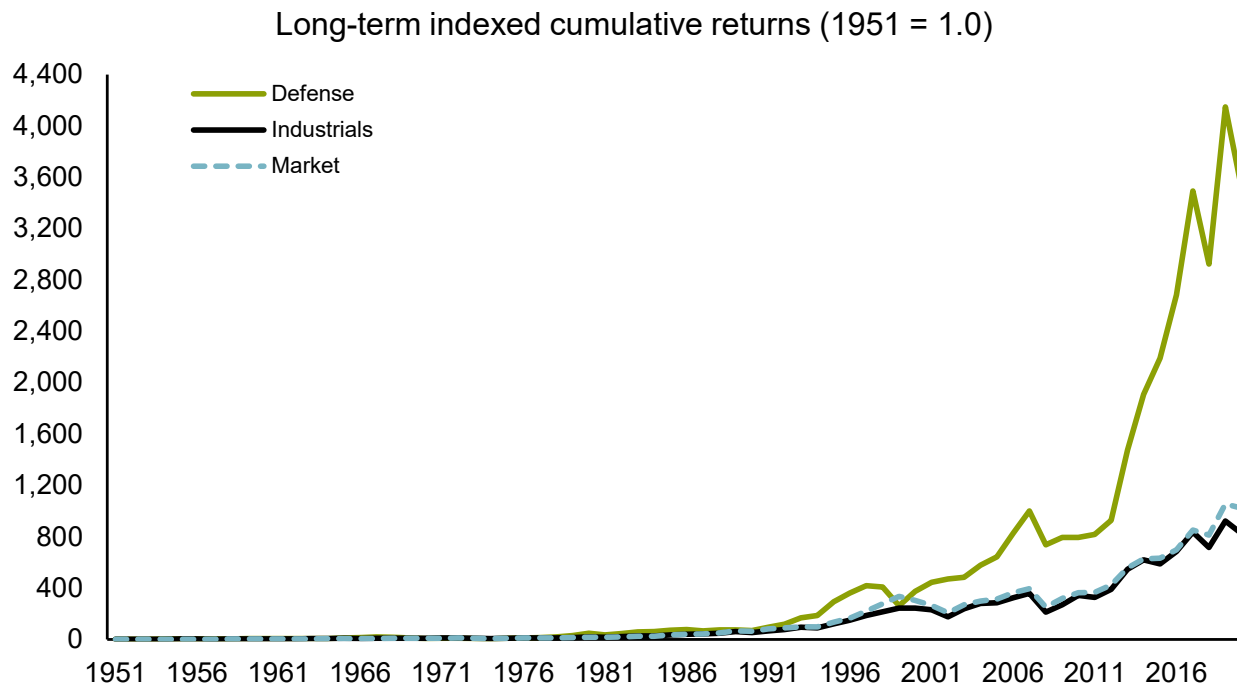


Source: Creative Commons license, Bernstein analysis

Defense: outperforming over long-term timeframes, generally defensive during recessions

Key differences from commercial aerospace:

- Primary driver is geopolitical threats, not the macroeconomy
- Government often pays for development costs: lower capex → higher FCF
- Relatively more protection from inflation, especially cost-plus contracts

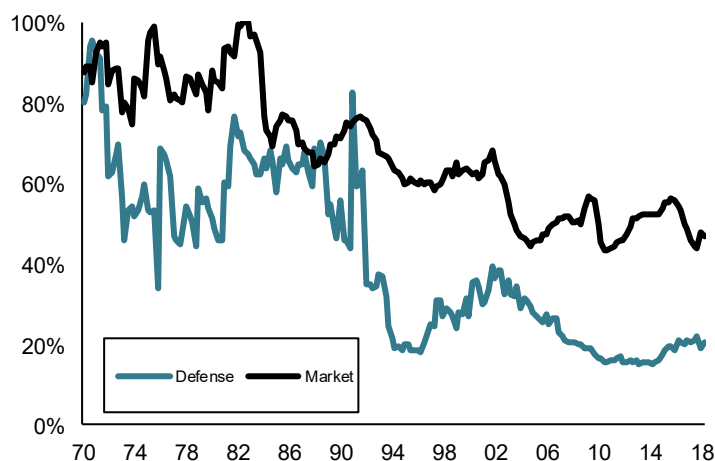


Source: Bloomberg, FactSet, Bernstein analysis

Long Term Case for Defense Stocks – Low Capex, High FCF

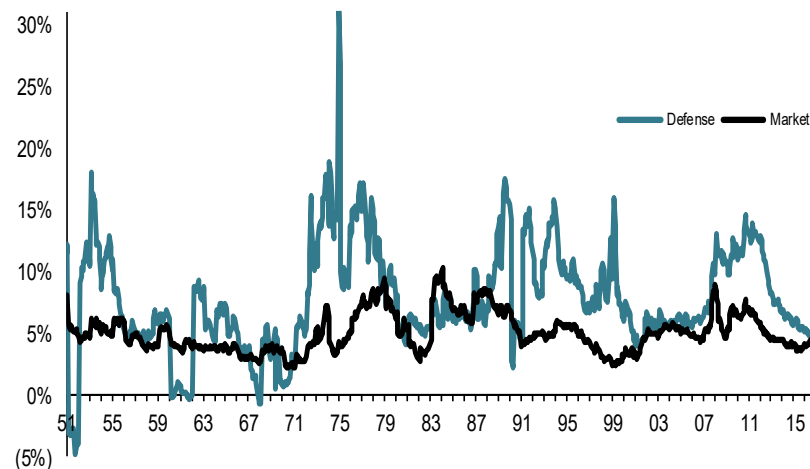
Due to government support on capital outlays, defense companies allocate a smaller share of cash generated to cap ex

Capital Expenditures As % of Gross Cash Flow
Through June 2018



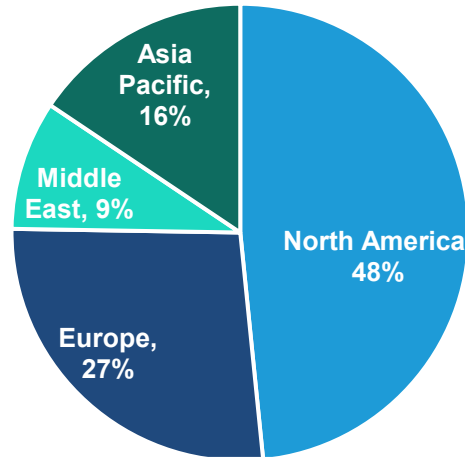
As a result, free cash flow yield is typically double that of the market

FCF Yield
Through July 2018

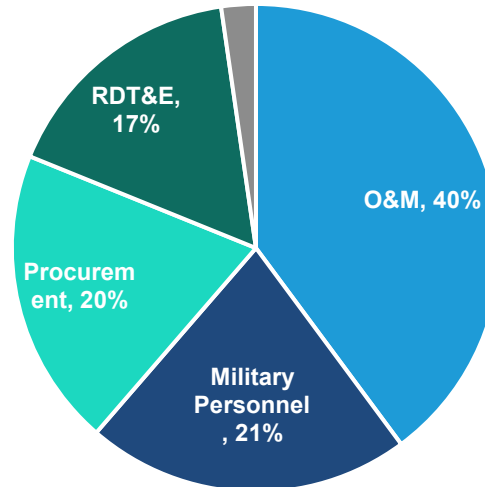


Global defense dominated by US; investment account (RDT&E + procurement) most important for contractors

Global defense spending breakdown (excludes China, Russia and Iran) (2025 total: ~\$2 trillion)

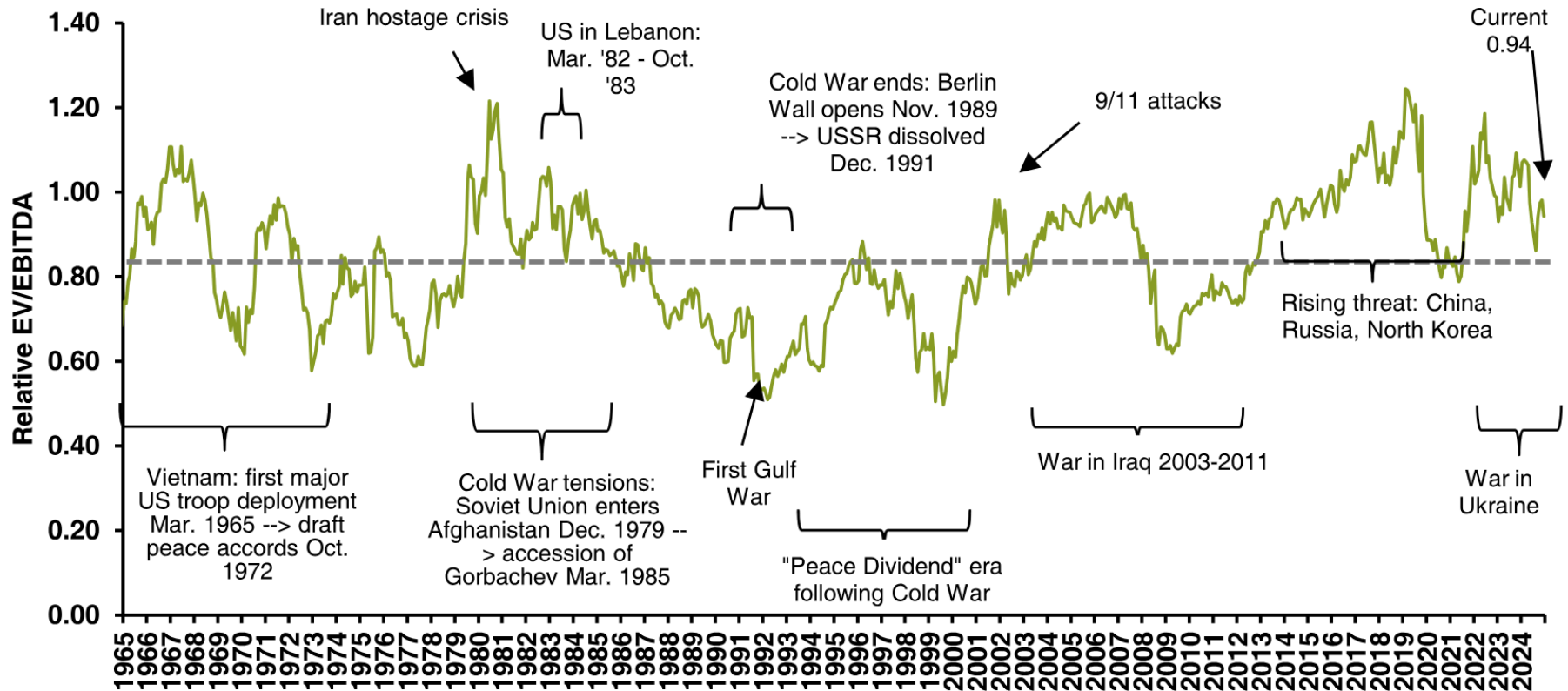


US DoD FY25 budget breakdown



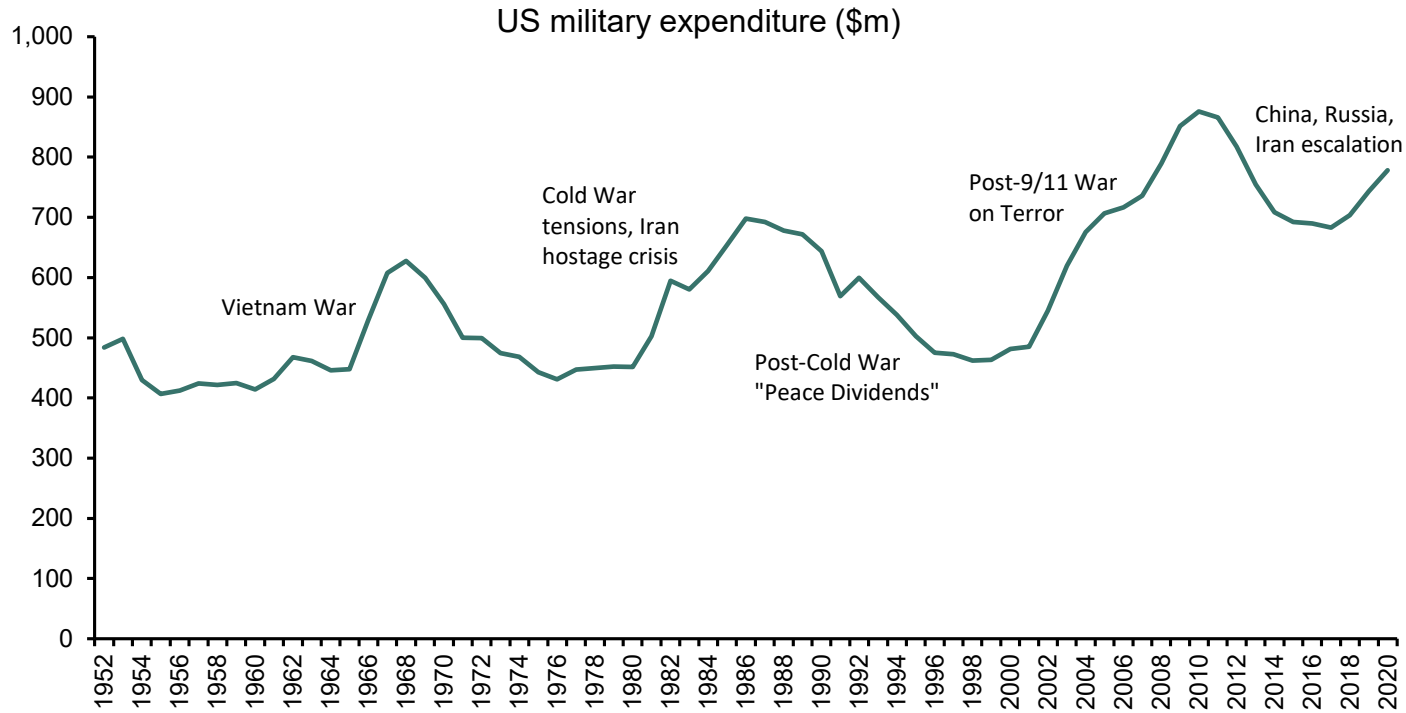
Source: SIPRI, DoD, Bernstein analysis

Defense valuations – Tied to DoD budget



Source: Bloomberg; Bernstein Analysis

Defense budgets are driven by geopolitical threats, stocks outperform with budget growth and/or high FCF yield spreads

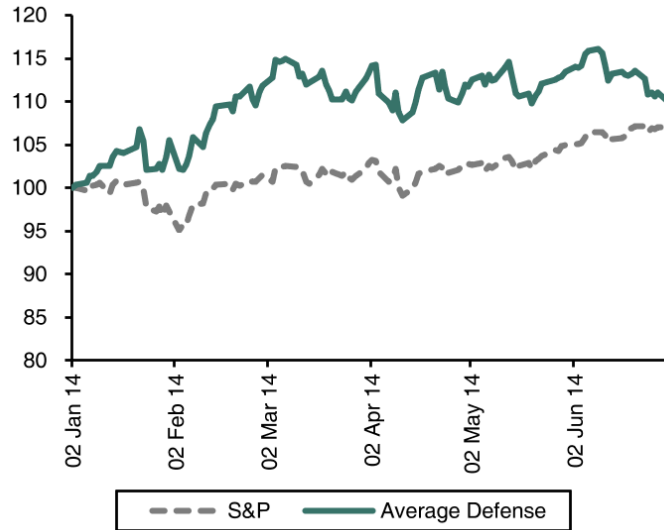


Period	Context	NTM Rel. Return CAGR	Avg FCF Yield Spread	DoD Real BA CAGR
1973 - 1979	Iran/Russia	26.2%	7.8%	-0.7%
1981 - 1982	Cold War	8.8%	1.0%	22.6%
1990 - 1995	Peace Dividend	16.2%	5.7%	-8.6%
1999 - 2001	Al Qaeda, 9/11	38.0%	5.2%	6.7%
2003 - 2007	Iraq, Afghanistan	10.6%	0.9%	11.0%
2012 - 2016	Postwar	15.4%	3.8%	-3.6%

Source: SIPRI, DoD, FactSet, Bloomberg, Bernstein analysis

Does a regional conflict mean defense upside? It depends

Russian annexation of Crimea



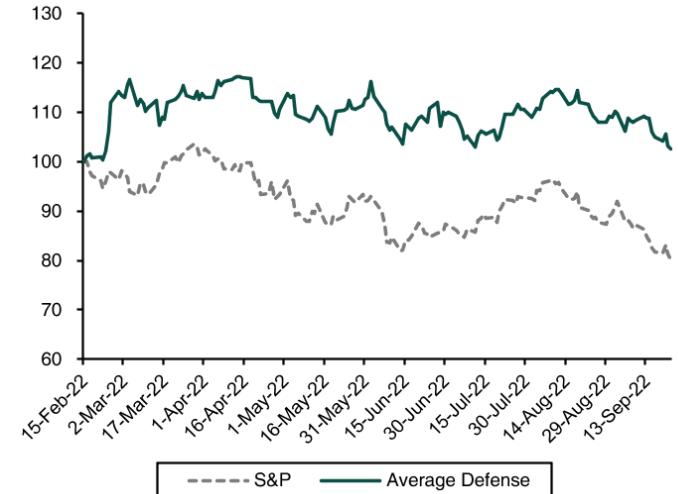
9/11 attacks



Operation Desert Storm

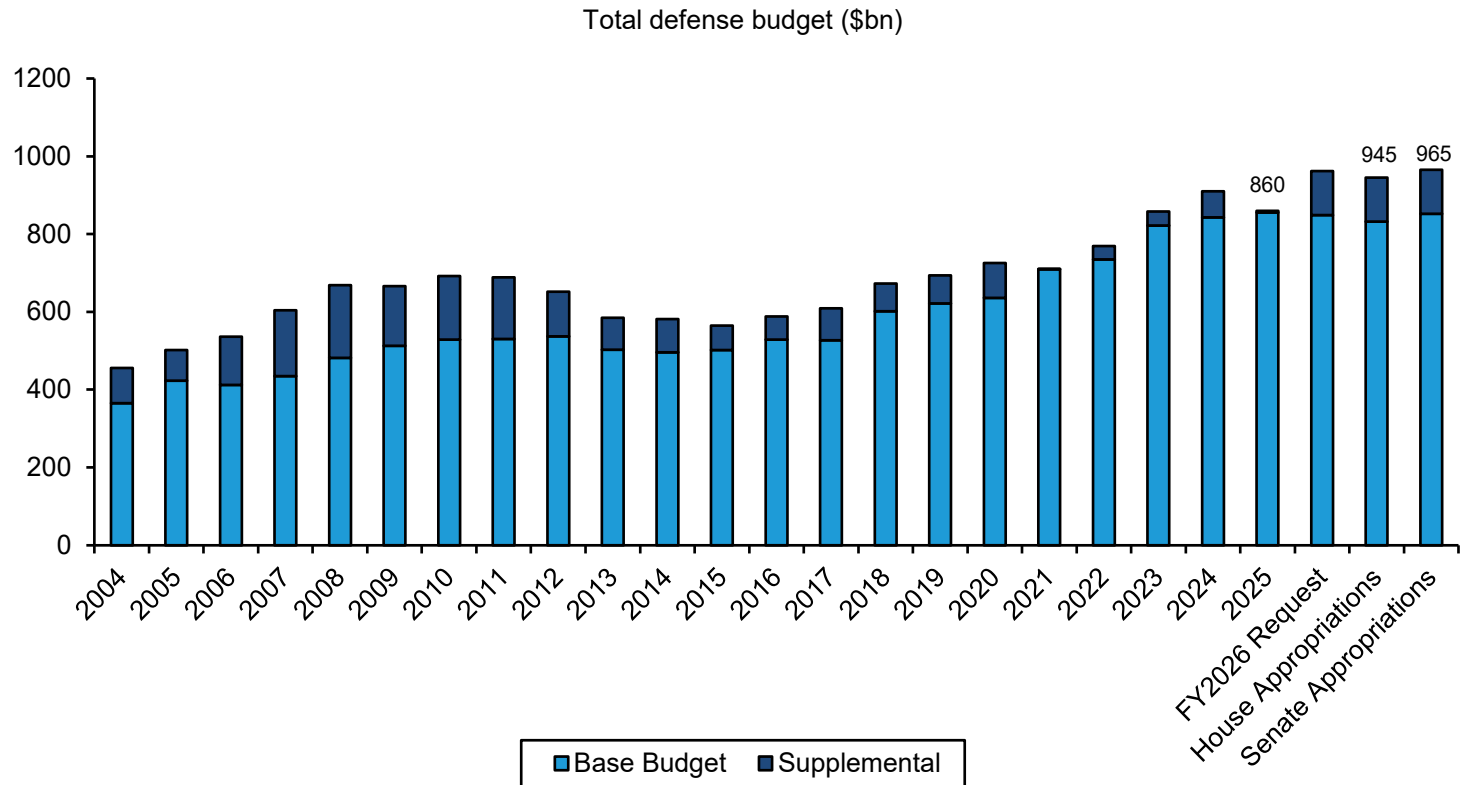


Russian invasion of Ukraine



Source: Bloomberg, Bernstein Analysis

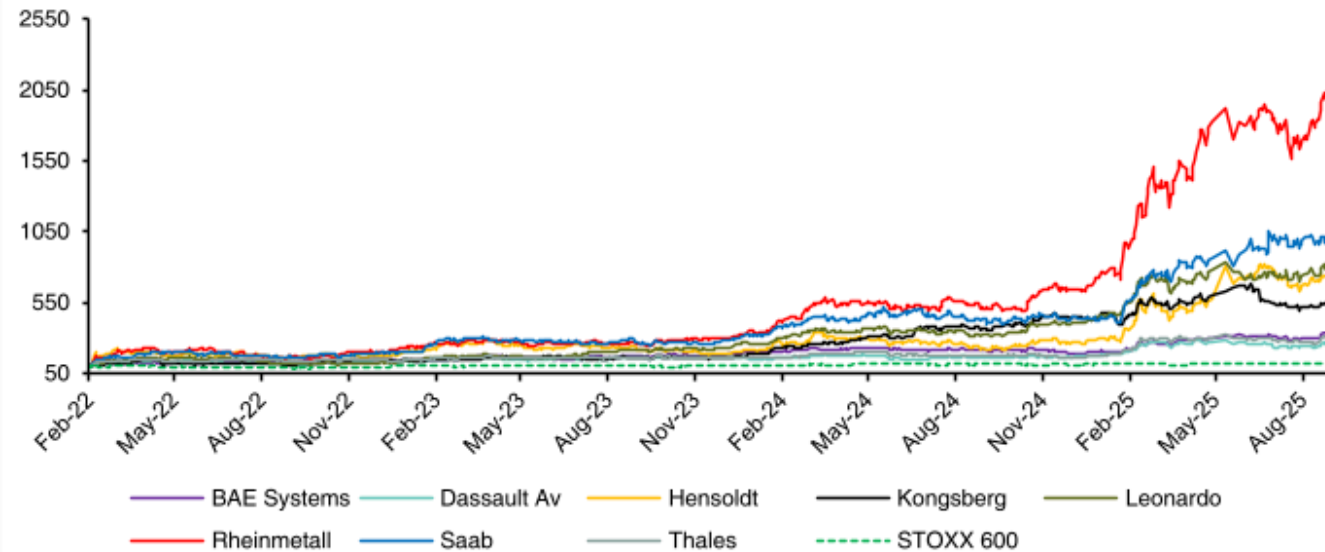
Surge in the US defense budget – Who gets \$1tn?



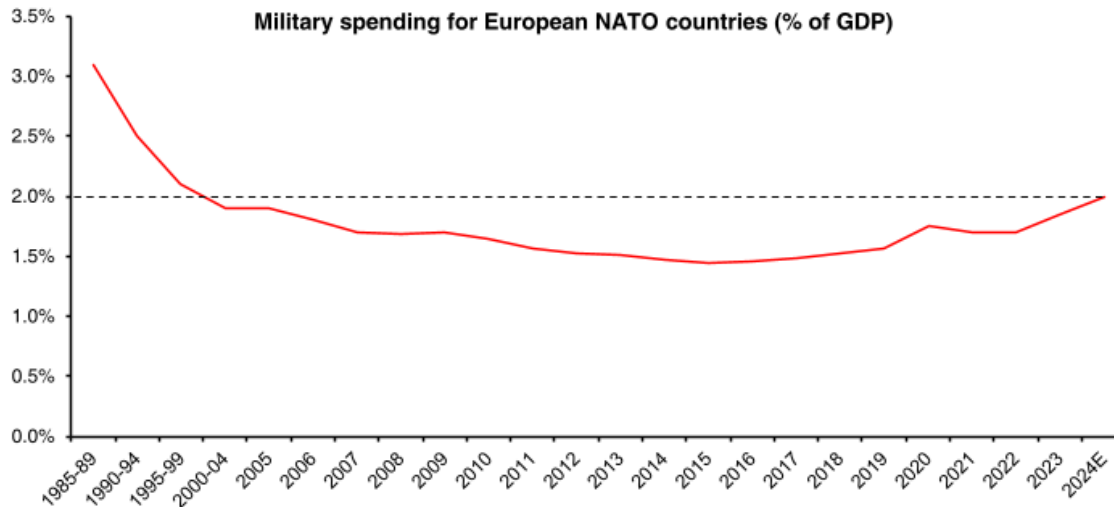
FY 2026 budget hit record high of with the reconciliation bill

NATO countries plan to spend 3.5% of GDP on defense budget – European defense stocks reacted in enthusiasm

European Defense Stocks



Military spending for European NATO countries (% of GDP)



Current defense budget: 2% of GDP
Target at 3.5% of GDP by 2035

Demand focused on
missiles, munitions,
missile defense,
C4ISR

Portfolio mix is a key differentiating factor among defense stocks

	BA	BAE	GD	HII	LHX	LMT	NOC	RTX
Mil. Space	9%	0%	0%	0%	14%	9%	28%	4%
Mil. Aircraft	37%	43%	1%	0%	46%	50%	38%	31%
Mil. Ships	0%	24%	27%	86%	11%	6%	3%	5%
Missile Defense	0%	0%	0%	0%	0%	8%	0%	9%
Tact. Missile	0%	10%	5%	0%	0%	10%	9%	9%
Ground Systems/Vehicles	0%	8%	12%	0%	15%	0%	3%	0%
Other Defense	5%	7%	8%	0%	6%	6%	12%	8%
Other Government/IT	2%	4%	25%	14%	7%	10%	6%	0%
Commercial	46%	4%	22%	1%	2%	1%	1%	34%

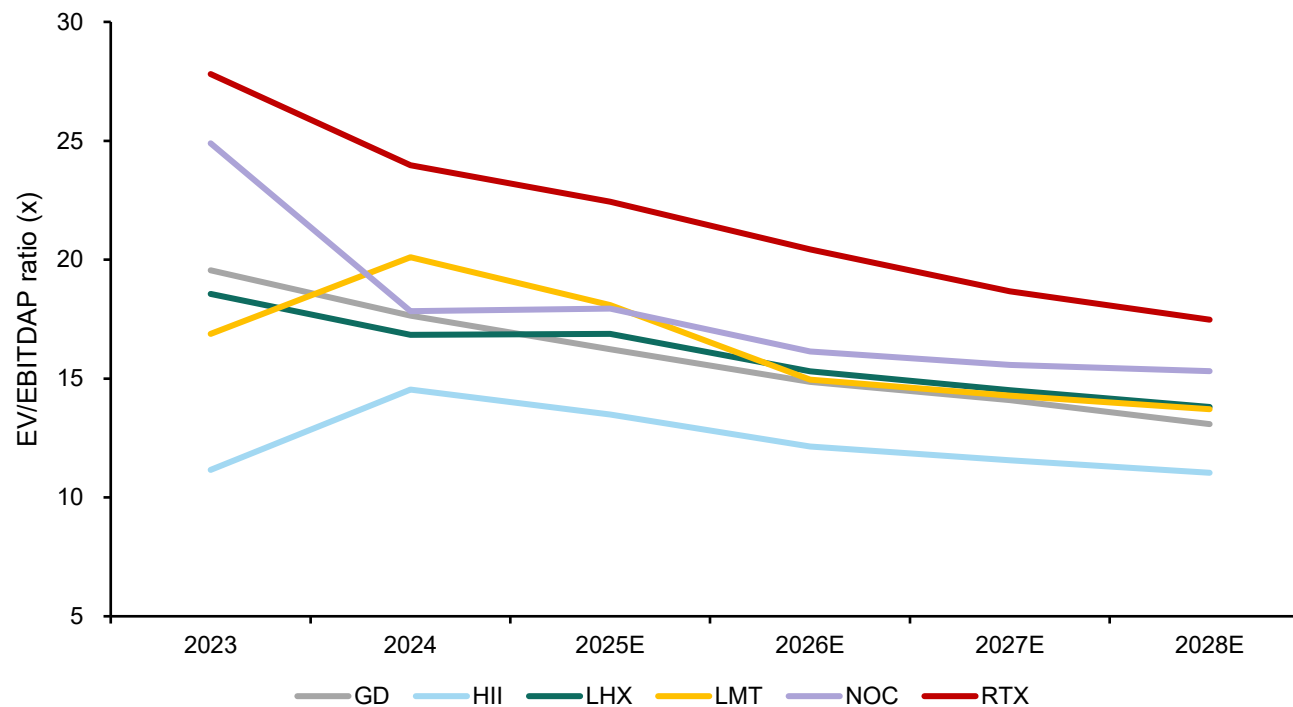
Highest growth had been in space and cyber – now tactical weapons are critical too

Source: Company reports, Bernstein estimates and analysis

Next for defense?

- Will regional conflicts escalate into broader wars?
- How will the \$1 trillion budget be allocated and managed?
- What is the execution plan for new initiatives like Golden Dome?
- Will NATO members commit to spending 3.5% of GDP on defense? Are European budget increases sustainable?
- How will new high-tech entrants reshape the industry landscape?
- When can we expect resolution of supply chain challenges?
- How will current authorities drive growth in long-term strategic areas (e.g., space, nuclear deterrence)?

Defense Valuation Perspective



Source: Company reports, Bernstein and analysis

Stock choices – Selected recommendations

Outperform (Mkt Cap)

- Howmet (\$77bn) – Unique position in engine airfoils and fasteners
- GE Aerospace (\$319bn) – Dominant engine player, wins on aftermarket and OE
- Airbus (€160bn) – Strong long-term position; short-term supply chain risks
- Boeing (\$167bn) – Turnaround value play; Eventually should succeed, but many challenges and risks
- LHX (\$56bn) – Tailwind from the defense budget

Market-Perform

- RTX (\$226bn) – Benefits from missile and missile defense growth; High controversy around Geared Turbofan engine
- General Dynamics (\$92bn) – Combat systems benefits from new conflicts; Nuclear submarine growth; Risks on Gulfstream deliveries

Source: Bernstein analysis

Ticker list

Ticker	Rating	Cur	13 Oct 2025	Price	TTM	Adjusted EPS				Adjusted P/E (x)		
			Closing		Rel.	Cur	2024A	2025E	2026E	2024A	2025E	2026E
			Price	Target	Perf.							
BA	O	USD	215.56	287.00	29.4%	USD	(20.38)	(1.68)	2.42	(10.6)	(128.5)	89.1
AIR.FP	O	EUR	202.35	198.00	39.0%	EUR	5.05	6.73	7.25	40.1	30.1	27.9
GE	O	USD	297.53	343.00	42.3%	USD	4.60	5.87	7.00	64.6	50.7	42.5
GD	M	USD	334.39	335.00	(1.7)%	USD	13.63	15.26	17.29	24.5	21.9	19.3
HWM	O	USD	189.99	217.00	69.6%	USD	2.69	3.67	4.90	70.5	51.8	38.8
HII	M	USD	287.90	305.00	(2.4)%	USD	13.96	14.37	16.36	20.6	20.0	17.6
LHX	O	USD	293.42	324.00	5.9%	USD	9.70	10.50	12.62	30.2	27.9	23.3
NOC	M	USD	618.88	630.00	3.7%	USD	28.34	25.58	27.65	21.8	24.2	22.4
LMT	M	USD	503.83	497.00	(30.0)%	USD	22.31	21.74	28.81	22.6	23.2	17.5
RTX	M	USD	158.85	181.00	14.8%	USD	5.73	5.89	6.31	27.7	27.0	25.2
SPR	M	USD	38.89	37.00	10.3%	USD	(4.02)	(11.18)	1.77	(9.7)	(3.5)	22.0
SARO	O	USD	27.51	39.00	(23.9)%	USD	0.04	0.89	1.23	112.6%	143.7%	25.1%
TXT	M	USD	81.74	90.00	(20.4)%	USD	5.48	6.08	6.83	14.9	13.4	12.0
SPX			6,552.51									
EDM			1,497.30									

O - Outperform, M - Market-Perform, U - Underperform, NR - Not Rated, CS - Coverage Suspended

GD, HII, NOC, LMT, SARO estimate is Reported EPS; GD, HII, NOC, LMT valuation is Reported P/E (x); SARO valuation is CFO CAGR; SPR base year is 2023;

Source: Bloomberg, Bernstein estimates and analysis.

I. REQUIRED DISCLOSURES

References to "Bernstein" or the "Firm" in these disclosures relate to the following entities: Bernstein Institutional Services LLC (April 1, 2024 onwards), Sanford C. Bernstein & Co., LLC (pre April 1, 2024), Bernstein Autonomous LLP, BSG France S.A. (April 1, 2024 onwards), Sanford C. Bernstein (Hong Kong) Limited 盛博香港有限公司, Sanford C. Bernstein (Canada) Limited, Sanford C. Bernstein (India) Private Limited (SEBI registration no. INH000006378), Sanford C. Bernstein (Singapore) Private Limited and Sanford C. Bernstein Japan KK (サンフォード・C・バーンスタイン株式会社).

On April 1, 2024, Société Générale (SG) and AllianceBernstein, L.P. (AB) completed a transaction that created a new joint venture in which their respective cash equities and research businesses operate in a new business combination. Although their respective ownership percentages in the joint venture differ between North America and the rest of the world, the creation, production and publication of research is handled collaboratively on a global basis across the two research brands, "Bernstein" and "Autonomous". Unless specifically noted otherwise, for purposes of these disclosures, references to Bernstein's "affiliates" relate to both SG and AB and their respective affiliates.

VALUATION METHODOLOGY

Boeing Co

We value our Aerospace companies by using a terminal value four years forward based on an EV/EBITDA multiple. We adjust for net debt to arrive at an equity value, discount that to our valuation date and add the discounted value of cash distributions to shareholders between now and the terminal date to reach our 12-month target of \$287. For Boeing, our terminal EV/EBITDA multiple is 14.9X, derived from a blend of commercial aircraft and defense multiples. We adjust our terminal EBITDA estimate for differences in the unit and program earnings for the 787 program.

GE Aerospace

We value GE by using a terminal value four years forward based on an EV/EBITDA multiple. We adjust for net debt to arrive at an equity value, discount that to our valuation date, add the discounted value of cash distributions to shareholders between now and the terminal date, and add the current value of GE's investments (AerCap note) to reach our 12-month target of \$343. Our absolute multiple for GE is 25.7x on 170% relative multiple of S&P.

L3Harris Technologies Inc

We value all of our aerospace and defense companies by using a terminal EV/EBITDA multiple four years forward, adjusted for pension. We discount the valuation back and add in discounted cash returned to shareholders over that time period to reach our one-year target. For L3Harris, we use a relative EV/EBITDA multiple of 105% on a 15.1x market multiple, which leads to our target price of \$324.

RISKS

Boeing Co

Downside risks would be an extended strike, worsening supply chain issues, and execution challenges in both commercial and defense businesses. Certification timing on the 777X, 737MAX-7/10 is also a risk.

GE Aerospace

For GE, downside risks relate to supply chain, Airbus and Boeing production rates, and financial performance of airlines. Shortages from suppliers could overly constrain GE's ability to produce and deliver products. If Airbus and/or Boeing production rates weaken relative to current plans, that could slow GE deliveries. If airlines have significantly weaker financial performance, this could eventually impact growth in GE's engine aftermarket.

L3Harris Technologies Inc

For L3Harris specifically, there are downside risks related to supply chain with fixed-price contracts, the integration of Aerojet Rocketdyne post-acquisition, and potential downsides to the defense budget.

RATINGS DEFINITIONS, BENCHMARKS AND DISTRIBUTION

EQUITY RATINGS DEFINITIONS

Bernstein brand

The Bernstein brand rates stocks based on forecasts of relative performance for the next 12 months versus the S&P 500 for stocks listed on the U.S. and Canadian exchanges, versus the Bloomberg Europe Developed Markets Large and Mid Cap Price Return Index (EDM) for stocks listed on the European exchanges and emerging markets exchanges outside of the Asia Pacific region, versus the Bloomberg Japan Large and Mid Cap Price Return Index USD (JP) for stocks listed on the Japanese exchanges, and versus the Bloomberg Asia ex-Japan Large and Mid Cap Price Return Index (ASIAAX) for stocks listed on the Asian (ex-Japan) exchanges -unless otherwise specified.

The Bernstein brand has three categories of ratings:

- Outperform: Stock will outpace the market index by more than 15 pp
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Not Covered (NC) denotes companies that are not under coverage.

Bernstein brand stock ratings are based on a 12-month time horizon.

Autonomous brand – common stocks

The Autonomous brand rates common stocks as indicated below. As our benchmarks we use the Bloomberg Europe 500 Banks And Financial Services Index (BEBANKS) and Bloomberg Europe Dev Mkt Financials Large and Mid Cap Price Ret Index EUR (EDMFI) index for developed European banks and Payments, the Bloomberg Europe 500 Insurance

Index (BEINSUR) for European insurers, the S&P 500 and S&P Financials for US banks and Payments coverage, S5LIFE for US Insurance, the S&P Insurance Select Industry (SPSIINS) for US Non-Life Insurers coverage, and the Bloomberg Emerging Markets Financials Large, Mid and Small Cap Price Return Index (EMLSF) for emerging market banks and insurers and Payments. Ratings are stated relative to the sector (not the market).

The Autonomous brand has three categories of common stock ratings:

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Those denoted as 'Feature' (e.g., Feature Outperform FOP, Feature Under Outperform FUP) are our core ideas.

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- Neutral (N): The total return of the preferred instrument is expected to perform in line with preferred securities of other issuers operating in similar sectors or rating categories over the next six months.
- Underperform (UP): The total return of the preferred instrument is expected to underperform preferred securities of other issuers operating in similar sectors or rating categories over the next six months.

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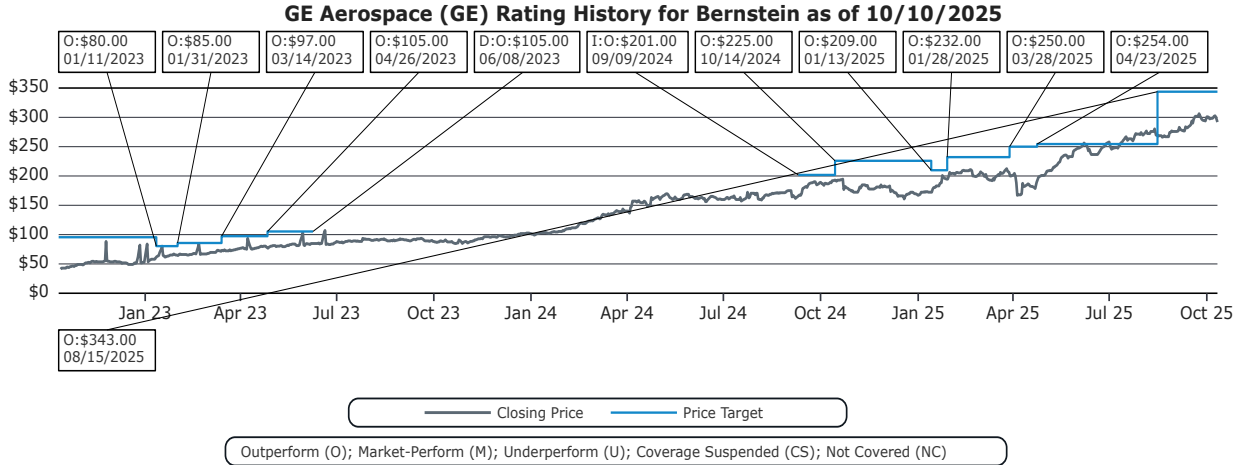
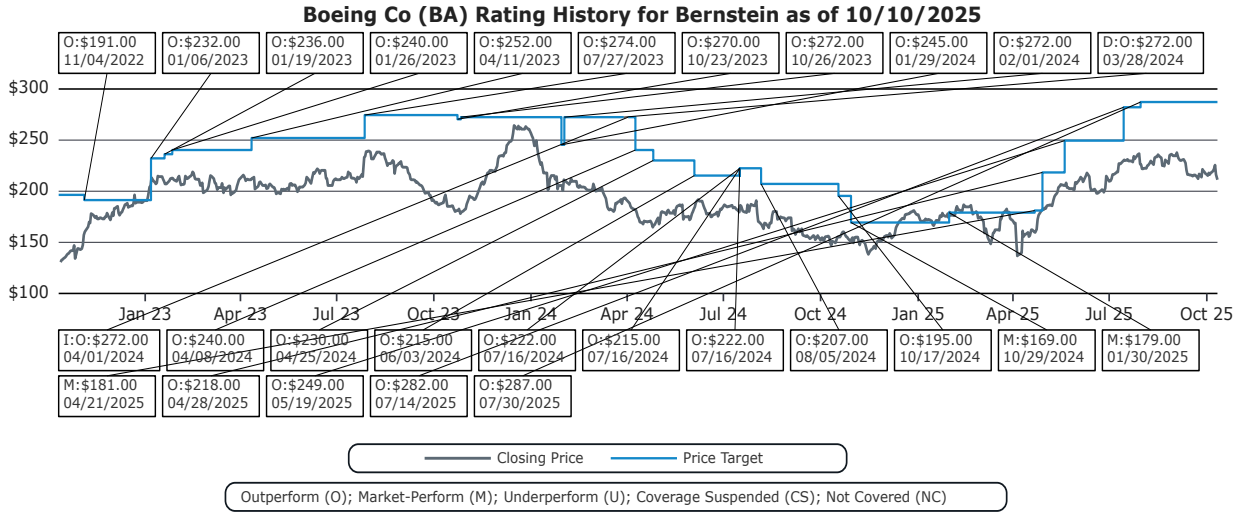
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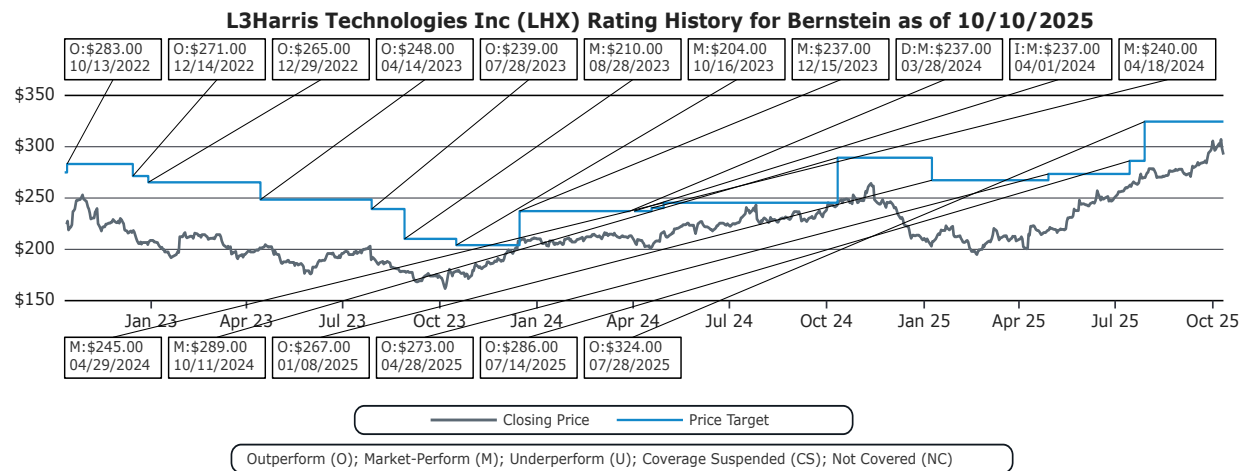
Rating	Market Abuse Regulation (MAR) and FINRA Rule 2241 classification	Count	Percent	Count*	Percent*
Outperform	BUY	620	51.07%	112	18.06%
Market-Perform (Bernstein Brand)	HOLD	420	34.60%	81	19.29%
Neutral (Autonomous Brand)					
Underperform	SELL	174	14.33%	19	10.92%

* These figures represent the number and percentage of companies in each category to whom Bernstein and Autonomous provided investment banking services. As of September 30, 2025. All figures are updated quarterly.

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