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- Aerospace & Defense Electronics: Commercial Aerospace
- Aerospace & Defense Electronics: Defense
- Aerospace & Defense Electronics: Government Technical Services

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SECTOR NOTE

FAREWELL FROM CAI VON RUMOHR: REFLECTING ON 50+ YEARS

THE TD COWEN INSIGHT

After more than 50 years of covering Aerospace at TD Cowen and its predecessors, the legendary Cai von Rumohr is retiring. Click on the link to read his thoughts on what has mattered most in the industry and lessons from his long career.

After nearly 55 years covering the Aerospace and Defense industry at TD Cowen and its predecessors, I'll be retiring on December 31. Gautam Khanna, my partner of 24 years, and Jack Ayers, who's been with TD Cowen for four years, are taking over my coverage, and I know they will be faithful stewards of the franchise we've built over the past years.

As I prepare to retire, I've been thinking about lessons from my 50+ years following the sector. When I started, Boeing delivered drawings to engineers in its shop via folks on roller skates. The 747 had just been rolled out, but deliveries were delayed because Pratt's engine was late. Boeing was debating whether to (1) keep producing planes and risk running out of cash if Pratt delays continued, or (2) slow production to conserve cash. Sound familiar? Back then, quarterly earnings were available only on ticker tape (who needs details?), there were no conference calls (advantage to analysts who were tight with the CFO), brokerage reports were mailed to clients (who cares about the short term?), and modeling was done on a slide rule (who needs a computer?). So, a lot has changed. And yet it seems a number of bigger-picture learnings still hold true. Here are some of my thoughts, in no particular order, on things to consider when investing in the sector.

Rules Of the Road – The benefit of “experience” is that hopefully you avoid making the same mistake twice. But often you find a new way to be wrong. Here are some of my “rules" to help minimize mistakes.

- **Buy Defense Stocks Into Presidential Elections** – Sometime back in 1999, I was asked “How should defense stocks do going into presidential elections?” So I decided to look at how they'd done in the past. And hey, they'd outperformed by an average of 6% since 1984. In considering why, I realized that Administrations want a strong economy going into elections, and they'll rarely kill a major program in front of elections to avoid the risk of losing the votes of folks who work on the program. If there are tough decisions to be made, they'll usually occur after elections. That's when Carter killed the B-1 bomber. The presidential elections "rule" worked until it failed miserably in 2020 and 2024.

- **Beware Unexpected Presidential Decisions** - Having killed the B-1 bomber, President Carter was perceived to be a peacenik. So, when Russia invaded Afghanistan and he proposed a big hike in defense spending, defense stocks went nuts for 2-3 months. Conversely, when Ronald Reagan was elected President, defense investors were encouraged by his support for strong defense to deter Soviet aggression. Surprise! He also believed defense contractors should put their own money at risk to win new, potentially lucrative contracts. So, he told BA, LK, and GD they could play, but only if each put $1 billion into the development pot for an Advanced Technology Fighter (ATF). The ATF went into production as the F-22, but only 187 were built as production was cancelled after the Soviet Union collapsed. In contrast, the F-35 is on its way to a program of 3500+ fighters.

- **Avoid Boeing IAM Negotiations** - From 1989 to 2008, Boeing experienced four strikes by the International Association of Machinists and Aerospace Workers (IAM) averaging 50 days - that's an 80% hit rate. Everyone following BA knew the stock would get very nervous going into contract negotiations. And if the IAM went on strike, the stock likely would tank in the first weeks of a work stoppage and then recover right before it ended. Former Boeing CEO Dave Calhoun failed to recognize in BA's recent IAM negotiations that relations with the IAM have been perennially contentious.

- **Avoid Long, Fixed-Price Defense Contracts** – The U.S. Department of Defense ("DoD") vacillates between having contractors do engineering and manufacturing development (EMD) or early production work on fixed-price contracts or cost-plus agreements. History would suggest that if a company takes a charge on a multiyear, fixed-price job, it's at risk of taking more because it has no profit "cushion" left to offset additional overruns. That was the case on Lockheed's C-5A (at it's low, the stock traded below $10 and was a takeover target of Textron) and McDonnell Douglas' C-17. Boeing is today's poster child for the issue. Contractors claim they are being more cautious on current bids. But the issue may be how many previous fixed-price bids are in backlog with risk to bite them and what stance will the Trump Administration take on the issue?

- **Understand The Impact Of Technology Change** – In 2000, Airbus launched the huge four-engine A380 out of concern that the 747 was a cash cow allowing Boeing to subsidize other programs. They missed the trend of improving aircraft engine reliability that would allow fuel-efficient twins to fly longer point-to-point routes. This enabled greater frequency and lower plane mile costs, reducing the market for the 747 and the A380. A380 production ended in 2021 after 14 years, while a version of the smaller 737, introduced back in 1967, still is in production. In space, Boeing and Lockheed Martin were late to recognize that launch costs could be pared by (1) vertically integrating to cut cycle time, (2) producing reusable rockets, and (3) boosting launch frequency to better cover heavy fixed launch pad costs. SpaceX understood this potential and executed successfully after three initial failures. As a result, its reported private market valuation is $355 billion, bigger than the combined market caps of BA, LMT, and NOC.

- **Know What The Market Wants** – In the late 1990s, BA toyed with the idea of building a "sonic cruiser" with 15-20% higher speed than existing aircraft and theoretically capable of supporting premium ticket prices. But with higher fuel prices after 9/11, potential clients balked. BA canned the idea, avoiding disaster, and it moved on to build the more fuel efficient 787, which has 1500+ orders. In contrast, bizjet leader Gulfstream felt that upper-end buyers wanted more range and a more spacious cabin and might pay more than the $49 million price of its leading G550. When it started taking G650 orders in mid-2008, it priced the plane at $59MM and estimated 60 initial orders. It got 100 and immediately raised the price for new customers to $62MM. Bottom line: misgauging what customers want, such as with the A380, can be an existential mistake. Hitting the target, as with the G650, can be a bonanza.

- **Understand Consolidation Strategies** – In 1993, Secretary of Defense Les Aspin had a "last supper" dinner with the primes, warning of future budget cuts following the collapse of the Soviet Union and indicating likely industry consolidation. This triggered a major M&A cycle in which companies sought either to (1) make acquisitions to gain capability to become systems integrators (e.g., LMT and NOC) or (2) build areas of strength and divest operations unlikely to lead (e.g., GD). Stocks rose for most buyers, who gained pricing power, as well as sellers, who saw take-outs done at a premium. However, Raytheon and Boeing were slow to move. In 1997, RTN ended up buying the missile operations of GMH and TXN, and Boeing bought its archrival McDonnell Douglas. By being late to the party, both paid peak prices. In contrast, L-3 acquired component and systems companies with an eye to becoming a merchant supplier to the primes. These were financial roll-ups with limited integration and incumbent management teams staying on to run the companies.

- **Culture Matters** – Boeing's acquisition of McDonnell Douglas and Raytheon's of the TXN and GMH missile businesses both involved market leaders buying archrival direct competitors. In contrast, both Northrop and Martin Marietta (now LMT) bought companies with complementary capabilities, and they encountered little cultural friction. They emerged as the defense market leaders. L-3 was successful because its acquirees received a nice payout and got to run their companies as they had before selling. Bottom line: Don't ignore the cultural fit with your acquisition!

- **Understand Next Narrowbody Aircraft Technology** – Developing the next narrowbody aircraft likely will be a bigger dice roll than prior models were. All planes since the 707 have used a conventional wing and engines powered by Jet A fuel. But the next plane will have more dramatic technology changes from which to choose. These include open fan or ducted engines, and, in BA's case, the transonic truss-braced wing, which sits atop the fuselage. Thus, the potential to launch a new design and have your competitor come up with a better design 2-3 years later is greater than it's been in the past.

- **Keep Tabs On eVTOLs And Urban Air Mobility (UAM)** – Certification targets for eVTOLs (electronic vertical takeoff and landing) continue to slip, and launching complex UAM operations looks daunting. Thus, estimates of a $1 trillion total addressable market appear excessive. However, initiating cargo operations & helicopter replacement should be less challenging. The technology's carbon neutral characteristics, better short-range economics, and low noise also are disruptive; and they'll continue to improve. While slower than expected, progress toward certification continues, recent Federal Aviation Administration operating regulations are favorable for industry, and stronger eVTOL companies have been able to raise money. We'd keep an eye on the sector.

Sincerely,

Cai Von Rumohr

Cai von Rumohr, CFA
Managing Director
TD Cowen

VALUATION METHODOLOGY AND RISKS

Valuation Methodology

Aerospace & Defense Electronics:

Price target methodology: We use a combination of Price-to-earnings (P/E), total enterprise value to EBITDAP (P = FAS/CAS pension adjustment), free cash flow yield (on stock price), and cash flow yield. We tend to favor GAAP P/Es for most commercial aerospace companies and TEV/EBITDAP for defense primes with large defined benefit plans with share Y/Y swings in FAS/CAS. We also use sum-of-the-parts for companies with sharply disparate businesses of meaningful size (GD, TXT, SAIC).

We make investment recommendations on certain early stage, pre-revenue companies based upon an assessment of their business model, technology, probability of market success, and the potential market opportunity, balanced by an assessment of applicable risks. Such companies may not be assigned a price target.

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Investment Risks

Commercial Aerospace Sector Risks:

· Cyclical slowing in growth of global GDP, passenger & cargo air traffic

· Sharp lift in interest rates to short circuit replacement demand

· Spike in oil prices dampening airline profitability (and traffic if ticket prices are hiked to offset)

· Growth in airline capacity from new deliveries exceeding the rate of air traffic growth

· Execution risk of bringing new products to market.

· Ability of U.S. airlines to gain labor scope clause changes permitting use of larger RJ's

· Competition from new foreign entrants

· Threat to suppliers from Boeing's Partner for Success program

· Raw material availability

Defense sector risks

· Sequester/reduced DoD funding to adversely impact industry sales with potential program cutbacks – keyed to potential for federal debt reduction agreement. Short cycle services contracts will feel pressure before longer cycle weapons systems

· Increased competition & pricing pressures on new contracts, esp. in services sector

· Potential stiffer DoD payment terms

· Possible shift to fixed-price-type development contracts on new programs

· Margin pressure from declining EAC (estimates at completed) adjustments as older contracts end and revenues decline

· Further decline in interest rates to boost pension expenses

· Transition risks as programs move from development into production

· Relatively low entry barriers in service area and increasing bid protest on ID/IQs pressure profitability

Government Services/Defense IT Services

· Sequester/reduced DoD funding to adversely impact industry sales with potential program cutbacks – keyed to potential for federal debt reduction agreement. Short cycle services contracts will feel pressure before longer cycle weapons systems

· Increased competition & pricing pressures on new contracts, esp. in services sector

· Potential stiffer DoD payment terms

· Possible shift to fixed-price-type development contracts on new programs

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ADDENDUM

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Buy (1): The stock is expected to achieve total return of +15% or more over the next 12 months

Hold (2): The stock is expected to achieve a total return that falls between -10% to +15% over the next 12 months

Sell (3): The stock is expected to achieve a total return of -10% or below over the next 12 months

Suspended (4): Due to evolving circumstances and potential conflicts of interest, we can no longer generate what we consider a defensible rating at the current time

Assumption: The expected total return calculation includes annual return and forecasted dividend yield

Cowen and Company, LLC Equity Research Rating Definitions applicable from 6:00PM ET March 22, 2024

Buy (1): The stock is expected to achieve total return of +15% or more over the next 12 months

Hold (2): The stock is expected to achieve a total return that falls between -10% to +15% over the next 12 months

Sell (3): The stock is expected to achieve a total return of -10% or below over the next 12 months

Suspended (4): Due to evolving circumstances and potential conflicts of interest, we can no longer generate what we consider a defensible rating at the current time

Assumption: The expected total return calculation includes annual return and forecasted dividend yield

Cowen and Company, LLC Equity Research Rating Definitions applicable until 5:59PM ET March 22, 2024

Outperform (1): The stock is expected to achieve a total positive return of at least 15% over the next 12 months

Market Perform (2): The stock is expected to have a total return that falls between the parameters of an Outperform and Underperform over the next 12 months

Underperform (3): Stock is expected to achieve a total negative return of at least 10% over the next 12 months

Assumption: The expected total return calculation includes anticipated dividend yield

TD Securities, Inc. Equity Research Rating Definitions applicable from 6:00PM ET March 22, 2024

Buy (1): The stock is expected to achieve total return of +15% or more over the next 12 months

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Sell (3): The stock is expected to achieve a total return of -10% or below over the next 12 months

Suspended (4): Due to evolving circumstances and potential conflict of interest, we can no longer generate what we consider a defensible rating at the current time.

Assumption: The expected total return calculation includes annual return and forecasted dividend yield

TD Securities, Inc. Equity Research Rating Definitions applicable until 5:59PM ET March 22, 2024

Action List Buy: The stock's total return is expected to exceed a minimum of 15% (with higher thresholds for less liquid, more risky securities) over the next 12 months and it is a top pick in the Analyst's sector.

Buy: The stock's total return is expected to exceed a minimum of 10% (with higher thresholds for less liquid, more risky securities) over the next 12 months.

Speculative Buy: The stock's total return is expected to exceed a minimum of 30% over the next 12 months (with higher thresholds for less liquid securities); however, there is material event risk associated with the investment that could result in a significant loss.

Hold: The stock's total return is expected to be between 0% and 10%, (with higher thresholds for less liquid, more risky securities) over the next 12 months.

Tender: Investors are advised to tender their shares to a specific offer for the company's securities or to support a proposed combination reflecting our view that a superior offer is not forthcoming.

Reduce: The stock's total return is expected to be negative over the next 12 months.

Suspended: Due to evolving circumstances, we can no longer generate what we consider a defensible target price and rating at the current time.

Under Review: Our rating is under review pending additional information and/or analysis. The prior rating should not be relied on.

Not Rated: We do not currently produce a recommendation and a target price on this security.

TD Cowen Equity Research Rating Distribution

Distribution of Ratings/Investment Banking Services (IB) as of 09/30/24

Rating	Count	Ratings Distribution	Count	IB Services/Past 12 Months
Buy	816	67.27%	289	35.42%
Hold	383	31.57%	94	24.54%
Sell	14	1.15%	3	21.43%

TD Cowen Equity Research Rating Distribution Table does not include any subject company for which the equity research rating is currently suspended.

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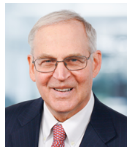

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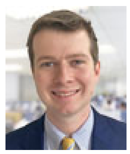

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