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A JOURNEY INTO BOEING'S TURBULENT RIDE

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Abstract:

This two-part case study explores Boeing's evolution since the merger with McDonnell Douglas to Boeing's $21 billion equity offering. Case A chronicles Boeing's rise to become a shareholder-focused giant. It explores a renewed focus on operational efficiency and all financial decisions that culminated in a historic stock price peak of $440.62 on March 1st, 2019. While Case B examines Boeing's decline following the 737 MAX crises, the Covid-19 pandemic and the quality problems that plagued the company. It concludes on October 28th, 2024, with Boeing's equity offering, as the company seeks recovery amidst significant debt levels and market challenges.

Keywords: The Boeing Company, Payout Policy, Return on Net Assets, Shareholder Value, Equity Raise, Debt Rating, Quality Control, Corporate Governance

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CASE STUDY B

Flying too close to the ground

On October 28th, 2024, Boeing launched a substantial equity offer, looking to raise close to $20 billion, a bold step in a bid to secure its future. Kelly Ortberg had just been appointed CEO of Boeing and he was confronted with a company that was once an engineering powerhouse and industry leader, that was now on the verge of collapse.

Once a Wall Street champion, reaching an all-time high stock price of $440.62 and a market capitalization above $250 billion, Boeing's rise had come at the expense of its focus on engineering integrity. It had shifted its priorities toward aggressive financial targets, cutting costs, and meeting tight production deadlines. Just ten months before the equity offer launch, a fuselage panel had blown out of a brand new 737 MAX plane, the same model that, 5 years before, was responsible for the death of 346 people. Now, its stock lingers at $150, while it struggles to produce and deliver planes, generate cash and wrestles a staggering $57.65 billion in debt.

Ortberg now faces the daunting task of restoring Boeing's reputation. He must focus on building trust with stakeholders, addressing long-standing quality control issues, and enhancing production efficiency to boost cash flow. Furthermore, it must also look into the future in order to regain Boeing's leading position in the industry. For the past decade, Airbus has been the clear winner of the battle, securing a 62% market share to date. To turn the page over its MAX disasters, Boeing must start thinking about its successor. But with the mounting debt and precarious credit-rating the challenges ahead are immense.

The question stands: Will Kelly Ortberg be able to bring Boeing back to its former glory?

See **Exhibit 18** for a full timeline of Boeing's key events since 2019.

Ethiopian Airlines Crash

On March 10th, 2019, flight 302 from Ethiopian Airlines took off from Addis Ababa. Seconds after take-off, the control column began shaking, altitude and airspeed warnings appeared. The Angle of Attack[1] vane on the left side reported that the plane was ascending almost vertically. To correct this, software mandated the plane to pitch its nose down. But the plane was not ascending almost vertically nor close to stalling[2]. The sensors were feeding incorrect data to the plane, making it point toward the ground. Despite following Boeing's recommendations for corrective action to the situation, the pilots were not able to regain control of the aircraft in time to avoid crashing, just six minutes after take-off.

This accident occurred less than five months after Indonesia's Lion Air MAX 8 crash that took the lives of all 189 people on board. Combined, the Boeing 737 MAX 8 is responsible for the loss of 346 lives, marking a very dark chapter of Boeing's history and changing its course.

Just one day after the crash, China was the first country to react, mandating all domestic airlines to ground 737 MAX planes, a decision that was quickly followed by every other major economy. At the same time, the FAA permitted the MAX to keep flying by launching a Continued Airworthiness Certification and Boeing insisted on the safety of its aircraft, leaving Boeing and the FAA isolated. See **Exhibit 19** for Boeing's Statement. Only two days later, the FAA imposed the grounding of all MAX aircraft on US airspace. Three days after the second crash in less than five months, the 350 MAX planes in service at more than 50 operators were all grounded. Amid the worldwide ban on the MAX, Boeing's stock price decreased to $377.14 from $422.54 before the crash. Boeing also halted deliveries of the model, which would have a strong impact on the cash inflow to the company[3]. By the time of the groundings, Boeing had

[1] Indicates what angle the wings are relative to the direction of airflow
[2] When the aircraft reaches a certain angle of attack that the wings are unable to generate sufficient lift, i.e the aircraft is not able to maintain altitude
[3] As manufacturers receive the majority of the payment upon the delivery of the aircraft

secured around 5000 orders for the 737 MAX. See **Exhibit 20** for Boeing's commercial aircraft orders and deliveries.

In the months that followed, Boeing came under intense scrutiny as it faced congressional and federal investigations, along with a criminal probe. These inquiries pulled back the curtain on the development process of the 737 MAX, exposing critical issues that had been overlooked and casting a harsh light on both Boeing and the FAA:

"Boeing's design and development of the 737 Max was marred by technical design failures, lack of transparency with both regulators and customers, and efforts to obfuscate information about the operation of the aircraft", according to the US House of Representatives report.

Looking under the Covers: The Investigation into the 737 MAX Development

The origins of the 737 stretch back to 1967, when Boeing introduced it to meet a growing demand for short-haul aircraft. The 737 was built with its two engines mounted under the wings, which allowed for a wider fuselage for increased space inside the cabin and easier access for repairs. The model's lower-to-ground build also facilitated loading and unloading of the plane. These design choices defined the 737's success, eventually making it Boeing's best-selling aircraft with 11,737 deliveries and 19,396 orders to date.

The 737 MAX came as Boeing's response to Airbus' A320neo. In 2010, Airbus announced plans for an updated version of the A320 family, with larger, more fuel-efficient engines, providing a 15% cost advantage over the 737 once it entered service. Boeing had to move quickly and present a worthy rival to the A320neo. At first, Boeing was inclined to respond by waiting and designing an entirely new plane. In fact, in an April 2011 earnings call, CEO James McNerney acknowledged that:

"…most of the data and customer feedback is suggesting to us that the new airplane option is the most favorable, …".

However, when American Airlines, a once exclusive customer of Boeing, announced an order for 260 Airbus A320neo, Boeing decided to change strategy.

The solution was the 737 MAX, a new iteration of the already 43-year-old plane. The MAX would feature larger, more powerful and efficient engines and, to entice airlines into ordering the plane, Boeing promised the updated plane would not require additional pilot training. This commitment would save millions for airlines, as training typically amounted to 20% of their operating budget. The MAX was an instant success gathering 1064 orders by the end of 2012.

Running behind Airbus, Boeing was under immense pressure to deliver. It promised the plane would be ready for service in just six years' time and it would cost just about $2.5 billion. During the testing phase, Boeing engineers noticed that the bigger engines mounted on the front of the wings made the plane tend to pitch up and eventually stall. A potential solution would have been to modify the tail, a rather costly and time-consuming one. Amidst the mounting pressure, Boeing settled for a software solution called the MCAS[4].

The MCAS would act based on the readings from the AOA[5] sensors and the G-forces accelerometer, to ensure redundancy, and push the plane's nose down. At first, this software would only be activated in very extreme situations and with a reduced action. However, Boeing engineers found the plane also had a propensity to stall under low speeds, when the plane was landing or taking off. So, the MCAS needed to be expanded to cover these lower speeds. To do so it had to move the plane stabilizer at a much greater angle and would only rely on the readings from the angle of attack sensors. Now, the MCAS was much more powerful and would only rely on the readings of a single sensor. This change in design, which drastically changed the operating characteristics of the software and its criticality, was not communicated to the FAA. To add to that, Boeing had assigned the construction of the MAX's simulators to the lowest

[4] Maneuvering Characteristics Augmentation System

[5] Angle of Attack

bidder, and they weren't likely to be ready in time for MAX deliveries. The team also decided not to refer to MCAS as a new function, but rather as a tweak to the old flight controls so that pilots would not require additional training, nor flight manuals had to be updated. Boeing also reduced the test flight hours in the MAX program to save costs. In 2014, a group of experts inside Boeing suggested a backup system as the MCAS could be easily compromised due to erroneous information, as it only relied on a single set of sensors that could easily be damaged. The idea was rejected as it could have a high impact on costs and training.

During the investigations, internal Boeing documents revealed communication between employees depicting attempts to mislead the regulators and choosing suppliers solely based on the lowest bid. Boeing also admitted that engineers identified that the MAX display system software did not correctly meet the AOA disagree alert requirements. Instead of functioning as designed, the AOA disagree alert was only triggered if the airline had purchased the optional AOA indicator, which was not the case for every aircraft, including the ones purchased by Lion Air and Ethiopian Airlines. Though Boeing knew this since 2017, it had omitted it from both the FAA and its customers.

At the same time Boeing was cutting corners in the development of the 737 MAX, it was focusing heavily on boosting shareholder value through aggressive stock buybacks and dividend payouts. See **Exhibit 21** for Boeing's spending on share buybacks since 1998. From 2013 to 2019, the company spent over $43 billion on share buybacks, nearly double its investment in research and development, and almost $21 billion on dividends. The total spending on buybacks and dividends amounted to 167% of the company's total net earnings for the period. See **Exhibit 22** for the comparison.

By the time the FAA certified the 737 MAX in March 2017, the aircraft was already a commercial success, with close to 4,000 orders secured. Its appeal to airlines was clear: the MAX promised greater fuel efficiency, longer flight ranges, and pilots who had already flown

the 737 would not be required additional training. As Boeing began deliveries for the MAX, its stock price skyrocketed, from $156.97 at the start of 2017 to $294.91 by year's end. With cash coming in as airplanes started being delivered, the manufacturer increased buybacks, averaging $9.1 billion over 2017 and 2018. Boeing saw its stock price grow from $77.47 on January 2nd, 2013, to an all-time high of $440.62 on March 1st, 2019, just ten days before the Ethiopian Airlines crash. See **Exhibits 23.1 and 23.2** for Boeing's stock price chart.

Airplanes on the Ground: Boeing's Fight to Rebuild Trust

However, once the entire fleet was grounded in 2019, Boeing's financial performance took a significant hit. Its revenue decreased to $76.7 billion from a record high of $100 billion in 2018. The company was also hit by declining operating cash flow, dropping from $15 billion in 2018 to a negative $2.4 billion in 2019, as production continued amid a sharp decrease in deliveries. See **Exhibits 24.1, 24.2, 24.3** for Boeing's financial statements. In fact, in 2019, Boeing only delivered 380 aircraft[6], the lowest number since 2008. To mitigate this, Boeing increased its borrowings, almost doubling its total debt size compared to 2018, and suspended the share repurchase program.

In December 2019, Boeing announced CEO, Dennis Muilenberg, would step down to be replaced by longtime board member Dave Calhoun. Muilenberg's exit came after intense scrutiny of his leadership and handling of the 737 MAX crisis, with Boeing's reputation and trust among regulators and the public at an all-time low:

"*Under his watch, a long-admired company made a number of devastating decisions that suggest profit took priority over safety."*, stated Peter DeFazio[7].

Defensive handling of communications after the crashes and delays in acknowledging Boeing's responsibility further eroded public trust. His departure marked an effort by Boeing's board to signal a shift in leadership:

[6] Boeing did not deliver any MAX aircraft after the grounding
[7] Democratic Chair of the House Transportation Committee

"The board of directors decided that a change in leadership was necessary to restore confidence in the company moving forward as it works to repair relationships with regulators, customers and all other stakeholders", a company statement read.

From 2015 to 2018, Muilenberg earned $95.9 million in gross pay, of which 51% consisted of gains from stock options exercised. Calhoun was now tasked with leading Boeing through one of the most challenging periods in its history, with a mandate to restore the company's focus on engineering integrity, safety, and corporate transparency. Boeing closed 2019 with a stock price of $325.76. It was far from its $440.62 peak, but it was just shy of the $323.81 it had started the year with. Despite the crisis that shook Boeing, the stock held steady, reflecting the confidence investors had in Boeing's ability to recover.

Covid-19: A Blow to an Already Struggling Boeing

In February 2020, a global pandemic broke out, leaving the aviation industry as one of the most affected worldwide. With quarantine rules and travel restrictions, aviation grounded to a halt, and entire fleets were left parked on the ground. In early March 2020, Boeing, in an already vulnerable position, tapped a $13.8 billion loan and its stock dropped to $189.08, the biggest fall in stock price Boeing had ever experienced, losing close to a fifth of its market value. By this time, the MAX was still not cleared to fly and the bill for its grounding had already reached $18.6 billion and included compensation to airlines and added costs due to halted production.

By summer 2020, Boeing announced it would be cutting 19,000 jobs. Boeing had more than 420 undelivered 737 MAX and 35 787, 777 and 747. To increase the inflow of cash to face the reduction in revenues, it issued $25 billion in debt, almost doubling its total debt balance. See **Exhibit 25** for Boeing's total debt balance. Boeing suspended dividends and backed off from a planned deal with Embraer to acquire 80% of its commercial aircraft and services business for $4.2 billion.

Adding to that, Boeing was still dealing with the aftermath of the MAX crashes, and it was later found to be at fault for misleading the FAA and introducing the MCAS without properly instructing airlines and crews. It agreed to pay $2.5 billion to settle a criminal charge with the US Department of Justice. It also later paid a $200 million fine to the SEC for misleading investors.

The 737 MAX was cleared to fly in November 2020. To achieve the recertification of the type, the FAA mandated Boeing to make repairs to the MCAS system, making it rely on two sensors rather than one, update operating manuals, and require pilot training in flight simulators. The grounding of the 737 MAX came at a great expense for Boeing, costing an estimated $20 billion in direct costs. This amount included $8.6 billion to compensate customers for delayed deliveries, $5 billion for unusual costs of production and $6.3 billion for increased costs on the MAX program. Adding to this, Boeing also spent $600 million to cover expenses for jet storage, software updates and pilot training and created a $100 million compensation fund for the victims of the crashes. The grounding also cost Boeing 448 canceled orders. See **Exhibit 26** for Boeing's order cancelations. Recertification of the 737 MAX was a critical milestone on Boeing's journey to recovery, enabling the return of its best-selling aircraft to commercial service. However, there was still a long path to return to its former glory.

In addition to the crisis brought by the MAX crashes and the pandemic, which induced a sharp decrease in passenger travel that deferred orders and deliveries for new aircraft across the entire industry, Boeing was also battling fights on other fronts. It was facing challenges in the development of the new 777X. Despite being initially expected to enter service by late 2020, the new widebody type will not be seen in the skies until at least 2026. Not only had the pandemic strongly decreased the market demand for wide-body jets, but regulators also demanded design changes due to safety concerns. The manufacturer was also experiencing problems with the production of the 787 Dreamliner, as production faults required deeper

inspections, halting deliveries of the aircraft. Boeing also decided to cut production of the Dreamliner from 14 to 5 units a month, as many aircraft remained undelivered.

By the end of 2020, Boeing's stock price had dropped to $214.06, a significant decline from the price of $333.74 at the beginning of the year. This steep decrease reflected a turbulent year for Boeing, which faced the prolonged fallout from the 737 MAX crisis, compounded by the financial devastation of the COVID-19 pandemic on the airline industry. With demand for new aircraft at historical lows, Boeing faced a wave of deferred orders and cancellations, registering, in 2020, 655 cancellations. As a result, the company reported a record loss of $12 billion and an operating cash outflow of $18.4 billion, as it struggled to deliver aircraft.

Crack in the Assembly Line: Boeing's production woes

In 2021, as air travel began to recover, Boeing experienced a resurgence in demand for new aircraft. The company registered 909 gross orders, up from the record low of 184 in 2020, with 749 of these orders placed for the 737 MAX. This underscores the model's sustained commercial success and customer confidence despite the challenges it faced. Deliveries also improved significantly, with Boeing handing over 340 planes to its customers, more than double the 157 deliveries in 2020. MAX production was up to 26 aircraft a month. This increase in deliveries was crucial for generating cash, helping Boeing post positive operating cash flow in the fourth quarter of the year, for the first time since 2019. **See Exhibit 27** for Boeing's 2021 quarterly operating cash flows.

Although Boeing showed signs of recovery, issues in its production process soon surfaced, which complicated its path forward. In 2021, deliveries of Boeing's 787 Dreamliner dropped drastically, from 158 in 2019 to only 14. Deliveries were halted in May, as the FAA deepened its investigation into production defects. This pause in deliveries, coupled with a production rate drop to less than 5 Dreamliners per month, followed Boeing's discovery of new structural flaws in parts manufactured by a supplier.

The faulty parts were supplied by Spirit Aerosystems, which was founded in 2005 after Boeing sold its Wichita division. At the time, Boeing was heavily divesting its assets in a bid to reduce fixed costs and improve financial metrics such as its Return on Net Assets. The company shifted its strategy toward outsourcing most of its production and focusing more on design and final assembly of the aircraft rather than manufacturing every component in-house. Despite the financial gains associated with it, Boeing now had less control over the production and quality of its aircraft.

As Boeing worked to stabilize its operations, it made a major strategic decision, in 2022, to move its corporate headquarters from Chicago to Arlington, Virginia, in a bid to strengthen its defense business and be close to policymakers. This move drew harsh criticism, with unions and industry experts suggesting that Boeing was moving in the wrong direction.

"*It's being perceived as an abandonment of the commercial aviation part of the company,"* said Ray Goforth[8], as Boeing relocated management further away from its commercial aircraft production, in Seattle.

By 2023, more problems emerged: Spirit had incorrectly installed two fittings on the fuselage of 737 MAX planes, drilled holes improperly in the rear fuselage of the plane and possibly left loose bolts around the rudder control systems. These ongoing quality control challenges highlighted Boeing's vulnerability to supplier-related production issues. Boeing needed to maintain steady production and timely deliveries, not only to stabilize financially but also to secure customers and fight off competition from Airbus. For the past four years, Boeing has strived to regain trust in its aircraft. Another major crisis would be a costly setback in its path toward recovery.

[8] executive director of the Society of Professional Engineering Employees in Aerospace, which represents more than 14,000 Boeing employees.

A New Crisis: The Alaska Airlines 737 MAX Incident

On January 5th, 2024, an eight-week-old Boeing 737 MAX 9 from Alaska Airlines was flying from Portland, Oregon to Ontario, Canada, when it encountered a major safety incident, shortly after takeoff. A panel detached from the fuselage, leaving a hole in the airplane that led to a rapid cabin depressurization at approximately 4,800 meters above ground. This resulted in items being sucked out of the aircraft, but luckily no passengers were sitting in the seats right next to the blown panel. As a result, Alaska Airlines grounded its entire 737 MAX fleet that same day and the FAA followed up by grounding several other MAX planes.

The panel that became detached from the fuselage was a left mid-exit door plug. A door plug is a deactivated emergency exit door, appearing to be just a regular window from the inside. When airlines opt for lower-density seating configurations, fewer emergency exits are required by safety regulations. In these cases, certain exit doors are deactivated and are transformed into these door plugs. Their purpose is no longer to serve as a door but rather to seal the space in the fuselage where the door had been. In this case, this door plug was merely secured by four bolts. The door plug in question had been manufactured by the troubled subcontractor Spirit AeroSystems. Upon arrival at the Boeing assembly plant, damage was found on the door and a non-conformance record was created. The door plug was removed for maintenance, but it wasn't recorded on the FAA-required record of the aircraft's assembly, meaning that no inspection was carried out after its reinstallation. It was found that, after being reinstalled, the bolts that secured it in place were missing. Further scrutiny revealed that an inexperienced mechanic, with only 17 months of experience at Boeing, had reinstalled the door plug while the primary mechanic was on vacation.[9]

Boeing's manufacturing process and internal culture came under fire. To increase production, especially to compete with Airbus, Boeing had shifted its priorities from safety and quality to

[9] Working on doors was a specialist occupation

speed and cost. As a result, oversight weakened, and practices like "inspector shopping", where workers sought inspectors likely to approve substandard work, and "self-inspections", where employees were allowed to sign-off on their own work, became widespread. Throughout the years, Boeing has lost a lot of its experienced workforce and, as such, a lot of institutional knowledge has been lost. Workers are currently far less experienced than they used to be.

This incident underscored deeper concerns about Boeing's practices, mirroring issues seen during the 737 MAX crashes. After the crashes, the focus at Boeing was to mitigate flawed design and software, the causes of the accidents, but there were problems with quality in the manufacturing process that needed to be addressed. Production speed has championed safety and quality, and Boeing not only ignored issues raised by employees, but they are also pressured employees not to report problems.

The distrust in Boeing's quality control was such that Emirates, one of Boeing's major customers, announced it would dispatch its own engineers to oversee production of the 777 at Boeing's facilities as well as at its supplier, Spirit Aerosystems. Emirates CEO, Sir Tim Clark, in an interview with the Financial Times, stated that he had seen a "progressive decline" in Boeing's standards, which he put down to long-running management and governance mis-steps, including prioritizing financial performance over engineering excellence. He added: "*They have got to instill this safety culture which is second to none. They've got to get their manufacturing process under review so there are no corners cut…*"

The Fall of an Angel

The Alaska Airlines incident has put Boeing under further strain as production slowed down and deliveries of the MAX were delayed. In the first quarter of 2024, Boeing registered $3.3 billion of operating cash outflow, reverting the positive flows from previous quarters. See **Exhibit 28** for Boeing's 2024 and 2023 quarterly financial summary. The company paid $443

million in compensation to customers, and, by mid-April, Boeing's stock price was down 33% since the beginning of the year, standing at $167.82.

In April 2024, Moody's downgraded Boeing's senior unsecured debt rating to Baa3, placing it just one level above junk status[10]. See **Exhibit 29** for the evolution of Boeing's credit rating. The downgrade reflects Boeing's inability to generate sufficient cash. Boeing's ability to generate cash is closely connected to its ability to produce and deliver planes, but the FAA has caped 737 MAX production at 38 planes per month to ensure quality standards. Moody's has warned that if Boeing's financial performance did not improve over the next 12 months, a further downgrade is likely. In fact, Moody's expects Boeing to be downgraded to junk status if it fails to achieve at least $2.5bn of free cash flow in 2025. The Q3 2024 report underscores these concerns, as Boeing posted $1.3 billion in negative operating cash flow, intensifying pressure to turn its financial position around.

In another blow to Boeing's reputation, it had to plead guilty to a charge of conspiracy to defraud the US Government. The company was fined $487.2 million, and it will also have to invest $455 million over the next three years on compliance and safety programs while working with an external compliance monitor. In 2021, Boeing had paid $2.5 billion under a deal with the Department of Justice, in which prosecution would be deferred and charges would be dismissed if Boeing adhered to a compliance program established after the crashes. However, with the panel blowout incident, Boeing was found to be breaching said agreement. This criminal conviction could endanger Boeing's ability to secure US defense contracts.

Will Boeing Be Able to Weather the Storm?

In August 2024, Robert "Kelly" Ortberg was appointed as Boeing's new CEO after Dave Calhoun's decision to step down, marking a critical turning point in the company's leadership.

[10] Junk rating means that the issuing company's financial stability is uncertain, making its bonds riskier than investment-grade bonds

With an engineering background and a lifelong career in the aerospace industry, Ortberg stands as the last hope to turn around Boeing. He will need to oversee a major cultural change to bring back its focus on product quality and safety instead of financial returns. One of his first actions was to relocate Boeing's Headquarters to Seattle, to work close to Boeing's factories, a change from his predecessors and a step in the right direction.

In September 2024, just a month into Ortberg's tenure, Boeing's members of the International Association of Machinists District 752, who represent 33,000 of Boeing's workers, walked off the job on strike after rejecting a 25% pay rise. The strike limited Boeing's ability to deliver planes, which slows down cash entering the company. With an already fragile cash balance and a precarious credit rating hovering above junk status, Boeing cannot afford another setback.

Over the past five years, Boeing has been shaken by two fatal crashes involving its brand-new jetliner, a global pandemic that disrupted air travel worldwide, a series of quality control failures and now a worker's strike that has added further strain on its finances. Once an industrial powerhouse and a high-performing stock, Boeing finds itself now struggling for survival. The US manufacturer has been burning through significant amounts of cash and has not turned a profit since 2018. It also substantially increased its debt balance, ending the third quarter of 2024 with $57.7 billion in total debt. Currently, its credit rating is dangerously close to junk status and its stock price has decreased from $251,76, in the beginning of 2024 to $152.04, by the end of September.

On October 28, in a crucial move to improve its financial health, Boeing announced an approximately $21 billion equity raise. The offer was divided into two parts and included approximately $16 billion of common stock and $5 billion of a three-year mandatory convertible preferred stock. See **Exhibit 30** for details. The base common stock offering consisted of 112.5 million shares at $143 each, a 7.7% discount on the closing price on October 25th. This offering also came at a cost to Boeing, as it spent almost $400 million on underwriting

fees, with Goldman Sachs, Bank of America, JP Morgan and Citigroup collecting nearly 80% of the fees between them.

This liquidity infusion is set to help the company cover impending debt maturities and immediate cash flow needs, especially to fund the revamping of its jet production after the strike ends. It also comes in an effort to prevent a further downgrade of its debt to junk status. Boeing also announced it had agreed to buy Spirit AeroSystems at a total transaction cost of $8.3 billion and the raised capital will also be crucial in the integration of this supplier. The acquisition of Spirit AeroSystems represents a change in Boeing's outsourcing strategy and a bid to improve its quality standards.

Airbus has already won the race with the A320 neo. It has been the world's largest plane maker by deliveries for the past five years and it holds a 62% market share in the narrow-body segment. Analysts believe that the only way for Boeing to regain its place is to focus on the next generation of planes and build a serious competitor.

The news of Ortberg's appointment was received with enthusiasm by the industry, he is seen as capable of leading Boeing in the right direction. The new capital and credit flexibility could provide Boeing with the breathing room it needs to implement the operational and cultural shifts that are vital to regaining its reputation as a leader in the aerospace industry. But there are risks along the way: Can Boeing raise enough capital to make a full recovery and reclaim its position as a leading force in global aviation? With its debt-heavy balance sheet, can it fund the development of new models?

See **Exhibit 31** for Capital Markets information over the period in study.

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Appendix

Case B

Exhibit 18 – Boeing Key Events Since 2019

Date	Event	Closing Stock Price ($)*
March 1st 2019	Stock closes at record high	440.62
March 10th 2019	Ethiopian Airlines flight 302 crashed	400.01
March 13th 2019	FAA grounds 737 MAX	377.14
December 23rd 2019	Denis Muilenburg resigns as CEO	337.55
March 11th 2020	Boeing register its biggest stock price fall	189.08
November 18th 2020	FAA clears the 737 MAX to fly	203.30
May 28th 2021	Boeing halts deliveries of the 787 amid quality concerns	247.02
April 14th 2023	Production issues find with supplier Spirit Aerosystems	201.71
January 5th 2024	Alaska Airlines flight 1282 incident	249.00
April 24th 2024	Moody's downgrades Boeing's senior insecured debt rating	164.33
July 31st 2024	Kelly Ortberg is anounced as Boeing's new CEO	190.60
September 13th 2024	Boeing workers begin strike	156.77
October 28th 2024	Boeing launches equity offer	150.69

**Closing price on Official announcement day's or next available day*

Source: Compiled by Case writer

Exhibit 19 – Press Release on March 12, 2019

"Safety is Boeing's number one priority, and we have full confidence in the safety of the 737 MAX. We understand that regulatory agencies and customers have made decisions that they believe are most appropriate for their home markets. We'll continue to engage with them to ensure they have the information needed to have confidence in operating their fleets. The United States Federal Aviation Administration is not mandating any further action at this time, and based on the information currently available, we do not have any basis to issue new guidance to operators."

Source: Boeing

Exhibit 20 – Boeing commercial aircraft orders and deliveries up to 31st October 2024

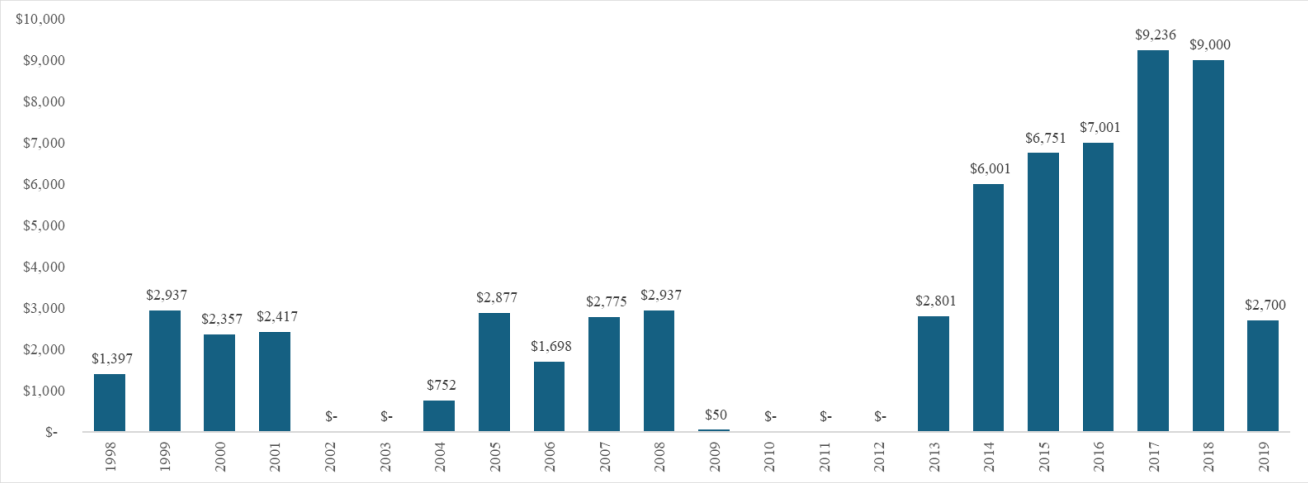
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Orders															
737 MAX	150	914	708	891	410	540	774	824	47	112	749	697	987	278	8,081
737	472	269	497	302	255	161	87	13	21	18	16	-	-	2	2,113
747	7	7	17	2	6	18	6	18	-	1	5	-	-	-	87
767	42	23	2	4	49	26	15	40	26	11	65	31	30	-	364
777	202	75	121	283	58	23	60	59	38	13	53	68	126	65	1,244
787	45	50	183	65	99	80	107	136	113	29	21	139	313	33	1,413
BBJ	3	1	3	3	1	-	4	-	1	-	-	-	-	-	16
Total Orders	918	1,338	1,528	1,547	877	848	1,049	1,090	245	184	909	935	1,456	378	13,318

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Deliveries															
737 MAX	-	-	-	-	-	-	74	256	57	27	245	374	387	234	1,654
737	365	411	434	482	491	490	455	323	69	16	16	12	9	4	3,577
747	9	31	24	19	18	9	14	6	7	5	7	5	1	-	155
767	20	26	21	6	16	13	10	27	43	30	32	33	32	16	325
777	73	83	98	99	98	99	74	48	45	26	24	24	26	11	828
787	3	46	65	114	135	137	136	145	158	53	14	31	73	40	1,150
BBJ	7	4	6	3	4	-	-	1	1	-	2	1	-	-	29
Total Deliveries	477	601	648	723	762	748	763	806	380	157	340	480	528	305	7,718

Note: *BBJ are Boeing Business Jets*

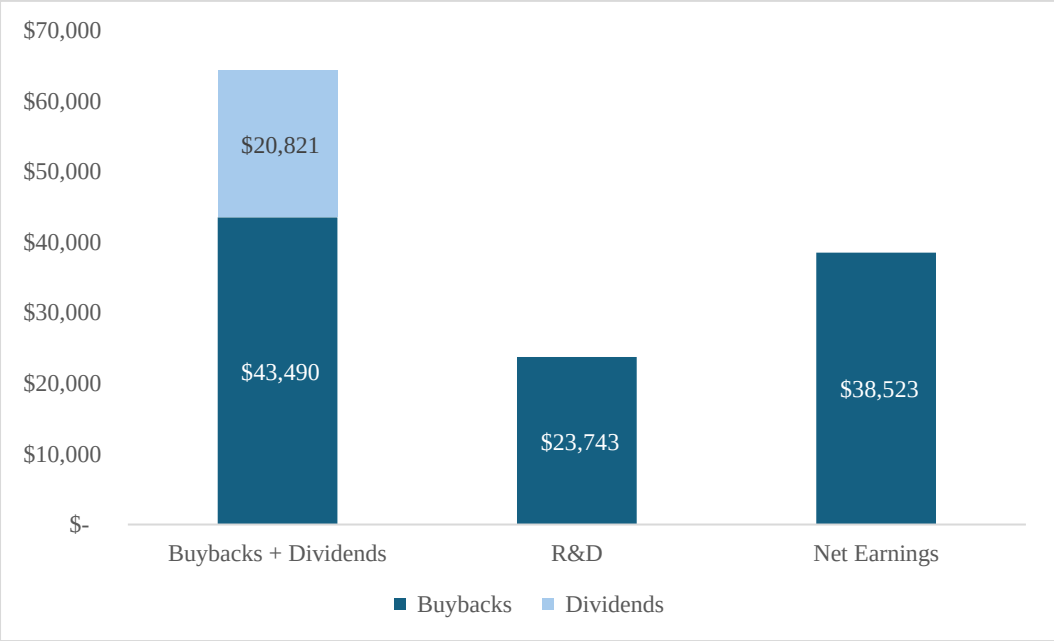
Source: Boeing

Exhibit 21 – Boeing's spending on share buybacks from 1998 to 2019 (in millions of dollars)



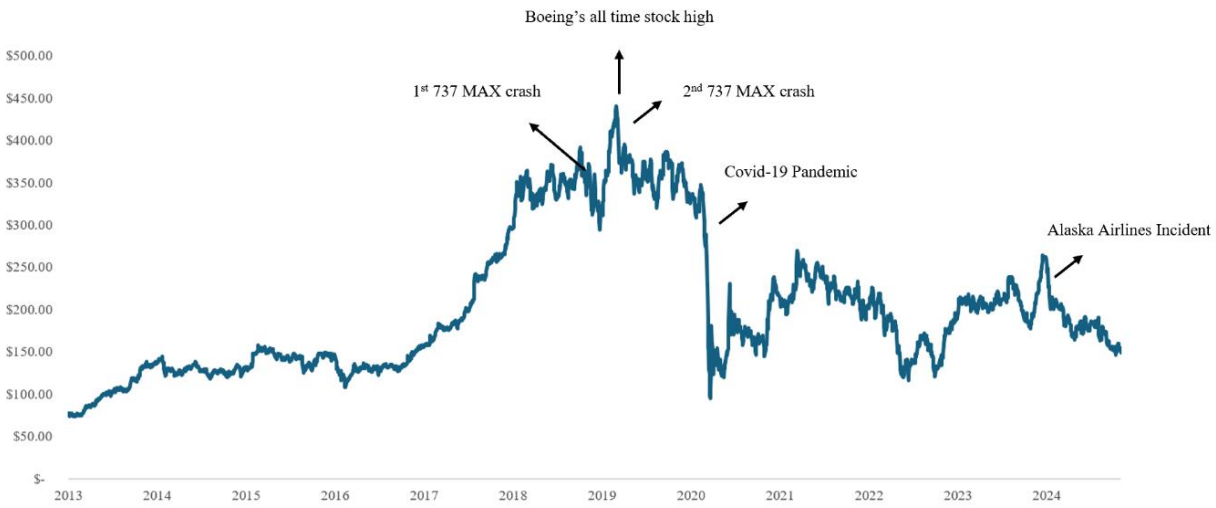
Source: Compiled from Boeing Annual Reports

Exhibit 22 – Boeing's cumulative spending from 2013 to 2019 on share buybacks and dividends, compared to spending in R&D and net earnings (in millions of dollars)



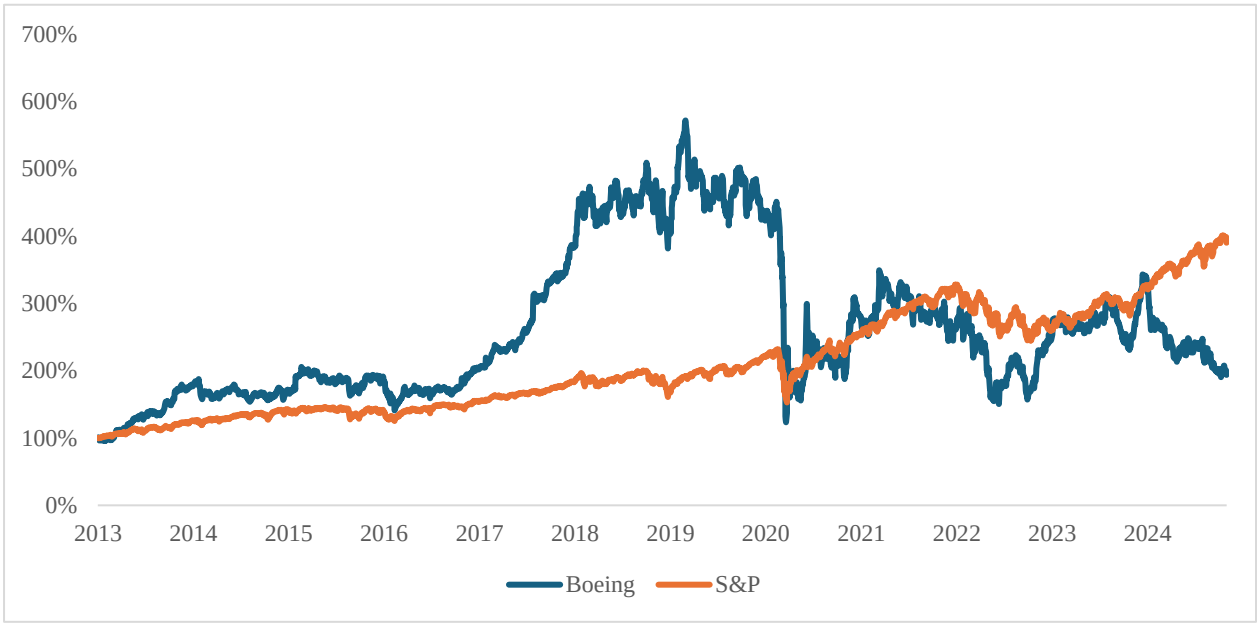
Source: Boeing

Exhibit 23.1 – Boeing's stock price from 2013 to October 31st, 2024



Source: Bloomberg

Exhibit 23.2 – Boeing's stock price comparison with S&P 500 (Index base = 2013)



Source: Bloomberg

Exhibit 24.1 – Boeing's Consolidated Statements of Operations 2018-2023

(Dollars in millions, except per share data) Years ended in December, 31	2018	2019	2020	2021	2022	2023
Sales of products	90,229	66,094	47,142	51,386	55,893	65,581
Sales of services	10,898	10,465	11,016	10,900	10,715	12,213
Total revenues	101,127	76,559	58,158	62,286	66,608	77,794
Cost of products	(72,922)	(62,877)	(54,568)	(49,954)	(53,969)	(59,864)
Cost of services	(8,499)	(9,154)	(9,232)	(9,283)	(9,109)	(10,206)
Total costs and expenses	(81,421)	(72,031)	(63,800)	(59,237)	(63,078)	(70,070)
	19,706	4,528	(5,642)	3,049	3,530	7,724
Income/(loss) from operating investments, net	111	(4)	9	210	(16)	46
General and administrative expense	(4,567)	(3,909)	(4,817)	(4,157)	(4,187)	(5,168)
Research and Development expense, net	(3,269)	(3,219)	(2,476)	(2,249)	(2,852)	(3,377)
Gains on dispositions, net	75	691	202	277	6	2
Earnings/(loss) from operations	12,056	(1,913)	(12,724)	(2,870)	(3,519)	(773)
Other income, net	92	438	447	551	1,058	1,227
Interest and debt expenses	(544)	(784)	(2,199)	(2,714)	(2,561)	(2,459)
Earnings/(loss) before income taxes	11,604	(2,259)	(14,476)	(5,033)	(5,022)	(2,005)
Income tax (expense)/benefit	(1,144)	1,623	2,535	743	(31)	(237)
Net earnings/(loss)	10,460	(636)	(11,941)	(4,290)	(5,053)	(2,242)
Less: net loss attributable to noncontrolling interest	-	-	(68)	(88)	(118)	(20)
Net earnings/(loss) attributable to Boeing Shareholders	10,460	(636)	(11,873)	(4,202)	(4,935)	(2,222)
Basic earnings/(loss) per share	$18.05	($1.12)	($20.88)	($7.15)	($8.30)	($3.67)
Diluted earnigns/(loss) per share	$17.85	($1.12)	($20.88)	($7.15)	($8.30)	($3.67)

Source: Compiled from Boeing Annual Reports

Exhibit 24.2 – Boeing's Consolidated Statements of Financial Position 2018-2023

(Dollars in millions, except per share data) Years ended in December, 31	2018	2019	2020	2021	2022	2023
Assets						
Cash and cash equivalents	7,637	9,485	7,752	8,052	14,614	12,691
Short-term and other investments	927	545	17,838	8,192	2,606	3,274
Accounts receivable, net	3,879	3,266	1,955	2,641	2,517	2,649
Unbilled receivables, net	10,025	9,043	7,995	8,620	8,634	8,317
Current portion of financing receivables, net	460	162	101	117	154	99
Inventories	62,567	76,622	81,715	78,823	78,151	79,741
Other current assets, net	2,335	3,106	4,286	2,221	2,847	2,504
Total current assets	87,830	102,229	121,642	108,666	109,523	109,275
Financing receivables and operating lease equipment, net	2,418	2,136	1,936	1,695	1,450	860
Property, plant and equipment, net	12,645	12,502	11,820	10,918	10,550	10,661
Goodwill	7,840	8,060	8,081	8,068	8,057	8,093
Acquired intangible assets, net	3,429	3,338	2,843	2,562	2,311	2,094
Deferred income taxes	284	683	86	77	63	59
Investments	1,087	1,092	1,016	975	983	1,035
Other assets, net of accumulated amortizatoin of $1,046 and $949	1,826	3,585	4,712	5,591	4,163	4,935
Total assets	117,359	133,625	152,136	138,552	137,100	137,012
Liabilities and Equity						
Accounts payable	12,916	15,553	12,928	9,261	10,200	11,964
Accrued liabilities	14,808	22,868	22,171	18,455	21,581	22,331
Advances and progress bilings	50,676	51,551	50,488	52,980	53,081	56,328
Short-term debt and current portion of long-term debt	3,190	7,340	1,693	1,296	5,190	5,204
Total current liabilities	81,590	97,312	87,280	81,992	90,052	95,827
Deferred income taxes	1,736	413	1,010	218	230	229
Accrued retiree health care	4,584	4,540	4,137	3,528	2,503	2,233
Accrued pension plan liability, net	15,323	16,276	14,408	9,104	6,141	6,516
Other long-term liabilites	3,059	3,422	1,486	1,750	2,211	2,332
Long-term debt	10,657	19,962	61,890	56,806	51,811	47,103
Total Liabilities	116,949	141,925	170,211	153,398	152,948	154,240
Shareholder's equity						
Common stock, par value $5.00 – 1,200,000,000 shares	5,061	5,061	5,061	5,061	5,061	5,061
Additional paid-in capital	6,768	6,745	7,787	9,052	9,947	10,309
Treasury stock, at cost	(52,348)	(54,914)	(52,641)	(51,861)	(50,814)	(49,549)
Retained earnings	55,941	50,644	38,610	34,408	29,473	27,251
Accumulative other comprehensive loss	(15,083)	(16,153)	(17,133)	(11,659)	(9,550)	(10,305)
Total shareholder's equity/(deficit)	339	(8,617)	(18,316)	(14,999)	(15,883)	(17,233)
Noncontroling interests	71	317	241	153	35	5
Total equity	410	(8,300)	(18,075)	(14,846)	(15,848)	(17,228)
Total liabilities and equity	117,359	133,625	152,136	138,552	137,100	137,012

Source: Compiled from Boeing Annual Reports

Exhibit 24.3 – Boeing's Consolidated Statement of Cash Flows 2018-2023

(Dollars in millions, except per share data) Years ended in December, 31	2018	2019	2020	2021	2022	2023
Cash flows - operating activities						
Net earnings/(loss)	10,460	(636)	(11,941)	(4,290)	(5,053)	(2,242)
Adjustments to reconcile net loss to net cash provided/(used) by operating activities						
Non-cash items -						
Share-based plans expense	202	212	250	833	725	690
Treasury shares issued for 401(k) contribution	-		195	1,233	1,215	1,515
Depreciation and amortization	2,114	2,271	2,246	2,144	1,979	1,861
Investment/asset impariment charges, net	93	443	410	98	112	46
Customer financing valuation adjustments	(3)	250	12	-	-	-
Gains on dispositions, net	(75)	(691)	(202)	(277)	(6)	(2)
777X reach-forward loss	-	-	6,493	-	-	-
787 reach-forward loss	-	-	-	3,460	-	-
Other charges and credits, net	247	334	1,462	360	401	3
Changes in assets and liabilities -						
Accounts receibale	(795)	603	909	(713)	142	(128)
Unbilied receivables	(1,826)	982	919	(586)	6	321
Advances and progress billing	2,636	737	(1,060)	2,505	108	3,365
Inventories	568	(12,391)	(11,002)	(1,127)	420	(1,681)
Other current assets	98	(682)	372	345	(591)	389
Accounts payable	2	1,600	(5,363)	(3,783)	838	1,672
Accrued liabilities	1,117	7,781	1,074	(3,687)	2,956	779
Income taxes receivable, payable and deferred	(180)	(2,476)	(2,576)	733	1,347	44
Other long-term liabilities	87	(621)	(222)	(206)	(158)	(313)
Pension and other postretirement plans	(153)	(777)	(794)	(972)	(1,378)	(1,049)
Financing receivables and operating lease equipment, net	120	419	173	210	142	571
Other	610	196	235	304	307	119
Net Cash provided/(used) by operating activities	15,322	(2,446)	(18,410)	(3,416)	3,512	5,960
Cash flows - investing activities						
Payments to acquire property, plant and equipment	(1,722)	(1,834)	(1,303)	(980)	(1,222)	(1,527)
Proceeds from disposals of property, plant and equipment	120	334	296	529	35	27
Acuisitions, net of cash acquired	(3,230)	(455)	-	(6)	-	(70)
Proceeds from dispositions		464	-	-	-	-
Contributions to investments	(2,607)	(1,658)	(37,616)	(35,713)	(5,051)	(16,448)
Proceeds from investments	2,898	1,759	20,275	45,489	10,619	15,739
Purchase of distribution rights	(69)	(127)	-	-	-	-
Other	(11)	(13)	(18)	5	(11)	(158)
Net Cash used/(provided) by investing activities	(4,621)	(1,530)	(18,366)	9,324	4,370	(2,437)
Cash flows - financing activities						
New borrowings	8,548	25,389	47,248	9,795	34	75
Debt repayments	(7,183)	(12,171)	(10,998)	(15,371)	(1,310)	(5,216)
Contributions from noncontrolling interests	35	7				
Stock options exercised	81	58	36	42	50	45
Employee taxes on certain share-base payment arrangements	(257)	(248)	(173)	(66)	(40)	(408)
Common shares repurchased	(9,000)	(2,651)	-	-	-	-
Dividends paid	(3,946)	(4,630)	(1,158)	-	-	-
Other	-	(15)	-	-	-	17
Net Cash used/(provided) by financing activities	(11,722)	5,739	34,955	(5,600)	(1,266)	(5,487)
Effect of exchange rate changes on cash and cash equivalents	(53)	(5)	85	(39)	(73)	30
Net (decrease)/increase in cash & cash equivalents, including restricted	(1,074)	1,758	(1,736)	269	6,543	(1,934)
Cash & cash equivalents, including restricted, at the beginning of year	8,887	7,813	9,571	7,835	8,104	14,647
Cash & cash equivalents, including restricted, at the end of year	7,813	9,571	7,835	8,104	14,647	12,713
Less restricted cash & cash equivalents, included in investments	176	86	83	52	33	22
Cash and cash equivalents at end of year	7,637	9,485	7,752	8,052	14,614	12,691

Source: Compiled from Boeing Annual Reports

Exhibit 25 – Boeing's total debt from 2013 to Q3 2024 (in billions of dollars)

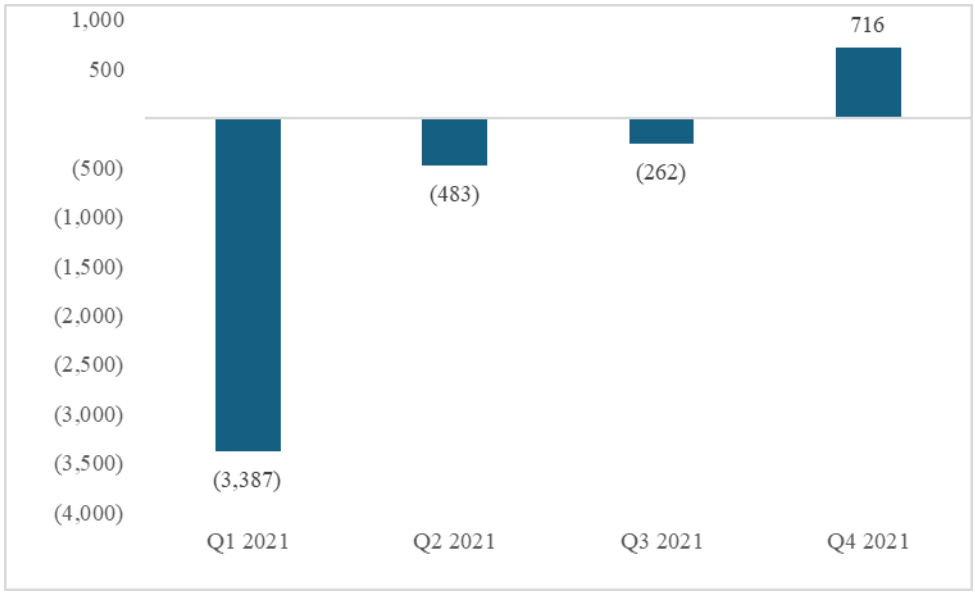
Source: Compiled from Boeing Annual Reports

Exhibit 26 – Boeing's order cancelations from 2018 to 2024

	2018	2019	2020	2021	2022	2023	2024	Total
Order Cancelations								
737	162	120	641	395	136	104	-	1,558
747	-	-	2	3	-	-	-	5
777	8	41	3	-	-	26	-	78
787	27	31	9	32	25	12	-	136
Total Cancelations	197	192	655	430	161	142	-	1,777

Source: Boeing

Exhibit 27 – Boeing's 2021 quarterly Operating Cash Flows (in millions of dollars)



Source: Boeing

Exhibit 28 – Boeing's 2024 and 2023 quarterly financial summary

	2023				2024		
(Dollars in millions except per share data)	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Total Revenues	17,921	19,751	18,104	22,018	16,569	16,866	17,840
(Loss)/Earnings from operations	(149)	(99)	(808)	283	(86)	(1,090)	(5,761)
Operating margin	(0.8%)	(0.5%)	4.5%	1.3%	(0.5%)	6.5%	(32.3%)
Net loss	(425)	(149)	(1,638)	(30)	(355)	(1,439)	(6,714)
Basic loss per share	($0.69)	($0.25)	($2.70)	($0.04)	($0.56)	($2.33)	($9.97)
Cash Flows							
Cashflows from Operating Activities	(318)	2,875	22	3,381	(3,362)	(3,923)	(1,345)
Additions to Property, Plant and Equipment	(468)	(296)	(332)	(431)	(567)	(404)	(611)
Free Cash Flows	(786)	2,579	(310)	2,950	(3,929)	(4,327)	(1,956)

Source: Compiled from Boeing Quarterly Reports 2024

Exhibit 29 – Boeing's Moody's Senior Unsecured Debt Rating Evolution

Rating	Watch	Effective
Aa3		28/02/1986
A1		31/03/1993
Aa3		17/07/1997
A1		21/12/1998
A1	*-	21/09/2001
A2		17/12/2001
A2	*-	15/07/2003
A3		17/12/2003
A3	*+	25/01/2006
A2		15/03/2006
A3		18/12/2019
A3	*-	13/01/2020
Baa1	*-	30/01/2020
Baa2		10/04/2020
Baa2	*-	26/03/2024
Baa3		24/04/2024
Baa3	*-	13/09/2024

Source: Bloomberg

Exhibit 30 – Details of the Mandatory Convertible Preferred Stock issued in October 2024

Security:	6.00% Series A Mandatory Convertible Preferred Stock
Issue Date:	October 31, 2024
Issue Amount:	$5 billion
Securities:	Depositary shares each representing 1/20th interest
Offering Price:	$50 per depositary share
Dividends:	6.00% on the liquidation preference of $1,000, payable quarterly
Mandatory Conversion Date:	October 15, 2027 (3 years)
Conversion Rate:	Stock Price > $171.58, then the rate = 0.2914 shares $142.98 ≤ Stock Price ≤ $171.58, then the rate is determined by dividing $50.00 by the stock price Stock Price < $142.98, then the rate = 0.3497 shares

Source: Boeing

Exhibit 31 – Capital Markets Data in 2024

	2024
Boeing's Stock Price at 28/10/2024[1]	$150.59
Boeing's Beta[1]	1.10
Estimated Market Risk Premium[2]	5.94%
US 10y Treasury Bond Yield[3]	4.19%
Boeing's Implied Volatility[1]	37.13%

Source: 1- Bloomberg; 2 - Case Writers estimation based on "Free Cash Flow Valuation." by Damodaran, Aswath, New York University, Stern School of Business and Federal Reserve Bank of St.Louis, 3 - U.S. Federal Reserve Bank of St. Louis

Appendix Teaching Note

Exhibit TN 1 – Return on Net Assets (RONA) Formula

$$RONA = \frac{NOPLAT}{FIXED\ ASSETS + NET\ WORKING\ CAPITAL\ RECQUIREMENTS}$$

Source: Applied Corporate Finance Course Nova SBE – Prof. Paulo Pinho

Exhibit TN 2 – Return on Net Assets (RONA) Calculations

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total Current Operating Assets	11,637	9,992	11,722	12,715	11,191	9,853	11,161	13,186	13,390	15,303	21,214	22,718	29,739	38,033	43,359	49,458	54,485	56,182	52,459	55,169	76,931
Total Current Operating Liabilities	11,984	12,484	15,496	18,258	16,862	17,027	21,253	26,443	27,650	30,523	30,172	31,994	33,840	36,141	39,061	43,656	47,304	49,178	49,750	54,934	78,400
Net Working Capital Requirements	(347)	(2,492)	(3,774)	(5,543)	(5,671)	(7,174)	(10,092)	(13,257)	(14,260)	(15,220)	(8,958)	(9,276)	(4,101)	1,892	4,298	5,802	7,181	7,004	2,709	235	(1,469)
Total Fixed Assets	20,297	20,435	26,164	32,133	35,487	35,777	38,863	38,090	28,811	31,706	27,815	26,778	27,993	30,176	31,587	27,589	25,154	26,174	27,509	27,172	29,529
Net Assets	19,950	17,943	22,390	26,590	29,816	28,603	28,771	24,833	14,551	16,486	18,857	17,502	23,892	32,068	35,885	33,391	32,335	33,178	30,218	27,407	28,060
Total Net Treasury	3,300	4,548	1,349	1,822	2,716	5,984	4,357	7,037	7,542	10,962	4,149	11,668	9,278	6,644	8,029	7,786	12,353	10,818	9,645	8,657	5,374
Total Long Term Liabilities	10,934	11,029	12,719	17,587	24,836	26,448	21,842	20,811	17,354	17,254	24,148	26,945	30,308	35,104	37,947	26,180	35,898	37,599	38,986	35,652	35,359
Shareholders' Equity	12,316	11,462	11,020	10,825	7,696	8,139	11,286	11,059	4,739	9,004	(1,294)	2,225	2,862	3,608	5,967	14,997	8,790	6,397	877	412	410
Total Long term Funds	23,250	22,491	23,739	28,412	32,532	34,587	33,128	31,870	22,093	27,448	23,006	29,170	33,170	38,712	43,914	41,177	44,688	43,996	39,863	36,064	35,769
Capital Employed	19,950	17,943	22,390	26,590	29,816	28,603	28,771	24,833	14,551	16,486	18,857	17,502	23,892	32,068	35,885	33,391	32,335	33,178	30,218	27,407	30,395
Working Capital	2,953	2,056	(2,425)	(3,721)	(2,955)	(1,190)	(5,735)	(6,220)	(6,718)	(4,258)	(4,809)	2,392	5,177	8,536	12,327	13,588	19,534	17,822	12,354	8,892	6,240
Effective Tax Rate	19.83%	30.54%	29.04%	20.71%	27.08%	(30.55)%	7.14%	9.12%	30.93%	33.67%	33.57%	22.88%	26.54%	25.63%	33.96%	26.41%	23.69%	27.66%	12.09%	18.41%	9.86%
NOPLAT	1,256	2,202	2,170	2,843	2,525	586	1,864	2,556	2,082	3,867	2,624	1,616	3,652	4,346	4,154	4,829	5,702	5,384	5,129	8,385	10,805
RONA	6.30%	12.27%	9.69%	10.69%	8.47%	2.05%	6.48%	10.29%	14.31%	23.46%	13.92%	9.24%	15.28%	13.55%	11.58%	14.46%	17.64%	16.23%	16.97%	30.60%	38.51%

Source: Computations from Case Writer

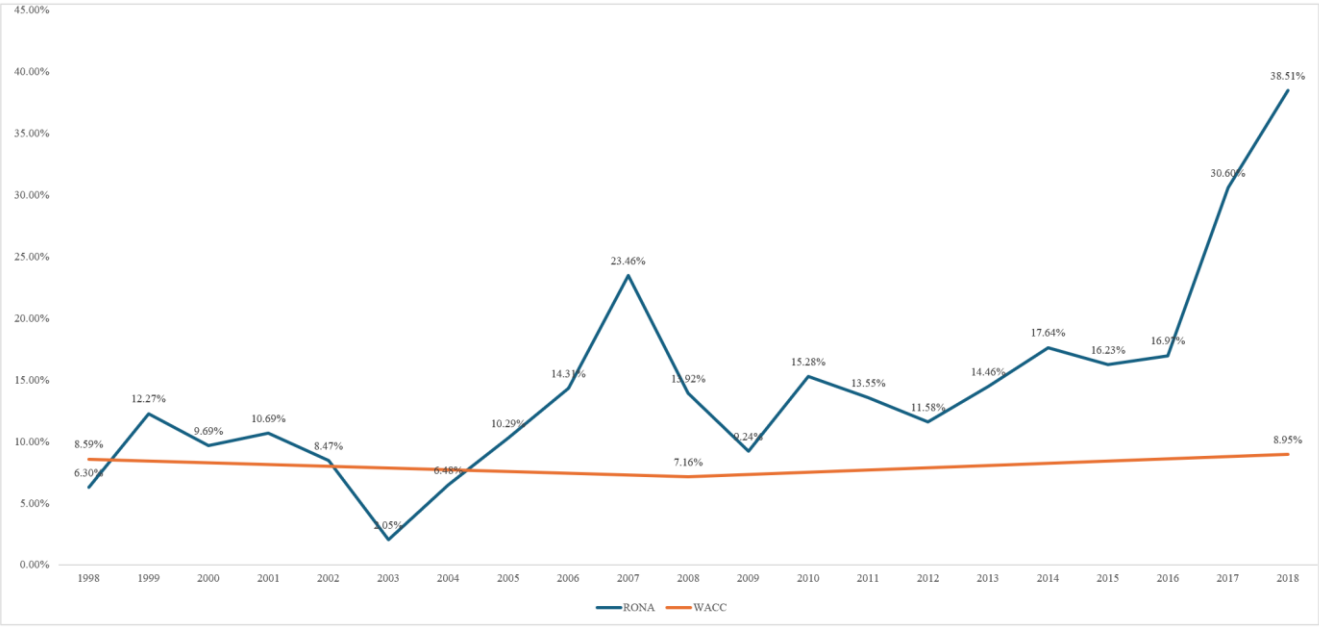
Exhibit TN 3 – WACC Calculations

	1998	2008	2018
Cost of debt after tax	4.31%	2.07%	3.52%
US 10y Treasury Bond Yield	4.65%	2.21%	2.91%
Credit Rating	AA	A+	A
Credit Spread	0.7%	0.9%	1.0%
Pre-Tax Rate	5.37%	3.11%	3.90%
Marginal Tax rate	19.83%	33.57%	9.86%
Cost of equity	9.67%	8.38%	9.33%
US 10y Treasury Bond Yield	4.65%	2.21%	2.91%
Levered Beta	0.86	1.06	1.10
Estimated Market risk premium	5.82%	5.82%	5.82%
Market Value of Equity (E)	30,599	29,788	186,792
Market Value of Debt (D)	7,723	7,122	12,866
D+E	38,322	36,910	199,658
WACC	8.59%	7.16%	8.95%

Note: *Utilized the 2018 estimated market risk premium, as a base on the 1998 and 2008 estimates, as it aligns with commonly referenced historical figures*

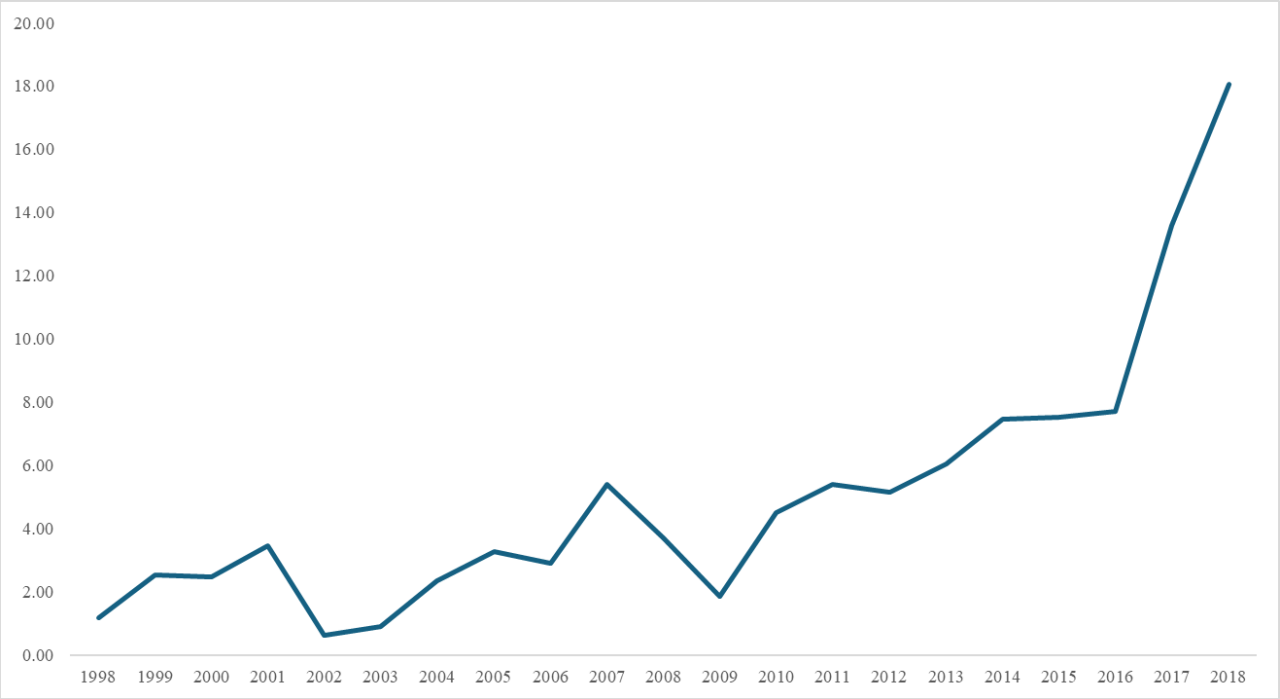
Source: Computations from Case Writer

Exhibit TN 4 – RONA Vs WACC



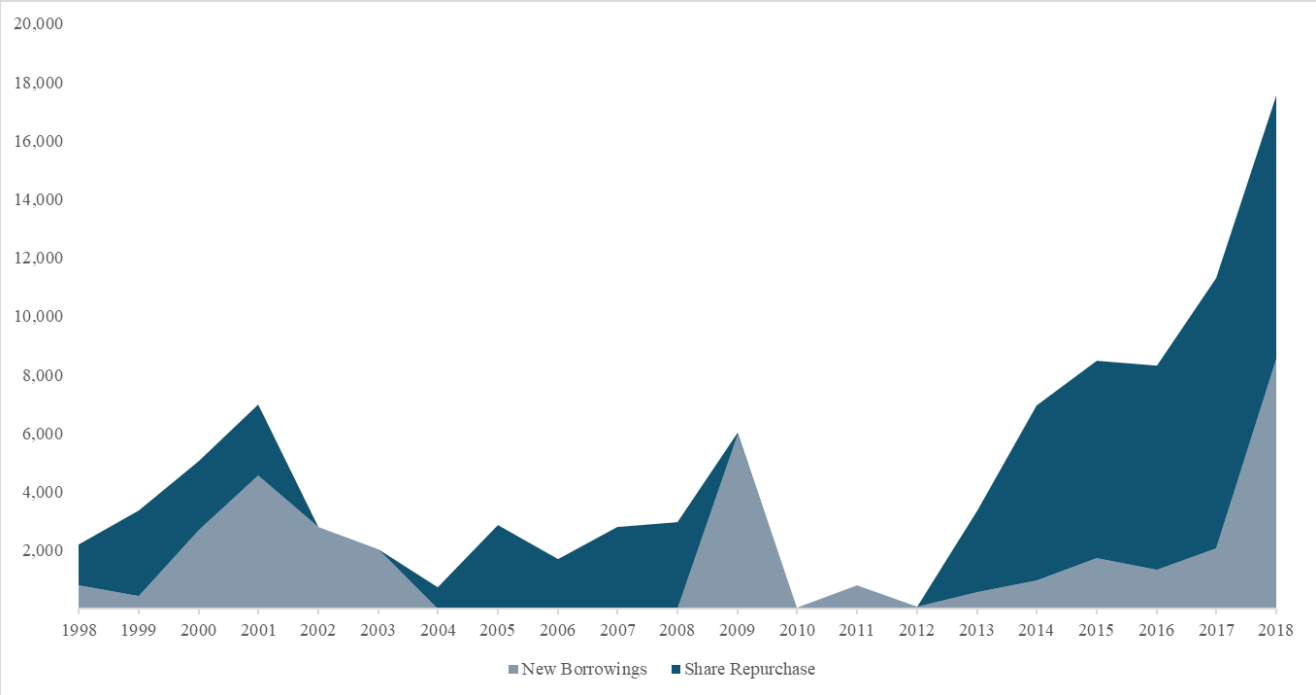
Source: Computations from Case Writer

Exhibit TN 5 – EPS evolution from 1998 to 2018



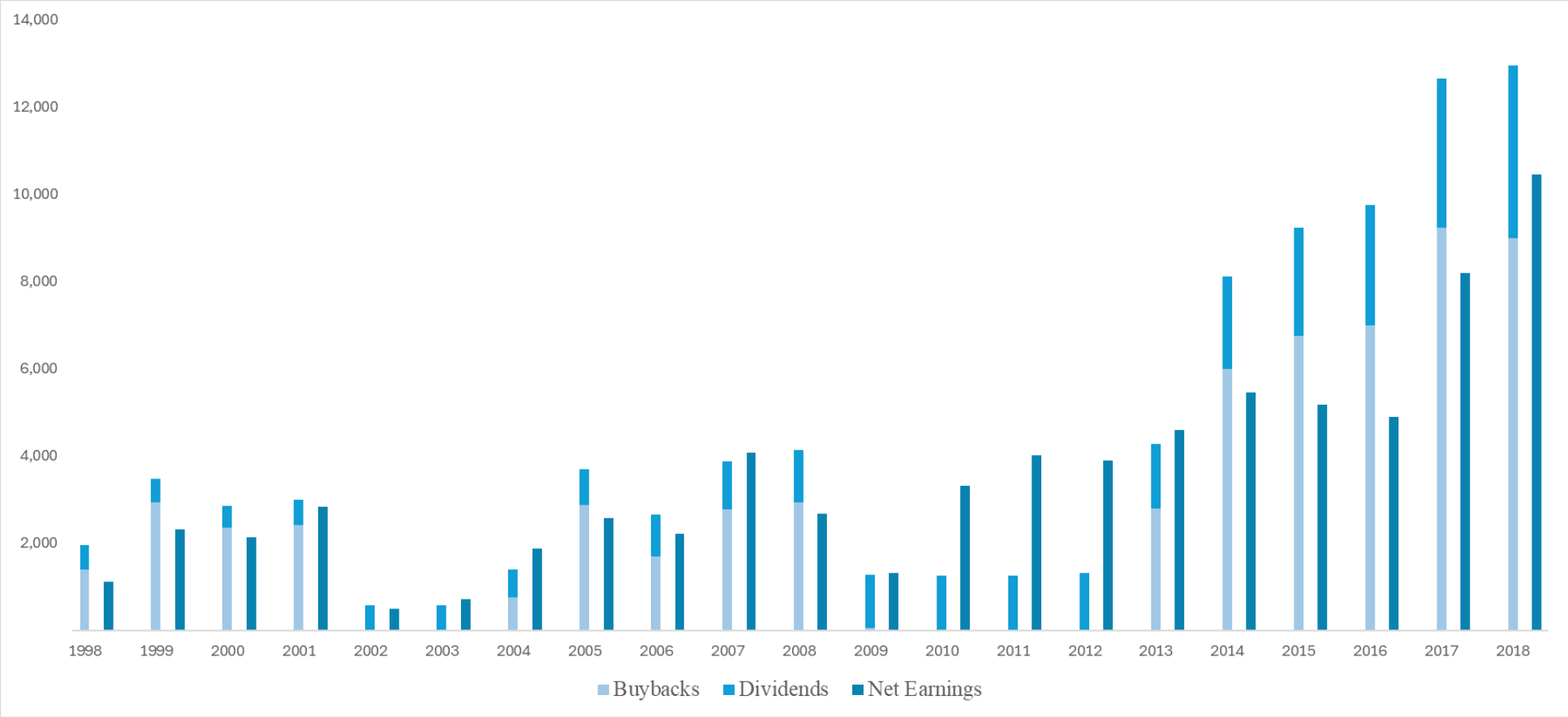
Source: Compiled from Boeing Annual Reports

Exhibit TN 6 – Shares Repurchased vs. New Borrowings from 1998 to 2018



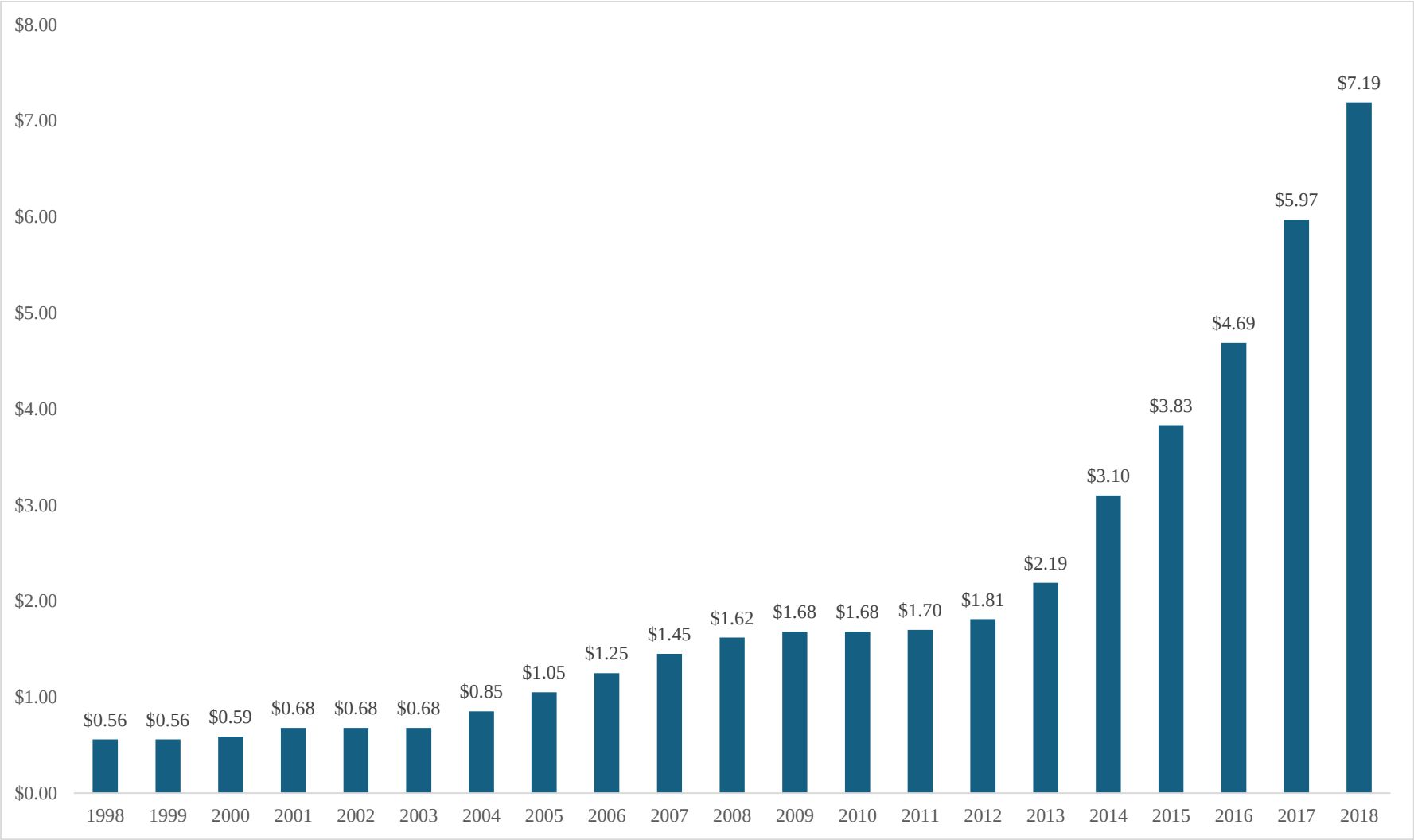
Source: Compiled from Boeing Annual Reports

Exhibit TN 7 – Total Money Spent with Shareholders vs. Net Earnings



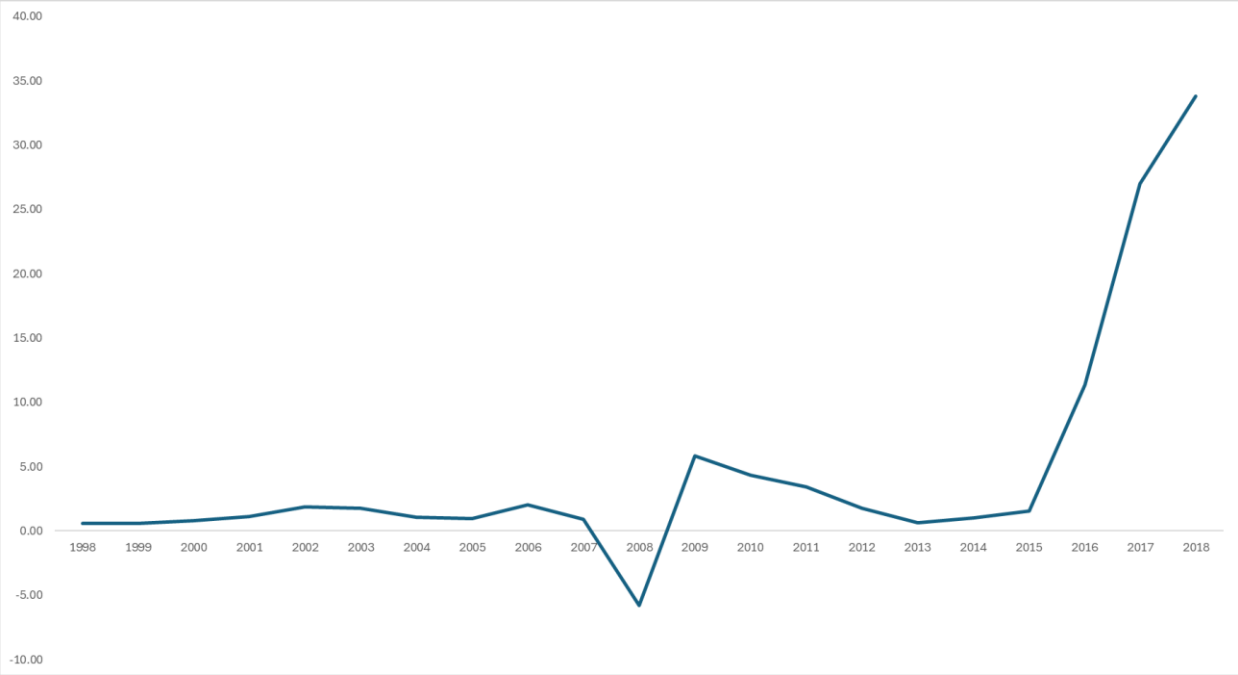
Source: Compiled from Boeing Annual Report

Exhibit TN 8 – Dividend per share evolution from 1998 to 2018



Source: Compiled from Boeing Annual Report

Exhibit TN 9 – Accounting Debt-to-Equity Evolution from 1998 to 2018



Source: Compiled from Boeing Annual Report

Exhibit TN 10 –Cost of Equity

Equity Beta	1.10
Estimated Market Risk Premium	5.94%
US 10y Treasury Bond Yield	4.19%
Cost of Equity	**10.75%**

Source: Computations from case writer

Exhibit TN 11 – Calculations for the Present Value of Dividends

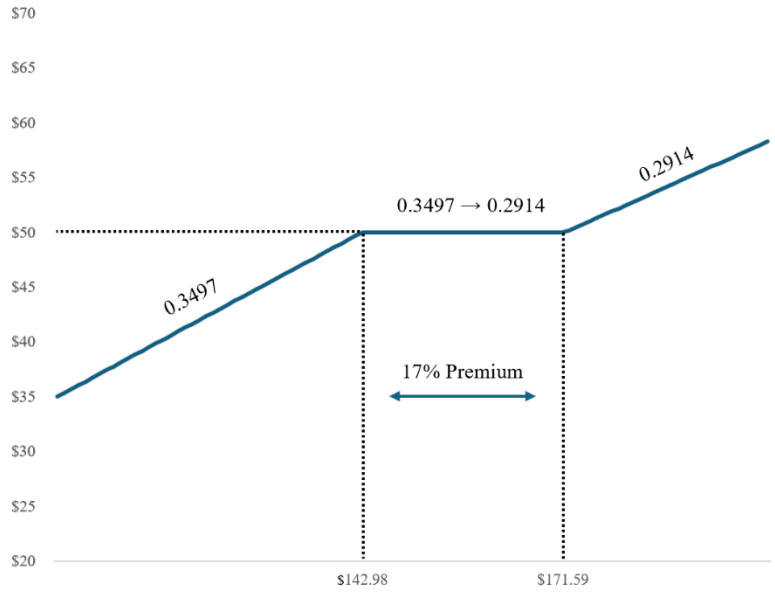
Dividend Rate (annually)	6%
Price	50
Annual Dividend	3
Quarterly Dividend	0.75
Cost of Equity	10.75%

Periods	1	2	3	4	5	6	7	8	9	10	11	12
	Jan-25	Apr-25	Jul-25	Oct-25	Jan-26	Apr-26	Jul-26	Oct-26	Jan-27	Apr-27	Jul-27	Oct-27
Quarterly Dividend	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
	0.730	0.711	0.693	0.675	0.657	0.640	0.623	0.607	0.591	0.575	0.560	0.546

PV of Dividends	**$ 7.61**

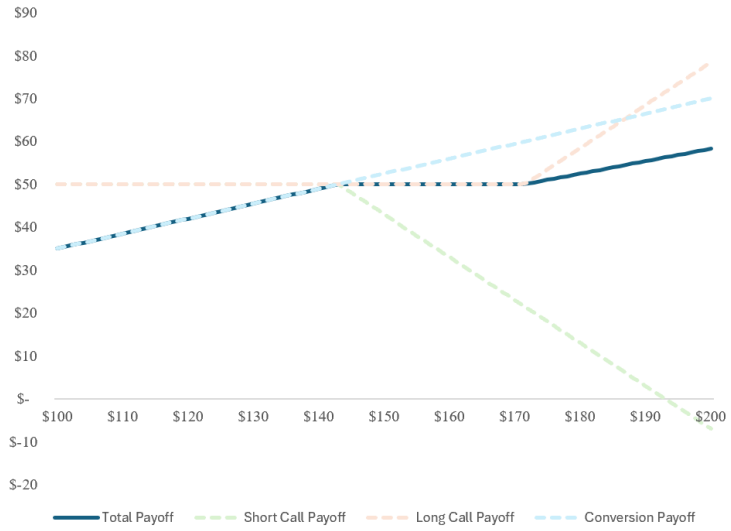
Source: Boeing, Computations from case writer

Exhibit TN 12 – Payoff Diagram for the MCPS



Source: Computations from case writer

Exhibit TN 13 – Payoff Diagram for the MCPS with call components highlighted



Source: Computations from case writer

Exhibit TN 14 – Calculations for the Mandatory Option Value

Stock Price at Issue	150.59	
MCPS Price	50.00	
Convertion Rates	0.3497	0.2914
Spot Price	150.59	150.59
Exercise Price	142.98	171.59
Volatility	37.13%	37.13%
Maturity	3.00	3.00
US 10y Treasury Bond Yield	4.19%	4.19%
d1	0.60	0.31
d2	-0.05	-0.33
N(d1)	0.72	0.62
N(d2)	0.48	0.37
Call Value	$ 48.41	$ 37.71

Mandatory Convertible Value	**$ 46.72**

Source: Computations from case writer

Exhibit TN 15 – Calculations for the total value of the Mandatory Convertible Preferred Stock

PV of Dividends	$ 7.61
Mandatory Convertible Value	$ 46.72

Total Value	**$ 54.33**

Source: Computations from case writer

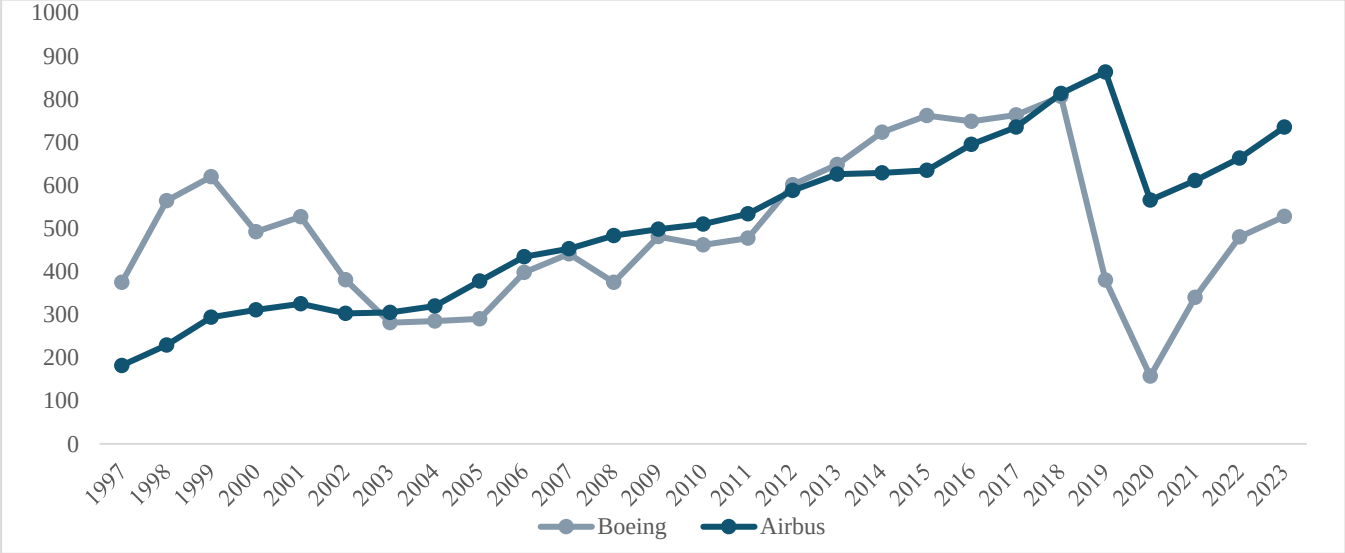
Appendix Industry Note

Exhibit IN 1 - Aircraft deliveries by manufacturer 1999-2021

Years	Boeing	Airbus	Bombardier	Embraer	Others	Total
1997	375	182	60	33	27	677
1998	564	229	75	60	22	950
1999	620	294	82	97	38	1,131
2000	492	311	99	157	48	1,107
2001	527	325	147	154	39	1,192
2002	381	303	185	120	8	997
2003	281	305	222	88	11	907
2004	285	320	175	135	8	923
2005	290	378	99	121	4	892
2006	398	434	79	103	1	1,015
2007	441	453	60	133	0	1,087
2008	375	483	61	162	0	1,081
2009	481	498	59	122	0	1,160
2010	462	510	34	97	0	1,103
2011	477	534	47	108	5	1,171
2012	601	588	14	106	8	1,317
2013	648	626	26	90	15	1,405
2014	723	629	59	92	28	1,531
2015	762	635	44	101	22	1,564
2016	748	695	46	108	21	1,618
2017	763	735	26	101	26	1,651
2018	806	813	20	90	35	1,764
2019	380	863	26	89	19	1,377
2020	157	566	16	43	39	821
2021	340	611	3	41	41	1,036

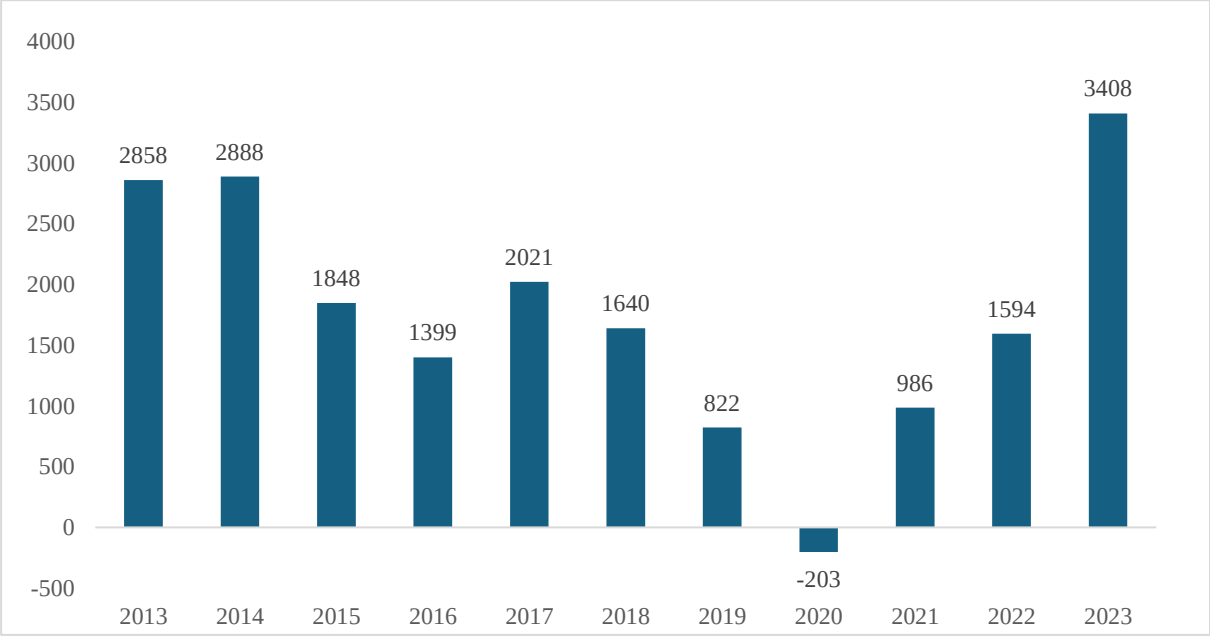
Source: Statista

Exhibit IN 2 – Boeing Vs. Airbus Orders Evolution



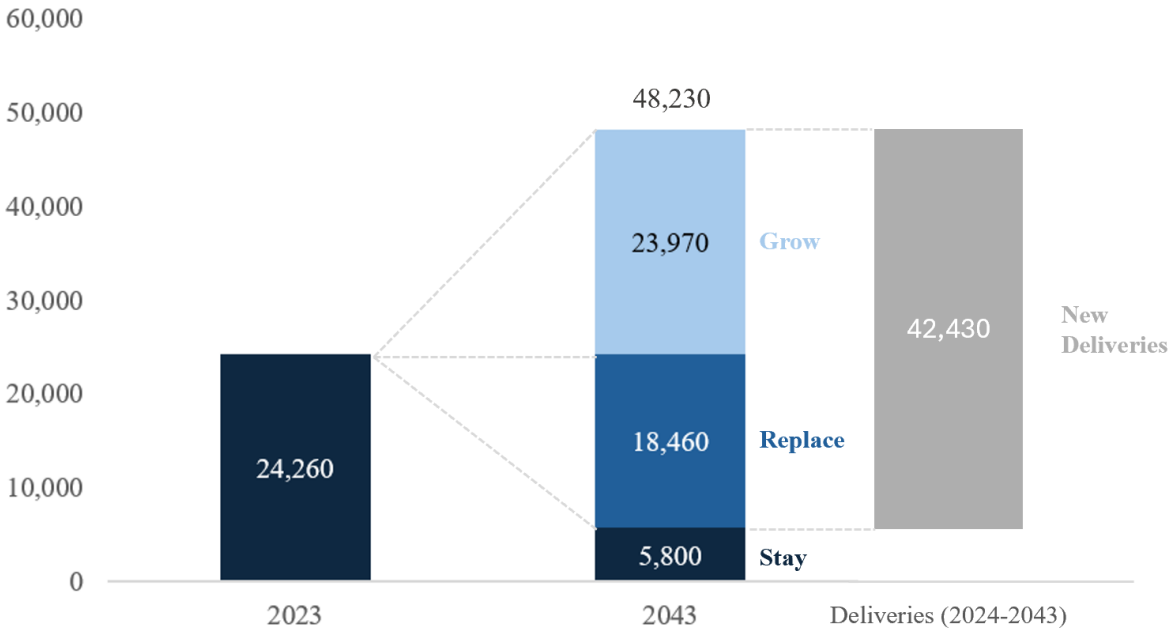
Source: Collected from companies Official Websites

Exhibit IN 3 – Total Market Orders Evolutions



Source: Collected from companies Official Websites

Exhibit IN 4 – Demand for new aircraft until 2043



Source: Airbus

Exhibit IN 5 – Predicted 2034 fleet by World Region

2034 Fleet	Africa	Middle East	Asia-Pacific	China	India	Latin America	North America	Eastern Europe	Russia	Western Europe
Narrowbody	625	1,056	2,468	4,847	1,253	1,508	6,186	904	184	3,945
Widebody	254	1,099	1,659	725	137	218	1,831	95	41	1,343
Regional Jet	231	53	264	645	16	250	1,276	121	322	290
Turboprop	319	19	762	212	139	158	557	105	1	295
Total	**1,429**	**2,227**	**5,153**	**6,429**	**1,545**	**2,134**	**9,850**	**1,225**	**548**	**5,873**

Source: Oliver Wyman