

Northrop Grumman (NYSE:NOC)

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Northrop Grumman is Well Positioned to Benefit from Short and Long Run Defense Trends

Key Facts

- Northrop Grumman is one of the world's largest weapon manufacturers and military technology providers
- Dim overall industry outlook past mid decade, NOC is well positioned to benefit from evolving DOD priorities
- Attractive industry given high switching costs and regulatory moats resulting in low internal competition
- **10 Year Historicals:**
 - ROIC: 21.1%
 - EBITDA Margin: 15.2%

Valuation

- Price target: \$365.45
- Implied Upside: 13.8%
- Valuation Methodology: Weighted average of base, bull, and base discounted cash flow valuation
- LTM EV/EBITDA: 12.2x; FCF Yield LTM: 5.4%

Key Drivers

Modernization of Legacy Systems

Renewed Focus on Space

Increasing Geopolitical Tension

Investment Rationale

- Thesis 1: Global Positioning
 - NOC is less exposed to more cyclical foreign defense spend relative to peers, limiting downside risk. Product mix has resulted in growing foreign revenues while peers' revenues have fallen
- Thesis 2: Strategic Alignment with DOD Priorities
 - Highly aligned with key US spending priorities of modernizing defense arsenal. The only company able to execute the GBSD (ground based strategic deterrent) project, a potential \$100B opportunity
- Thesis 3: Strong Backlog and Opportunities for Value Creation
 - Increasing and stable backlog, coupled with industry leading book to bill provides opportunities to return value to shareholders

*We recommend a **BUY** rating for NOC with a price target of **\$365.45** indicating a **13.8% upside***

Business Model & Company Overview

Northrop Grumman is a global security company. NOC provides systems, products and solutions in aerospace, electronics, information systems, and technical services

Company Management



Kathy J. Warden
Chair, CEO and President

Warden was elected chairman in 2019 and has served as CEO since January of 2019.



Brig Gen Richard Stapp
Chief Technology Officer

Stapp assumed his role in November of 2020. He has more than 30 years of experience at the DoD.



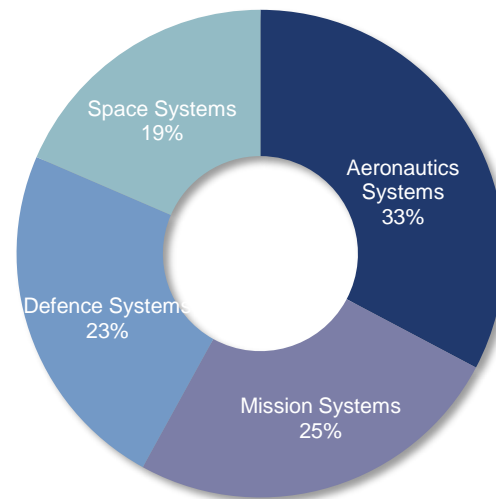
Dave Keffer
Corporate Vice President and Chief Financial Officer

Keffer was appointed CFO in February 2020. Prior to joining Northrop Grumman, Keffer was a partner at Blue Delta Capital Partners.

Business Model Overview

- Northrop Grumman is an global aerospace and defence technology company operating in 4 segments:
 - Aeronautics Systems — Aircraft systems used for strike and intelligence
 - Mission Systems — Radar, communications, and network systems cyber solutions
 - Defence Systems — Weapons systems, mission system sustainment, and modernization
 - Space Systems — Satellites, payloads, and missile defence systems
- **Strategy:** After its acquisition of Orbital ATK Northrop expanded its offerings to include ammunition, gun systems, and missile propulsion systems, satellites, and space launch vehicles
- **Geography:** 85% of revenues are from the U.S and 15% of revenues are International
- **Key Differentiation:**
 - Northrop's leadership role in the U.S. nuclear-deterrence modernization effort, with its B-21 and GBSD programs, F-35 partnership, and advanced unmanned- and space-systems capabilities

Revenue Segments % of Net Sales



Key Financial Information

5-Year Revenue CAGR	12.4%
EBITDA Margin	14.6%
EV / EBITDA	11.5x
Price / Earnings	13.4x
Net Debt / EBITDA	2.1x
Avg. Dividend Yield (2020 Y)	1.80%
Price as of April 1, 2021	\$322.24

Operating Segment Breakdown

Aeronautics and Space Fueling Growth

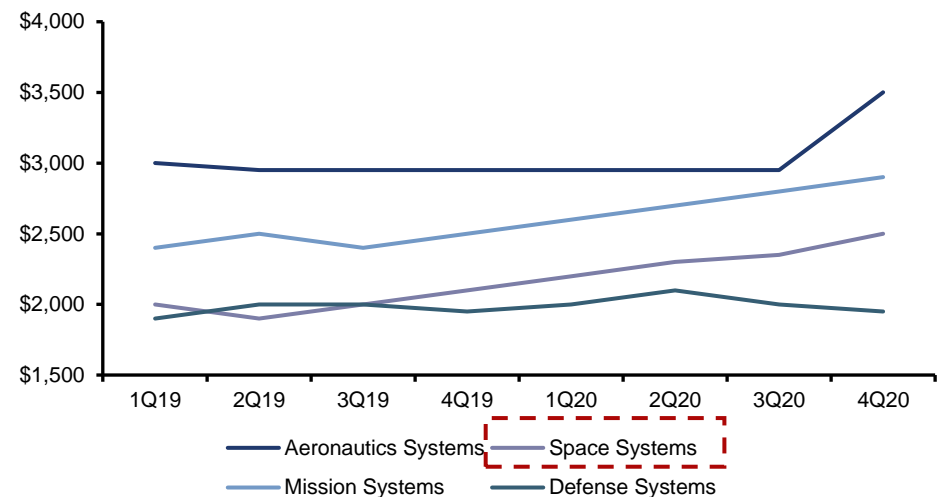
Historical Strength

- High profit margin (15% EBITDA Margin vs. 12% average) relative to peers due to a focus on high-value systems integration and electronics (focus on nuclear arsenal)
- Northrop's Space business is poised to be the largest generator of near-term revenue growth, with the new GBSD program expected to add almost \$1 billion in 2021 and potentially \$85B+ over the lifetime of the program.
- Classified work and new radar programs also bode well for the Mission Systems division
- Continued F-35 work is a positive for the Aeronautics segment
- Less international exposure has insulated Northrop from deflated military spending of NATO members

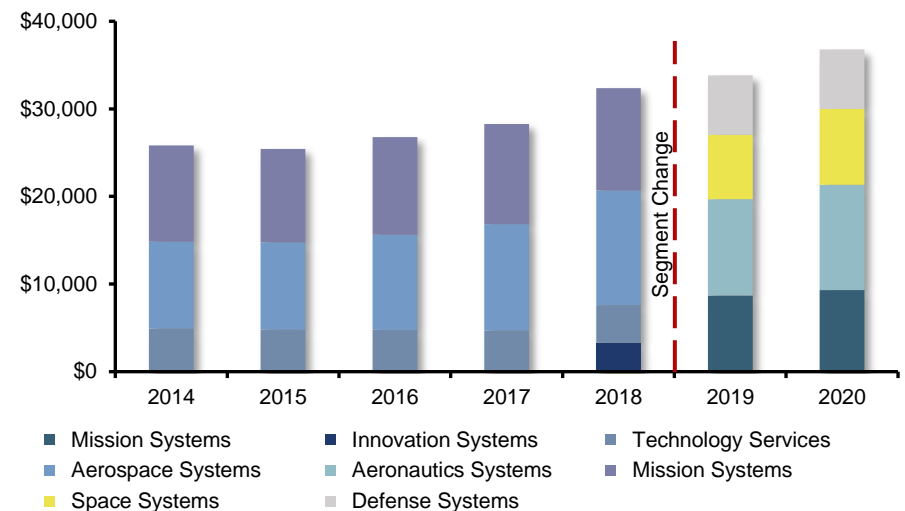
Segment Outlook

- Northrop's securing of the GBSD program, which the Defence Department pegged at about \$85B, is a franchise opportunity to replace 1970s-era missile defence systems
 - R&D spending on the GBSD program is expected to reach \$3B by 2023, based on Pentagon budget documents
- Northrop and its partners suggest it's on-plan to deliver 170 F-35s annually in coming years as it gets past 2020 pandemic-related supply-chain disruption
 - The program will potentially generate over \$2B for Northrop
- The Pentagon budget indicates annual B-21 funding of about \$3 billion
 - The program will make up a high-single-digit share of Northrop's revenue in 2021

Revenue from Key Programs (USD, M)



Historical Revenue by Segment (USD, M)



Share Performance

2-Year Share Price Performance and Analysis

NOC's stock price has appreciated by ~22% from 03/19 to 03/21 — withstanding macro factors — and should show future appreciation per fundamentals

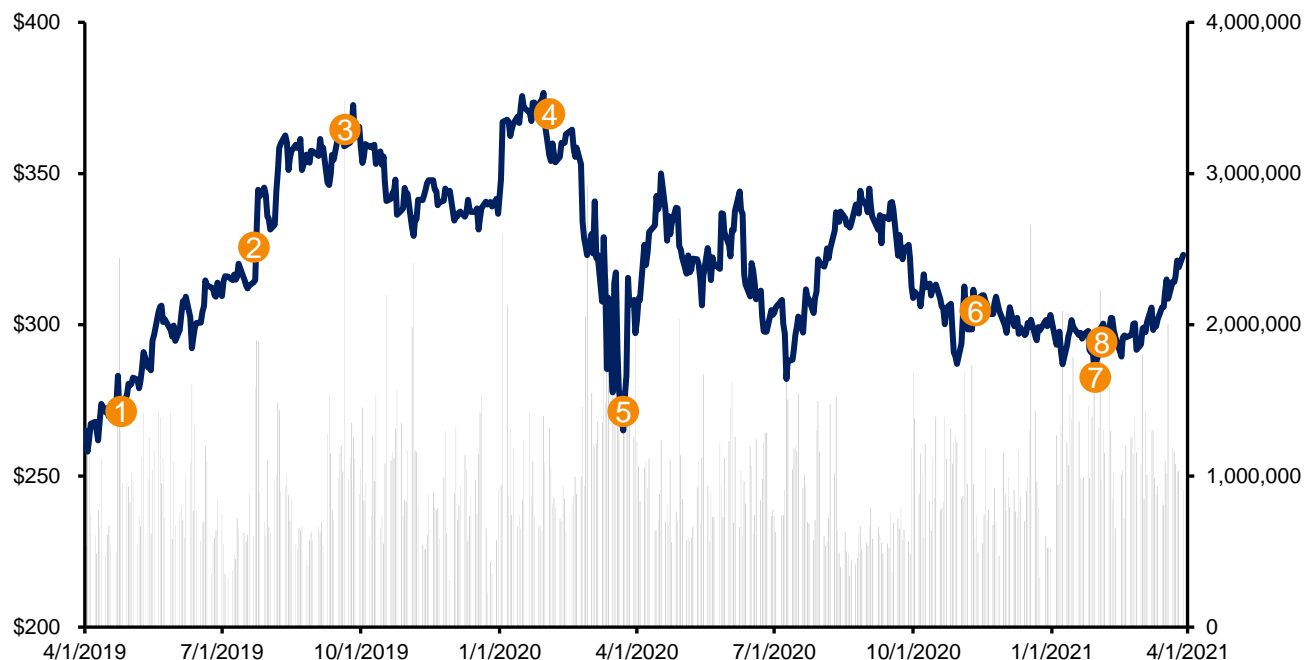
Commentary

- NOC has consistently beat historical earnings estimates barring substantial negative macro factors
- NOC is poised to continue strong growth based on backlog growth, and current repurchases
- NOC and the broader defense sector are underperforming the overall market in 2021

Trading Statistics

Time Period	Trading Summary	
	Low	High
Last 30 Days	\$295.87	\$326.15
Last 60 Days	\$290.88	\$323.64
LTM	\$282.08	\$349.99

2 Year Share Price Performance



- April 24, 2019:**
 - Q1 Earnings beat – EPS \$5.56 vs \$4.58
 - Q1 Sales grew 21%, reflecting addition of Innovation Systems
- July 25, 2019:**
 - Q2 Earnings beat – EPS \$5.06 vs \$4.67
 - Innovation Systems profit margin >11% exceed expectations
- September 20, 2019:**
 - Orbital Sciences Corp (NOC) awarded \$1.1bn contract by US Missile Defence Agency
 - Operating Segments and leadership change
- January 30, 2020:**
 - Q4 Earnings beat – EPS \$9.21 vs \$4.77
 - +21% Backlog growth, and ~5% FCF growth
- March 23, 2020:**
 - General market correction, COVID-19 low
- November 12, 2020:**
 - Democratic Party said to win US Federal Election, President Joe Biden to assume office
- January 28, 2021:**
 - Q4 Earnings beat – EPS \$6.60 vs \$5.77
 - Total backlog increased by 25% to \$81bn
- February 2, 2021:**
 - NOC completes sale of IT Services Business to Veritas Capital for \$3.4bn
 - NOC enters \$2bn accelerated share buyback agreement to offset dilution
 - Completes \$1.5bn debt redemption

Industry Overview

Industry Dynamics & Major Players

Key Background Information

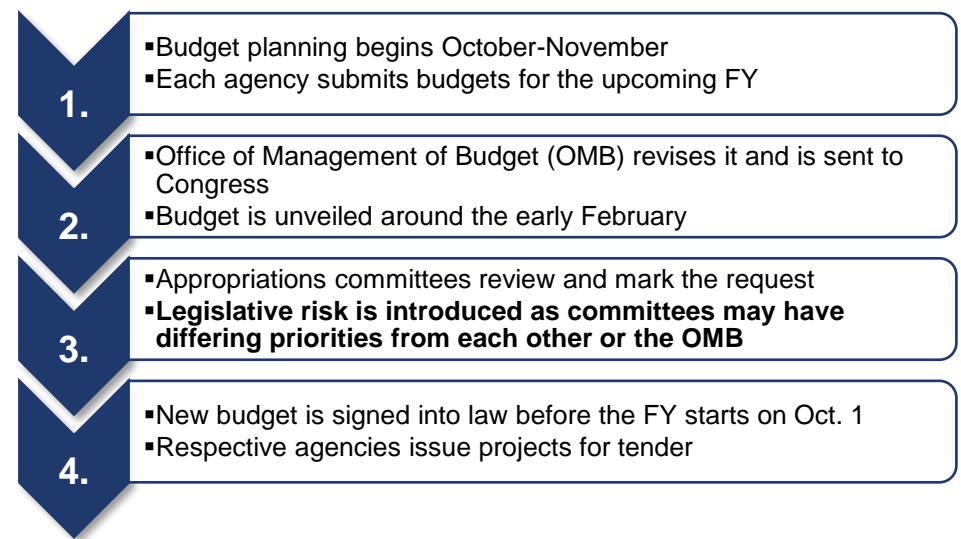
Components of Defense Spending

- Components of defense spending are split between a base budget and Overseas Contingency Operations (OCO)
- **Base Budget:** The recurring set of funds provided to the DoD at the beginning of each new budget period
 - Provides long-term spending that exist regardless of any extraordinary circumstances
 - Base budget made up 90.4% of the total budget requested in 2021
- **Overseas Contingency Operations (OCO):** Pays for any extraordinary events, such as war-related expenses. Typically considered a slush fund given extremely limited oversight
 - Can surpass spending caps established by the budget
 - Consisted of 9.6% of total FY 2021 budget request
 - The OCO is proposed to be \$19 billion in 2022, a 72% decrease from the 2021 current account balance

Investment Accounts

- The three primary accounts the defense budget focuses on Operations & Maintenance (O&M), Research, Development, Testing and Evaluation (RDT&E), and Procurement
- **O&M:** Used to finance expenses including headquarters operations, training and education, base operations support, minor construction projects. Funds are obligated for one FY
- **RDT&E:** Spending includes basic and applied research, technology and component development, prototyping, R&D support, Funds allocated to RDT&E are available for obligation for a period of two FY
- **Procurement:** DoD's CapEx account, which funds the acquisition of ships, aircraft, and other weapons systems. Funds allocated to Procurement are available for obligation for a period of three FY

US Budget Process



Contract Types

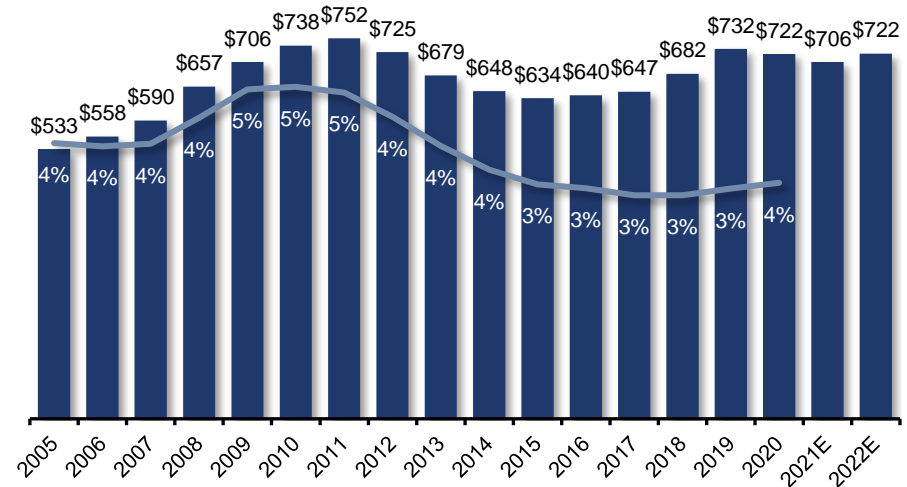
- Generally, most US contracts awarded to defense contractors take one of three forms:
 - **Cost-type Contracts** – Provide for reimbursement of the contractor's allowable costs incurred plus a set fee that serves to ensure profitability of a project. Typically issued for R&D type projects and offer lower margins
 - **Fixed-price incentive contracts** – Provide reimbursement of the contractor's allowable costs up to a ceiling amount
 - **Firm Fixed-Price Contracts** –The specified scope of work is agreed to for a price that is a pre-determined, negotiated amount and not generally subject to adjustment regardless of costs incurred by the contractor. Time-and-materials contracts are considered firm fixed-price contracts as they specify a fixed hourly rate for each labour hour charged.

Drivers and Trends

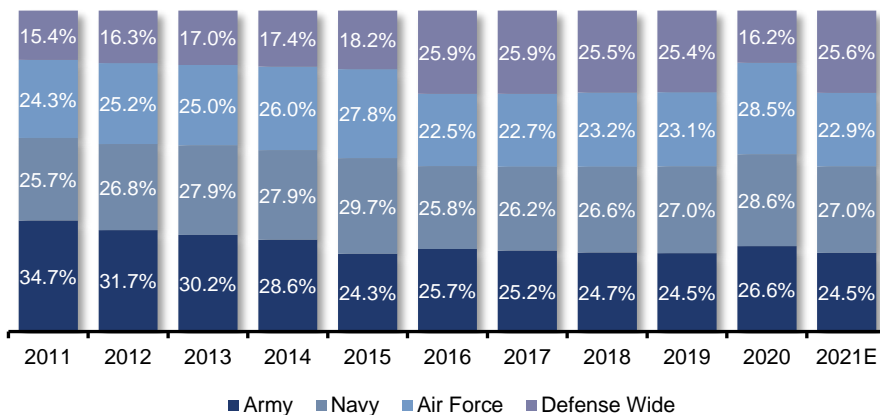
Industry Drivers and Trends

- The aerospace & defense (A&D) industry had a strong year in 2019 with \$909 billion in industry sales, a 6.7% increase from 2018
- Global defense spending is defined by discrete cycles, tied to the U.S. budget. U.S. accounts for ~38% of global defense spend
- The global trends in A&D are favourable and will complement NOCs expansion, several trends include:
 - **New Administration:** Potential decline on defense in FY2022 and beyond, primarily due to debt from any stimulus spending or any shift in focus toward social and domestic programs
 - **Space Industry:** Likely to experience increased opportunities, primarily in satellite broadband internet access. 2020 investments remained strong at \$25.6 billion and forecasted to grow more than 15.7% year over year
 - **Focus on Supply Chains:** Industry focus on becoming more resilient and dynamic, U.S. DoD recently revamped procurement

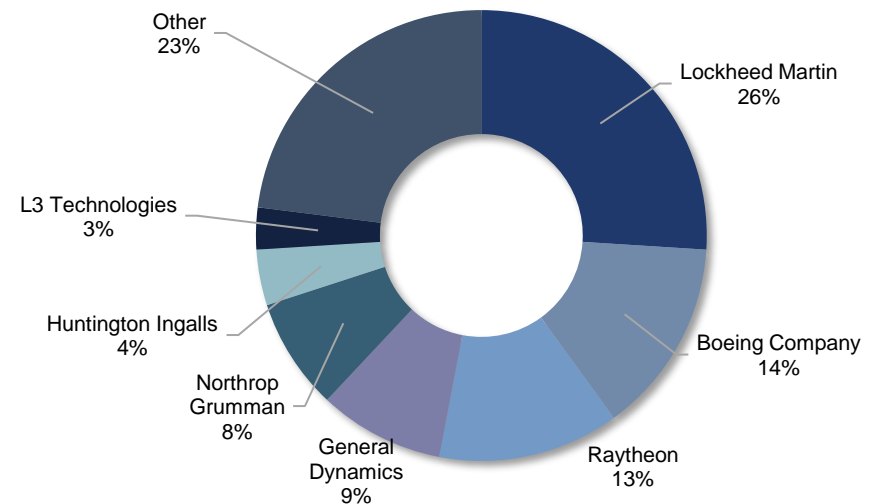
U.S. DOD Budget as a % of GDP (USD, B)



Defense Spending by Type



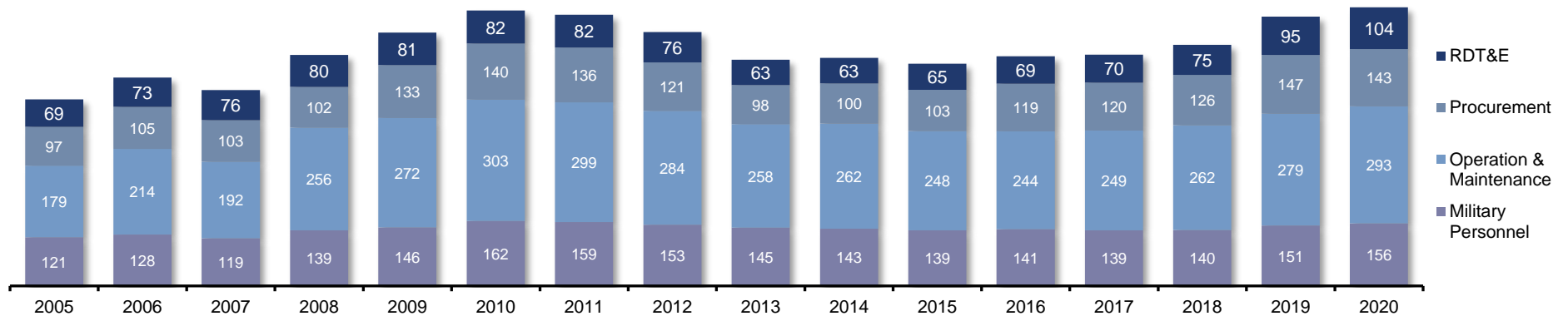
U.S. Defense Spending Fragmentation



Industry Overview – Aerospace and Defense

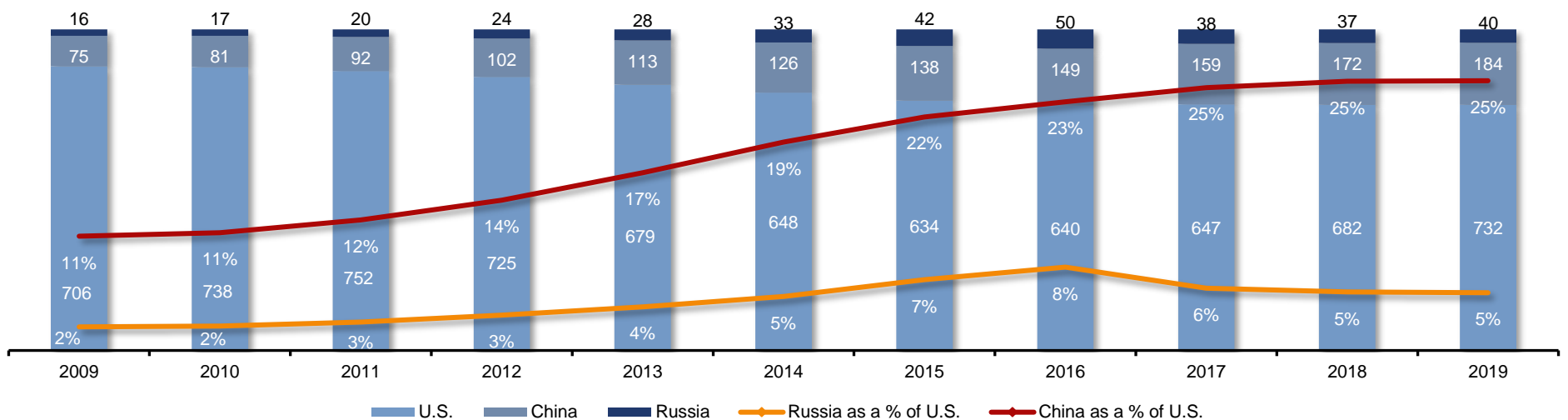
Global Spending Trends

U.S. Defense Budget is Cyclical (US \$B)



Procurement is volatile due to large exposure to wars; funds are also obligated for three years. RDT&E is less prone to swings, due to the costs of research and funds are obligated for two years. Along with O&M they make up **investment accounts** and represent ~80% of the sectors' market

Global Powers Defense Spending as a % of U.S. Defense Spending (US \$B)



Several Key Programs Determine Growth Prospect for Defense Primes

International Trends¹

- International defense spending and US spending are highly correlated over the past 50 years, with macroeconomic and geopolitical factors which spur increased spending being global in nature
- Defense spending from most international nations has been at historical lows over the past decade, with the EU spending ~1.5% GDP on defense
- Former Republican Administration was successful in motivating NATO members to increase defense spending.
 - In 2017, only 5 of 30 nations met 2% spending target
 - In 2020, 11 targets met 2% spending target
 - Several other nations have committed to achieving the 2% target

Select Program: GBSD²

- U.S. Air Force's Ground Based Strategic Deterrent (GBSD) is the weapon system replacement for the LGM-30 ballistic missile
- Will provide land-based strategic nuclear deterrence, assurance, and stability, while hedging against potential problems
- Awarded the prime contract for engineering and development in 2020 and is projected to deliver a weapon system in FY'29
- A \$13.3B development phase which is expected to last eight years. The entire program is worth up to \$63B over 20 years
- NOC was the only bidder and has a dominant share in the defense market for rocket motors
- The project and use of the fleet is poised to last through 2075

Select Program: B-21²

- In 2010, NOC won the contract due to a substantial cost/price advantage over rival Boeing
- The B-21 Raider is the fourth largest procurement program in FY 2020 with \$2.98B in funding for the USAF
- Innovative new stealth bomber used to bolster the Aeronautics segment, projected to fly for the first time in December 2021
- Air Force plans to spend nearly \$300 million on construction in FY 2022 and \$2.8B in 2021
- Scheduled to be available for service around 2026 or 2027, building an initial fleet of 100 aircrafts
- B-21 should support a \$60b+ procurement opportunity

Top 10 Procurement Programs – FY 2020³

#	Program	Type	Prime	User	FY20 Funding
1	F-35 Lightning II (JSF)	Fighter	LH	Joint	12,612
2	Virginia class submarine	Submarine	GD/ HI	Navy	8,817
3	AEGIS Destroyer	Destroyer	GD/HI	Navy	6,175
4	B-21 Raider	Bomber	NOC	USAF	2,983
5	Ford class aircraft carrier	Carrier	HI	Navy	2,483

Industry Major Players

Varied Competition in US and International Players

United
States



- Lockheed Martin is the leading military defense contractor, and supplies aircrafts to government and commercial customers
- US Government accounts for ~71% of revenue, where their flagship F-35 fighter-jet accounts for ~25% of sales



- Northrop Grumman is a Global Aerospace & Defense company providing products and systems in aerospace, electronics, information systems, and technical services
- Northrop Grumman's military systems include manned and autonomous aircrafts. The Orbital ATK acquisition expanded product lines to satellites and space launch vehicles



- Raytheon Technologies operates as an aircraft manufacturing company, and focuses on high-tech offerings for the aerospace, and commercial building industries
- In 2020, Raytheon completed a merger with United Technologies



- Boeing is the world's largest Aerospace company, operating in a duopoly for Commercial Aircraft Manufacturing. Their segments include: Defense, Space & Security; Commercial Airplanes, Boeing Global Services, and Boeing Capital
- Defense, Space & Security is ~45% of sales, and Commercial Airplanes ~30%



- General Dynamics is a diversified defense company offering a variety of products and services. Its 5 Operating Segments are: Aerospace, Marine Systems, Information Technology, Combat Systems and Mission Systems



- L3Harris Technologies is an Aerospace & Defense technology innovator. They operate in 4 segments: Integrated Missions, Space and Airborne Systems, Communication Systems, and Aviation Systems. Harris and L3 Technologies merged in 2019, and acquired Exelis in 2015



- BAE Systems plc is a British multinational arms, security, and aerospace company. BAE is the sixth largest contractor to the US DOD and operates across the segments of: Electronic Systems, Cyber and Intelligence, and Platforms and Services



- Thales is a France-based multinational, partly owned by the French Government. The company specializes in radar and surface to air systems. The company has three operating segments: defense and security, aerospace, transportation. ~60% of revenues are defense-related

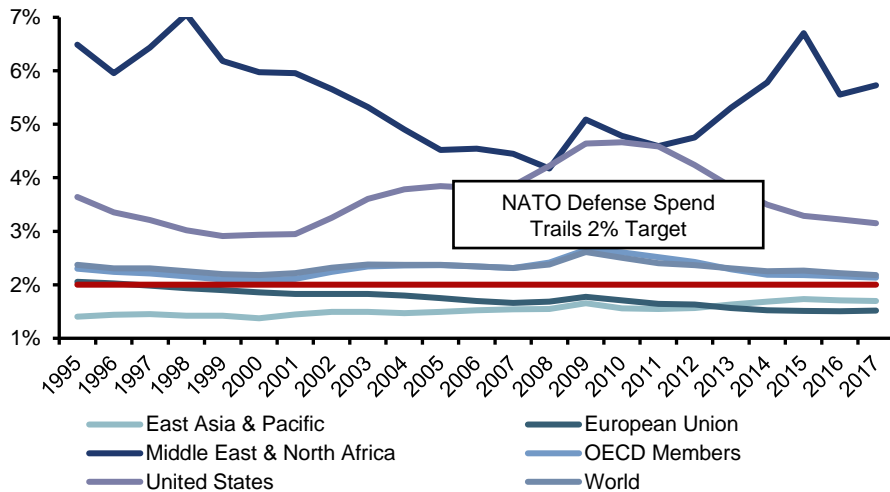
World

Investment Theses

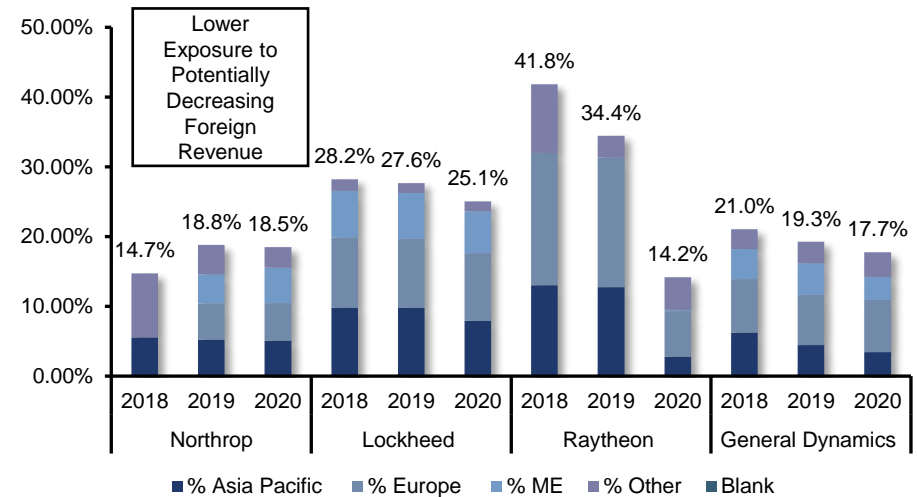
Investment Thesis I: Macroeconomic Position

NOC is Well Positioned to Benefit from Short & Long Run Defense Trends

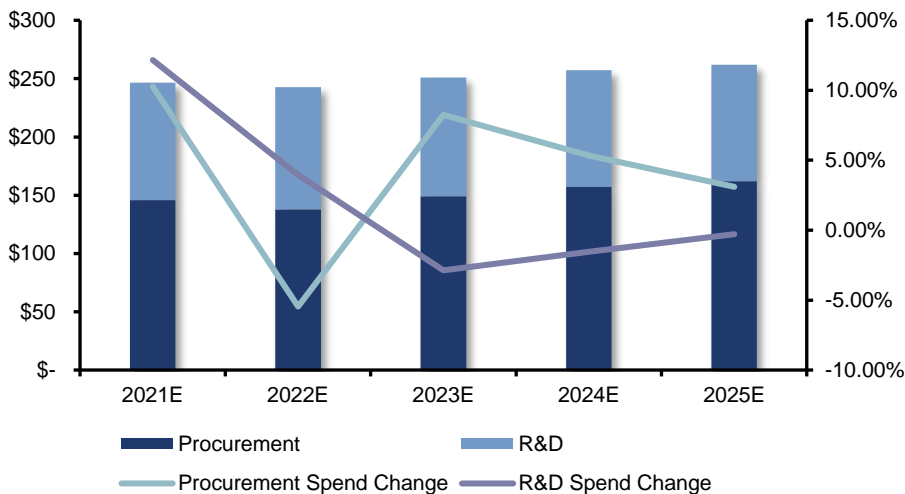
National Defense Spending as % of GDP¹



Revenue Attributable to Foreign Sales²



US Procurement and R&D Spend (USD \$B)³



Commentary

- Long run growth supported by renewed NATO commitment to spend 2% of GDP on defense
 - Continued need to match Chinese defense spend amid escalating global tensions provides further growth opportunities
- Foreign Sales are highly sensitive to macroeconomic conditions. Effects of COVID-19 stand to reduce foreign defense purchases in the short run.
 - Given its product mix, NOC is less exposed internationally and stands to avoid headwinds.
- Maturity of several key US defense programs mid decade will shift spending on procurement. Procurement contracts are typically more lucrative and offer higher margin "fixed cost" contracts"

Investment Thesis II: Strategic Alignment

Northrop Grumman is Aligned with Department of Defence Priorities

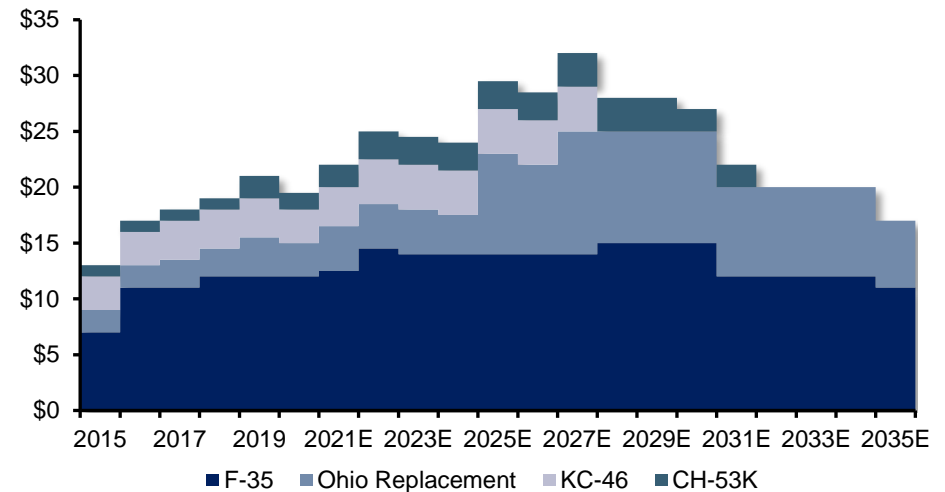
Strong Competitive Moats

- Defense industry is being increasingly specialized with major plays pursuing smaller niches and developing greater competitive moats
 - NOC benefits from this trend as it is well positioned in key nuclear niches prioritized by the US Government
- Northrop was able to edge out Boeing for the B-21 program and was awarded a no-bid contract for the GBSB
 - Northrop was the original designer of the B-2
 - These programs are integral to nuclear deterrence given that current tactical bombers and ICBM stations are approaching the end of their useful life
- Moats are less present for more novel programs (space), where all major contractors have exposure

Northrop Programs Have Strong Political Support

- The White House's 2021 defence-budget request shows a low-single-digit increase in investment account spending
- Despite this, Northrop's programs will be receiving major increases in funding through expected defence bills:
 - The ramp-up in procurement spending in 2024 is expected as funding for new programs, including the B-21 bomber, Columbia class submarine and F-35 production accelerate
 - The Pentagon has indicated it will support the B-21 as its budget indicates increased funding
 - Northrop is solving a long-term political issue in the U.S. through the introduction of the GBSB program. Despite concerns of a budget slowdown, the GBSB program has been accelerated in recent years

Key Defense Priorities (US, \$B)



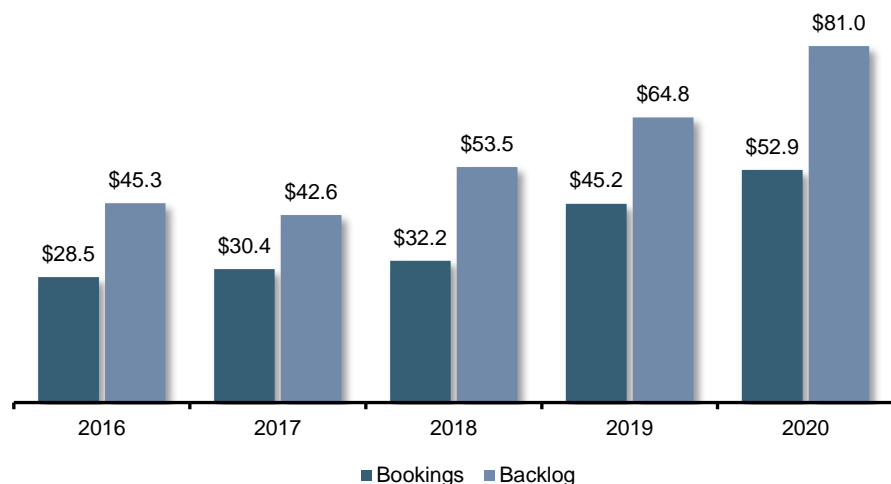
Mid-Decade Funding

- U.S. Government will continue to place a high priority on defence spending and national security. Through a competitive bidding process Northrop has segmented itself across several major projects. Unlike its peers, where contract confirmation is uncertain
- Increased spending on recapitalization, modernization of the nuclear arsenal and maintenance of defence, intelligence, and homeland security assets will continue to be a national priority
 - This spending will directly benefit Northrop's GBSB contract
- Include the development and procurement of new military platforms and systems along with advanced electronics and software to enhance the capabilities of individual systems
 - This elevated spending will support Northrop's B-21 and F-25 Revenues

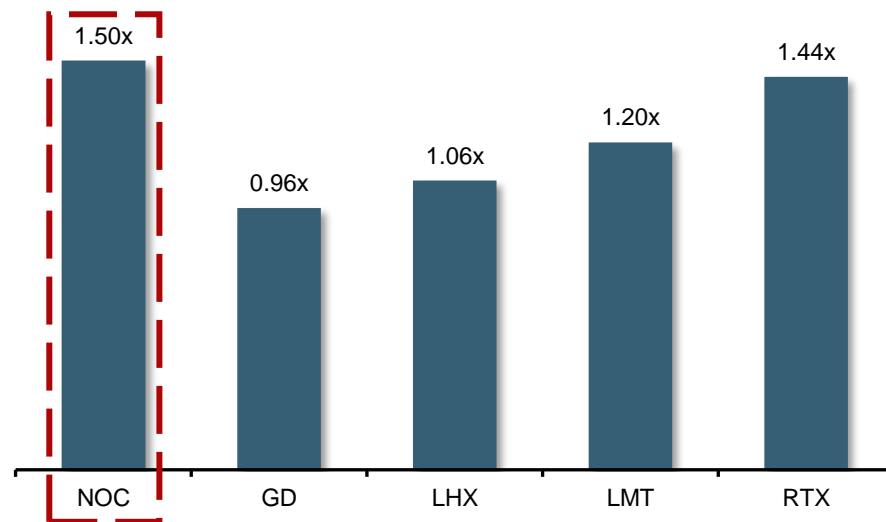
Investment Thesis III: Strong Backlog

NOC's Strong Backlog Limits Potential Risk and Creates Growth

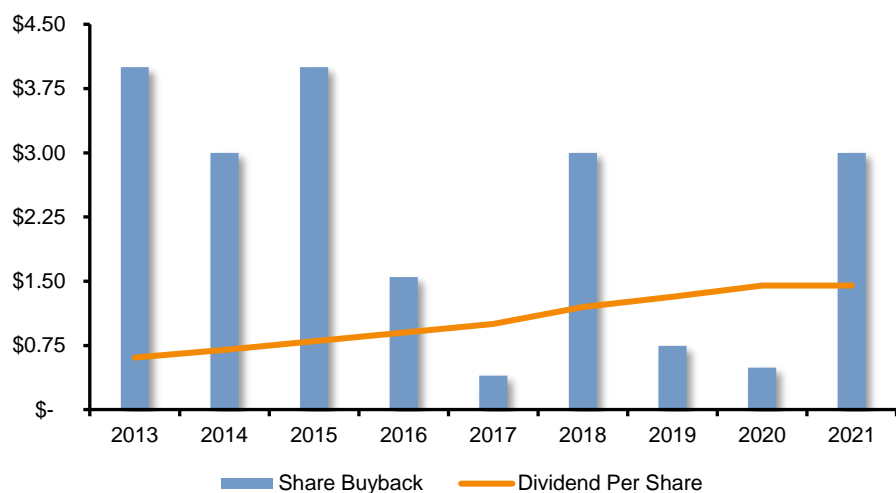
Growing Backlog and Strong Demand (USD, B)



Strong Book-to-Bill Ratio



Capital Allocation



Commentary

- Their backlog has grown tremendously in 2020, largely due to winning lucrative contracts including:
 - \$13 billion U.S. Air Force – expected to last 8.5 years
 - Their space segment backlog rose 117% in 2020, largely due to a \$9.2 billion Space segment orders in Q2 2020
- NOC has a stronger demand in than competitors and growth is poised to continue, creating renewable cash flow for years to come
- Free cash flow increased by 16% CAGR since 2017, and they have announced a plan to buyback \$2 billion of common stock by Q2 2021
- NOC has also recently sold their IT and mission support business line to Veritas Capital for \$3.4 billion. They plan to use the proceeds for buybacks and debt retirement

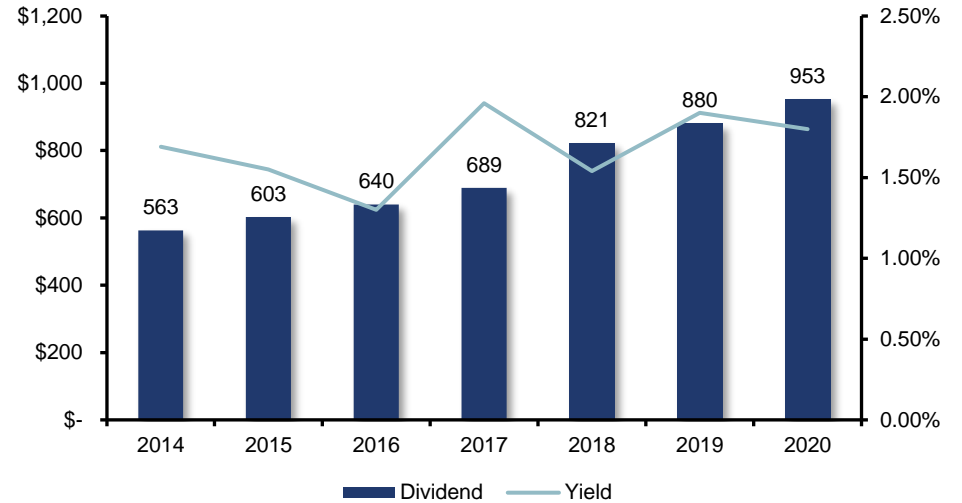
Capital Allocation

Strong Track Record of Ensuring Shareholder Returns

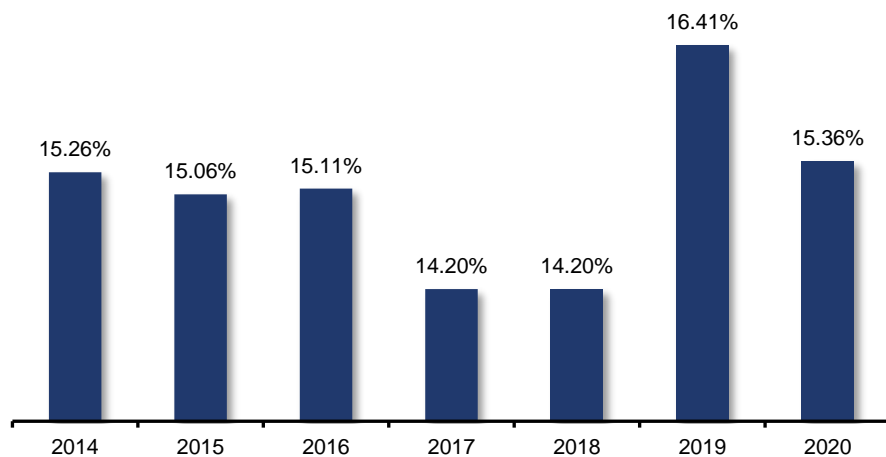
Commentary

- NOC has consistently grown dividends YoY for 15+ years and engaged in share repurchases to redistribute returns to shareholders
- NOC ROIC of 16% is well above the companies cost of capital
 - Current ROIC is below historical averages of 24%, however this matches a broader industry decrease over past 5 years
- EBITDA margins have remained relatively constant over past 5 years.
 - Little variation in margins given that most of NOC's revenue stems from contracts with the federal government which has intense bargaining power

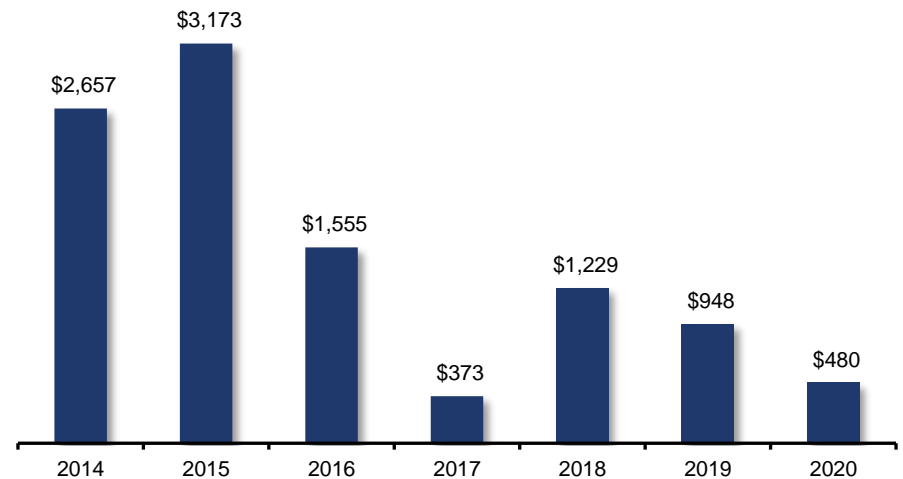
Dividends Paid (US \$M)



EBITDA Margin



Share Repurchases (US \$M)



Key Investment Considerations

Select Investment Risks

- **Legislative Risk:** As ~84% of sales are derived from the US Government, NOC is subject to legislative risks concerning DoD spending, planned tax changes, and/or general budget distribution. Depending on current administration policy, initial projections leaves defense budget allocation unreliable. R&D spending is expected to remain relatively flat through mid-decade as spending on procurement increases
- **Contract Execution:** ~50% of sales are derived from fixed-price contracts, which carry inherently more risk compared to other contract types (cost-type). This is because if the process is mismanaged, material changes with end clients unanticipated cost growth, or if contract terms are not met, NOC is liable for losses
- **Technology Risk:** increased global warfare innovation shows traditional military defense contractors have a lower return on innovation and R&D showing greater potential risk to commercial sector innovators

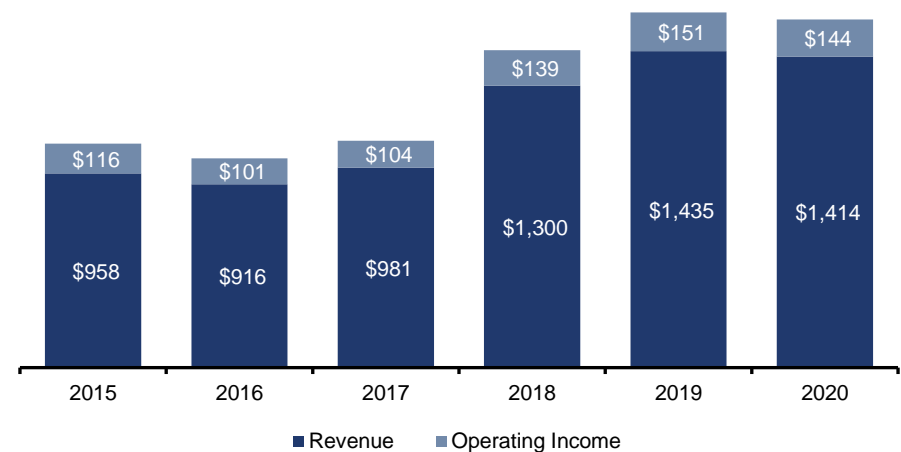
Catalysts

- **Share Repurchases:** NOC has committed to an accelerated \$2 billion share repurchase program following the sale of its IT Services business, with the remainder of the proceeds to be reinvested, or allocated for future repurchases
- **Rising Geopolitical Tensions:** as the Democratic government aims to distinguish itself from the previous administration, the current administration has taken stricter ground against China and Russia. Coupled with high US-China trade tensions in 2019, rising geopolitical tensions could push a reversal of current government defense spending priorities
- **Commercialization of Space:** Space Systems takes up 34.7% of the Space Systems & Missile Manufacturing industry (~\$10.1bn) revenues. With the ISS supply mission, and Orbital ATK acquisition, industry specific revenue is expected to increase 8.1% CAGR over the next 5 years

Mitigation Strategies

- Current administration spending priorities are an inherent business risk, therefore the mitigation to political factors impacting business operations are limited. However, legislative risks seem to be non-recurring due to the aforementioned cyclicity of defense spending
- Though fixed-price contracts carry inherently more business risk at *inception*, when moving from development to production, risk is appropriately adjusted and decreased. Furthermore, fixed-price contracts only carry more risk due to the terms of the contract itself not the probability of changes. Fixed-price contracts also offer more room for profitability on projects and have cost-sharing ratios to prevent full liability to the contractor
- Despite innovating opposite to previous government objectives, traditional contractors can mitigate competitive risk by committing to more IR&D spending (less risk-averse investments), and strategic alliances for better internal technological innovation

NOC Space & Missile Manufacturing Rev. (USD, \$M)

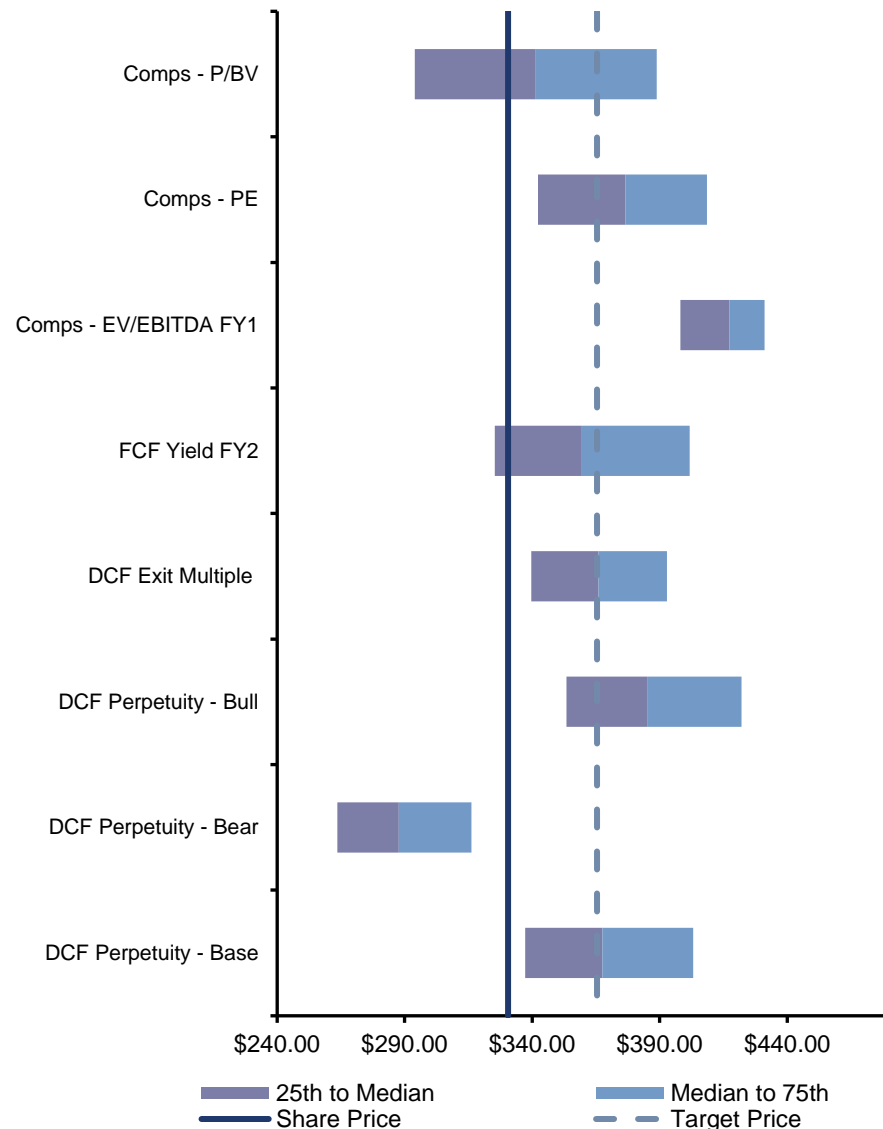


Valuations

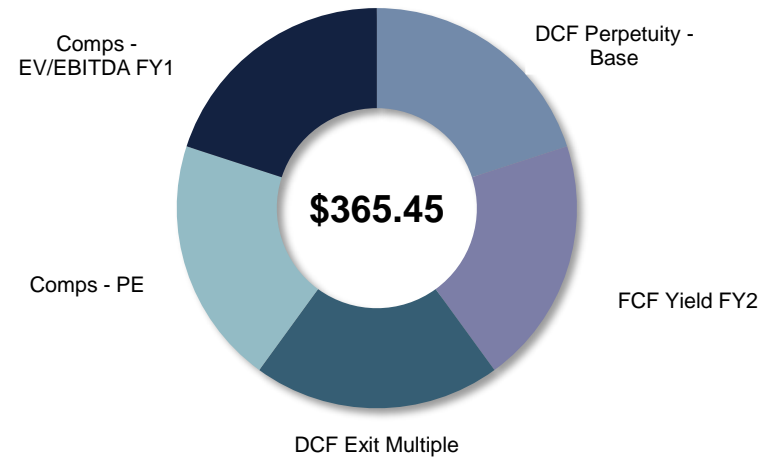
Valuation Summary

Our Analysis Indicates NOC is Underappreciated by the Overall Market

Football Field



Weighted Average Share Price



Summary

- Utilized relative and intrinsic valuation techniques with sensitized outputs to estimate fair value
- Fair value was determined by taking a weighted average of various methodologies as shown above
- Case Assumptions:
 - Base Case:** Anticipated defense spend is realized, margins slightly contract given pressure from DOD
 - Bear Case:** Key contracts delayed / cancelled, much higher margin pressure from DOD stemming from Democratic administration
 - Bull Case:** Global defense spending accelerates, increased spending on aero and space.
- Based on our implied share price, NOC has a 13.8% upside; we recommend a buy rating

Comparable Companies

US and International Defence Contractors

Company	Ticker	Share	Market	Enterprise	Net Debt /	EV / EBITDA		P/E		FCF	P/FCF		Margins		Revenue	ROIC
		Price	Capitalization	Value	LTM EBITDA	LTM	FY1	LTM	FY1	Yield	LTM	FY1	FCF Yield	EBITDA	5yr CAGR	LTM
GENERAL DYNAMICS	GD	\$182	\$51,476	\$63,384	2.4x	10.9x	12.7x	16.5x	16.3x	5.6%	17.9x	14.8x	5.6%	13.2%	5.2%	11.7%
L3HARRIS TECHNOLOGIES	LHX	\$199	\$40,895	\$47,504	2.0x	14.2x	12.0x	22.0x	15.6x	5.6%	17.6x	16.7x	5.7%	17.8%	24.9%	5.9%
LOCKHEED MARTIN	LMT	\$365	\$101,649	\$111,781	0.9x	9.5x	10.5x	12.4x	13.9x	6.2%	15.9x	15.5x	6.3%	17.6%	8.1%	38.9%
RAYTHEON TECHNOLOGIES	RTX	\$78	\$118,508	\$145,248	2.9x	15.8x	14.9x	30.6x	21.3x	1.8%	56.2x	53.6x	1.8%	13.5%	2.8%	2.9%
LEIDOS	LDOS	\$96	\$13,598	\$18,518	3.7x	15.1x	12.8x	20.5x	15.1x	8.4%	11.9x	13.0x	8.4%	10.7%	20.5%	10.3%
BOEING	BA	\$245	\$142,916	\$182,502	-	-	32.2x	-	42.9x	(13.7%)	-	-	(14.2%)	(17.9%)	(8.3%)	(32.2%)
Maximum		\$365	\$142,916	\$182,502	3.7x	15.8x	32.2x	30.6x	42.9x	8%	56.2x	53.6x	8.4%	17.8%	24.9%	38.9%
75% Quartile		\$233	\$114,294	\$136,882	2.8x	14.9x	14.4x	21.6x	20.0x	6%	17.9x	16.4x	6.1%	16.6%	17.4%	11.3%
Median		\$190	\$76,563	\$87,583	2.2x	12.5x	12.7x	18.5x	15.9x	5.58%	16.8x	15.1x	5.6%	13.4%	6.7%	8.1%
25% Quartile		\$118	\$43,541	\$51,474	1.2x	9.8x	12.2x	13.5x	15.2x	3%	12.9x	13.4x	2.7%	11.3%	3.4%	3.7%
Minimum		\$78	\$13,598	\$18,518	0.0x	0.0x	10.5x	0.0x	13.9x	(13.7%)	0.0x	0.0x	(14.2%)	(17.9%)	(8.3%)	(32.2%)

NORTHROP GRUMMAN	NOC	\$319	\$53,186	\$64,146	2.1x	11.5x	13.5x	13.4x	13.5x	5.37%	18.4x	17.7x	5.4%	14.6%	12.4%	16.5%
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NOC's EBITDA margin and ROIC exceed comparable companies. NOC warrants a premium relative to peers based on strong fundamentals coupled with attractive growth outlook.

		FY1 Earnings					FCF Yield						
		3,550	3,750	3,950	4,150	4,350			5.03%	5.53%	6.03%	6.53%	7.03%
P/E	13.95	-7.8%	-2.0%	3.1%	7.8%	12.1%	FCF	3,324	19.3%	11.3%	3.2%	-4.8%	-12.8%
	14.95	-0.6%	4.8%	9.6%	14.0%	17.9%		3,474	22.8%	15.1%	7.4%	-0.3%	-8.0%
	15.95	5.7%	10.8%	15.3%	19.4%	23.1%		3,624	26.0%	18.6%	11.2%	3.9%	-3.5%
	16.95	11.3%	16.0%	20.3%	24.1%	27.6%		3,774	28.9%	21.8%	14.8%	7.7%	0.6%
	17.95	16.2%	20.7%	24.7%	28.4%	31.7%		3,924	31.6%	24.8%	18.0%	11.2%	4.4%
		BV					FY1 EBITDA Multiple						
		10,379	10,479	10,579	10,679	10,779			8.0x	9.0x	10.0x	11.0x	12.0x
P/BV	3.90	-31.8%	-30.6%	-29.4%	-28.1%	-27.0%	EBITDA	4,683	8.4%	15.2%	21.1%	26.2%	30.7%
	4.65	-10.6%	-9.5%	-8.5%	-7.5%	-6.5%		4,883	10.8%	17.5%	23.3%	28.3%	32.8%
	5.40	4.8%	5.7%	6.6%	7.5%	8.3%		5,083	13.1%	19.8%	25.5%	30.4%	34.7%
	6.15	16.4%	17.2%	18.0%	18.7%	19.5%		5,283	15.3%	21.9%	27.5%	32.3%	36.6%
	6.90	25.5%	26.2%	26.9%	27.6%	28.2%		5,483	17.4%	23.9%	29.4%	34.2%	38.3%

Discounted Cash Flow

Base Case - Cash Flow Projections

FCF Projections

Discounted Cash Flows	2012A	2013A	2014A	2015A	2016A	2017A	2018A	2019A	2020A	2021E	2022E	2023E	2024E	2025E
Revenue	25,218	24,661	23,979	23,526	24,706	26,004	30,095	33,841	36,799	35,406	37,166	39,313	41,177	43,138
EBITDA	3,640	3,618	3,658	3,543	3,733	3,693	4,580	5,234	5,332	4,865	5,775	6,301	6,648	7,136
Less: D&A	(510)	(495)	(462)	(467)	(456)	(475)	(800)	(1,265)	(1,267)	(970)	(1,219)	(1,300)	(1,299)	(1,341)
EBIT	3,130	3,123	3,196	3,076	3,277	3,218	3,780	3,969	4,065	3,894	4,556	5,001	5,349	5,794
Tax Rate	34%	32%	30%	29%	18%	38%	12%	7%	12%	12%	13%	16%	18%	20%
NOPAT	2,071	2,130	2,244	2,189	2,694	1,988	3,326	3,688	3,596	3,427	3,964	4,201	4,386	4,636
Plus: D&A	510	495	462	467	456	475	800	1,265	1,267	970	1,219	1,300	1,299	1,341
Plus/Less: Changes in NWC	-	18	107	533	127	(415)	1,557	(821)	216	(388)	295	246	(62)	(35)
Less: Capital Expenditures	(331)	(364)	(561)	(471)	(920)	(928)	(1,249)	(1,264)	(1,420)	(1,386)	(1,375)	(1,278)	(1,029)	(1,078)
Unlevered FCF	2,250	2,279	2,252	2,718	2,357	1,120	4,434	2,868	3,659	2,623	4,103	4,469	4,593	4,863
Periods										1	2	3	4	5
Discount Factor										0.93	0.86	0.79	0.74	0.68
PV of Unlevered FCF										2,429	3,518	3,547	3,376	3,310
Sum of Unlevered FCF														16,180

Terminal Value - Perpetuity Method		Exit Multiple Method	
Unlevered FCF in Final Year	4,863	Exit Year EBITDA	7,136
Growth Rate	2.0%	Exit EV/EBITDA Multiple	11.0x
Terminal Value	82,675	Terminal Value	78,493
Discount Periods	5.00	WACC	8.0%
WACC	8.0%	Discount Period	5
Net PV of Terminal Value	56,267	PV of Terminal Value	53,421
PV of UFCF	16,180	Sum of PV of UFCF	16,180
Implied Enterprise Value	72,447	Implied Enterprise Value	69,601
Less: Total Debt	(15,867)	Less: Total Debt	(15,867)
Less: Preferred Stock	-	Less: Preferred Stock	-
Less: Minority Interest	-	Less: Minority Interest	-
Plus: Cash and Equivalent	4,907	Plus: Cash and Equivalent	4,907
Implied Equity Value	61,487	Implied Equity Value	58,641
Diluted Shares Outstanding	167.30	Shares Outstanding	160
Implied Share Price	367.53	Implied Price Per Share	366.00
Current Share Price	\$319.02	Current Share Price	319.02
Margin of Safety	15.2%	Margin of Safety	12.8%

		WACC						
		7.25%	7.50%	7.75%	8.00%	8.25%	8.50%	8.75%
Terminal Growth	1.70%	27.4%	21.1%	15.2%	9.9%	5.0%	0.4%	(3.8%)
	1.80%	29.7%	23.1%	17.1%	11.6%	6.5%	1.9%	(2.5%)
	1.90%	32.1%	25.3%	19.1%	13.4%	8.2%	3.3%	(1.1%)
	2.00%	34.5%	27.5%	21.1%	15.2%	9.8%	4.9%	0.3%
	2.10%	37.1%	29.8%	23.2%	17.1%	11.6%	6.5%	1.8%
	2.20%	39.7%	32.2%	25.3%	19.1%	13.3%	8.1%	3.3%
	2.30%	42.5%	34.6%	27.5%	21.1%	15.2%	9.8%	4.8%
		WACC						
		7.25%	7.50%	7.75%	8.00%	8.25%	8.50%	8.75%
Exit Multiple	9.50	3.5%	2.5%	1.5%	0.5%	(0.6%)	(1.6%)	(2.7%)
	10.00	7.9%	6.9%	6.0%	5.0%	4.0%	3.0%	2.0%
	10.50	11.9%	11.0%	10.0%	9.1%	8.1%	7.1%	6.2%
	11.00	15.6%	14.7%	13.8%	12.8%	11.9%	11.0%	10.1%
	11.50	18.9%	18.1%	17.2%	16.3%	15.4%	14.5%	13.6%
	12.00	22.0%	21.2%	20.4%	19.5%	18.6%	17.8%	16.9%
	12.50	24.9%	24.1%	23.3%	22.5%	21.6%	20.8%	20.0%

Discounted Cash Flow

Base Case - Operating Model

Income Statement	2012A	2013A	2014A	2015A	2016A	2017A	2018A	2019A	2020A	2021E	2022E	2023E	2024E	2025E
Revenues														
Product Revenue	13,838	14,033	14,015	13,966	15,080	16,364	20,469	23,852	27,015	26,569	28,196	30,209	31,937	33,759
Service Revenue	11,380	10,628	9,964	9,560	9,626	9,640	9,626	9,989	9,784	8,837	8,969	9,104	9,240	9,379
Total Revenue	25,218	24,661	23,979	23,526	24,706	26,004	30,095	33,841	36,799	35,406	37,166	39,313	41,177	43,138
		(2.21%)	(2.77%)	(1.89%)	5.02%	5.25%	15.73%	12.45%	8.74%	(3.79%)	4.97%	5.78%	4.74%	4.76%
Operating Expenses														
General and Administrative Expenses	2,450	2,256	2,405	2,566	2,632	2,712	3,011	3,290	3,413	3,328	3,434	3,470	3,452	3,452
Cost of Products Sold	10,415	10,623	10,431	10,333	11,197	12,527	15,785	18,675	21,559	21,202	22,134	23,714	25,150	26,585
Cost of Services	9,223	8,659	7,947	7,551	7,600	7,547	7,519	7,907	7,762	6,981	7,041	7,128	7,226	7,306
Operating Income	3,130	3,123	3,196	3,076	3,277	3,218	3,780	3,969	4,065	3,894	4,556	5,001	5,349	5,794
Non-Operating Expenses														
Interest Expense	212	257	282	301	301	360	562	528	593					
Other Non-Operating Income	-	-	-	-	(611)	(699)	(1,049)	(800)	(1,198)					
Income Tax Expense (Benefit)	987	911	868	800	638	1,360	513	300	539					
Income Before Income Taxes	2,965	2,863	2,937	2,790	2,681	4,229	3,742	2,548	3,728					
Other Non-Operating (Income)/Expense - Net	(47)	3	(23)	(15)	(44)	(136)	(130)	(107)	(92)					
Other One - Time Items Non-Operating	-	-	-	-	950	(536)	655	1,800	1,034					
Net Income	1,978	1,952	2,069	1,990	2,043	2,869	3,229	2,248	3,189					
Average Shares Outstanding														
Basic	248.60	229.60	208.80	189.40	178.90	174.40	173.70	169.30	167.10	167.10	167.10	167.10	167.10	167.10
Diluted	253.40	233.90	212.10	191.60	180.50	175.60	174.60	170.00	167.60	167.60	167.60	167.60	167.60	167.60

Assumptions	2019A	2020A	2021E	2022E	2023E	2024E	2025E
% Growth Rate							
Product Revenue	16.53%	13.26%					
Aeronautics Systems		11.19%	(3.00%)	7.00%	8.00%	7.00%	7.00%
Mission Systems		11.99%	1.50%	2.50%	2.50%	2.75%	2.50%
Space Systems		20.34%	2.00%	10.00%	12.00%	7.50%	7.50%
Defense Systems		(5.70%)	(30.00%)	2.00%	2.00%	2.50%	2.50%
Service Revenue	3.77%	(2.05%)	(2.00%)	1.50%	1.50%	1.50%	1.50%
% of Revenue							
SG&A	9.72%	9.27%	9.40%	9.70%	9.80%	9.75%	9.75%
Cost of Products	78.30%	79.80%	79.80%	78.50%	78.50%	78.75%	78.75%
Cost of Services	79.16%	79.33%	79.00%	78.50%	78.30%	78.20%	77.90%
Depreciation & Amortization	3.74%	3.44%	2.74%	3.28%	3.31%	3.15%	3.11%
Capital Expenditures	3.74%	3.86%	3.91%	3.70%	3.25%	2.50%	2.50%
Tax Rate	7.07%	11.54%	12.00%	13.00%	16.00%	18.00%	20.00%

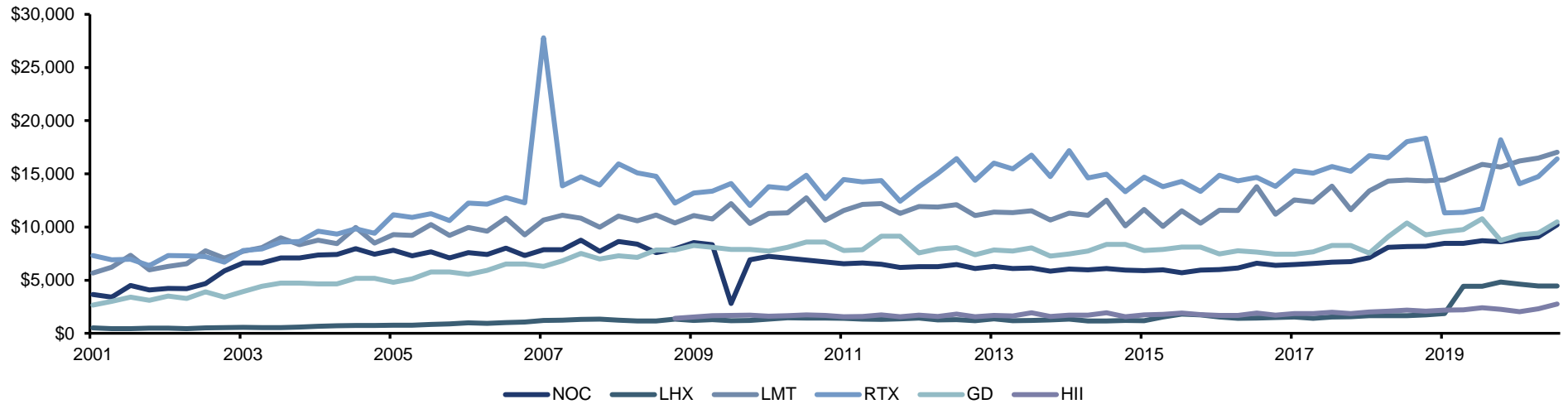
Key Metrics	2019A	2020A	2021E	2022E	2023E	2024E	2025E
Gross Profit	7,259	7,478	7,223	7,991	8,471	8,801	9,246
Operating Income	3,969	4,065	3,894	4,556	5,001	5,349	5,794
EBITDA	5,234	5,332	4,865	5,775	6,301	6,648	7,136
Margin %	15.47%	14.49%	13.74%	15.54%	16.03%	16.14%	16.54%
Depreciation and Amortization	1,265	1,267	970	1,219	1,300	1,299	1,341
Capital Expenditures	(1,264)	(1,420)	(1,386)	(1,375)	(1,278)	(1,029)	(1,078)

Historical Analysis

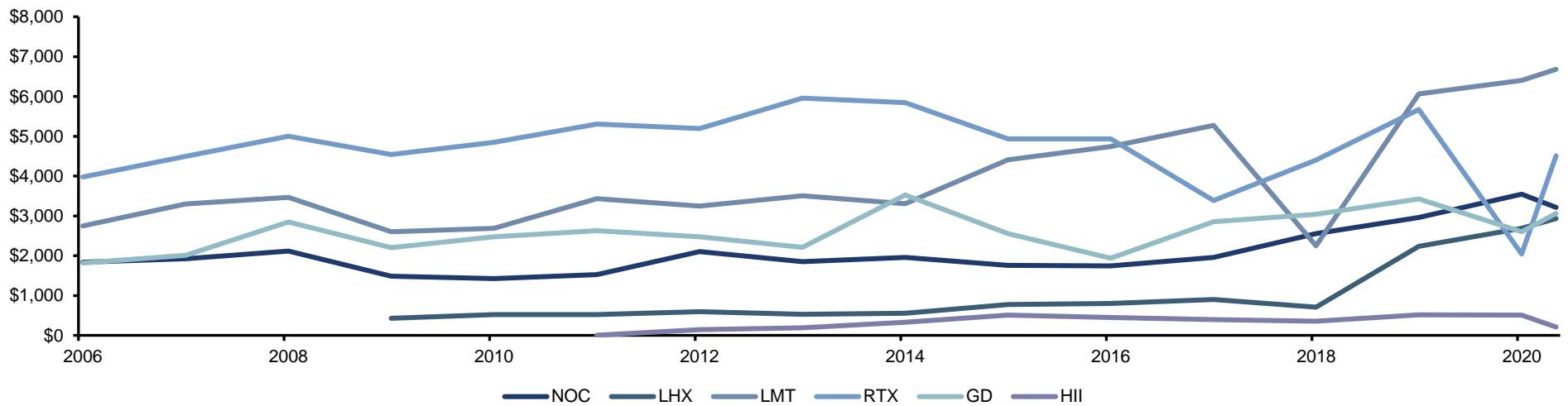
Historical Analysis

Revenue, Free Cash Flow

Revenue (Millions)



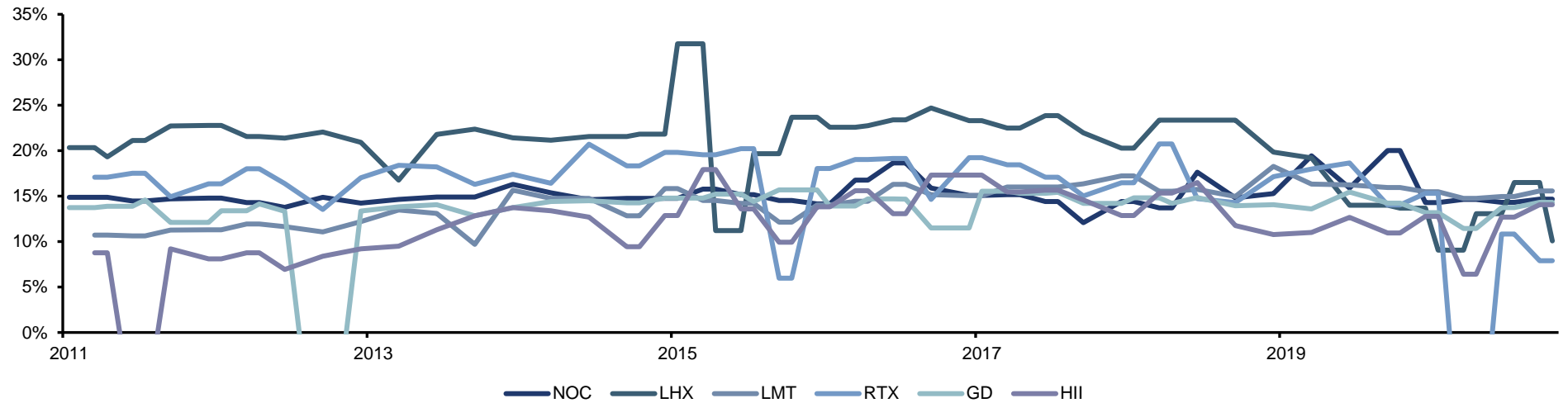
Free Cash Flow (Millions)



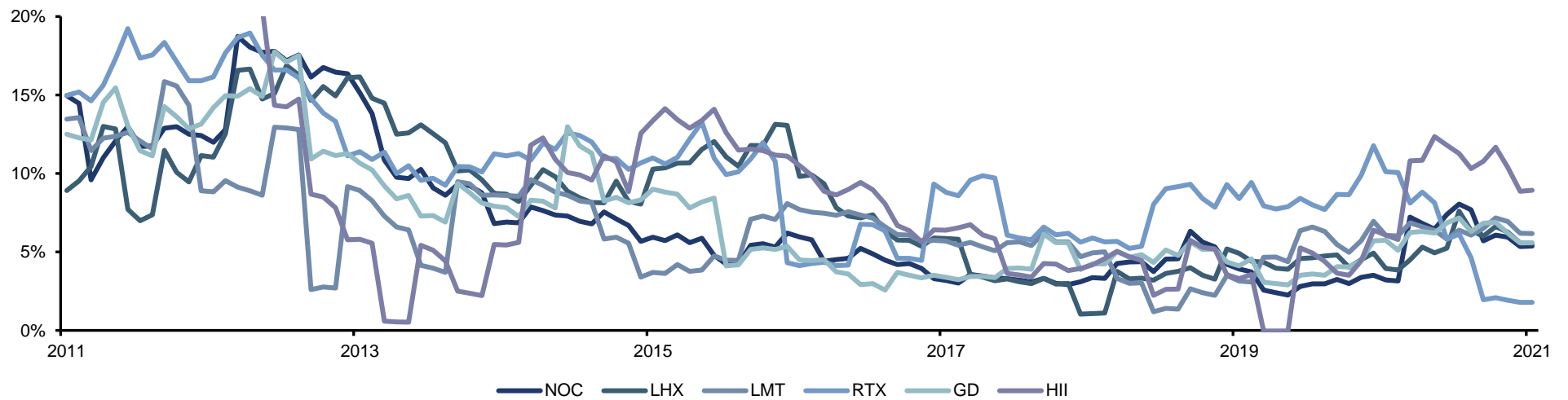
Historical Analysis

EBITDA Margin, FCF Yield

EBITDA Margin



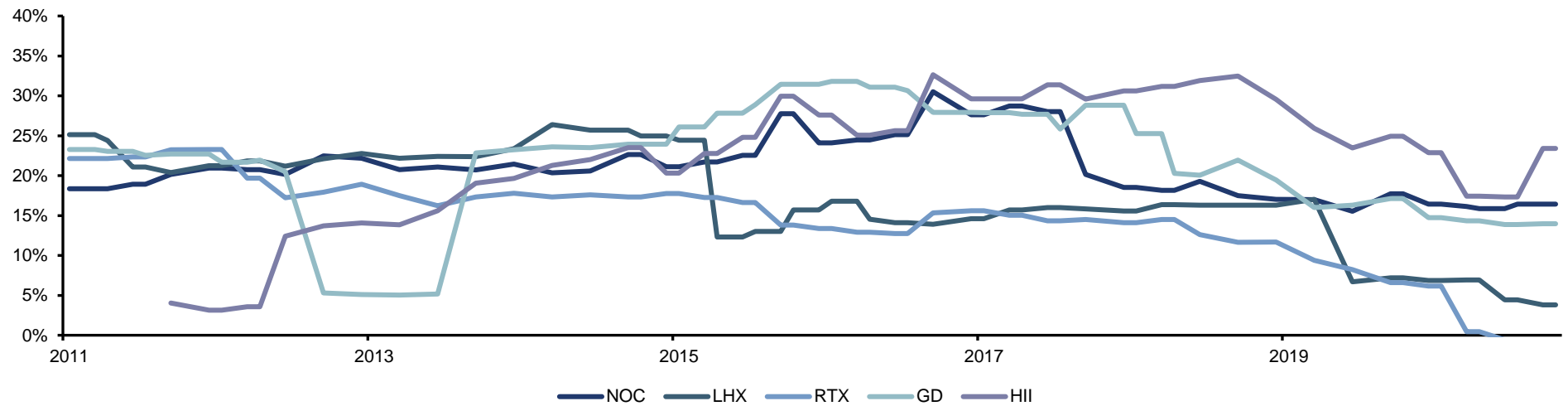
Free Cash Flow Yield



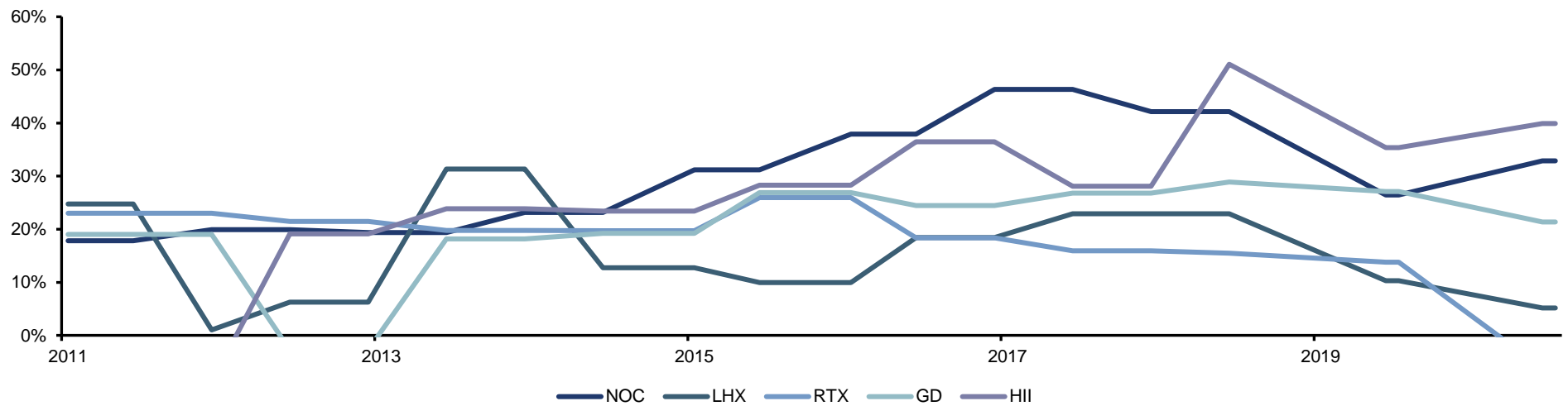
Historical Analysis

ROIC, ROE

ROIC



ROE



Appendices

Management Team

Strong Management Team with Decades of Experience in the Defence Industry

Kathy J Warden

CEO



Prior to becoming CEO and president, Warden served as president and chief operating officer, responsible for the operational management of the company's four sectors as well as its enterprise services organization. She also led the integration of Northrop Grumman's Orbital ATK acquisition.

Prior to joining Northrop Grumman in 2008, Warden held leadership roles at General Dynamics, and she spent nearly a decade with the General Electric Company working in commercial industries.

**GENERAL
DYNAMICS**



Brig. Gen. Richard Stapp

CTO



Prior to holding the position of CTO in 2020, Richard held the position of VP applied research from 2014. Prior to Northrop, Richard accumulated over 30 years at the US department of defense where he oversaw governance, acquisition, oversight and external liaison for all DoD special access programs (SAP), he was the principal staff assistant to the undersecretary of Defense, Acquisition, Technology and Logistics and served as the primary DOD liaison to agencies of the executive branch.



David F Keffer

CFO



Prior to joining Northrop Grumman, Keffer was a general partner at Blue Delta Capital Partners. He also previously served as the chief financial officer of CSRA, Inc. As CFO, he was involved in all operational matters of the company, including the integration and increased efficiency of SRA International and CSC Government Services, which were merged to create CSRA, the new company he helped take public in late 2015.



**GENERAL
DYNAMICS**



Ownership Analysis

Highly Diversified Ownership Base

Top 25 Shareholders – Class A Shares

Shareholder Name	% Ownership	Cumulative Ownership
Capital Group Cos Inc/The	11.8%	11.8%
State Street Corp	9.7%	21.4%
Vanguard Group Inc/The	7.5%	28.9%
BlackRock Inc	5.7%	34.6%
Wellington Management Group LLP	5.4%	40.0%
Sun Life Financial Inc	3.6%	43.6%
JPMorgan Chase & Co	2.9%	46.5%
FMR LLC	1.8%	48.3%
Bank of America Corp	1.5%	49.8%
Geode Capital Management LLC	1.4%	51.2%
Macquarie Group Ltd	1.4%	52.5%
Putnam Investments LLC	1.1%	53.6%
Northern Trust Corp	0.9%	54.5%
Government Pension Investment Fund	0.9%	55.4%
Morgan Stanley	0.9%	56.2%
BANK OF NEW YORK MELLON CORP/THE	0.8%	57.1%
Teachers Insurance & Annuity Assoc	0.8%	57.8%
ClearBridge LLC	0.7%	58.5%
Ameriprise Financial Inc	0.7%	59.1%
Franklin Resources Inc	0.7%	59.8%
Invesco Ltd	0.6%	60.4%
Wells Fargo & Co	0.6%	60.9%
Legal & General Group PLC	0.5%	61.5%
DE Shaw & Co LP	0.5%	62.0%
Top 25 Shareholders	62.0%	-
Other	48.0%	100.0%

Insider Ownership

Shareholder Name	Market Value (USD)	% Ownership
Bush Wesley G	\$ 81,539,803	0.15%
Warden Kathy J	\$ 38,498,920	0.07%
Jones Christopher T	\$ 20,887,078	0.04%
Bedingfield Kenneth L	\$ 13,559,221	0.03%
Felsing Donald E	\$ 12,348,161	0.02%
Cheston Sheila C	\$ 11,106,678	0.02%
Krapek Karl John	\$ 8,299,748	0.02%
Caylor Mark A	\$ 6,593,841	0.01%
Gordon Bruce S	\$ 5,973,423	0.01%
Kleiner Madeleine A	\$ 5,642,663	0.01%
Pamiljans Janis G	\$ 4,779,192	0.01%
Schoewe Thomas Michael	\$ 4,286,288	0.01%
Total Insider Ownership		0.43%

Commentary

- **Share Classes:** NOC equity exists only in the form of common shares. No preferred or separate classes of share exist.
- **Insider Ownership:** The largest insider holder of NOC is the former CEO, Bush Wesley. Wesley retired in 2019. While the shares held by insiders are monetarily significant, given the market cap of NOC, not significant influence is exerted.
- **Overall Ownership:** Ownership is diluted, with the largest 25 holders only accounting for 62% of all voting shares.
 - Capital Group's position largely stems from managing several mutual funds.

Discounted Cash Flow

Bear Case - Cash Flow Projections

FCF Projections

Discounted Cash Flows	2012A	2013A	2014A	2015A	2016A	2017A	2018A	2019A	2020A	2021E	2022E	2023E	2024E	2025E
Revenue	25,218	24,661	23,979	23,526	24,706	26,004	30,095	33,841	36,799	34,717	35,895	37,128	38,468	39,913
EBITDA	3,640	3,618	3,658	3,543	3,733	3,693	4,580	5,234	5,332	5,083	5,361	5,511	5,851	5,980
Less: D&A	(510)	(495)	(462)	(467)	(456)	(475)	(800)	(1,265)	(1,267)	(970)	(1,219)	(1,300)	(1,299)	(1,341)
EBIT	3,130	3,123	3,196	3,076	3,277	3,218	3,780	3,969	4,065	4,113	4,142	4,210	4,552	4,638
Tax Rate	34%	32%	30%	29%	18%	38%	12%	7%	12%	12%	13%	16%	18%	20%
NOPAT	2,071	2,130	2,244	2,189	2,694	1,988	3,326	3,688	3,596	3,619	3,604	3,537	3,733	3,711
Plus: D&A	510	495	462	467	456	475	800	1,265	1,267	970	1,219	1,300	1,299	1,341
Plus/Less: Changes in NWC	-	18	107	533	127	(415)	1,557	(821)	216	(288)	163	185	(35)	(102)
Less: Capital Expenditures	(331)	(364)	(561)	(471)	(920)	(928)	(1,249)	(1,264)	(1,420)	(1,386)	(1,375)	(1,278)	(1,029)	(1,078)
Unlevered FCF	2,250	2,279	2,252	2,718	2,357	1,120	4,434	2,868	3,659	2,916	3,610	3,744	3,967	3,871
Periods										1	2	3	4	5
Discount Factor										0.93	0.86	0.79	0.74	0.68
PV of Unlevered FCF										2,700	3,095	2,972	2,916	2,635
Sum of Unlevered FCF														14,318

Terminal Value - Perpetuity Method		Exit Multiple Method	
Unlevered FCF in Final Year	3,871	Exit Year EBITDA	5,980
Growth Rate	2.00%	Exit EV/EBITDA Multiple	11.0x
Terminal Value	65,810	Terminal Value	65,777
Discount Periods	5.00	WACC	8.0%
WACC	8.00%	Discount Period	5
Net PV of Terminal Value	44,789.21	PV of Terminal Value	44,767
PV of UFCF	14,317.90	Sum of PV of UFCF	14,318
Implied Enterprise Value	59,107	Implied Enterprise Value	59,085
Less: Total Debt	(15,867)	Less: Total Debt	(15,867)
Less: Preferred Stock	-	Less: Preferred Stock	-
Less: Minority Interest	-	Less: Minority Interest	-
Plus: Cash and Equivalent	4,907	Plus: Cash and Equivalent	4,907
Implied Equity Value	48,147	Implied Equity Value	48,125
Diluted Shares Outstanding	167.30	Shares Outstanding	160
Implied Share Price	288	Implied Price Per Share	300.37
Current Share Price	\$319.02	Current Share Price	319.02
Margin of Safety	(10.9%)	Margin of Safety	(6.2%)

		WACC						
		7.25%	7.50%	7.75%	8.00%	8.25%	8.50%	8.75%
Terminal Growth	1.70%	27.4%	21.1%	15.2%	9.9%	5.0%	0.4%	(3.8%)
	1.80%	29.7%	23.1%	17.1%	11.6%	6.5%	1.9%	(2.5%)
	1.90%	32.1%	25.3%	19.1%	13.4%	8.2%	3.3%	(1.1%)
	2.00%	34.5%	27.5%	21.1%	15.2%	9.8%	4.9%	0.3%
	2.10%	37.1%	29.8%	23.2%	17.1%	11.6%	6.5%	1.8%
	2.20%	39.7%	32.2%	25.3%	19.1%	13.3%	8.1%	3.3%
	2.30%	42.5%	34.6%	27.5%	21.1%	15.2%	9.8%	4.8%
		WACC						
		7.25%	7.50%	7.75%	8.00%	8.25%	8.50%	8.75%
Exit Multiple	9.50	3.5%	2.5%	1.5%	0.5%	(0.6%)	(1.6%)	(2.7%)
	10.00	7.9%	6.9%	6.0%	5.0%	4.0%	3.0%	2.0%
	10.50	11.9%	11.0%	10.0%	9.1%	8.1%	7.1%	6.2%
	11.00	15.6%	14.7%	13.8%	12.8%	11.9%	11.0%	10.1%
	11.50	18.9%	18.1%	17.2%	16.3%	15.4%	14.5%	13.6%
	12.00	22.0%	21.2%	20.4%	19.5%	18.6%	17.8%	16.9%
	12.50	24.9%	24.1%	23.3%	22.5%	21.6%	20.8%	20.0%

Discounted Cash Flow

Bear Case - Operating Model

Income Statement	2012A	2013A	2014A	2015A	2016A	2017A	2018A	2019A	2020A	2021E	2022E	2023E	2024E	2025E
Revenues														
Product Revenue	13,838	14,033	14,015	13,966	15,080	16,364	20,469	23,852	27,015	26,061	27,152	28,297	29,549	30,905
Service Revenue	11,380	10,628	9,964	9,560	9,626	9,640	9,626	9,989	9,784	8,656	8,743	8,830	8,919	9,008
Total Revenue	25,218	24,661	23,979	23,526	24,706	26,004	30,095	33,841	36,799	34,717	35,895	37,128	38,468	39,913
		(2.21%)	(2.77%)	(1.89%)	5.02%	5.25%	15.73%	12.45%	8.74%	(5.66%)	3.39%	3.43%	3.61%	3.76%
Operating Expenses														
General and Administrative Expenses	2,450	2,256	2,405	2,566	2,632	2,712	3,011	3,290	3,413	3,263	3,368	3,472	3,472	3,645
Cost of Products Sold	10,415	10,623	10,431	10,333	11,197	12,527	15,785	18,675	21,559	20,458	21,414	22,371	23,287	24,388
Cost of Services	9,223	8,659	7,947	7,551	7,600	7,547	7,519	7,907	7,762	6,864	6,930	7,002	7,071	7,142
Operating Income	3,130	3,123	3,196	3,076	3,277	3,218	3,780	3,969	4,065	4,131	4,184	4,283	4,638	4,739
Non-Operating Expenses														
Interest Expense	212	257	282	301	301	360	562	528	593					
Other Non-Operating Income	-	-	-	-	(611)	(699)	(1,049)	(800)	(1,198)					
Income Tax Expense (Benefit)	987	911	868	800	638	1,360	513	300	539					
Income Before Income Taxes	2,965	2,863	2,937	2,790	2,681	4,229	3,742	2,548	3,728					
Other Non-Operating (Income)/Expense - Net	(47)	3	(23)	(15)	(44)	(136)	(130)	(107)	(92)					
Other One - Time Items Non-Operating	-	-	-	-	950	(536)	655	1,800	1,034					
Net Income	1,978	1,952	2,069	1,990	2,043	2,869	3,229	2,248	3,189					
Average Shares Outstanding														
Basic	248.60	229.60	208.80	189.40	178.90	174.40	173.70	169.30	167.10	167.10	167.10	167.10	167.10	167.10
Diluted	253.40	233.90	212.10	191.60	180.50	175.60	174.60	170.00	167.60	167.60	167.60	167.60	167.60	167.60

Assumptions	2019A	2020A	2021E	2022E	2023E	2024E	2025E
% Growth Rate							
Product Revenue	16.53%	13.26%					
Aeronautics Systems		11.19%	(3.00%)	5.00%	5.00%	5.00%	5.00%
Mission Systems		11.99%	(2.00%)	2.00%	2.00%	2.00%	2.00%
Space Systems		20.34%	(2.00%)	6.00%	6.00%	6.50%	7.00%
Defense Systems		(5.70%)	(30.00%)	2.00%	2.00%	2.50%	2.50%
Service Revenue	3.77%	(2.05%)	(4.00%)	1.00%	1.00%	1.00%	1.00%
% of Revenue							
SG&A	9.72%	9.27%	9.40%	9.70%	10.00%	10.00%	10.50%
Cost of Products	78.30%	79.80%	78.50%	78.87%	79.06%	78.81%	78.91%
Cost of Services	79.16%	79.33%	79.30%	79.26%	79.30%	79.29%	79.28%
Depreciation & Amortization	3.74%	3.44%	2.74%	3.28%	3.31%	3.15%	3.11%
Capital Expenditures	3.74%	3.86%	3.91%	3.70%	3.80%	3.90%	3.70%
Statutory Tax Rate	7.07%	11.54%	12.00%	13.00%	16.00%	18.00%	20.00%

Key Metrics	2019A	2020A	2021E	2022E	2023E	2024E	2025E
Gross Profit	7,259	7,478	7,395	7,551	7,754	8,109	8,384
Operating Income	3,969	4,065	4,131	4,184	4,283	4,638	4,739
EBITDA	5,234	5,332	5,083	5,361	5,511	5,851	5,980
Margin %	15.47%	14.49%	14.64%	14.94%	14.84%	15.21%	14.98%
Depreciation and Amortization	1,265	1,267	952	1,177	1,228	1,214	1,241
Capital Expenditures	(1,264)	(1,420)	(1,359)	(1,328)	(1,411)	(1,500)	(1,477)

Discounted Cash Flow

Bull Case - Cash Flow Projections

FCF Projections

Discounted Cash Flows	2012A	2013A	2014A	2015A	2016A	2017A	2018A	2019A	2020A	2021E	2022E	2023E	2024E	2025E
Revenue	25,218	24,661	23,979	23,526	24,706	26,004	30,095	33,841	36,799	36,040	38,042	40,324	42,283	44,314
EBITDA	3,640	3,618	3,658	3,543	3,733	3,693	4,580	5,234	5,332	4,973	5,931	6,517	6,874	7,375
Less: D&A	(510)	(495)	(462)	(467)	(456)	(475)	(800)	(1,265)	(1,267)	(988)	(1,248)	(1,334)	(1,334)	(1,378)
EBIT	3,130	3,123	3,196	3,076	3,277	3,218	3,780	3,969	4,065	3,985	4,683	5,183	5,540	5,997
Tax Rate	34%	32%	30%	29%	18%	38%	12%	7%	12%	12%	13%	16%	18%	20%
NOPAT	2,071	2,130	2,244	2,189	2,694	1,988	3,326	3,688	3,596	3,507	4,074	4,354	4,543	4,797
Plus: D&A	510	495	462	467	456	475	800	1,265	1,267	988	1,248	1,334	1,334	1,378
Plus/Less: Changes in NWC	-	18	107	533	127	(415)	1,557	(821)	216	(388)	295	246	(62)	(35)
Less: Capital Expenditures	(331)	(364)	(561)	(471)	(920)	(928)	(1,249)	(1,264)	(1,420)	(1,386)	(1,375)	(1,278)	(1,029)	(1,078)
Unlevered FCF	2,250	2,279	2,252	2,718	2,357	1,120	4,434	2,868	3,659	2,721	4,242	4,655	4,785	5,062
Periods										1	2	3	4	5
Discount Factor										0.93	0.86	0.79	0.74	0.68
PV of Unlevered FCF										2,519	3,637	3,696	3,517	3,445
Sum of Unlevered FCF														16,814

Terminal Value - Perpetuity Method		Exit Multiple Method	
Unlevered FCF in Final Year	5,062	Exit Year EBITDA	7,375
Growth Rate	2.00%	Exit EV/EBITDA Multiple	11.0x
Terminal Value	86,048	Terminal Value	81,121
Discount Periods	5.00	WACC	8.0%
WACC	8.00%	Discount Period	5
Net PV of Terminal Value	58,563	PV of Terminal Value	55,209
PV of UFCF	16,814	Sum of PV of UFCF	16,814
Implied Enterprise Value	75,376	Implied Enterprise Value	72,023
Less: Total Debt	(15,867)	Less: Total Debt	(15,867)
Less: Preferred Stock	-	Less: Preferred Stock	-
Less: Minority Interest	-	Less: Minority Interest	-
Plus: Cash and Equivalent	4,907	Plus: Cash and Equivalent	4,907
Implied Equity Value	64,416	Implied Equity Value	61,063
Diluted Shares Outstanding	167.30	Shares Outstanding	160
Implied Share Price	385	Implied Price Per Share	381.12
Current Share Price	\$319.02	Current Share Price	319.02
Implied Upside	17.1%	Margin of Safety	16.3%

		WACC						
		7.25%	7.50%	7.75%	8.00%	8.25%	8.50%	8.75%
Terminal Growth	1.70%	25.1%	21.1%	17.2%	13.2%	9.1%	5.0%	0.9%
	1.80%	26.4%	22.4%	18.5%	14.5%	10.4%	6.4%	2.2%
	1.90%	27.7%	23.8%	19.8%	15.8%	11.8%	7.7%	3.6%
	2.00%	29.0%	25.1%	21.1%	17.1%	13.1%	9.0%	4.9%
	2.10%	30.3%	26.4%	22.5%	18.5%	14.4%	10.4%	6.3%
	2.20%	31.6%	27.7%	23.8%	19.8%	15.8%	11.7%	7.6%
	2.30%	32.9%	29.0%	25.1%	21.1%	17.1%	13.1%	9.0%
		WACC						
		7.25%	7.50%	7.75%	8.00%	8.25%	8.50%	8.75%
Exit Multiple	9.50	7.4%	6.5%	5.5%	4.5%	3.5%	2.5%	1.5%
	10.00	11.6%	10.7%	9.7%	8.8%	7.8%	6.9%	5.9%
	10.50	15.4%	14.5%	13.6%	12.7%	11.8%	10.9%	10.0%
	11.00	18.9%	18.0%	17.2%	16.3%	15.4%	14.5%	13.6%
	11.50	22.1%	21.3%	20.4%	19.6%	18.8%	17.9%	17.0%
	12.00	25.1%	24.3%	23.5%	22.7%	21.8%	21.0%	20.2%
	12.50	27.8%	27.0%	26.3%	25.5%	24.7%	23.9%	23.1%

Discounted Cash Flow

Bull Case - Operating Model

Income Statement	2012A	2013A	2014A	2015A	2016A	2017A	2018A	2019A	2020A	2021E	2022E	2023E	2024E	2025E
Revenues														
Product Revenue	13,838	14,033	14,015	13,966	15,080	16,364	20,469	23,852	27,015	27,203	29,073	31,220	33,042	34,936
Service Revenue	11,380	10,628	9,964	9,560	9,626	9,640	9,626	9,989	9,784	8,837	8,969	9,104	9,240	9,379
Total Revenue	25,218	24,661	23,979	23,526	24,706	26,004	30,095	33,841	36,799	36,040	38,042	40,324	42,283	44,314
		(2.21%)	(2.77%)	(1.89%)	5.02%	5.25%	15.73%	12.45%	8.74%	(2.06%)	5.56%	6.00%	4.86%	4.81%
Operating Expenses														
General and Administrative Expenses	2,450	2,256	2,405	2,566	2,632	2,712	3,011	3,290	3,413	3,388	3,496	3,532	3,514	3,514
Cost of Products Sold	10,415	10,623	10,431	10,333	11,197	12,527	15,785	18,675	21,559	21,708	22,822	24,508	26,021	27,512
Cost of Services	9,223	8,659	7,947	7,551	7,600	7,547	7,519	7,907	7,762	6,959	7,041	7,101	7,207	7,292
Operating Income	3,130	3,123	3,196	3,076	3,277	3,218	3,780	3,969	4,065	3,985	4,683	5,183	5,540	5,997
Non-Operating Expenses														
Interest Expense	212	257	282	301	301	360	562	528	593					
Other Non-Operating Income	-	-	-	-	(611)	(699)	(1,049)	(800)	(1,198)					
Income Tax Expense (Benefit)	987	911	868	800	638	1,360	513	300	539					
Income Before Income Taxes	2,965	2,863	2,937	2,790	2,681	4,229	3,742	2,548	3,728					
Other Non-Operating (Income)/Expense - Net	(47)	3	(23)	(15)	(44)	(136)	(130)	(107)	(92)					
Other One - Time Items Non-Operating	-	-	-	-	950	(536)	655	1,800	1,034					
Net Income	1,978	1,952	2,069	1,990	2,043	2,869	3,229	2,248	3,189					
Average Shares Outstanding														
Basic	248.60	229.60	208.80	189.40	178.90	174.40	173.70	169.30	167.10	167.10	167.10	167.10	167.10	167.10
Diluted	253.40	233.90	212.10	191.60	180.50	175.60	174.60	170.00	167.60	167.60	167.60	167.60	167.60	167.60

Assumptions	2019A	2020A	2021E	2022E	2023E	2024E	2025E
% Growth Rate							
Product Revenue	16.53%	13.26%					
Aeronautics Systems		11.19%	(2.00%)	7.50%	8.50%	7.25%	7.00%
Mission Systems		11.99%	1.50%	2.50%	2.50%	2.75%	2.50%
Space Systems		20.34%	7.00%	12.00%	12.00%	7.50%	7.50%
Defense Systems		-5.70%	(25.00%)	2.00%	2.00%	2.50%	2.50%
Service Revenue	3.77%	(2.05%)	(2.00%)	1.50%	1.50%	1.50%	1.50%
% of Revenue							
SG&A	9.72%	9.27%	9.40%	9.70%	9.80%	9.75%	9.75%
Cost of Products	78.30%	79.80%	79.80%	78.50%	78.50%	78.75%	78.75%
Cost of Services	79.16%	79.33%	78.75%	78.50%	78.00%	78.00%	77.75%
Depreciation & Amortization	3.74%	3.44%	2.74%	3.28%	3.31%	3.15%	3.11%
Capital Expenditures	3.74%	3.86%	3.91%	3.70%	3.25%	2.50%	2.50%
Statutory Tax Rate	7.07%	11.54%	12.00%	13.00%	15.00%	17.00%	19.00%

Key Metrics	2019A	2020A	2021E	2022E	2023E	2024E	2025E
Gross Profit	7,259	7,478	7,373	8,179	8,715	9,054	9,511
Operating Income	3,969	4,065	3,985	4,683	5,183	5,540	5,997
EBITDA	5,234	5,332	4,973	5,931	6,517	6,874	7,375
Margin %	15.47%	14.49%	13.80%	15.59%	16.16%	16.26%	16.64%
Depreciation and Amortization	1,265	1,267	988	1,248	1,334	1,334	1,378
Capital Expenditures	(1,264)	(1,420)	(1,411)	(1,408)	(1,311)	(1,057)	(1,108)