

Northrop Grumman (NYSE: NOC)

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Changing The Definition of Global Security

NOC is an aerospace and defense company with capable leadership, stable revenue streams, and a wide range of applications

Business Overview

- Northrup Grumman (**NYSE: NOC**) is a technology company that develops applications in the aerospace, defense, electronics, and information systems sectors
- Serves **foreign, state, and local** governments and **commercial** customers across North America, Europe, and Asia-Pacific
- Maintains **government contracts** that span internet-in-space constellation to long-range strike bombers.

Established Leadership



Kathy Warden - CEO & President

- Serves as CEO & President of NOC
- Responsible for the operational management of company's four sectors
- Extensive experience in business development government and commercial markets



Matt Bromberg – VP of Global Operations

- Currently Vice President for global operations
- Served as the president of Military Engines at Pratt & Whitney
- Prior broad experience in leading global teams at Raytheon

Key Trends and Acquisitions



Strong Order Backlog

Includes funded backlog that represents authorized firm orders



Space Exploration

Highly reliant on military spending and budgets of defense departments

Among the A&D industry's catalysts, Northrup Grumman's order backlog and continued R&D in space exploration has primed the firm for projected growth

Acquisition of Orbital ATK



Absorbed into Northrup Grumman Innovation Systems

Enhanced space exploration capabilities and innovation

Enabled the construction and launch of the **Cygnus spacecraft**

Transaction Value

\$9.2B
[\$7.8B in cash, \$1.4B net debt]

Savings

Estimated annual pre-tax cost savings of \$150 million by 2020.

Segment Analysis

Northrup Grumman has four primary operating sectors that span five geographical landscapes.

Aeronautics (26%)

Premier provider of aeronautics systems, like autonomous systems and aerospace structures



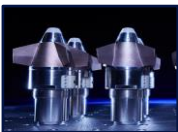
B-2 Bomber

CPU: \$1.16BN based on non-sticky contracts

- Backbone of stealth technology for the United States Air Force
- Key component of the nation's long-range strike arsenal

Defense (14.2%)

Provider of critical solutions, ranging from advanced weapons to battle command systems.



Precision Guidance

Over 100k produced units at ~\$13k/unit

- Transforms traditional munitions into GPS-guided weapons
- Deployed from air, land, and sea based platforms

Contract Type

53%

47%

Cost Type

Reimbursement for all allowable costs incurred during the performance of the contract

Fixed Price

Contract set at a redetermined price, regardless of the actual costs incurred

Sales Distribution

88%

12%

Of Northrup Grumman's consumer base, 88% are domestic, principally the DoD and intelligence community, while 12% are other global/commercial consumers.

November 2010

NASA selects Northrup Grumman for consideration of potential contract awards for heavy lift launch vehicle system concepts, and propulsion technologies

July 2013

Northrup Grumman won a training-simulation contract potentially worth \$490 million to support the U.S. Air Force's next-generation aerial warfare virtual-training network

December 2018

Northrup Grumman became the primary contractor for the James Webb Space Telescope

October 2023

Taxi tests for the B-21 Raider were underway for the US Air Force

Mission (26.3%)

Offers battle management and cyber solutions that provide situational awareness



Battle Systems

Contracts valued between \$1.2-4BN

- Senses, identifies, and defeats evolving air and missile threats
- Integrates strategy between USMC, USAF, and USN

Space (33.5%)

Designs, builds, and delivers space, defense and aviation-related systems to global consumers



J.W. Space Telescope

Project total of \$10BN in 2016

- Currently NASA's complex and powerful space telescope
- Leading deep space exploration and central for NRC R&D

Investment Thesis

1

Northrop Grumman is currently undervalued in the market and its potential for growth over the next few years has not been recognized

2

Geopolitical tensions and the resulting need for security and defense offer Northrop Grumman prime opportunities for increased revenue

3

Northrop Grumman's advanced space program has them uniquely positioned to lead the growing space industry

Blended Share Price: \$619.16

Upside/Downside: 41.4%

Part 1: Market Undervaluation



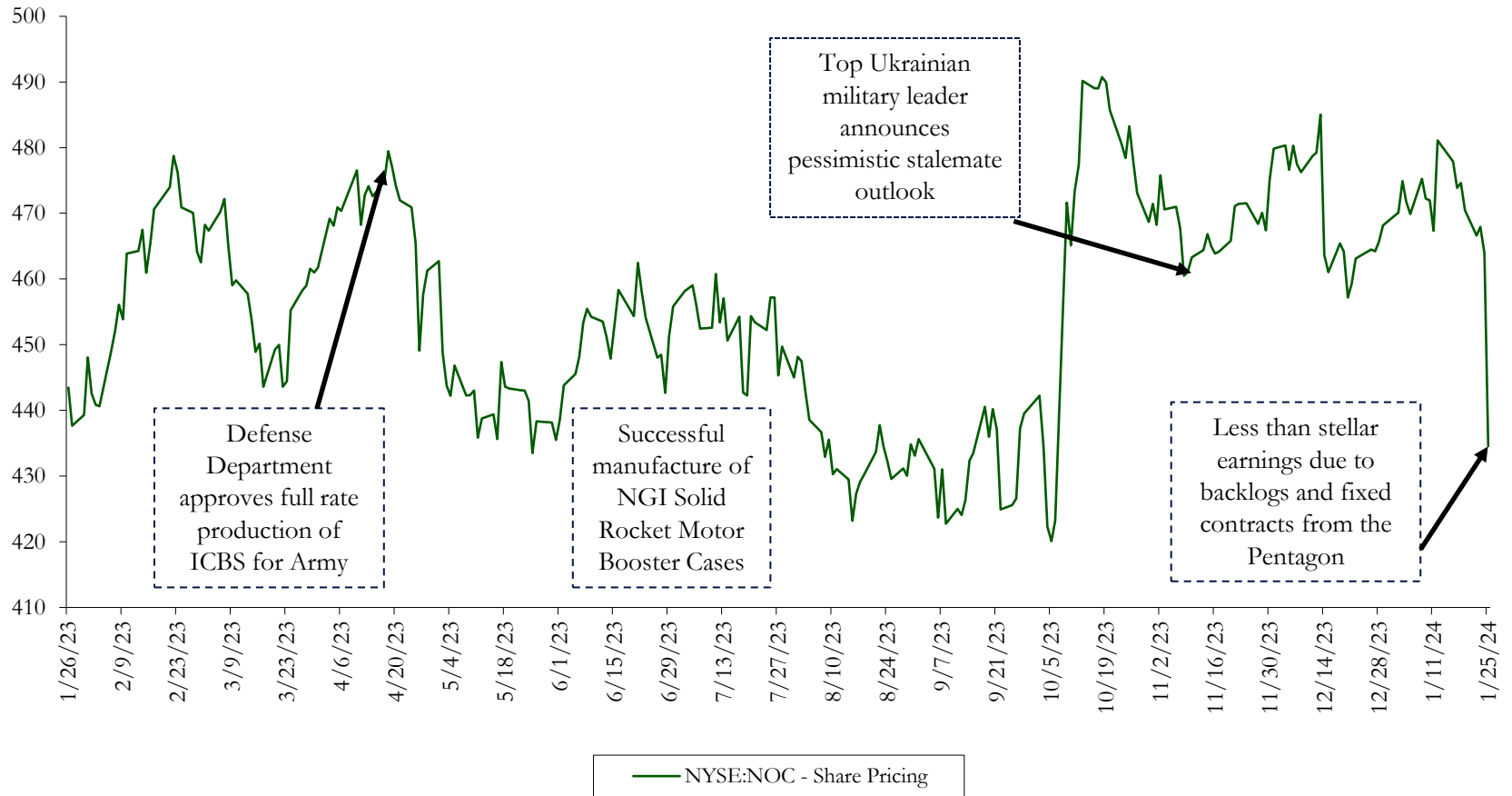
1

NOC is currently undervalued in the market and its potential for growth over the next few years has not been recognized

Inconsistent Market

NOC's movement over the past year shows a skittish market that fails to appreciate the potential for long-term demand.

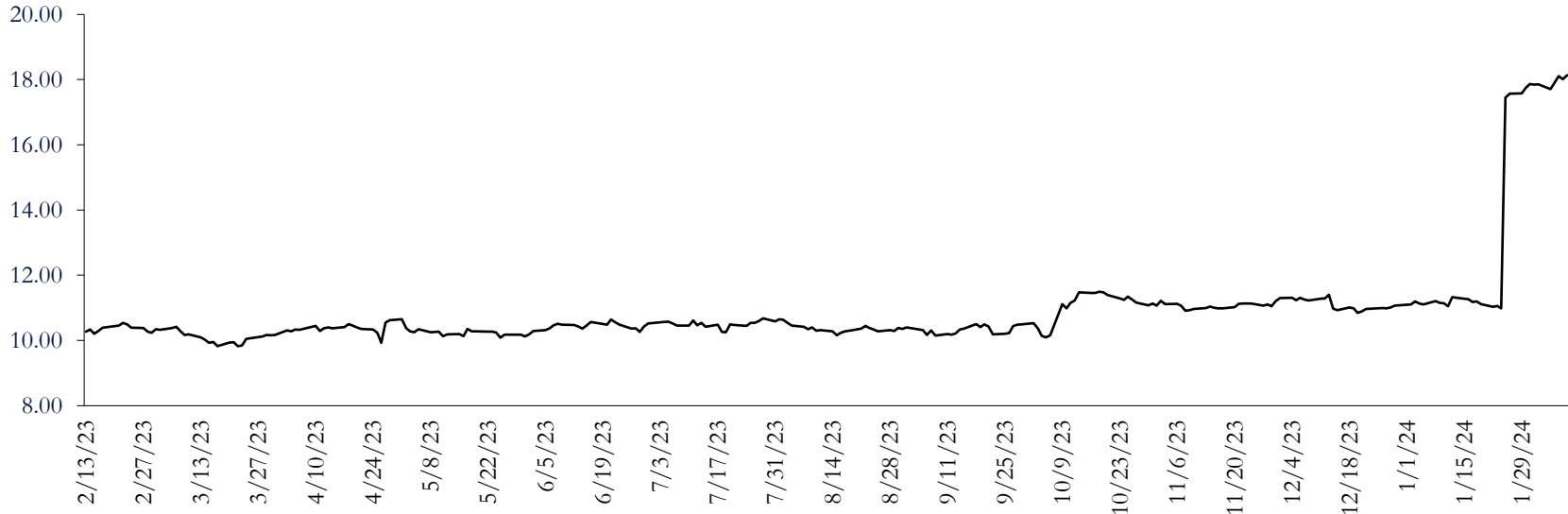
NYSE:NOC - Share Pricing



Discounted EV/EBIDTA History

NDIC can capitalize on a historically tentative market's discount due to potential for heightened demand.

TEV to LTM EBITDA



Reasons for Historical Discount

- Average Altman Z Score of 2.81 over the past six years, which is far below the average “green zone” scores of Lockheed and General Dynamics
- Smaller EV than many competitors creates perceived risk
- Length of project completion creates investor sentiment of slow growth

NOC Gross

16.7%

**Vs.
Industry Gross**

21.3%

Capitalizing on Historic Concerns

Discounted purchase opportunity

Decreased market worries as A&D demand rises

Realization of gains as market **appreciates**

Leveraging a Loss

"The B-21 will eventually make money." – Kathy Warden

Northrup Grumman's B-21 Bomber



The B-21 Raider, replacing the aging B-2, is a key weapon in the Pentagon's strategy to **counter China and Russia**



Conventional and Nuclear Loads



Agile Digital Engineering

2023 Earnings

Northrup Grumman swung a post-tax **\$1.17B loss in Q4**

1 For multiple quarters, NOC has reported potential losses of up to \$1.2 billion due to a **fixed-price** contract for the B-21 Raider's **low-rate initial production phase** signed in 2015.

2 Northrop warned it is likely to lose money on the first five batches of aircraft delivered under the fixed-price deal, capping the price/plane at **~ \$700 million**

3 The B-21 program (will yield 100+ bombers), has most of its production covered under a **cost-plus** contract for the EMD phase of the program.

Geopolitical Competition



Tupolev Tu-160 White Swan (Blackjack)

Russia's fleet is aging and has struggled to produce even its older designs. Maintains a significant number of those older bombers and shows no signs of retiring the aircraft anytime soon.



People's Liberation Army Air Force (PLAAF)

China has ambitious plans to become a major bomber power, developing at least two strategic bombers that could reach Guam from mainland China.

Loss Now, Profit Later

Probable that first **5 batches** of LRIP will bring losses



Since the B-21 production will be at least **145**, the company will ultimately bring profits that **far exceed** the losses.

Part 2: Geopolitical Tensions



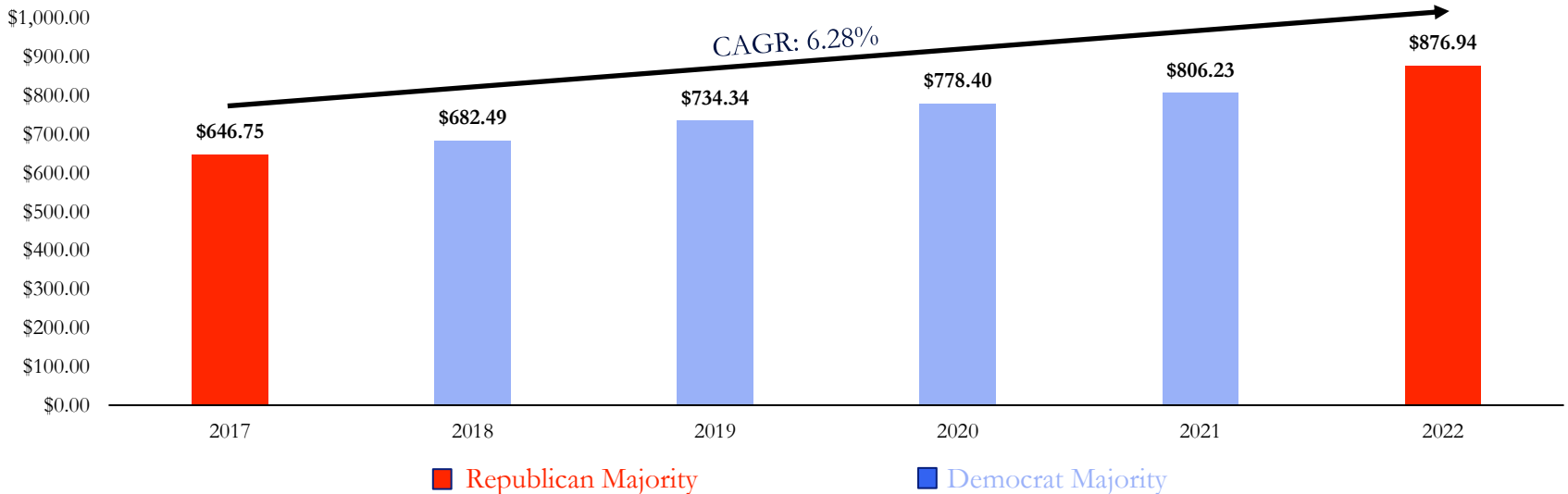
2

Geopolitical tensions and the resulting need for security and defense offer NOC prime opportunities for increased revenue

US Political Landscape

Despite potential political changes in the legislative and executive branches, defense spending will likely continue to increase.

House Majority vs. Defense Spending (\$bn)



With an election year upcoming, the possibility of the House flipping blue will not be detrimental to defense spending and thus, NOC's ability to earn.

Joe Biden, Democratic President



Recent authorization of attacks on Houthi rebels that used NOC naval systems for US Navy Arleigh-Burke Destroyers



Donald Trump, Republican Candidate

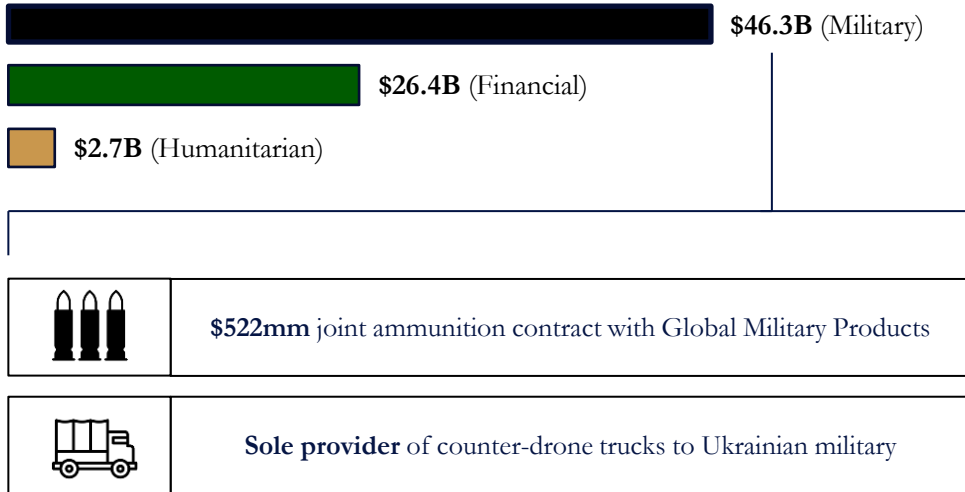


Granted Congress more defense spending that was partially used to purchase NOC B-21 long-range stealth bombers

Ukraine-Russia Conflict

NOC's advanced defense systems have seen an increase in demand due to the Ukraine-Russia conflict.

Breakdown of US Aid to Ukraine



Northrup Grumman and NATO



Helped deliver a new F-35 fuselage Integrated Assembly Line to **Germany**, who is preparing to increase F-35 jet production



Primary provider of NATO'S aerial surveillance system, which has been used to continuously monitor the **Eastern Front**



Provides NATO with their Cyber Incident Response Capability system that protects over **28 countries from cyberattacks**

Patriots and Rocket Motor Significance

Rising Demand in Ukraine

Rockets motors are used in guided multiple-launch rocket systems (GMLRS)

GMLRS are GPS-guided rockets with 200-pound warheads

Enables **distance strikes** against Russian forces

Northrup Grumman Futures

\$500mm

in new backlog orders for GLMRS (NOC 3Q 2023)

Northrup Grumman has a strong outlook with Ukraine's continued demand for rocket motors, coupled with Biden's approved request of **\$106B** in new funds for backfill production of US weapons. The firm is also **1 of 2 manufacturers** of rocket motors.

NOC's Strong Partnership with South Korea

A strong history of partnership in KOR, growing tensions in the region, and constant contract activity keeps KOR a stable revenue source

Capable Regional Leadership



Chief Executive: Dong Ha

- Responsible for NOC/KOR relationship
- Spearheading company growth in KOR
- Prior director of business development for NOC in KOR
- 27-year career with the U.S. Army, retiring at the grade of colonel

2024 DPRK Relations at a Breaking Point



DPRK Preparing for Conflict:

- Testing of new “super large” warheads
- Designed to overwhelm regional missile defense
- Deepening military cooperation with Russia



DPRK No Longer Seeking Reunification:

- Kim Jong Un called for KOR to be labeled as “primary foe and invariable principal enemy” in new constitution
- Threatened to “annihilate” KOR if provoked

History of Success and Signs of a Bright Future

Past

- **Office in Seoul since 1991**
- APG-68 Fire Control Radar (FCR) on KF-16
- MESA radar on Peace Eye
- Internal Countermeasures System (ICS) on the F-15K
- APN-241 all-weather radars on the upgraded C-130 platform
- Legacy F-5 fighter jets
- Support to the Korean Air and Missile Defense program



Future

1 NOC and LIG Nex1 to collaborate on **Electronic Warfare Systems** for KOR

2 NOC to Enhance **UH-60V** Aircraft Capabilities

3 NOC to supply **Airborne Laser Mine Detection System** to KOR

Issues in the South China Sea

NOC's presence in the South China Sea grows in support of Taiwan as tensions increase between China and Taiwan.

American-Chinese Hostilities

- In September, China placed sanctions on NOC products because NOC was supplying weapons to Taiwan
- US-Taiwan relations have grown more material due to increased Chinese incursions
- US Naval exercises east of Taiwan as demonstration of force against China

NOC in Taipei



NOC's office in Taipei "underscores [their] long-term strategic commitment to Taiwan and its security"

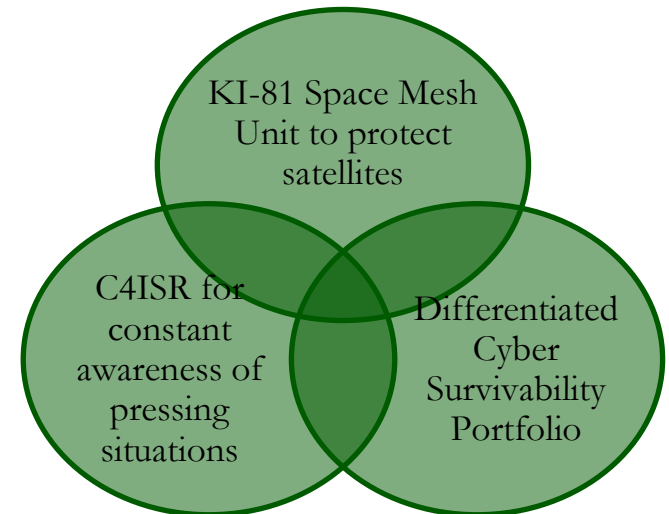
Taiwan Relations Act

United States' firm commitment to provide defensive capabilities to Taiwan and to resist forces aimed at toppling Taiwan's sovereignty

China's continuous crossing of **the Taiwan Strait** has prompted more American involvement in the area



China's large **offensive cyberattack** capabilities present a pressing need for Taiwan to defend



Part 3: Best-in-Class Space Segment



3

NOC's advanced space program has them uniquely positioned to lead the growing space industry

Sky's The Limit

NOC is capitalizing on modernized space exploration and militarization

Northrup Crushed in 2023



Fastest Growing Segment

Largest and fastest-growing segment in the company, with **\$13.9 billion** in revenue, posting 14% in YoY growth (2023)



Contract Type

73% were cost-type, while 27% were fixed price



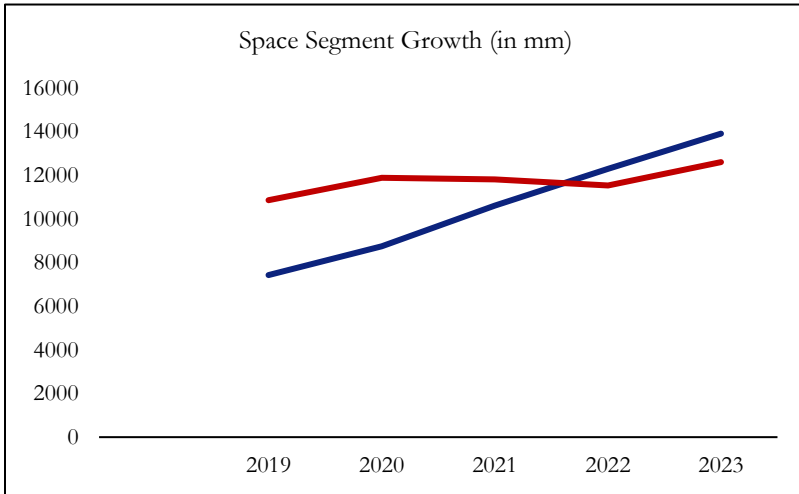
Sales Distribution

98% of sales is domestic consumption

Double Digit Growth

Space has expanded sales at a greater than **17% CAGR** since 2019

Northrup Grumman has recently been outperforming Lockheed Martin



For both Lockheed Martin and Northrup Grumman, **space** was the top segment for sales growth in 2023 — by a wide margin.

Lockheed's space unit saw sales grow 9% YoY, while Northrop's space unit grew sales by **14% YoY**

Increased Sales In..

GBSD Program



NGI Program



SLS Program



Space Militarization Outlook

NOC is positioning itself well to take a large portion of the Space Force's budget

Eyes in the Sky



Northrup Grumman provides a variety of satellite services used to **track ballistics** and **provide communication** with ground forces



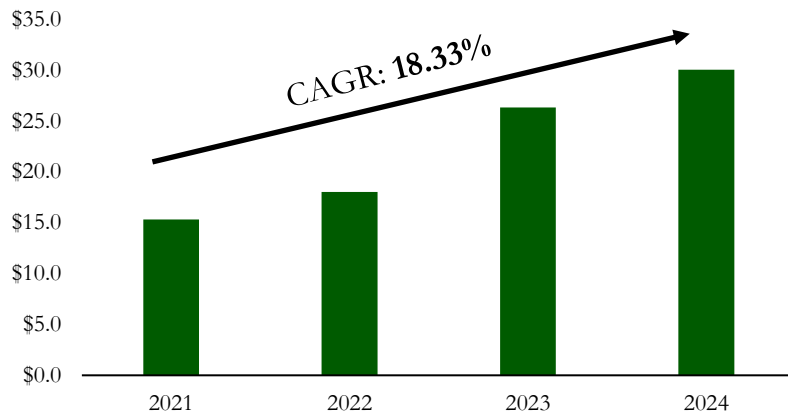
>3,400 Satellites
US-based in orbit



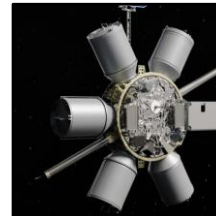
+\$1221
NOC space revenue

Relationship with the United States

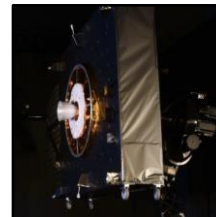
US Military Stance & Space Force Budget (\$bn)



Space Force Relationship



Tests and mockups of their Passive Refueling Module (PRM)



Selected as **first company** to provide Space Force with orbital refueling port

Leader in Advanced Space Systems

NOC has a history of being a leader in space technology and continues to lead the industry in advancing the journey into space.

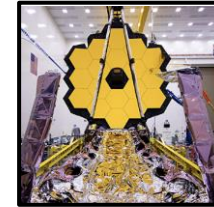
6 Segments of Space Division



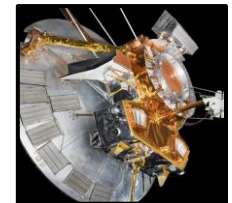
Legacy of Excellence



Lunar Module



James Webb



Pioneer 10

Constant Innovation Leading to Lucrative Contracts



Tranche I



\$692M contract

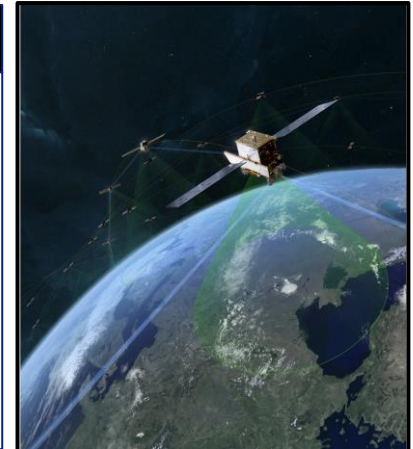
Detects, identifies and tracks **hypersonic weapons** and other advanced missiles

Tranche II



\$732M contract

Delivers accessible, near-real time communications to **U.S. warfighters**



Both have 42 satellites

Artemis Program

NASA's next big project is the Artemis Mission, which NOC is helping to drive at a time when the space market is rebounding.

What is Artemis?

Artemis is NASA's next mission to the moon

Planned landings in 2024

Exploratory missions over the decade

Multiple missions with on-moon stays



Late 2024



2030s

Potential Partners with Blue Origin

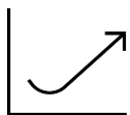


Lucrative Partnership

Blue Origin is developing the moon lander that will interact with many of NOC's products

Venture Capital Optimism

\$298bn invested since 2014 across 1,832 space firms



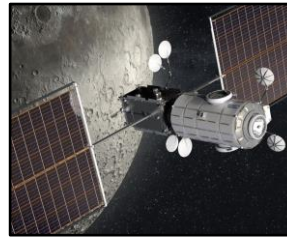
31%
Q4 Growth in Investment



\$17.9bn
Total 2023 VC Funding

Northrup Grumman's Involvement

Primary Provider of Key Instruments for Artemis Missions



Habitat and Logistics Outpost

Sole contractor of the orbital support system, which allows for **prolonged exploratory missions**, needed for potential Mars



Orion Spacecraft Control Motor

Eight valves to steer the craft in any direction while in space (steering force of 7,000 total lbs), being useful for **abort features**



Rocket Motor Systems

Largest human-rated, solid rocket motors **ever built for flight**, which a history of successful separation

Conclusion: Investment Thesis

1

Northrop Grumman is currently undervalued in the market and its potential for growth over the next few years has not been recognized

2

Geopolitical tensions and the resulting need for security and defense offer Northrop Grumman prime opportunities for increased revenue

3

Northrop Grumman's advanced space program has them uniquely positioned to lead the growing space industry

Blended Share Price: \$619.16

Upside/Downside: 41.4%

DCF Base

\$ in millions

For Fiscal Year Ending September 24th,

	2024E	2025E	2026E	2027E	2028E	2029E
Revenue	\$41,111.1	\$43,282.8	\$45,641.0	\$48,420.0	\$51,017.1	\$53,846.4
<i>% Growth</i>	4.6%	5.3%	5.4%	6.1%	5.4%	5.5%
(-) Operating Expenses	(37,469.9)	(39,341.8)	(41,387.8)	(43,804.4)	(46,044.9)	(48,483.5)
(+) Depreciation & Amortization	1,445.2	1,521.5	1,604.4	1,702.1	1,793.4	1,892.8
EBITDA	5,086.3	5,462.5	5,857.6	6,317.7	6,765.5	7,255.8
<i>% Margin</i>	12.4%	12.6%	12.8%	13.0%	13.3%	13.5%
(-) Depreciation & Amortization	(1,445.2)	(1,521.5)	(1,604.4)	(1,702.1)	(1,793.4)	(1,892.8)
EBIT	3,641.2	3,941.0	4,253.2	4,615.6	4,972.1	5,362.9
<i>% Margin</i>	8.9%	9.1%	9.3%	9.5%	9.7%	10.0%
(-) Taxes	(451.5)	(488.7)	(527.4)	(572.3)	(616.5)	(665.0)
<i>% Effective Tax Rate</i>	12.4%	12.4%	12.4%	12.4%	12.4%	12.4%
NOPAT	3,189.7	3,452.3	3,725.8	4,043.3	4,355.6	4,697.9
(+) Depreciation & Amortization	1,445.2	1,521.5	1,604.4	1,702.1	1,793.4	1,892.8
(-) Capital Expenditures	(1,857.3)	(1,955.4)	(2,061.9)	(2,187.5)	(2,304.8)	(2,432.6)
(-) Change in Net Working Capital	(7.5)	(44.6)	(48.9)	(57.8)	(53.4)	(58.1)
UFCF (excl. SBC)	2,770.1	2,973.8	3,219.4	3,500.1	3,790.8	4,100.0
(-) Stub-Year		24.8				
FCF For Discounting	2,770.1	2,998.6	3,219.4	3,500.1	3,790.8	4,100.0
Discount Period		0.50	1.50	2.50	3.50	4.50
Discount Factor		0.97	0.92	0.88	0.83	0.79
PV of UFCF		2,920.3	2,975.2	3,069.4	3,154.5	3,237.5

Operating Build Condensed



\$ in billions

	Historical Years			Forecasted Years					
	2021A	2022A	2023A	2024E	2025E	2026E	2027E	2028E	2029E
Product Revenue	27,868.0	28,522.0	30,897.0	32,329.0	34,036.9	35,891.3	38,076.7	40,119.0	42,343.9
Service Revenue	7,799.0	8,080.0	8,393.0	8,782.0	9,245.9	9,749.7	10,343.3	10,898.1	11,502.5
Total Revenue	\$35,667.0	\$36,602.0	\$39,290.0	\$41,111.1	\$43,282.8	\$45,641.0	\$48,420.0	\$51,017.1	\$53,846.4
<i>% Growth</i>		2.6%	7.3%	4.6%	5.3%	5.4%	6.1%	5.4%	5.5%
Products COGS	(22,309.0)	(22,761.0)	(26,226.0)	(26,373.6)	(27,766.8)	(29,279.7)	(31,062.4)	(32,728.5)	(34,543.6)
Services COGS	(6,090.0)	(6,367.0)	(6,513.0)	(6,864.2)	(7,119.4)	(7,409.8)	(7,757.5)	(8,064.6)	(8,396.8)
(-) Cost of Goods Sold	(\$28,399.0)	(\$29,128.0)	(\$32,739.0)	(\$33,237.8)	(\$34,886.2)	(\$36,689.4)	(\$38,819.9)	(\$40,793.1)	(\$42,940.4)
Gross Profit	\$7,268.0	\$7,474.0	\$6,551.0	\$7,873.2	\$8,396.6	\$8,951.6	\$9,600.1	\$10,224.0	\$10,906.0
<i>% Margin</i>	20.4%	20.4%	16.7%	19.2%	19.4%	19.6%	19.8%	20.0%	20.3%

Main Assumptions

\$ in billions

	Historical Years			Forecasted Years					
	2021A	2022A	2023A	2024E	2025E	2026E	2027E	2028E	2029E
Products Revenue	\$27,868.0	\$28,522.0	\$30,897.0	\$32,329.0	\$34,036.9	\$35,891.3	\$38,076.7	\$40,119.0	\$42,343.9
% Growth		2.3%	8.3%	3.6%	4.2%	4.3%	4.8%	4.2%	4.4%
Base				3.6%	4.2%	4.3%	4.8%	4.2%	4.4%
Bull				6.3%	4.7%	5.5%	9.4%	5.9%	5.8%
Bear				3.1%	3.1%	3.1%	3.1%	3.1%	3.1%
Services Revenue	\$7,799.0	\$8,080.0	\$8,393.0	\$8,782.0	\$9,245.9	\$9,749.7	\$10,343.3	\$10,898.1	\$11,502.5
% Growth		3.6%	3.9%	1.0%	1.1%	1.2%	1.3%	1.1%	1.2%
Base				1.0%	1.1%	1.2%	1.3%	1.1%	1.2%
Bull				1.7%	1.3%	1.5%	2.6%	1.6%	1.6%
Bear				0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
Products COGS	(\$22,309.0)	(\$22,761.0)	(\$26,226.0)	(\$26,373.6)	(\$27,766.8)	(\$29,279.7)	(\$31,062.4)	(\$32,728.5)	(\$34,543.6)
% of Products Revenue	80.1%	79.8%	84.9%	81.6%	81.6%	81.6%	81.6%	81.6%	81.6%
Base				81.6%	81.6%	81.6%	81.6%	81.6%	81.6%
Bull				76.8%	77.9%	77.3%	74.5%	77.0%	77.1%
Bear				84.1%	84.1%	84.1%	84.1%	84.1%	84.1%
Services COGS	(\$6,090.0)	(\$6,367.0)	(\$6,513.0)	(\$6,864.2)	(\$7,119.4)	(\$7,409.8)	(\$7,757.5)	(\$8,064.6)	(\$8,396.8)
% of Services Revenue	78.1%	78.8%	77.6%	78.2%	77.0%	76.0%	75.0%	74.0%	73.0%
Base				78.2%	77.0%	76.0%	75.0%	74.0%	73.0%
Bull				76.8%	76.0%	74.9%	73.1%	72.8%	71.9%
Bear				78.8%	77.7%	76.6%	75.6%	74.6%	73.6%

Assumed growth remains consistent with historical growth rates
 Assumed NOC is able to effectively manage production on B-21 and Sentinel contracts
 Assumed consistent revenue but a steadily low growth rate due to backlogs and loss of contract value

Assumed growth remains consistent with historical growth rates
 Assumed higher military demand for NOC-based maintenance and training programs
 Assumed international tensions decrease and need for maintenance is less precedent

In line with revenue
 Assumed increased economies of scale
 Assumed backlogs keep costs high while demand plateaus, leaving revenues low

Mostly in line with revenue, assume decreases as efficiency naturally improves
 Assumed increased economies of scale
 Assumed backlogs keep costs high while demand plateaus, leaving revenues low

Exit Valuation

Implied Share Price:	
Enterprise Value	\$100,152.7
(-) Total Debt	16,048.0
(+) Cash	3,109.0
Equity Value	\$87,213.7
Shares Outstanding (mm)	151.2
Share Price	\$576.81
Upside/Downside	31.7%

Implied Share Price:	
Enterprise Value	\$112,959.5
(-) Total Debt	16,048.0
(+) Cash	3,109.0
Equity Value	\$100,020.5
Shares Outstanding (mm)	151.2
Share Price	\$661.51
Upside/Downside	51.0%

Blended Implied Share Price:	
Gordan Growth Method	\$661.5
Exit Multiple Method	\$576.8
Upside/Downside	41.4%

Appendix

Full Assumptions

in \$MM	Historical Years			Forecast Year					
	2021A	2022A	2023A	2024E	2025E	2026E	2027E	2028E	2029E
Products Revenue	\$27,844.0	\$28,512.0	\$30,897.0	\$31,529.0	\$35,836.9	\$35,893.3	\$38,676.7	\$40,139.0	\$43,455.9
% Growth		2.5%	8.2%	3.0%	4.2%	4.2%	4.2%	4.2%	4.2%
Rate		2.0%	2.0%	2.0%	4.2%	4.2%	4.2%	4.2%	4.2%
Ball		0.0%	4.7%	3.5%	3.4%	3.4%	3.5%	3.5%	3.5%
Rear		3.1%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%
Services Revenue	\$7,799.0	\$8,080.0	\$8,393.0	\$8,742.0	\$9,246.9	\$9,749.7	\$10,340.3	\$10,896.1	\$11,522.5
% Growth		3.0%	3.9%	2.0%	2.2%	2.6%	2.3%	2.2%	2.2%
Rate		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Ball		1.0%	1.0%	1.0%	2.0%	1.0%	1.0%	1.0%	
Rear		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Products COGS	(\$22,349.0)	(\$22,761.0)	(\$26,224.0)	(\$26,375.6)	(\$27,746.8)	(\$29,279.7)	(\$31,042.4)	(\$32,738.5)	(\$34,545.6)
% of Total Revenue	80.1%	79.8%	84.9%	83.0%	81.0%	81.0%	81.0%	81.0%	81.0%
Rate		81.0%	81.0%	81.0%	81.0%	81.0%	81.0%	81.0%	
Ball		78.0%	77.0%	77.0%	77.0%	78.0%	77.0%	77.0%	
Rear		84.1%	84.1%	84.1%	84.1%	84.1%	84.1%	84.1%	
Services COGS	(\$6,090.0)	(\$6,367.0)	(\$6,383.0)	(\$6,444.3)	(\$7,189.4)	(\$7,409.8)	(\$7,737.5)	(\$8,044.4)	(\$8,394.8)
% of Total Revenue	78.1%	78.8%	77.0%	78.2%	77.0%	76.0%	78.0%	74.0%	78.0%
Rate		78.2%	77.0%	78.2%	77.0%	76.0%	78.0%	74.0%	
Ball		78.0%	78.0%	78.0%	78.0%	78.0%	78.0%	78.0%	
Rear		78.0%	77.0%	76.0%	76.0%	76.0%	76.0%		
Selling, General, and Administrative	(\$5,597.0)	(\$5,873.0)	(\$6,044.0)	(\$6,212.1)	(\$6,405.6)	(\$6,608.4)	(\$6,844.5)	(\$7,114.8)	(\$7,410.1)
% of Total Revenue	20.1%	20.6%	19.6%	19.7%	18.2%	18.7%	17.7%	17.5%	17.0%
Rate		19.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	
Ball		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%		
Rear		11.0%	10.0%	11.0%	11.0%	11.0%	11.0%		
Depreciation & Amortization	(\$1,259.0)	(\$1,342.0)	(\$1,358.0)	(\$1,446.2)	(\$1,511.5)	(\$1,604.9)	(\$1,702.1)	(\$1,795.4)	(\$1,892.8)
% of Total Revenue	4.5%	4.7%	4.4%	4.6%	4.2%	4.5%	4.4%	4.5%	4.3%
Rate		4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	
Ball		4.5%	4.5%	4.5%	4.5%	4.5%	4.5%		
Rear		4.5%	4.5%	4.5%	4.5%	4.5%	4.5%		
Taxes	(\$1,953.0)	(\$2,040.0)	(\$2,060.0)	(\$2,115.0)	(\$2,188.7)	(\$2,274.0)	(\$2,371.0)	(\$2,465.5)	(\$2,561.0)
% Effective Tax Rate	21.0%	18.7%	12.4%	12.4%	12.4%	12.4%	12.4%	12.4%	12.4%
Rate		12.4%	12.4%	12.4%	12.4%	12.4%	12.4%		
Ball		12.4%	12.4%	12.4%	12.4%	12.4%	12.4%		
Rear		12.4%	12.4%	12.4%	12.4%	12.4%	12.4%		
Capital Expenditures	(\$1,485.0)	(\$1,455.0)	(\$1,775.0)	(\$1,837.3)	(\$1,955.4)	(\$2,044.9)	(\$2,187.5)	(\$2,304.8)	(\$2,432.6)
% of Total Revenue	4.0%	3.9%	4.5%	4.1%	4.2%	4.2%	4.2%	4.2%	4.2%
Rate		4.1%	4.2%	4.1%	4.2%	4.2%	4.2%		
Ball		4.1%	4.2%	4.2%	4.2%	4.2%	4.2%		
Rear		4.1%	4.2%	4.2%	4.2%	4.2%	4.2%		
Accounts Receivable	\$6,959.0	\$7,494.0	\$7,987.0	\$7,478.3	\$7,875.3	\$8,302.3	\$8,807.8	\$9,286.2	\$9,799.9
Accounts Receivable Days	71.2	74.7	68.4	68.4	68.4	68.4	68.4	68.4	68.4
Rate		68.4	68.4	68.4	68.4	68.4	68.4		
Ball		68.4	68.4	68.4	68.4	68.4	68.4		
Rear		68.4	68.4	68.4	68.4	68.4	68.4		
Inventory	\$111.0	\$97.0	\$130.0	\$115.9	\$118.7	\$124.8	\$135.6	\$141.8	\$149.4
Inventory Days	10.4	12.8	12.4	11.7	12.1	12.0	11.9	12.0	12.0
Rate		11.7	12.1	12.0	11.9	12.0	12.0		
Ball		11.7	12.1	12.0	11.9	12.0	12.0		
Rear		11.7	12.1	12.0	11.9	12.0	12.0		
Other Current Assets	\$1,124.0	\$1,459.0	\$2,341.0	\$2,449.5	\$2,578.9	\$2,739.4	\$2,845.0	\$2,939.7	\$2,248.3
% of Total Revenue	3.2%	3.9%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Rate		6.0%	6.0%	6.0%	6.0%	6.0%	6.0%		
Ball		6.0%	6.0%	6.0%	6.0%	6.0%	6.0%		
Rear		6.0%	6.0%	6.0%	6.0%	6.0%	6.0%		
Accounts Payable	\$2,977.0	\$2,547.0	\$2,810.0	\$2,555.2	\$2,674.2	\$2,664.4	\$2,972.9	\$2,657.0	\$2,392.5
Accounts Payable Days	21.2	21.4	21.5	21.1	21.0	20.1	21.1	21.4	21.1
Rate		21.1	21.0	21.1	21.1	21.1	21.1		
Ball		21.1	21.0	21.1	21.1	21.1	21.1		
Rear		21.1	21.0	21.1	21.1	21.1	21.1		
Other Current Liabilities	\$1,344.0	\$2,354.0	\$2,348.0	\$2,346.0	\$2,721.3	\$2,935.7	\$4,375.3	\$4,399.2	\$4,406.2
% of Total Revenue	6.0%	8.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Rate		14.0%	14.0%	14.0%	14.0%	14.0%	14.0%		
Ball		14.0%	14.0%	14.0%	14.0%	14.0%	14.0%		
Rear		14.0%	14.0%	14.0%	14.0%	14.0%	14.0%		
Deferred Revenue	\$5,024.0	\$5,609.0	\$4,852.0	\$4,437.0	\$4,439.1	\$4,870.8	\$4,367.3	\$4,341.0	\$4,347.0
% of Total Revenue	23%	23%	16%	16%	16%	16%	16%	16%	16%
Rate		16%	16%	16%	16%	16%	16%		
Ball		16%	16%	16%	16%	16%	16%		
Rear		16%	16%	16%	16%	16%	16%		
Other Income (expense)	\$5,287.0	\$2,225.0	(\$911.0)	\$1,777.0	\$1,275.7	\$953.2	\$1,334.4	\$1,187.2	\$1,184.3
% of Total Revenue	22%	8%	(3.0%)	4%	2%	2%	2%	2%	2%
Rate		4%	2%	2%	2%	2%	2%		
Ball		4%	2%	2%	2%	2%	2%		
Rear		4%	2%	2%	2%	2%	2%		

Operating Build Full



\$ in billions	Historical Years			Forecasted Years					
	2021A	2022A	2023A	2024E	2025E	2026E	2027E	2028E	2029E
Product Revenue	27,868.0	28,522.0	30,897.0	32,329.0	34,036.9	35,891.3	38,076.7	40,119.0	42,343.9
Service Revenue	7,799.0	8,080.0	8,393.0	8,782.0	9,245.9	9,749.7	10,343.3	10,898.1	11,502.5
Total Revenue	\$35,667.0	\$36,602.0	\$39,290.0	\$41,111.1	\$43,282.8	\$45,641.0	\$48,420.0	\$51,017.1	\$53,846.4
% Growth		2.6%	7.3%	4.6%	5.3%	5.4%	6.1%	5.4%	5.5%
Products COGS	(22,309.0)	(22,761.0)	(26,226.0)	(26,373.6)	(27,766.3)	(29,279.7)	(31,062.4)	(32,728.5)	(34,543.6)
Services COGS	(6,090.0)	(6,367.0)	(6,513.0)	(6,864.2)	(7,119.4)	(7,409.8)	(7,757.5)	(8,064.6)	(8,396.8)
(-) Cost of Goods Sold	(\$28,399.0)	(\$29,128.0)	(\$32,739.0)	(\$33,237.8)	(\$34,886.2)	(\$36,689.4)	(\$38,819.9)	(\$40,793.1)	(\$42,940.4)
Gross Profit	\$7,268.0	\$7,474.0	\$6,551.0	\$7,873.2	\$8,396.6	\$8,951.6	\$9,600.1	\$10,224.0	\$10,906.0
% Margin	20.4%	20.4%	16.7%	19.2%	19.4%	19.6%	19.8%	20.0%	20.3%
Research and Development				0.0	0.0	0.0	0.0	0.0	0.0
Selling, General, and Administrative	(3,597.0)	(3,873.0)	(4,014.0)	(4,232.1)	(4,455.6)	(4,698.4)	(4,984.5)	(5,251.8)	(5,543.1)
(-) Total Operating Expenses	(\$3,597.0)	(\$3,873.0)	(\$4,014.0)	(\$4,232.1)	(\$4,455.6)	(\$4,698.4)	(\$4,984.5)	(\$5,251.8)	(\$5,543.1)
Operating Income (EBIT)	\$3,671.0	\$3,601.0	\$2,537.0	\$3,641.2	\$3,941.0	\$4,253.2	\$4,615.6	\$4,972.1	\$5,362.9
% Margin	10.3%	9.8%	6.5%	8.9%	9.1%	9.3%	9.5%	9.7%	10.0%
(+) Depreciation & Amortization	1,239.0	1,342.0	1,338.0	1,445.2	1,521.5	1,604.4	1,702.1	1,793.4	1,892.8
Note: EBITDA	\$4,910.0	\$4,943.0	\$3,875.0	\$5,086.3	\$5,462.5	\$5,857.6	\$6,317.7	\$6,765.5	\$7,255.8
% Margin	13.8%	13.5%	9.9%	12.4%	12.6%	12.8%	13.0%	13.3%	13.5%
(+) Other Income (expense)	\$3,287.0	\$2,235.0	(\$191.0)	\$1,777.0	\$1,273.7	\$953.2	\$1,334.6	\$1,187.2	\$1,158.3
(-) Taxes	(1,933.0)	(940.0)	(290.0)	(451.5)	(488.7)	(527.4)	(572.3)	(616.5)	(665.0)
% Effective Tax Rate	21.6%	16.1%	12.4%	12.4%	12.4%	12.4%	12.4%	12.4%	12.4%
Net Income	\$5,025.0	\$4,896.0	\$2,056.0	\$4,966.7	\$4,726.0	\$4,679.0	\$5,377.9	\$5,542.8	\$5,856.3
Capital Expenditures	(1,415.0)	(1,435.0)	(1,775.0)	(1,857.3)	(1,955.4)	(2,061.9)	(2,187.5)	(2,304.8)	(2,432.6)
Accounts Receivable	6,959.0	7,494.0	7,147.0	7,478.3	7,873.3	8,302.3	8,807.8	9,280.2	9,794.9
Inventory	811.0	978.0	1,109.0	1,125.9	1,181.7	1,242.8	1,315.0	1,381.8	1,454.6
Other Current Assets	1,126.0	1,439.0	2,341.0	2,449.5	2,578.9	2,719.4	2,885.0	3,039.7	3,208.3
Non-Cash Current Assets	\$8,896.0	\$9,911.0	\$10,597.0	\$11,053.7	\$11,633.9	\$12,264.5	\$13,007.8	\$13,701.8	\$14,457.7
Accounts Payable	2,197.0	2,587.0	2,110.0	2,207.8	2,324.4	2,451.1	2,600.3	2,739.8	2,891.7
Other Current Liabilities	2,314.0	3,334.0	3,388.0	3,545.0	3,732.3	3,935.7	4,175.3	4,399.2	4,642.2
Deferred Revenue	3,026.0	3,609.0	4,193.0	4,387.3	4,619.1	4,870.8	5,167.3	5,444.5	5,746.5
Non-Debt Current Liabilities	\$7,537.0	\$9,530.0	\$9,691.0	\$10,140.2	\$10,675.8	\$11,257.5	\$11,942.9	\$12,583.5	\$13,281.4
Net Working Capital	1,359.0	381.0	906.0	913.5	958.1	1,007.0	1,064.8	1,118.2	1,176.4
Change in Net Working Capital		\$978.0	(\$525.0)	(\$7.5)	(\$14.6)	(\$48.9)	(\$57.8)	(\$53.4)	(\$58.1)

WACC Calculation

Weighted Average Cost of Capital:

Market Risk Premium	6.1%
Adjusted Beta	0.38
Risk Free Rate	4.2%
Cost of Equity	6.5%
Pre-Tax Cost of Debt	5.0%
Tax Rate	12.4%
Cost of Debt	4.4%
Total Equity (mm)	\$14,795.0
Total Debt (mm)	\$16,048.0
Equity / Total Capitalization	48.0%
Debt / Total Capitalization	52.0%
WACC	5.4%

Return Sensitivities

Exit Multiple Method:

		Discount Rate				
		4.60%	5.00%	5.40%	5.80%	6.20%
Exit Multiple	13.2x	\$535.24	\$525.41	\$515.79	\$506.35	\$497.11
	14.0x	\$566.59	\$556.23	\$546.08	\$536.13	\$526.39
	14.8x	\$597.94	\$587.05	\$576.37	\$565.91	\$555.67
	15.6x	\$629.29	\$617.86	\$606.67	\$595.70	\$584.95
	16.4x	\$660.64	\$648.68	\$636.96	\$625.48	\$614.23

Perpetuity Growth Method:

		Discount Rate				
		4.60%	5.00%	5.40%	5.80%	6.20%
PGR	0.5%	\$560.76	\$503.07	\$454.81	\$413.85	\$378.65
	1.0%	\$639.22	\$566.55	\$507.11	\$457.59	\$415.69
	1.5%	\$743.00	\$648.18	\$572.83	\$511.50	\$460.63
	2.0%	\$886.69	\$757.01	\$657.87	\$579.60	\$516.26
	2.5%	\$1,098.80	\$909.38	\$772.23	\$668.34	\$586.92

Comparable Companies

Company Name	Market Cap	EV	EV/Revenues LTM	EV/Revenue NTM
General Dynamics Corporation (NYSE:GD)	72,448.2	79,796.2	1.9x	1.72x
RTX Corporation (NYSE:RTX)	131,961.8	172,260.8	2.5x	2.19x
L3Harris Technologies, Inc. (NYSE:LHX)	39,234.8	51,799.8	2.7x	2.44x
Lockheed Martin Corporation (NYSE:LMT)	102,932.8	120,126.8	1.8x	1.73x
The Boeing Company (NYSE:BA)	127,750.1	165,911.1	2.1x	1.83x
Hexcel Corporation (NYSE:HXL)	5,797.0	6,269.5	3.5x	3.15x
Rocket Lab USA, Inc. (NasdaqCM:RKL B)	1,931.4	1,723.1	7.3x	4.59x
TransDigm Group Incorporated (NYSE:TDG)	62,474.6	78,763.6	12.0x	10.33x
Howmet Aerospace Inc. (NYSE:HWM)	23,765.9	27,305.9	4.3x	3.97x
Textron Inc. (NYSE:TXT)	16,856.5	18,679.5	1.4x	1.27x
Northrop Grumman Corporation (NYSE:NOC)	446.58	150.0	2.0x	1.94x
High	131,961.8	172,260.8	12.0x	10.33x
Low	1,931.4	1,723.1	1.4x	1.27x
Mean	58,515.3	72,263.6	3.9x	3.32x
Median	50,854.7	65,281.7	2.6x	2.31x

Company Name	EV/EBITDA LTM	EV/EBITDA NTM	P/Diluted EPS Before Extra LTM - Latest	P/E NTM
General Dynamics Corporation (NYSE:GD)	15.6x	13.32x	22.1x	18.11x
RTX Corporation (NYSE:RTX)	17.2x	12.58x	41.2x	17.12x
L3Harris Technologies, Inc. (NYSE:LHX)	15.7x	13.43x	32.1x	16.19x
Lockheed Martin Corporation (NYSE:LMT)	11.4x	12.28x	15.5x	16.38x
The Boeing Company (NYSE:BA)	45.9x	24.84x	NM	57.44x
Hexcel Corporation (NYSE:HXL)	18.0x	15.36x	55.6x	30.35x
Rocket Lab USA, Inc. (NasdaqCM:RKL B)	NM	NM	NM	NM
TransDigm Group Incorporated (NYSE:TDG)	-248.1x	19.85x	51.0x	34.81x
Howmet Aerospace Inc. (NYSE:HWM)	18.7x	16.99x	37.5x	28.12x
Textron Inc. (NYSE:TXT)	11.2x	10.44x	18.8x	13.63x
Northrop Grumman Corporation (NYSE:NOC)	17.9x	13.94x	33.0x	18.17x
High	45.9x	24.84x	55.6x	57.44x
Low	-248.1x	10.44x	15.5x	13.63x
Mean	-10.5x	15.45x	34.2x	25.79x
Median	15.7x	13.43x	34.8x	18.11x