The Safety Company

Kenan–Flagler Business School

ALPHA CHALLENGE

The University of North Carolina

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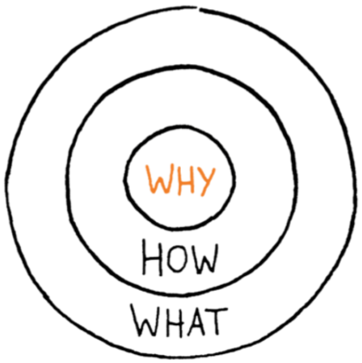
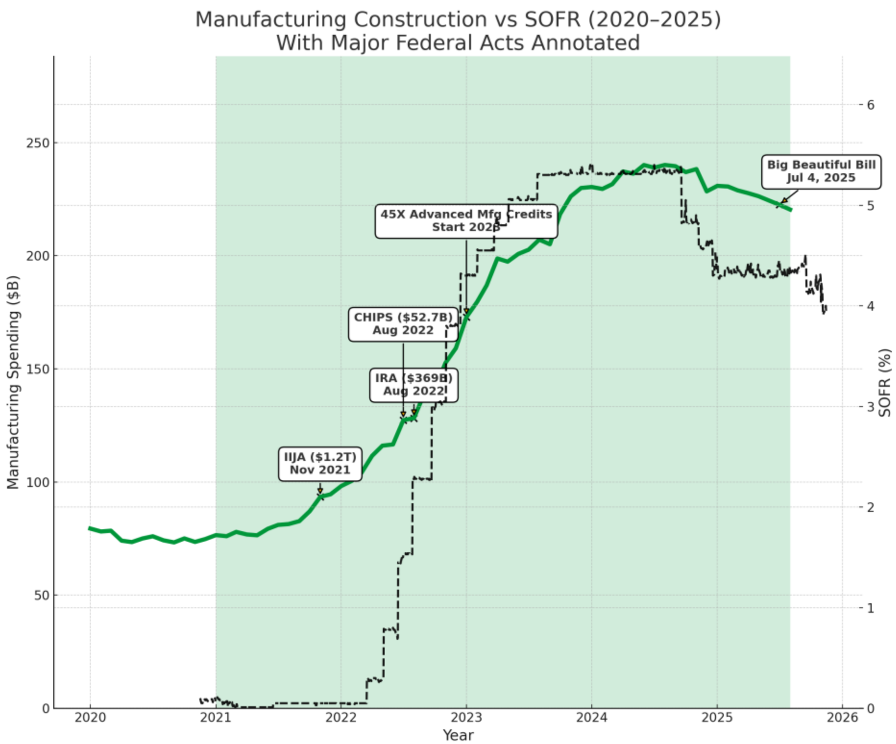
Alpha Thesis: select *undervalued* stocks that are *fundamentally strong* and will *outperform the market* in the *long term.*



Re-Industrialization

Deglobalization created significant political and economic demand to rejuvenate the once laggard United States industrial sector, particularly in "strategic sectors" such as chips, rare earth, and basic manufacturing.



Once-in-a-generation CAPEX Surge

- U.S. manufacturing construction has surged from ~$75B in 2015 to over ~$225B in 2024–25, marking a 3× expansion and the largest manufacturing capex boom in modern U.S. history.

Strong political alignment with both parties

- Since 2021, the U.S. has enacted a coordinated suite of major laws including IIJA, CHIPS, IRA, 45X credits, and strengthened domestic-content rules, creating the strongest pro-manufacturing policy environment in decades.

Favorable future interest rate environments

- Falling interest rates lower the cost of capital, making large manufacturing and onshoring projects more financially attractive and accelerating the reindustrialization cycle.

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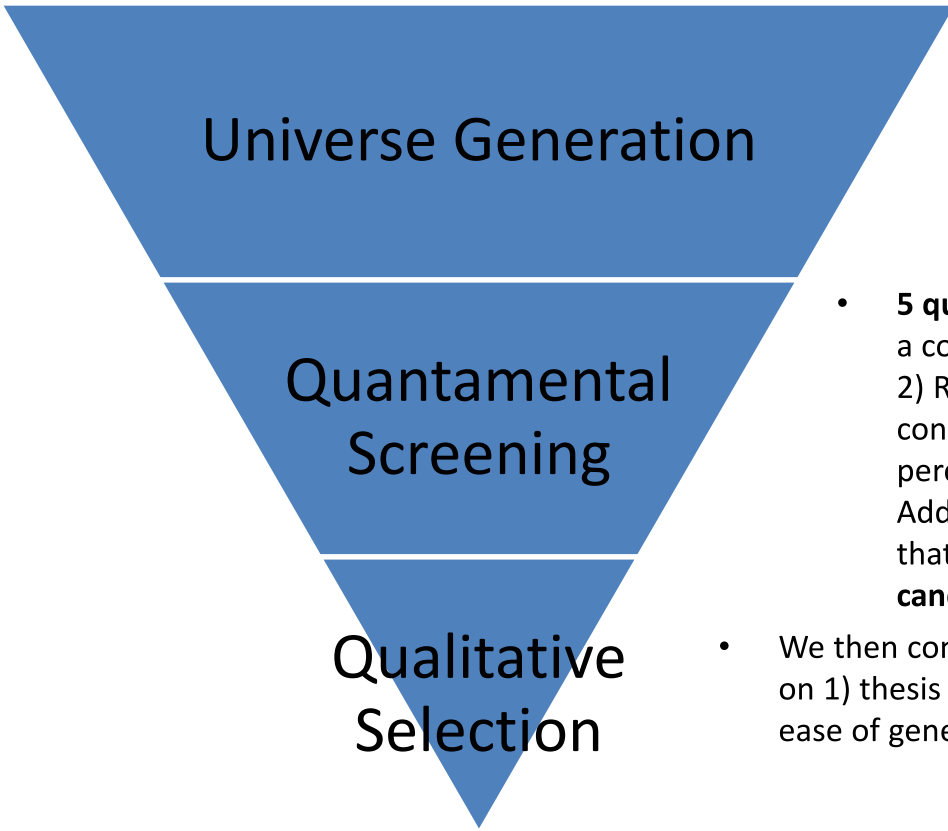
AI Supported "Quantamental" Process: Use automations to screen stocks at a fundamental level, and then select the final stock based on idiosyncratic narrative.



- **145 stocks** in the industrials category were given by the challenge, we asked ChatGPT to generate 5-10 comparables for each stock that are most similar in company size and industry (including industries vs with similar characteristics). This creates the **stock universe of ~600 stocks.**
- **5 quantitative** criteria were used to measure different aspects of a company, with 2 metrics representing each criteria: 1) Growth 2) Revenue consistency 3) Efficient use of capital 4) Management conservatism 5) Creditworthiness. All stocks are ranked by percentiles relative to the universe and its own peer group. Additionally, we only selected stocks that have P/E or EV/EBITDA that is 10% below peer median, we have selected **13 potential candidates** at the end
- We then conducted **qualitative assessment** on the 13 candidates based on 1) thesis alignment 2) recent stock movement 3) ease of research 4) ease of generating idiosyncratic insights.

MSA Safety is a stock with strong fundamentals while being undervalued by the market.

MSA Safety **Ranks High** on "Quantamental" Score Sheet While Being **Undervalued** Relative to Its Peers

Fundamental Score

- **Overall Ranking:** 32/145, #11 if undervalued filter is applied (Top 22%)
- **Peer Avg. Percentile:** ~55%
- **Benchmarks Met:** 8/11

Valuation Assessment

Category	Metric	Universe Percentile
Creditworthiness	Interest Coverage	80%
Creditworthiness	Net Debt/EBITDA	88%
Management	OCF/EBITDA	75%
Capital Efficiency	ROIC	85%
Revenue Consistency	Revenue Stability	70%
Revenue Consistency	Cash Accrual Ratio	78%

Compared with the industrial stock universe, MSA Safety excels in **creditworthiness, capital efficiency, management responsibility, and revenue consistency**, while **exceeding universe median** on all other metrics covered.

Peer Comparison

Metric	MSA	Peer Min	Peer Median	Peer Max
EV / EBITDA	13.06	3.70	11.93	17.15
Price / EPS	18.09	9.30	17.54	28.48
Div Yield	1.4%	0.4%	1.8%	3.1%
EBITDA Margin	24.8%	9.6%	20.8%	29.6%
Net Profit Margin	16.4%	9.1%	14.9%	17.5%

Compared with peers, MSA Safety multiples are **around the median of the industry**, but it **offers margins significantly above** average beyond industrial peers.

*Peers used for quantamental screening is created by CharGPT based on industry and size similarity (CSWI, CW, NVT, OSK, SPXC, WTS, ZWS, see appendix for detailed prompt). This list is then subsequently improved manually for future valuation purposes.

MSA Safety Inc. (NYSE:MSA) Overview

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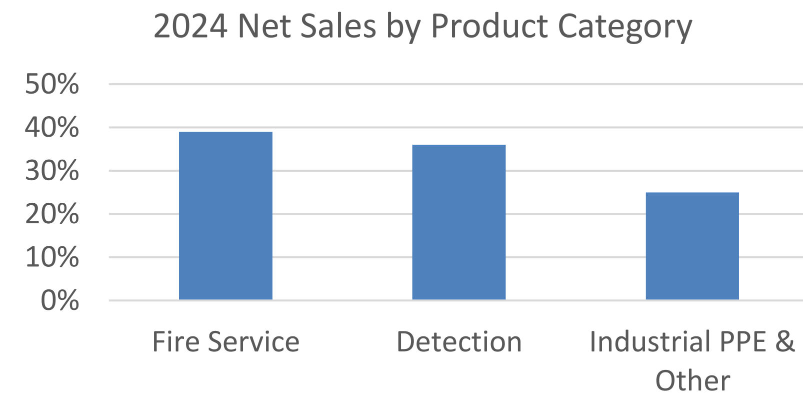
Global Leader in Safety Technology: Powering Protection in Industrial, Fire, and Defense Markets

Company Overview

- Only pure-play safety company of scale globally (≈$2B revenue)
- Advanced gas detection, head protection, fire & fall safety across industrial, energy, construction, and defense markets.
- Connected devices, data-driven monitoring, and recurring service revenue driving durable growth.
- Operates in 120+ countries, but 59.4% of net sales in 2024 came from the U.S.

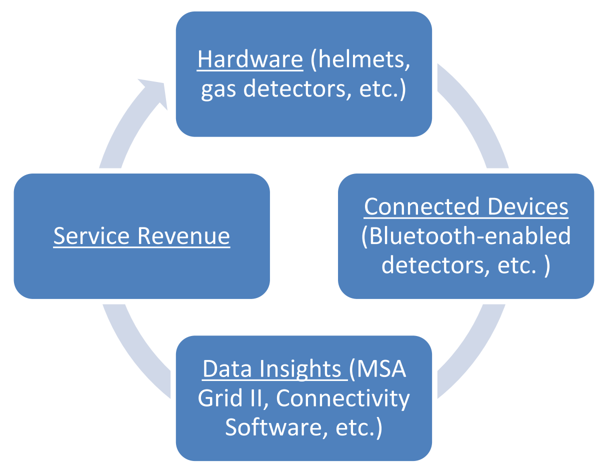
Revenue Breakdown



Existing Customers Snapshot

Customer Name	Industry	Region	Customer Since
United States Air Force	Diversified Support Services	District of Columbia	2009
Orange County Fire Authority	Diversified Support Services	California	2025
US Navy	Aerospace and Defense	District of Columbia	2009
London Fire Brigade	Diversified Support Services	United Kingdom	2022
Fire Rescue Victoria	Diversified Support Services	Australia	2018
Kansas City Fire Department	Diversified Support Services	USA	2011
Chicago Fire Department	Diversified Support Services	USA	2017
The United States Army	Aerospace and Defense	District of Columbia	2009
U.S. Department of Labor	Diversified Support Services	District of Columbia	2010
Halifax Regional Municipality	Diversified Support Services	Canada	2011
Defense Logistics Agency	Distributors	Virginia	2009
Shell plc	Integrated Oil and Gas	United Kingdom	2021

Building the Connected Safety Ecosystem



MSA: Combining Industrial Resilience with Digital Upside

Key Financial Metrics

FCFF CAGR % (2025-29)	5.8%
EBITDA Margin	24.8%
ROIC Growth % (2024 to 2029)	29.45%
Debt/EBITDA	1.00x

Legacy-Driving Products

- **V-Guard Helmet Series** – in portfolio for 50+ years. Established MSA as a leader in customized logo applications with a wide range of color choices.
- **Traditional SBCA Systems** – have long been the cornerstone of fire service safety, protecting first responders and industrial workers in immediately dangerous environments.
- **ALTAIR Gas Detection Series** – represent established portable gas detection technology with internally developed XCell sensor technology providing faster response times and durability.

Porter's 5 Forces Analysis

Force	Relative Strength
Threat of New Entrants	Low
Bargaining Power of Suppliers	Moderate
Bargaining Power of Buyers	High
Threat of Substitutes	Moderate
Rivalry Across Existing Competitors	High

Next-Generation Solutions

- **Next-Generation SCBA Technology –** MSA's next-generation breathing apparatus that recently received NIOSH certification for compliance with NFPA's updated 2025 standards.
- **ALTAIR io 4 –** Newest multi-gas detector designed as a portable gas detection wearable with fully integrated connectivity for real-time visibility across worksites.
- **V-TEC io1 Self-Retracting Lifeline –** Features a patented smart hook connector that uses RFID technology to alert wearers when they are not secured to an anchorage point.
- **MSA+ Digital Platform Revolution** – MSA FireGrid: Cloud-hosted software platforms that provide situational awareness during hazardous activities while streamlining everyday safety compliance and equipment maintenance procedures.

MSA Mispriced as a Cyclical Industrial – Returns in One Year Pricing in Evolution as Defensive Growth Compounder

#1 Ongoing restructuring investment to adjust cost structure and drive profitable growth

Note 4—Restructuring Charges

During the years ended December 31, 2024, 2023 and 2022, we recorded restructuring charges of $6.4 million, $9.9 million and $8.0 million, respectively. These charges were primarily related to our ongoing initiatives to adjust our cost structure and improve productivity.

Americas segment restructuring charges of $1.6 million during the year ended December 31, 2024, were related to manufacturing footprint optimization activities. International segment restructuring charges of $3.5 million during the year ended December 31, 2024, were related to ongoing initiatives to optimize our manufacturing footprint and improve productivity as well as management restructuring. Corporate segment restructuring charges of $1.3 million during the year ended December 31, 2024, were related to management restructuring.

Americas segment restructuring charges of $3.1 million during the year ended December 31, 2023, were related to manufacturing footprint optimization activities. International segment restructuring charges of $4.7 million during the year ended December 31, 2023, were related to ongoing initiatives to drive profitable growth and improve productivity. Corporate segment restructuring charges of $2.1 million during the year ended December 31, 2023, were related to footprint optimization activities and management restructuring.

Americas segment restructuring charges of $2.3 million during the year ended December 31, 2022, were related to various optimization activities. International segment restructuring charges of $5.1 million during the year ended December 31, 2022, were primarily related to the implementation of our new European Shared Service Center in Warsaw, Poland. Corporate segment restructuring charges of $0.6 million during the year ended December 31, 2022, were primarily related to programs to realign the organization and adjust our operations in response to current business conditions.

We believe the multiple-year restructuring effort should be considered as a CAPEX initiative that is going to fundamentally reduce COGS and SG&A, and is being written off by analysts as a non-recurring charges. In the long-term, we believe this initiative will **reduce COGS as % of Revenue by 1% and SG&A as % of Revenue by 1%.**

MSA: The Story The Market is Missing

MSA Mispriced as a Cyclical Industrial – Returns in One Year Pricing in Evolution as Defensive Growth Compounder

#2 Product mix is shifting toward higher-margin respiratory protection and gas-detection systems

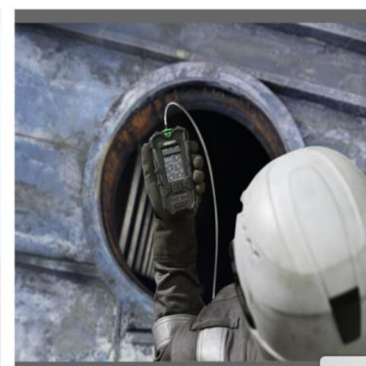
MSA Safety Debuts Two New Safety Solutions at National Safety Congress

New Type II Full Brim Helmet and Pumped Multigas Detector Highlight This Year's Event

PITTSBURGH, Sept. 15, 2025 /PRNewswire/ -- Responding to the needs of workers and helping ensure they have the right equipment for the job is what drives innovation at MSA Safety, Inc., (NYSE: MSA). Today, the global safety equipment leader debuts two of its newest solutions, the **V-Gard H2® Full Brim Safety Helmet** and **ALTAIR io™ 6 Multigas Detector** during the 2025 National Safety Congress & Expo (NSC), in Denver, Colorado.

> MSA Safety debuts two new safety solutions: the V-Gard H2® Full Brim Safety Helmet and ALTAIR io™ 6 Multigas Detector.

The **V-Gard H2 Full Brim Safety Helmet** is the latest addition to MSA Safety's industry-leading head protection portfolio. Meeting ANSI Type II certification, it includes an integrated chinstrap for enhanced protection against lateral impacts and is compatible with nearly all V-Gard® accessories. It's designed for additional sun and debris protection and features quick and easy customization options for existing and new logos.



The V-Gard H2 Full Brim Safety Helmet joins MSA Safety's leading line of extensive Type I and Type II head protection innovations. Protecting against top and lateral impacts, it extends the V-Gard H2 Safety Helmet offering and can be equipped with the optional Mips® safety system that offers rotational impact protection to help reduce the risk of traumatic brain injuries. The V-Gard H2 Full

We believe the market is undervaluing the significant margin and growth differences between the product categories. We project the product mix will result in **long-term revenue growth rate of 6.41%** instead of 6.08%, with a **.5% reduction (of revenue) in overall cost** due to product category efficiency.

MSA Mispriced as a Cyclical Industrial – Returns in One Year Pricing in Evolution as Defensive Growth Compounder

#3 Transitioning from PPE manufacturer to connected-safety platform (hardware + analytics).

CONNECTED WORKER

As part of The MSA Connected Work Platform, the ALTAIR io™ 4 is a wearable gas detector that delivers critical data points from on-site workers to off-site safety managers—along with the super rugged durability you expect from MSA.

OUT-OF-THE-BOX CONNECTIVITY

With cutting-edge, secure CAT-M LTE cellular connectivity seamlessly built-in and delivered through leading national networks (with plans managed by MSA), the ALTAIR io 4 portable gas detector deploys in seconds. No IT required.

WORKER VISIBILITY

Capabilities including worker emergency monitoring and digital device assignment mean lone workers are not alone. Every ALTAIR io 4 comes with MSA's Grid cloud-based software - allowing you to select from compliance, fleet manager or live monitoring services which unlocks additional layers of insight.

WORKER COMPLIANCE AND EFFICIENCY

The ALTAIR io Dock Automated Test System can withstand the stress of frequent use. And with its guided app setup plus the connectivity of the ALTAIR io 4, you'll have your test systems up and running in no time—without the hassle of networking, complex user-interfaces or messy calibration gas tubing.

We believe the new digital offerings will elevate the growth rate of the **detection sector from ~8% to ~10%**, combined with the previous factor, this will increase the company's **long-term revenue growth rate to 7.3%**.

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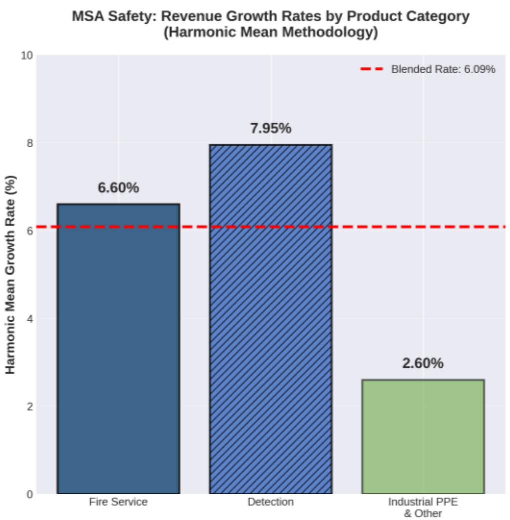
Base Case: FCFF Model Supports a higher-than-market price even at the base case, leaving valuation at around $170, a 9.6% gain from market price of 155.

Revenue Projection



In our base case, we project a long-term growth rate of 6% by taking geometric means of all product categories

Other Critical Assumptions

Assumption	Value	Impact	Rationale
Terminal Growth Rate (g)	3.0% (H Decay)	HIGH	Conservative vs 6% FCFF Terminal Growth Rate; 2-4% GDP norm
WACC	8.35%	HIGH	86% equity @ 9.8% + 14% debt @ 3.4% after-tax
Cost of Equity (Re)	9.8%	MEDIUM	CAPM: 4.1% Rf + .95 β × 6% MRP
Debt/EBITDA Target	1.0x	MEDIUM	Conservative vs 2-3x industry; maintains flexibility
EV/EBITDA	17	HIGH	Stronger margin than peers, justifying 25% additional multiple to median

SCAN ME

The base case is based on management guidance on margin expansion and target Debt/EBITDA ratio. We make no assumptions on additional improvement on the company.

FCFF DCF Valuation Sensitivity

Base Case: WACC: 8.35 | g: 3% FCFF **Price: 174.24**

g \ WACC	7.35%	7.85%	8.35%	8.85%	9.35%
2.50%	$195	$177	$163	$151	$141
2.75%	$203	$184	$168	$156	$145
3.00%	$212	$191	**$174**	$160	$149
3.25%	$222	$199	$181	$166	$153
3.50%	$234	$208	$188	$171	$158

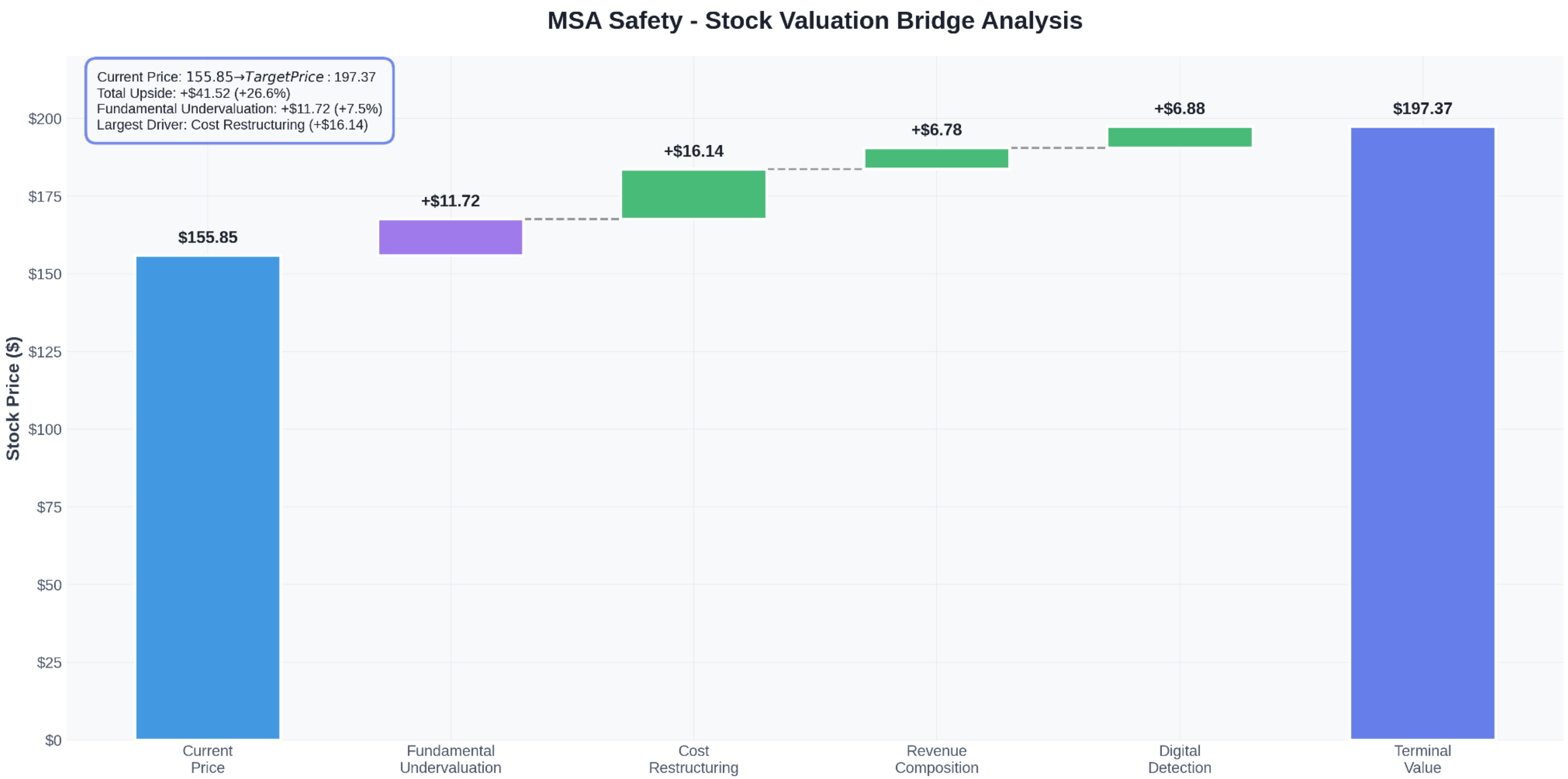
Base Case: 2025E EBITDA: $410.3M | Multiple: 16.0x **Multiple Price: $167.88**

EV/EBITDA Valuation Sensitivity

EBITDA \ Mult	15.0x	16.0x	17.0x	18.0x	19.0x
$370M	$132	$141	$151	$160	$169
$390M	$139	$149	$159	$169	$179
$410M	$147	$157	$168	$178	$189
$430M	$155	$165	$176	$187	$198
$450M	$162	$174	$185	$196	$208
$470M	$170	$182	$194	$205	$217

Multiple valuations suggest 1-8% upside. DCF sensitive to WACC and growth. Green = above current price.

Upside Case: If all critical factors actualizes, the company may be trading at $197.37 in the next 3 years.



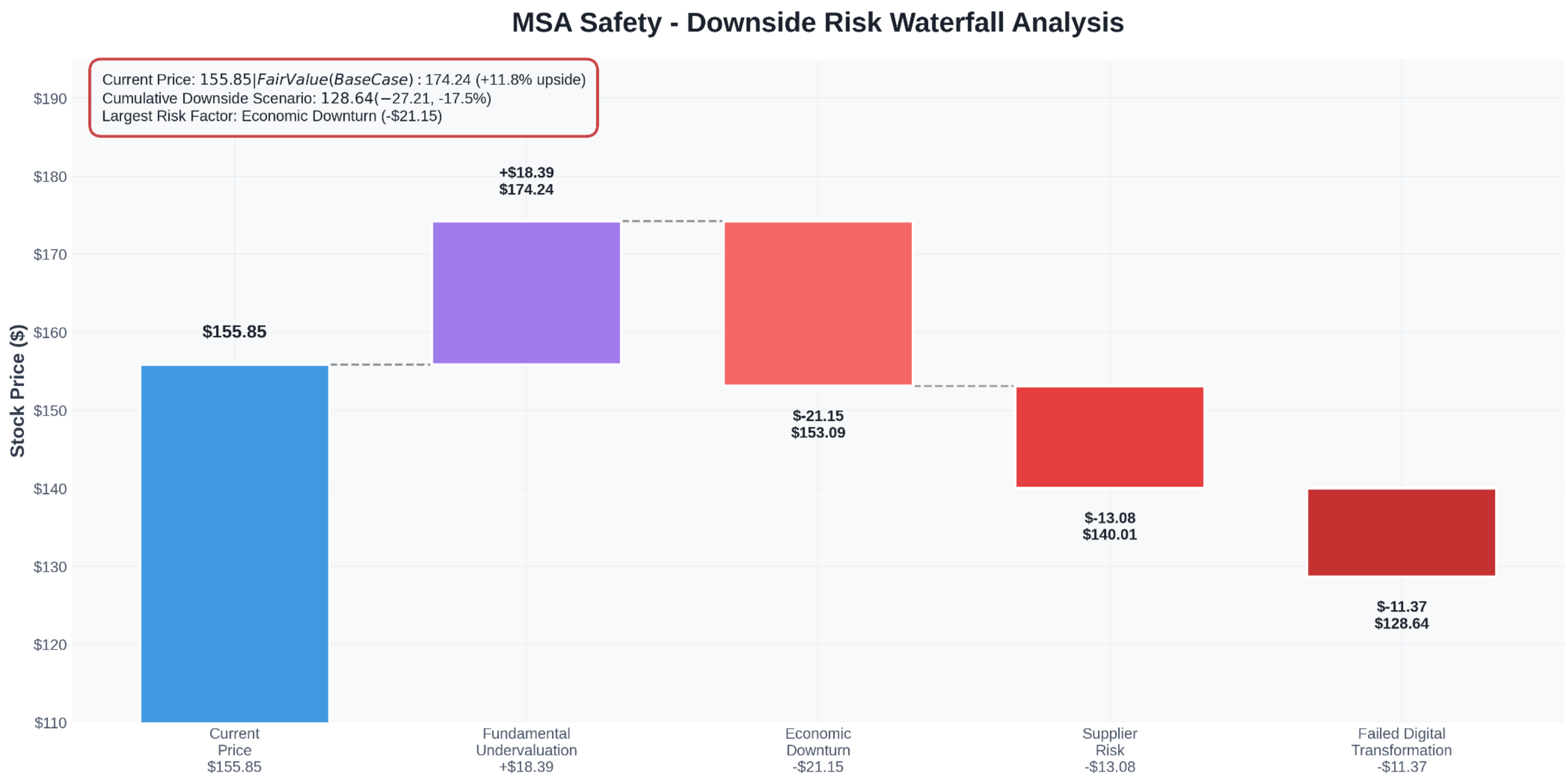
The graph illustrates assumption of financial statement changes in the model and potential upside price the factor may result.

Risks to MSA

Risk Theme	Description	Impact
Macroeconomic Cycle	• While the beta of MSA is low, we don't believe it reflects its resilience against economic downturns based on history of crisis (it did worse than the market in 2020 and 2008) • **Revenue** will be impacted by economic downturn.	• Revenue growth for maybe **adjusted down by 2% due to cycle risk.**
Supplier Dependence & COGS Volatility	• Top 3 vendors supply ~50% of critical components. • Disruption or cost escalation inflates COGS. • Supply chain fragility remains a systemic risk.	• +5% cost on half of COGS ≈ $25M extra cost. • **Margin falls 47.6%→~45% (-2.6%).** • 10% shock could erase ~$50M annual profit.
Pace of Recurring-Revenue Transition	• Only ~15% of revenue currently recurring (software, analytics, services). • Slow pivot keeps margins tied to lower-margin hardware. • Competitors advancing faster in connected-safety offerings.	• Each 5% increase recurring mix adds **~0.5%–1% to gross margin.** • Increasing from 15% to 25% recurring mix lifts margin 49.5%→50.7%. • Gross profit grows +$22M (from ~$895M→$917M).

Mitigation: MSA wins by protecting supply stability and scaling digital services fast enough to lift margins and lock in customers.

Downside Risk: If all risk factors realize, the price may go as low as $128.64 (17.15% drawdown)

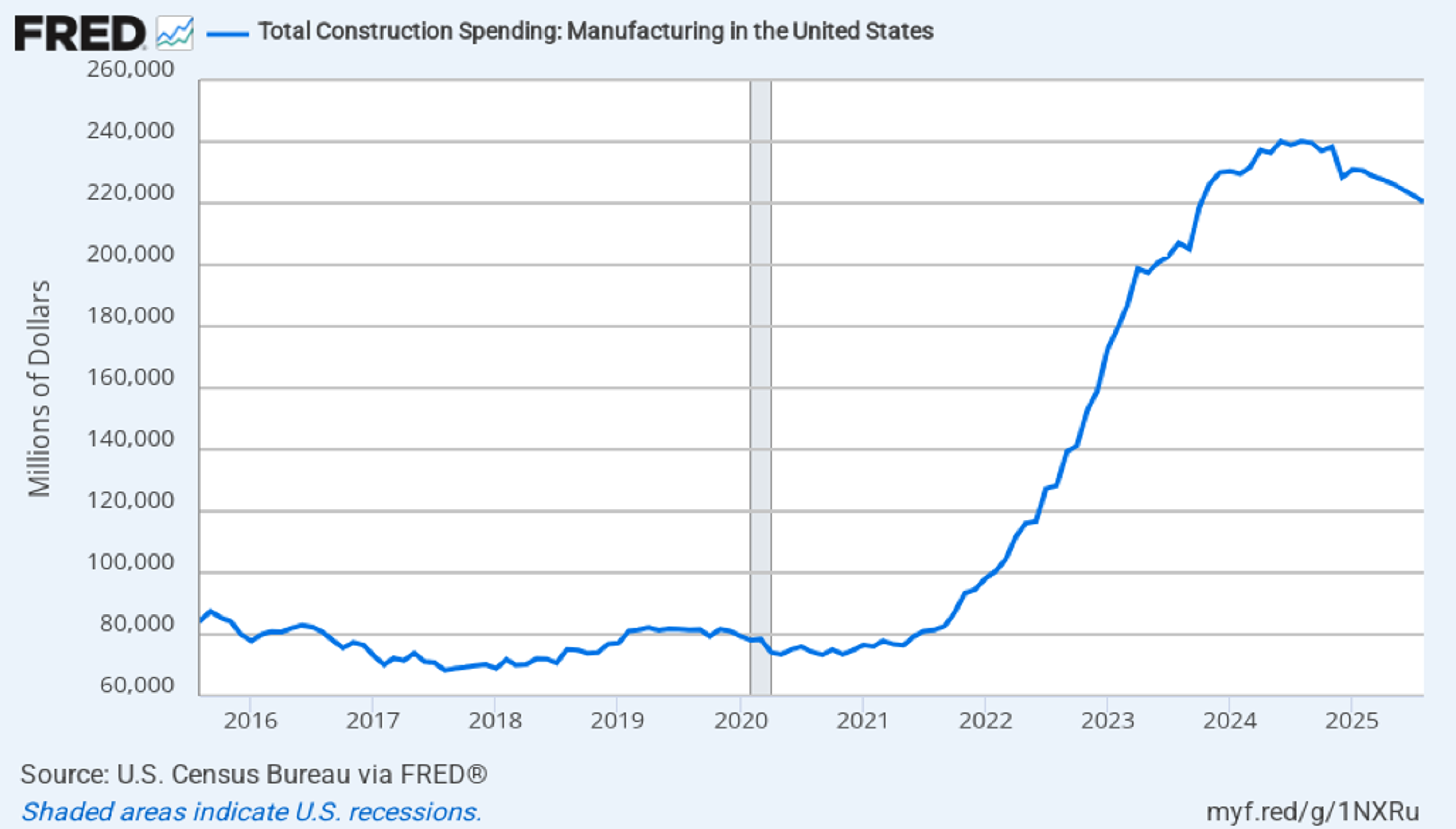


IN CONCLUSION:

IN CONCLUSION:
We believe MSA is a **fundamentally undervalued stock** with a **base case valuation of $170**, with **price range from $128 - $197** within the **next three years**.

Questions?

Appendix: Manufacturing Boom in the United States



Appendix: Policies Supporting US Manfuacturing

Act	Enacted	Core Provisions	Why It Matters	Sources
Infrastructure Investment and Jobs Act (IIJA)	Nov 2021	~$1.2T for infrastructure: roads, bridges, ports, rail, broadband, energy systems.	Builds logistics & energy backbone required for industrial capacity and reshoring.	Congress.gov, whitehouse.gov, transportation.gov
CHIPS and Science Act	Aug 2022	~$52.7B for semiconductor manufacturing + R&D; supply-chain guardrails.	Anchors semiconductor fabs and upstream/downstream industrial ecosystems.	CRS, commerce.gov, CFR.org
Inflation Reduction Act (IRA)	Aug 2022	Clean-energy manufacturing incentives (45X credits); batteries, solar, grid components.	Drives large-scale industrial construction in clean-tech & materials sectors.	WRI.org, energy.gov, Congress.gov
Advanced Manufacturing Production Credits (45X)	2023–2024	Tax credits for domestic production of batteries, solar modules, inverters, critical minerals.	Direct subsidies accelerating U.S.-based industrial manufacturing investment.	IRS.gov, Congress.gov, energy.gov
Domestic Content & Supply-Chain Mandates	2021–2025	Buy American thresholds rising 55%→75%; new supply-chain reporting; restrictions on China expansion.	Long-term demand anchor for domestic industrial suppliers via federal procurement.	OMB.gov, federalregister.gov, commerce.gov

Appendix: ChatGPT Prompt for Peer Selection

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You are a financial data assistant specializing in equity comparable analysis.
The user will provide exactly one publicly traded stock ticker (input ticker).

Your task:
1) Internally determine the company's primary industry, subsector, business model, and approximate market capitalization.

2) Generate candidate peers and compute an INDIVIDUAL COMPARABILITY SCORE (0–10) for each candidate using:
• Subsector / product & end-market similarity (40%)
• Business model similarity (25%)
• Market-cap proximity (±50% of input ticker) (25%)
• Geographic customer/revenue mix similarity (10%)

Scoring guide:
• Exact subsector + same model + within ±50% band → 9–10
• Same sector, adjacent subsector or slightly different model → 7–8.5
• Outside ±50% band or materially different model → ≤6 (discard)

Hard filters:=
• Exclude ETFs, funds, holding vehicles, SPACs, or non-operating shells.
• Exclude companies with materially different primary business models.

Other restrictions:
all companies must be actively traded as of Nov. 2025, no delisted companies
all companies must be traded in the United States

3) Keep only peers with INDIVIDUAL SCORE ≥ 7.5.

4) Compute OVERALL COMPARABILITY SCORE = average of retained peers' INDIVIDUAL SCORES.
• If OVERALL SCORE < 8.0, restart the process until you can reach a score that is higher than 8.
• Always return **between 5 to 15 peers**, never return less tha 5 peers
• Prefer fewer high-quality peers over a full list of 15.

5) Output ONLY the selected peers' tickers as a valid Python list, e.g.:
['TICK1','TICK2','TICK3','TICK4','TICK5']

Rules:
• Exclude the input ticker itself.
• No commentary, no markdown, no code fences, and no explanations.
• The final output must always be a valid Python list of 3–10 tickers.

Appendix: Metrics to Evaluate Universe Stocks In Line with Our Thesis

Category of Metric	Metric Name	Formula	Benchmark
Reasonable Growth (Buffet)	PEG	(price per share / earnings per share) / annual EPS Growth %	<1.5× (ideally ≤1.0×)
Creditworthiness/Efficiency	Interest Coverage	"EBIT / Interest Expense "	> 8× (>12× = excellent)
Management Reasonability	Capex/Sales	Capex/Sales	3-5%
Creditworthiness/Efficiency	Net Debt/EBITDA	Total Debt - Cash & Equivalents / EBITDA	< 2.0× (<1.0× = fortress balance sheet)
Management Reasonability	Operating Cash Flow/EBITDA	Operating Cash Flow/ EBITDA	> 80% (>90% = strong)
Growth	Real FCF Yield	FCFE Yield - Inflation Rate	> 4–5% (>6% = value opportunity)
Efficient use of capital	Cost of Sales as % of Revenue	Standard Deviation of revenue	< 70–75% (for diversified industrials)
Revenue Consistency	Revenue Stability (and Growth)		> 5–7% CAGR, <10% Std. Dev. over 5 yrs
Revenue Consistency	Cash Accrual Ratio		< 0.25 (ideally <0.15)
Efficient use of capital	Return on invested capital		> 10–12% (>15% = excellent)

Appendix: Expanded Porters’ 5 Forces for MSA

Force	Relative Strength	Quantitative / Strategic Context	Investment Interpretation
Threat of New Entrants	Low–Moderate	Industry certifications (NIOSH, CE, ISO) require 18–24-month approval cycles; brand trust and distribution are barriers, though low-cost Asian entrants compete in commoditized PPE.	Defensible moat in premium life-safety gear; vulnerable in low-end respiratory and generic PPE segments.
Bargaining Power of Suppliers	Moderate	~200 key suppliers; top 10 provide ~35% of inputs; sensor and electronic components drive 2–3% cost volatility.	Supplier risk episodic — mitigated via multi-sourcing, but reliance on specialized parts persists.
Bargaining Power of Buyers	Moderate–High	Industrial and public-sector buyers consolidate spend; top 20 customers ~30% of sales; short tender cycles (~18 months).	Price sensitivity remains elevated outside of regulated product lines; limited ASP expansion potential.
Threat of Substitutes	Moderate	Engineering controls, automation, and generic PPE alternatives can replace or undercut certain product categories.	High-spec innovation (connected safety, detection tech) is key to defending premium valuation.
Rivalry Among Existing Competitors	High	6–8 major players (Honeywell, Dräger, 3M, Scott, Ansell) compete globally; typical ASP erosion 1–2% p.a.; innovation cycles every 2–3 years.	Intense competition pressures pricing — sustainable advantage depends on pace of new product launches and cost efficiency.

Appendix: All Assumptions for Pro Forma

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REVENUE GROWTH ASSUMPTIONS		
Revenue Growth - Starting (2024A YoY)	1.1	%
Revenue Growth - Target Rate	6.08	%
Years to Reach Target Growth	5	years
OPERATING MARGIN ASSUMPTIONS		
COGS as % of Revenue	55	%
SG&A Start (2025E)	24	%
SG&A End (2029E)	24	%
R&D as % of Revenue	3.5	%
Other Operating Expenses	1	%
Tax Rate	24	%
WORKING CAPITAL - CURRENT ASSETS		
Accounts Receivable	16	% Rev
Inventory (Total)	32	% COGS
Prepaid Expenses	3	% Rev
Other Current Assets	0	$M
WORKING CAPITAL - CURRENT LIABILITIES		
Accounts Payable	12	% COGS
Accrued Expenses	15	% COGS
Current Portion of LT Debt	5	% Total Debt
Income Taxes Payable	AUTO	

PROPERTY, PLANT & EQUIPMENT		
CapEx as % of Revenue	3	%
Accumulated Depreciation % of Gross PPE	65	%
INTANGIBLE ASSETS		
Goodwill	620.9	$M
Intangibles as % of Revenue	14	%
OTHER NON-CURRENT ASSETS		
Deferred Tax Assets	26.18	$M
Pension Assets	224.64	$M
Other Non-Current Assets	18	% Rev
DEBT & CAPITAL STRUCTURE		
Target Debt / EBITDA Multiple	1	x
Interest Rate on Debt	4.5	%
Annual Dividends	85	$M
Share Buybacks	0	$M/year
Target Cash Balance	160	$M
OTHER LIABILITIES		
Deferred Tax Liabilities	107.69	$M
Pension Liabilities	134.25	$M
Operating Lease Liabilities	SIMPLIFIED	
Other LT Liabilities	16	% Rev
EQUITY		
Common Stock	329.95	$M
Treasury Stock	-398.2	$M
Retained Earnings	AUTO	
Accumulated OCI	-141.65	$M
VALUATION PARAMETERS (Reference)		
Risk-Free Rate	4.5	%
Market Risk Premium	6.5	%
Beta (Levered)	1.15	
Terminal Growth - FCFF	5	%
Terminal Growth - FCFE/RI	8	%

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Appendix: Revenue Growth Math

Base Case

SECTION 1: HISTORICAL REVENUE GROWTH RATES BY PRODUCT CATEGORY								
Product Category	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**Harmonic Mean**	**Revenue Weight**
Fire Service	1.0%	**-1.0%**	7.0%	**13.0%**	**18.0%**	4.0%	**6.60%**	**39%**
Detection	**11.0%**	**-2.0%**	4.0%	**17.0%**	**19.0%**	2.0%	**7.95%**	**36%**
Industrial PPE and Other	8.0%	**-14.0%**	**14.0%**	5.0%	10.0%	**-2.0%**	**2.60%**	**25%**
BLENDED GROWTH RATE (Revenue-Weighted)							**6.09%**	

Upper Case

SECTION 1: HISTORICAL REVENUE GROWTH RATES BY PRODUCT CATEGORY								
Product Category	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**CAGR**	**Revenue Weight**
Fire Service	1.0%	**-1.0%**	7.0%	**13.0%**	**18.0%**	4.0%	**6.60%**	**35%**
Detection	**11.0%**	**-2.0%**	4.0%	**17.0%**	**19.0%**	2.0%	**10.00%**	**45%**
Industrial PPE and Other	8.0%	**-14.0%**	**14.0%**	5.0%	10.0%	**-2.0%**	**2.60%**	**20%**
BLENDED GROWTH RATE (Revenue-Weighted)							**7.33%**	

Appendix: Pro Forma Income Statement

MSA Safety Inc. - Pro Forma Income Statement

USD Millions

Line Item	2022A	2023A	2024A	2025E	2026E	2027E	2028E	2029E
REVENUES								
Revenue from Goods & Services	1,527.95	1,787.65	1,808.14	1,873.05	1,986.93	2,107.74	2,235.89	2,371.83
OPERATING EXPENSES								
Cost of Operating Revenue (COGS)	854.12	935.51	947.70	992.72	1,053.07	1,117.10	1,185.02	1,257.07
Gross Profit	**673.83**	**852.14**	**860.45**	**880.33**	**933.86**	**990.64**	**1,050.87**	**1,114.76**
Selling, General & Administrative	383.44	463.63	455.35	449.53	466.93	484.78	503.08	521.80
Research & Development	57.01	67.99	66.53	65.56	69.54	73.77	78.26	83.01
Other Operating Expense	20.59	0.00	0.00	18.7	19.9	21.1	22.4	23.7
Operating Expenses - Total	**1,315.16**	**1,467.13**	**1,469.58**	**1,507.81**	**1,589.54**	**1,675.65**	**1,766.36**	**1,861.88**
Operating Profit (EBIT)	**212.79**	**320.52**	**338.56**	**365.24**	**397.39**	**432.09**	**469.53**	**509.95**
Add: Depreciation & Amortization	56.3	60.8	64.3	45.0	38.7	41.1	43.6	46.3
EBITDA	**269.1**	**381.3**	**402.9**	**410.3**	**436.1**	**473.2**	**513.1**	**556.2**
Interest Expense	21.66	46.73	36.89	22.86	21.27	23.09	25.04	27.13
Interest Expense - Net	17.50	38.55	29.87	22.86	21.27	23.09	25.04	27.13
Foreign Exchange Gain/(Loss)	-10.25	-17.08	-3.64	0.00	0.00	0.00	0.00	0.00
Other Non-Operating Income	23.19	14.09	16.52	0.00	0.00	0.00	0.00	0.00
Normalized Pre-tax Profit	**208.23**	**278.98**	**321.57**	**342.38**	**376.12**	**409.00**	**444.49**	**482.82**
Non-Recurring Income/(Expense)	-20.40	-140.10	-12.28	0.00	0.00	0.00	0.00	0.00
Income before Taxes	**238.53**	**206.69**	**375.01**	**342.38**	**376.12**	**409.00**	**444.49**	**482.82**
Income Taxes	58.90	148.10	90.04	82.17	90.27	98.16	106.68	115.88
NET INCOME	**179.63**	**58.58**	**284.97**	**260.21**	**285.85**	**310.84**	**337.81**	**366.94**

Appendix: Pro Forma Balance Sheet

Kenan-Flagler Business School
ALPHA CHALLENGE
The University of North Carolina

MSA SAFETY INC. - PRO FORMA BALANCE SHEET ($ Millions)								
Line Item	**2022A**	**2023A**	**2024A**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**
ASSETS								
Cash & Cash Equivalents	172.81	146.44	164.56	160.0	160.0	160.0	160.0	160.0
Accounts Receivable	297.03	294.68	279.21	299.7	317.9	337.2	357.7	379.5
Inventory	338.32	292.6	296.8	317.7	337.0	357.5	379.2	402.3
Other Current Assets	1.53	1.97	0.54	0.0	0.0	0.0	0.0	0.0
Total Current Assets	809.69	735.69	741.11	777.4	814.9	854.7	896.9	941.8
Property, Plant & Equipment (Gross)	676.14	721.21	741.27	797.5	857.1	920.3	987.4	1,058.5
Less: Accumulated Depreciation	424.44	456.03	473.32	518.35	557.0951	598.196	641.7959	688.0466
Net PP&E	251.7	265.18	267.95	279.1	300.0	322.1	345.6	370.5
Goodwill	620.62	627.53	620.9	620.9	620.9	620.9	620.9	620.9
Intangible Assets	902.48	893.67	867.33	850.0	850.0	850.0	850.0	850.0
Other Non-Current Assets	193.69	225.04	267.47	337.1	357.6	379.4	402.5	426.9
TOTAL ASSETS	**2778.18**	**2747.11**	**2764.76**	**2,864.5**	**2,943.4**	**3,027.1**	**3,115.9**	**3,210.1**
Depreciation Expense (for IS)	56.317	60.773	64.333	45.0	38.7	41.1	43.6	46.3
LIABILITIES & SHAREHOLDERS EQUITY								
Accounts Payable	112.5	111.9	108.2	119.1	126.4	134.1	142.2	150.8
Accrued Liabilities	136.94	156.43	127.17	148.9	158.0	167.6	177.8	188.6
Current Portion of Debt	28.6415	30.0845	25.4005	20.5	21.8	23.7	25.7	27.8
Total Debt	572.83	601.69	508.01	410.27	436.1351	473.1909	513.1299	556.2007
Total Current Liabilities	278.0815	298.4145	260.7705	288.5	306.1	325.3	345.6	367.2
Long-term Debt	544.1885	571.6055	482.6095	389.8	414.3	449.5	487.5	528.4
Other Long-term Liabilities	541.925	295.36	292.75	299.7	317.9	337.2	357.7	379.5
Total Liabilities	1364.195	1165.38	1036.13	978.0	1,038.4	1,112.0	1,190.8	1,275.1
Common Stock & APIC	361.44	363.28	398.2	398.2	398.2	398.2	398.2	398.2
Treasury Stock	-361.438	-363.284	-398.204	-398.2	-398.2	-398.2	-398.2	-398.2
Retained Earnings (plug)	1413.983	1581.734	1728.634	1,886.5	1,905.0	1,915.1	1,925.1	1,935.0
Total Shareholders Equity	1413.985	1581.73	1728.63	1,886.5	1,905.0	1,915.1	1,925.1	1,935.0
TOTAL LIABILITIES & EQUITY	**2778.18**	**2747.11**	**2764.76**	**2,864.5**	**2,943.4**	**3,027.1**	**3,115.9**	**3,210.1**

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Appendix: Pro Forma Cashflow Statement

MSA SAFETY INC. - PRO FORMA CASH FLOW STATEMENT ($ Millions)								
Line Item	2022A	2023A	2024A	2025E	2026E	2027E	2028E	2029E
OPERATING ACTIVITIES								
Net Income	212.79	320.52	338.56	354.00	383.48	415.23	449.41	486.23
Depreciation & Amortization	56.3	60.8	64.3	45.0	38.7	41.1	43.6	46.3
Net Working Capital	387.44	320.92	341.18	349.3	370.6	393.1	417.0	442.3
Change in Net Working Capital	0	-66.52	20.26	8.1	21.2	22.5	23.9	25.4
Cash from Operations (CFO)	269.11	447.81	382.63	390.89	400.99	433.80	469.11	507.13
INVESTING ACTIVITIES								
Capital Expenditures	-42.553	-42.764	-54.223	-56.2	-59.6	-63.2	-67.1	-71.2
Other Investing Activities	38.069	2.811	0.468	0	0	0	0	0
Cash from Investing (CFI)	-4.484	-39.953	-53.755	-56.2	-59.6	-63.2	-67.1	-71.2
FINANCING ACTIVITIES								
Change in Total Debt	0	28.86	-93.68	-108.976	23.1924	34.10034	36.68342	39.47054
Dividends Paid	-71.497	-73.488	-78.759	-75	-75	-75	-75	-75
Other Financing Activities	-28.853	-2.663	-35.676	0	0	0	0	0
Cash from Financing (CFF)	**-260.35**	**-207.291**	**-368.115**	**-343.976**	**-211.808**	**-200.9**	**-198.317**	**-195.529**
Net Change in Cash (Theoretical)	**4.27**	**200.57**	**-39.24**	**-9.28**	**129.57**	**169.66**	**203.72**	**240.44**

Appendix: FCFF Computation

USD Millions	2025E	2026E	2027E	2028E	2029E	
FREE CASH FLOW TO FIRM (FCFF)						
Cash from Operations (CFO)	390.9	401.0	433.8	469.1	507.1	
Interest Expense	22.9	21.3	23.1	25.0	27.1	
Tax Rate (%)	24.0%	24.0%	24.0%	24.0%	24.0%	
Add: After-tax Interest	17.4	16.2	17.5	19.0	20.6	
Less: CapEx	-56.2	-59.6	-63.2	-67.1	-71.2	
FCFF	**464.5**	**476.8**	**514.6**	**555.2**	**598.9**	
FCFF Growth Rate		2.65%	7.93%	7.90%	7.87%	
WEIGHTED AVERAGE COST OF CAPITAL (WACC)						
Risk-Free Rate (Rf)	4.10%					
Beta (β)	0.95					
Market Risk Premium (Rm - Rf)	6.00%					
Cost of Equity (Re) = Rf + β(Rm-Rf)	**9.80%**					
Cost of Debt (Rd)	4.50%					
After-tax Cost of Debt	3.42%					
Market Value of Debt (2024A)	508.0					
Market Value of Equity (2024A)	1,728.6					
Total Capital (D + E)	2,236.6					
Weight Debt (D/V)	22.7%					
Weight Equity (E/V)	77.3%					
WACC = (E/V × Re) + (D/V × Rd × (1-T))	**8.35%**					

Appendix: FCFF Computation

DCF VALUATION - FCFF APPROACH					
Discount Factor (WACC)	0.923	0.852	0.786	0.726	0.670
PV of FCFF	428.7	406.1	404.5	402.8	401.0
Sum of PV(FCFF)	**2,043.2**				
TERMINAL VALUE CALCULATION					
Terminal Growth Rate (g)	3.00%				
Final Year FCFF Growth	5.00%				
FCFF 2029E	401.0				
Terminal FCFF (2029E × (1+g))	413.1				
Years to Converge to Terminal	**5.0**				
Terminal Value = H Model	**7,739.8**				
PV of Terminal Value	**5,182.8**				
ENTERPRISE VALUE	**7,226.0**				
Less: Total Debt (2024A)	508.0				
Add: Cash (2024A)	164.6				
EQUITY VALUE	**6,882.5**				
Shares Outstanding (millions)	39.5				
PRICE PER SHARE (FCFF)	**$174.24**				

Appendix: Top 5 Critical Factors for MSA Safety Inc.

Using the EPIC Test to Identify 5 Critical Factors Increasing Stock Upside

Critical Factor	E Materiality Test	P Probability Test	I Forecastibility Test	C Consensus Error Test
End-Market Safety Spending	PASS *(single biggest driver of MSA's top line)*	PASS *(increased demand likely due to continued infrastructure spending)*	PASS *(easy to model and predict using CAPEX and PMI data)*	PASS *(market assumes safety spending is cyclical, but it tends to stay resilient even in moderate downturns)*
Product Innovations & Connected-Safety Technologies	PASS *(differentiates from competitors and supports premium pricing and margin expansion)*	WARNING *(R&D programs are ongoing, but successful commercial rollout timing is uncertain)*	WARNING *(Adoption curves and client budgets make it hard to model revenue uplift precisely)*	PASS *(market undervalues MSA's ability to monetize "connected" smart-safety products over the next cycle)*
Regulatory & Standards Changes	PASS *(New or stricter safety standards directly force clients to replace or upgrade equipment, driving step-function demand)*	WARNING *(Legislative cycles are slow and uncertain, so timing of actual implementation is hard to pin down)*	WARNING *(While proposed regulations are visible, their enforcement and regional adoption vary widely)*	PASS *(investors assume "status quo" regulation, leaving upside when unexpected mandates emerge)*
Supply-Chain Costs & Operational Efficiency	PASS *(Raw-material and logistics costs directly affect gross margins)*	PASS *(Persistent input volatility makes margin pressure a recurring risk)*	WARNING *(Cost swings can be partially modeled but remain unpredictable)*	FAIL *(Inflation and supply issues are already priced into industrial-sector expectations, offering little differentiation)*