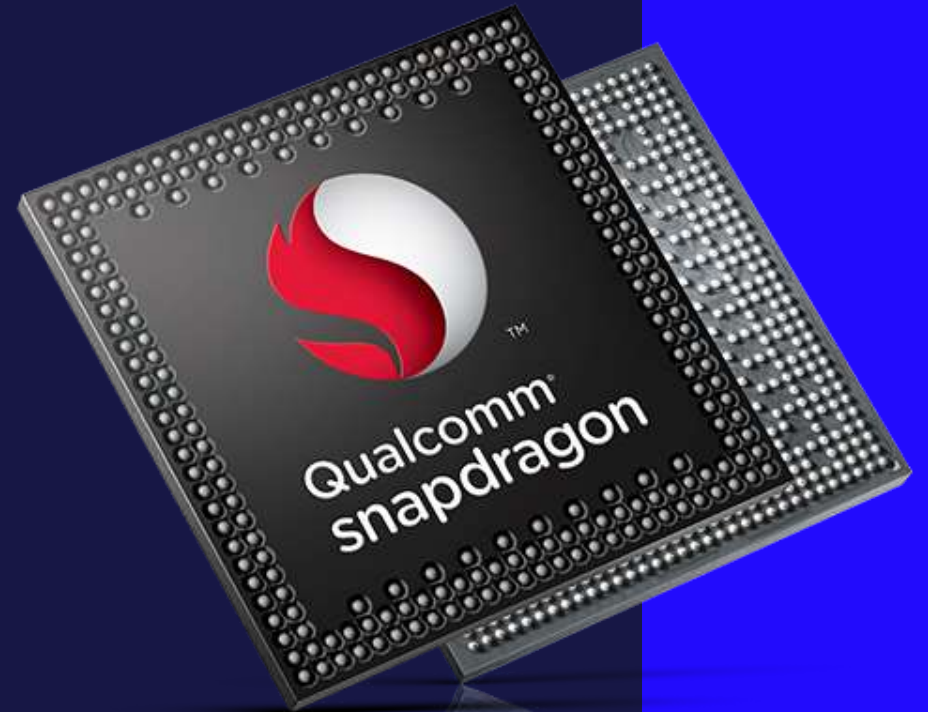


Qualcomm

Bulldog Investment Company

April 22, 2022



Newcomers



William Errett
Junior Analyst
BBA, Finance/Economics
1st year in BIC



Caitlyn Linzy
Junior Analyst
BBA, Accounting
1st year in BIC



Logan Arciba
Junior Analyst
BBA, Accounting
1st year in BIC



Dylan Swanson
Junior Analyst
BBA, Finance/Economics
1st year in BIC

Overview

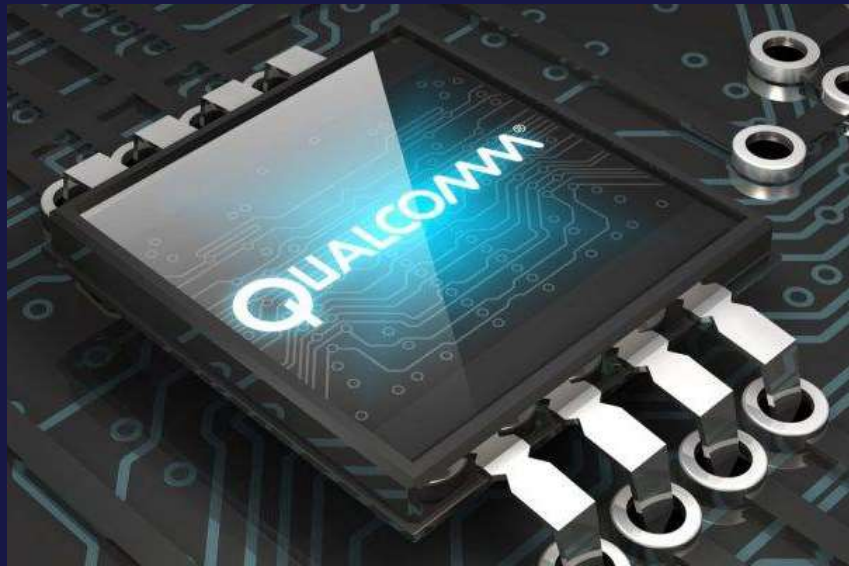
Overview



QUALCOMM®

- **Ticker:** QCOM
- **Headcount:** 45,000
- **Headquarters:** San Diego, CA
- **Price:** \$140.00
- **Market Cap:** \$158B

Our Position



- **Shares:** 100
- **Cost Average:** \$48.00
- **Total Cost:** \$4,863.80
- **Market Value:** \$13,932
- **Weight:** 1.05%

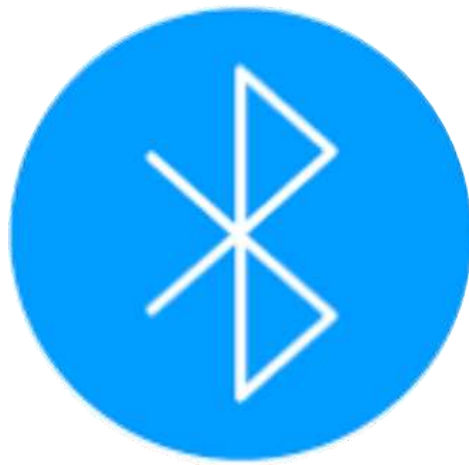
What is QCOM?



- Known for cellular connectivity
- Designs and manufactures
 - Semiconductors
 - Wireless telecommunication products
- Technologies include
 - Processors
 - Modems
 - Software



5G



Bluetooth



AI



Technology

A central blue rectangular box with a white border containing the word 'Technology' in white, bold, sans-serif font. The box is flanked by stylized circuit traces extending horizontally to the left and right edges of the image.

Modem-
RF
Systems



Processors



Wi-Fi

**Qualcomm
CDMA
Technologies**

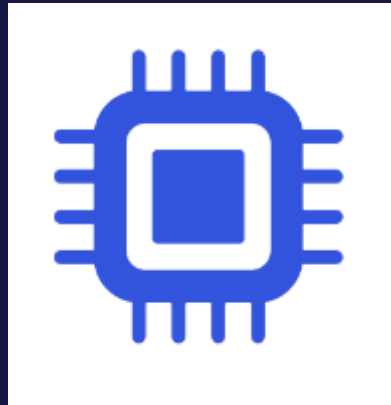
Handsets

RF Front End

Automotive

Internet of Things

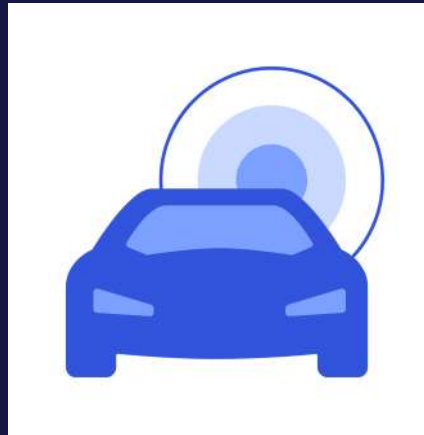
Handsets



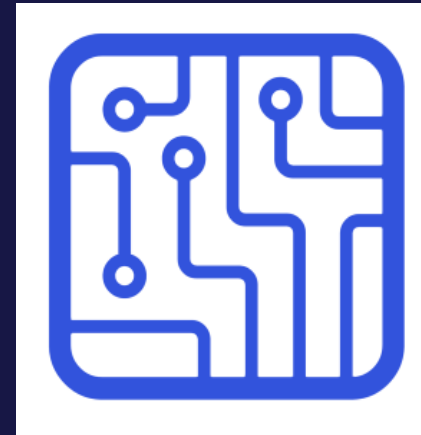
RF Front End



Automotive

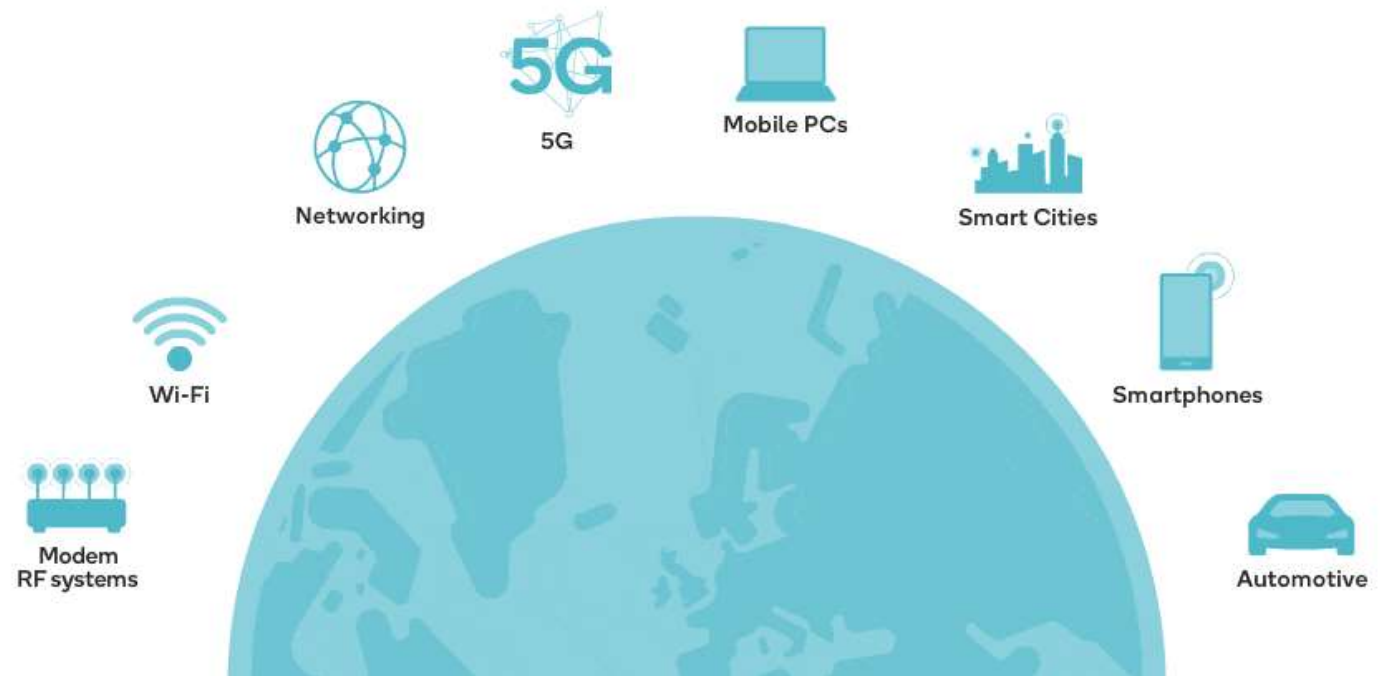


IoT



Qualcomm Technology Licensing

- Grants licenses and provides rights to intellectual property
- Over 300 licensing agreements



Qualcomm Strategic Initiatives

- Invest in companies leveraging Qualcomm's foundational technology



Revenue Breakdown

Revenue Drivers- Qualcomm Technology Licensing

Includes: licenses, patents rights, and software

- Essential to manufacture, use, and sale certain products of Qualcomm

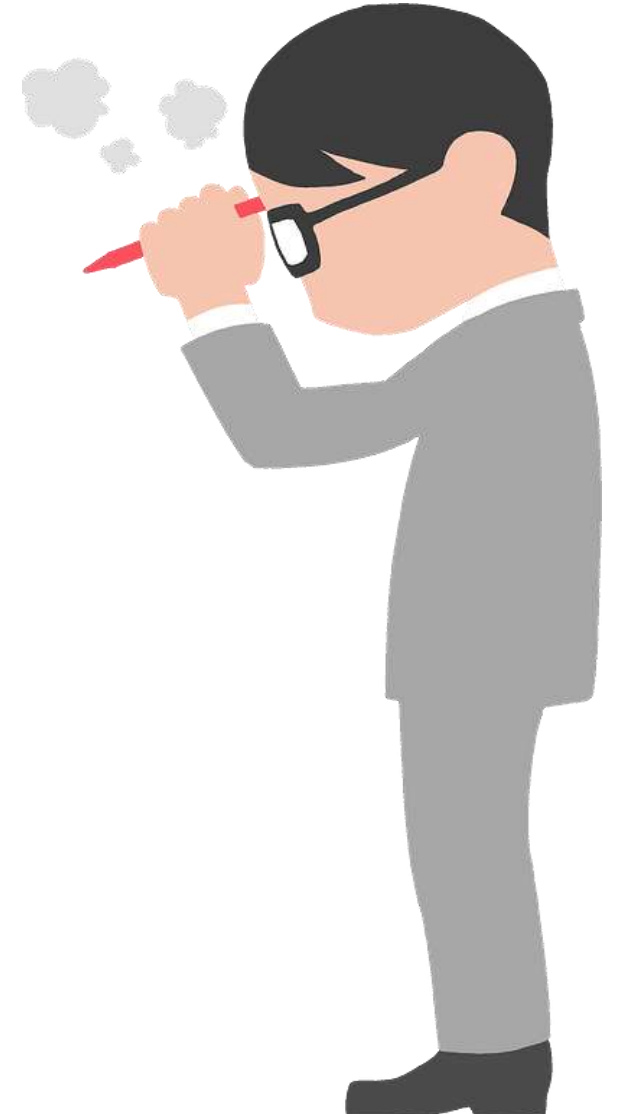


Revenue Drivers- Qualcomm Strategic Initiatives

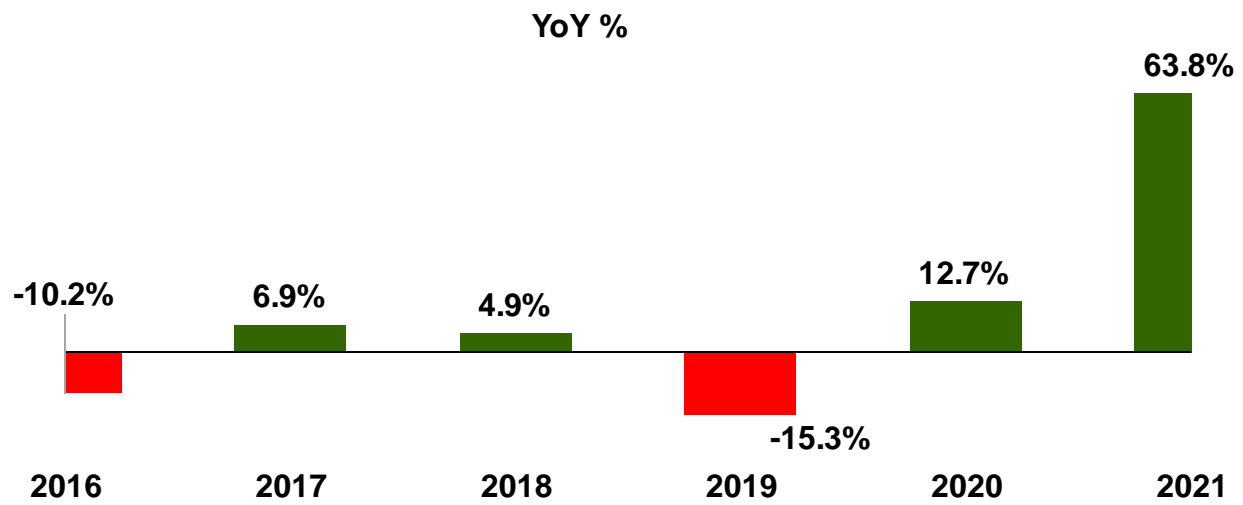
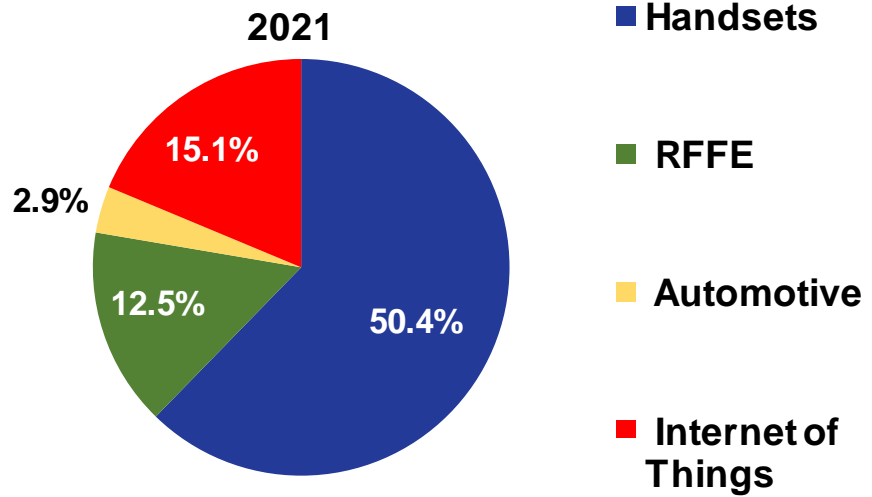
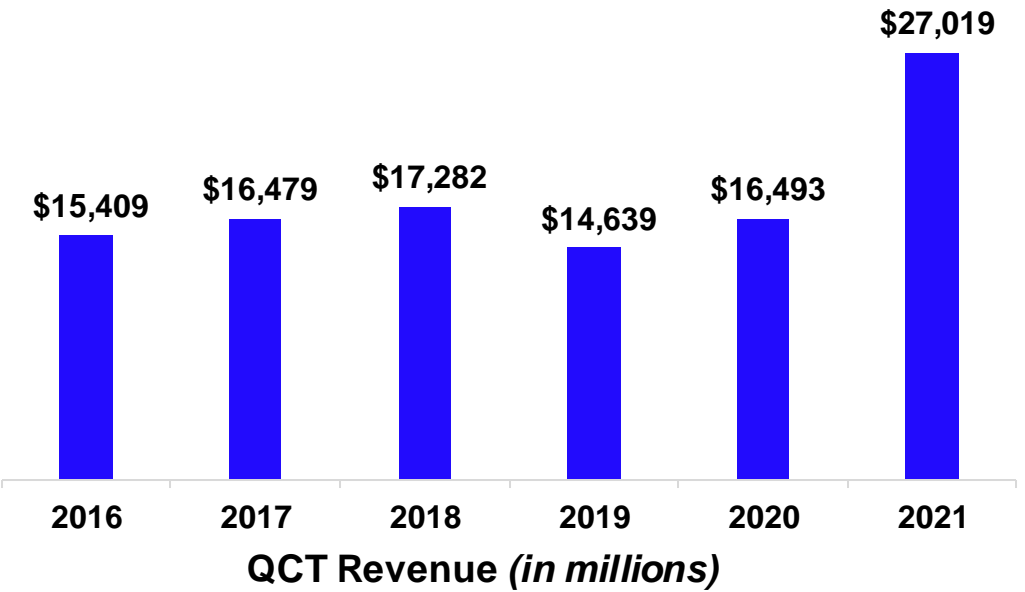
- Strategic investments in the early-stage of technology companies.

Types of Companies:

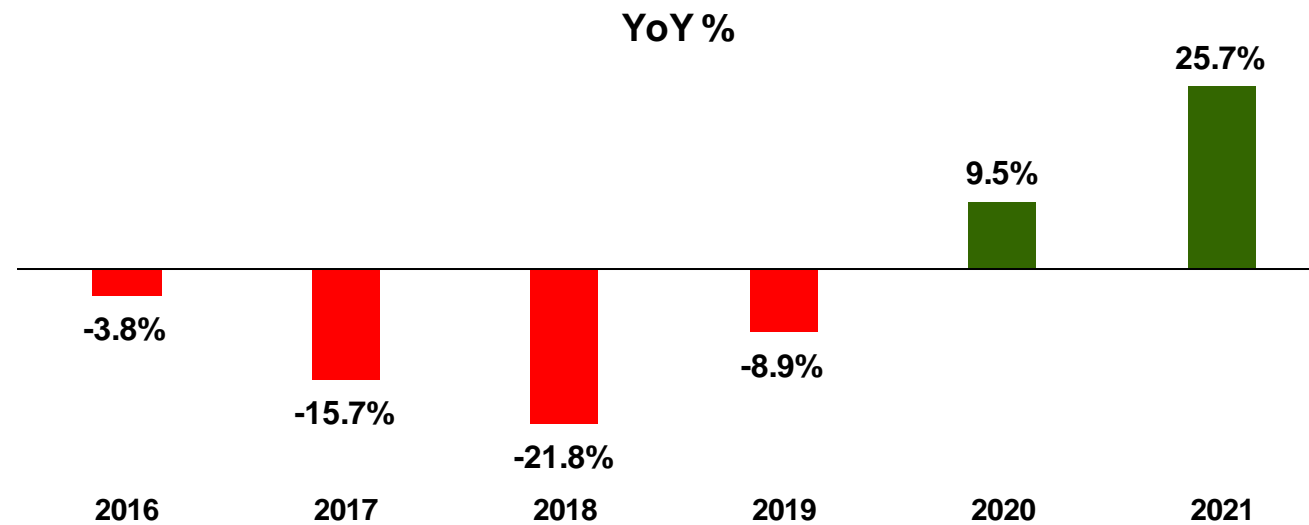
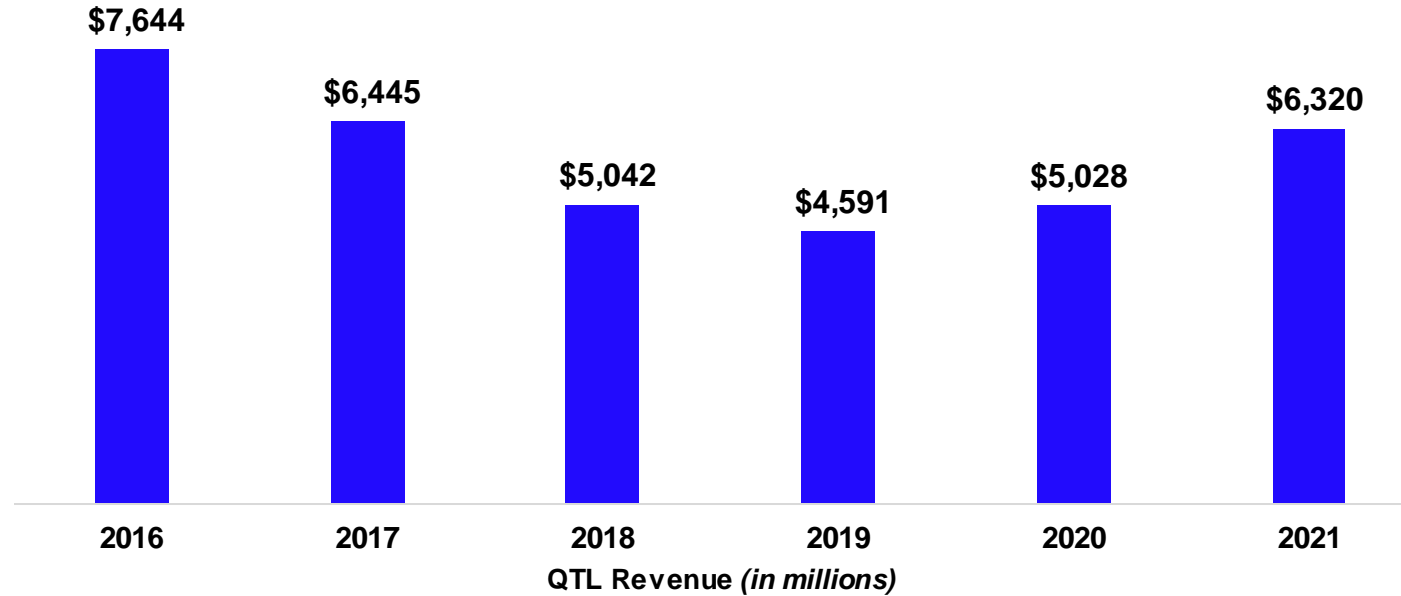
Artificial Intelligence,
Networking, Internet of
Things, Mobile, etc.



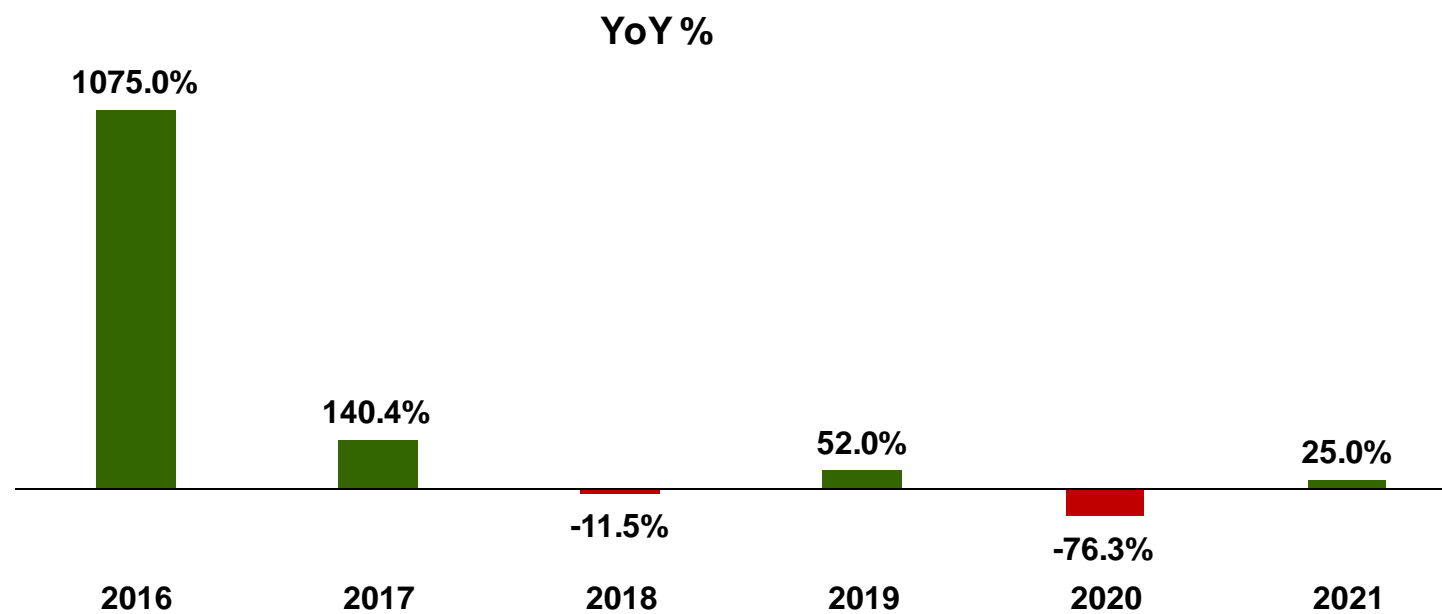
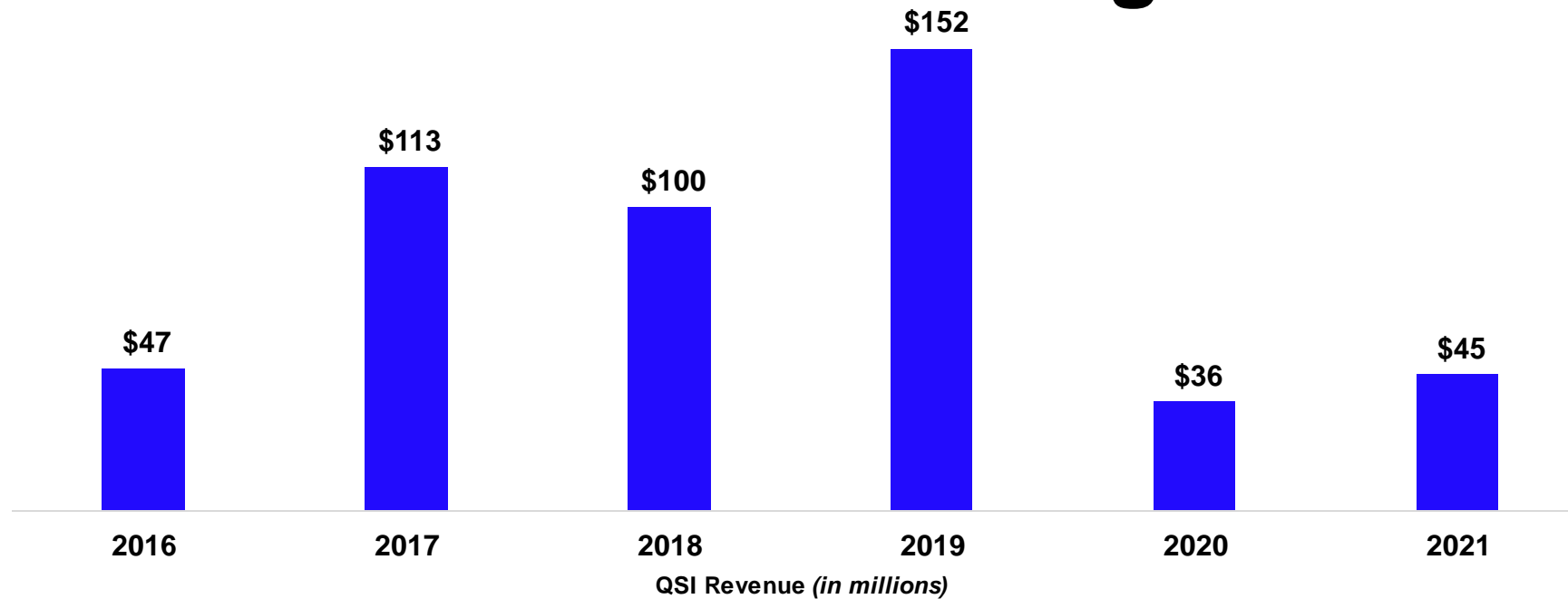
Revenue- Qualcomm CDMA Technologies



Revenue- Qualcomm Technology Licensing



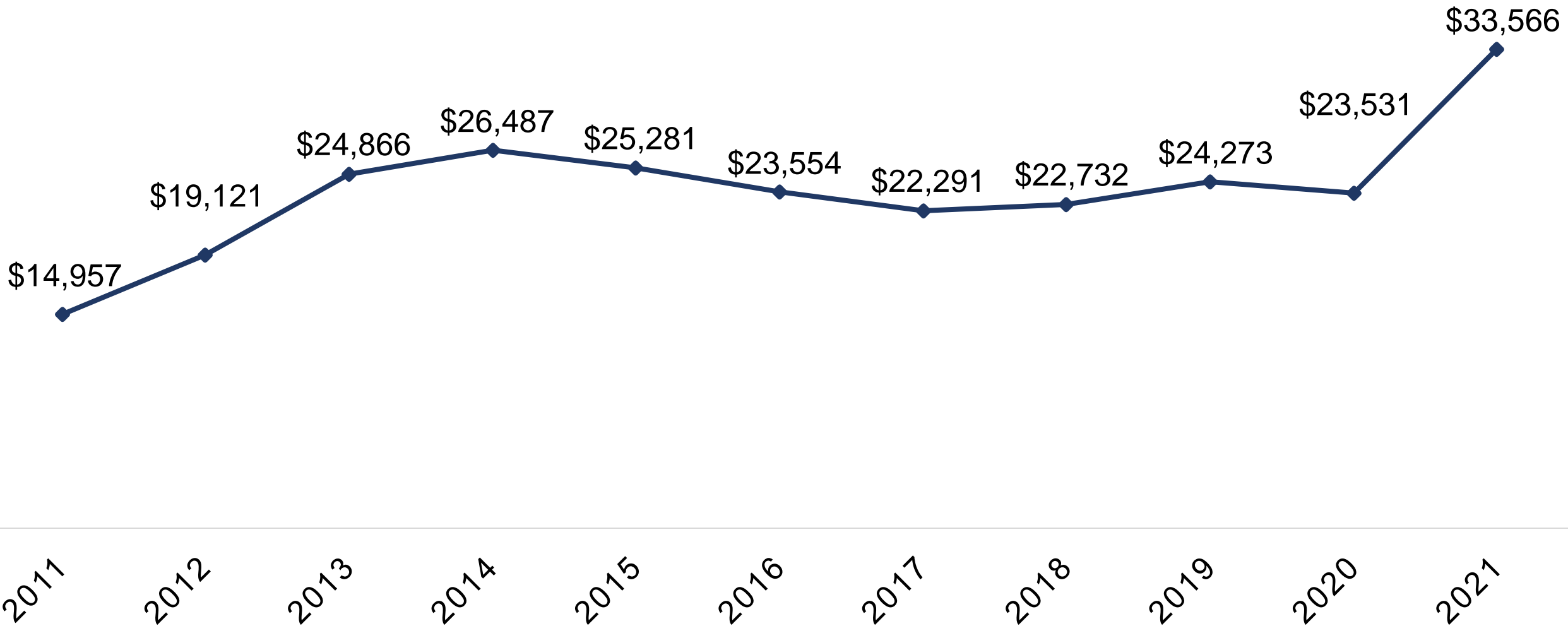
Revenue- Qualcomm Strategic Initiatives



Interpretation of Financial Statements

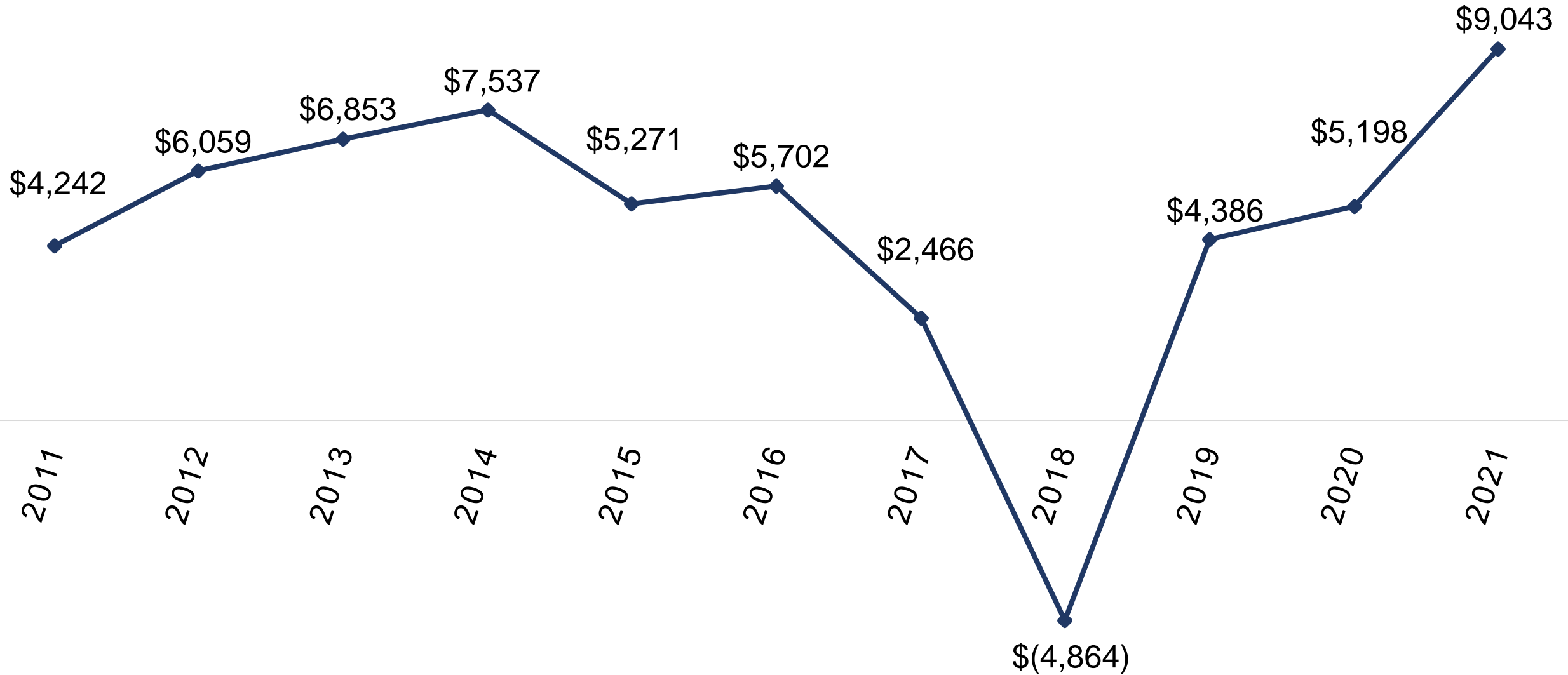
3-Year CAGR: 13.9%
5-Year CAGR: 7.3%
10-Year CAGR: 8.4%

Revenue *(in millions)*

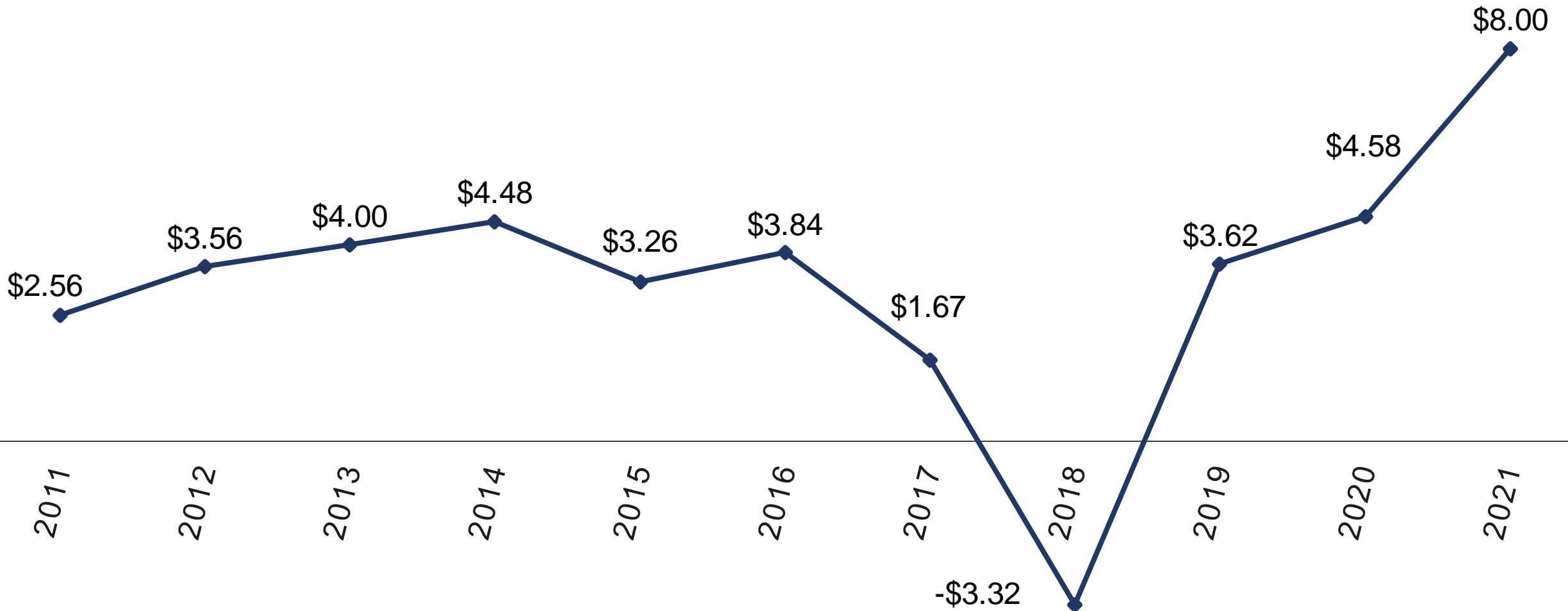


3-Year CAGR: NMF
5-Year CAGR: 9.7%
10-Year CAGR: 7.9%

Net Income (in millions)

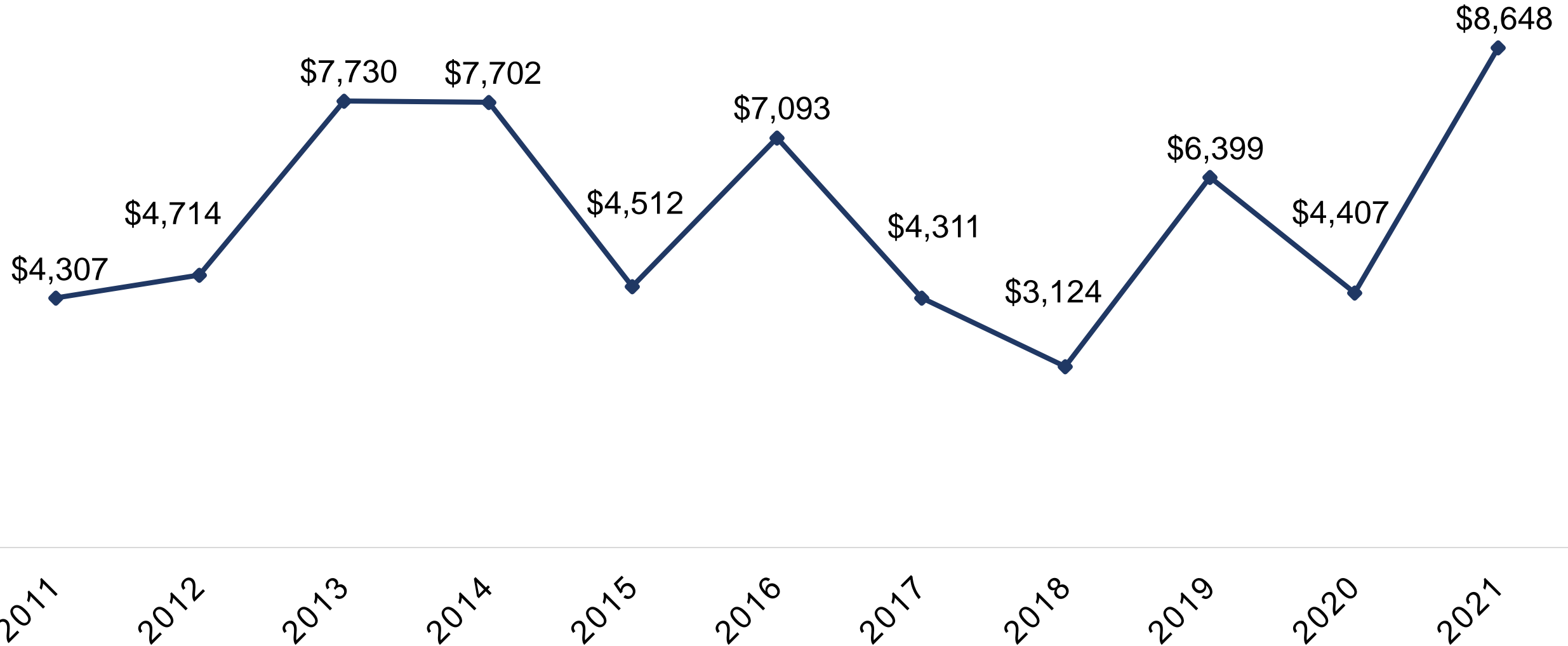


Earnings per Share

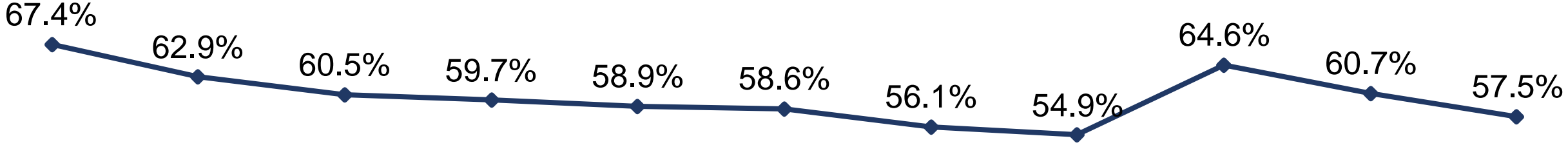


3-Year CAGR: 40.4%
5-Year CAGR: 4.0%
10-Year CAGR: 7.2%

Free Cash Flow (in millions)



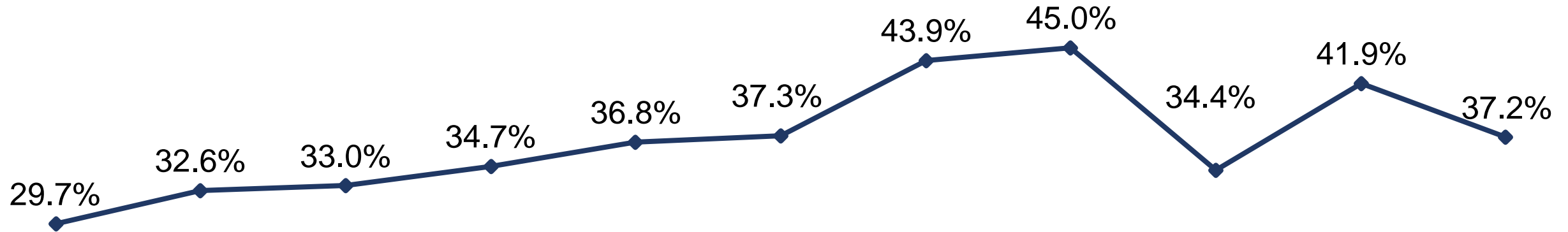
Gross Margin



40%

2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021

Research and Development as a % of Gross Profit



10%

2011

2012

2013

2014

2015

2016

2017

2018

2019

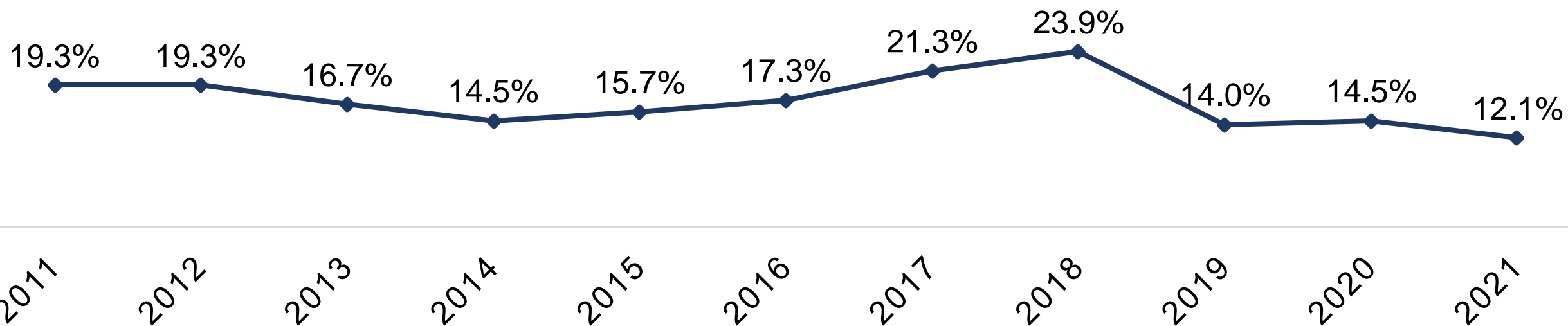
2020

2021

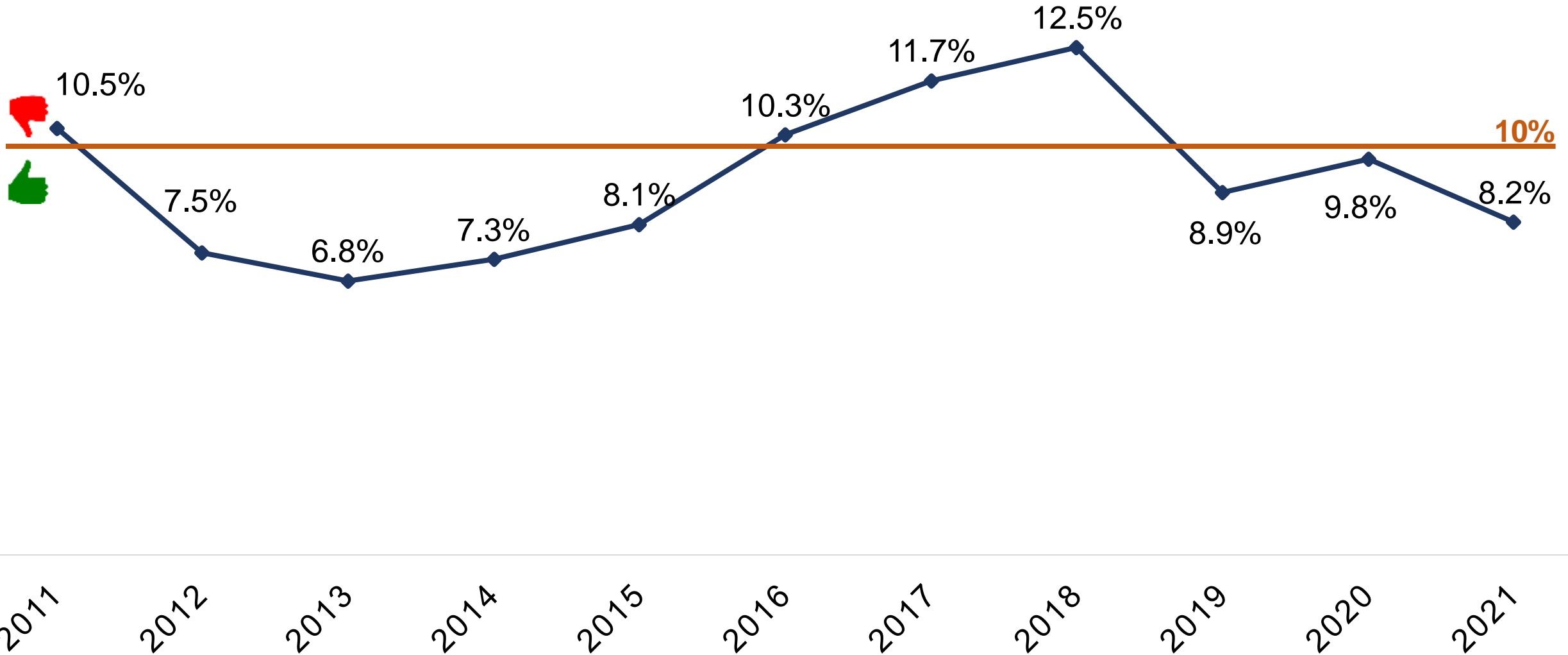
Selling, General, and Administrative Expenses as % of Gross Profit



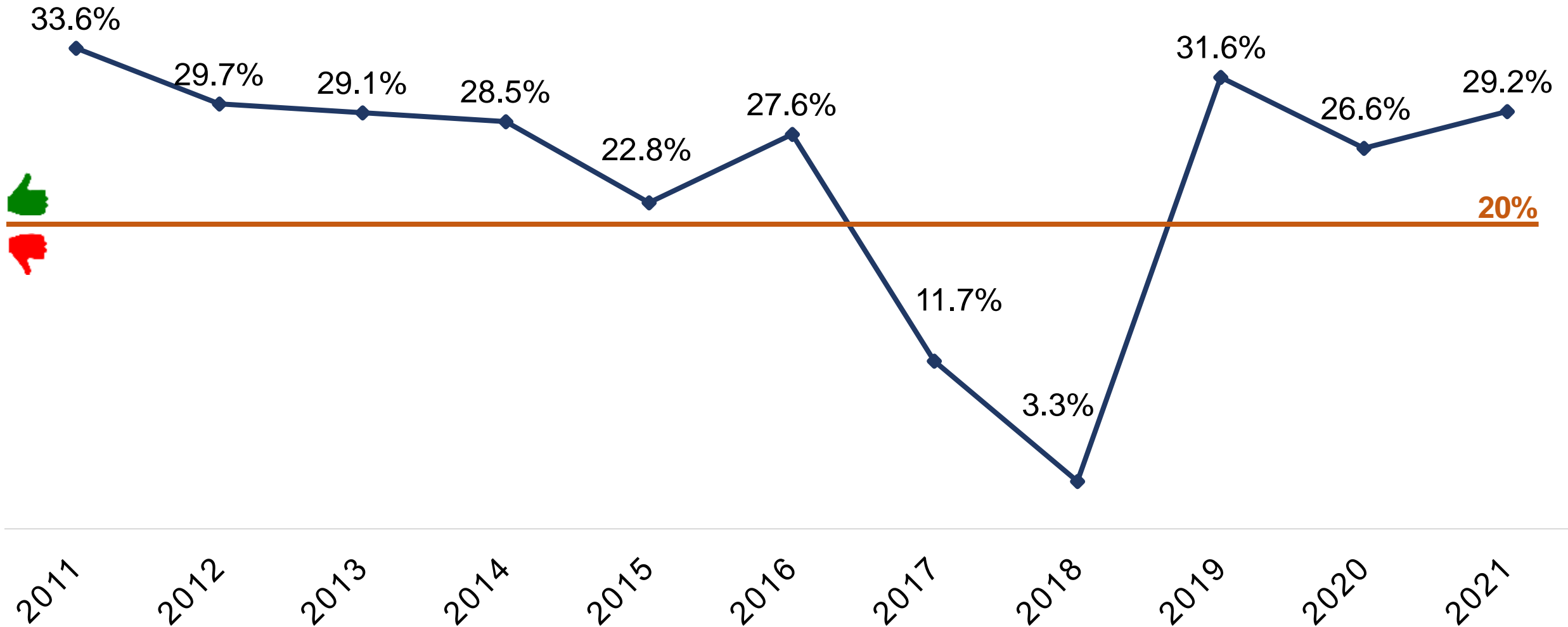
80%



Depreciation as a % of Gross Profit



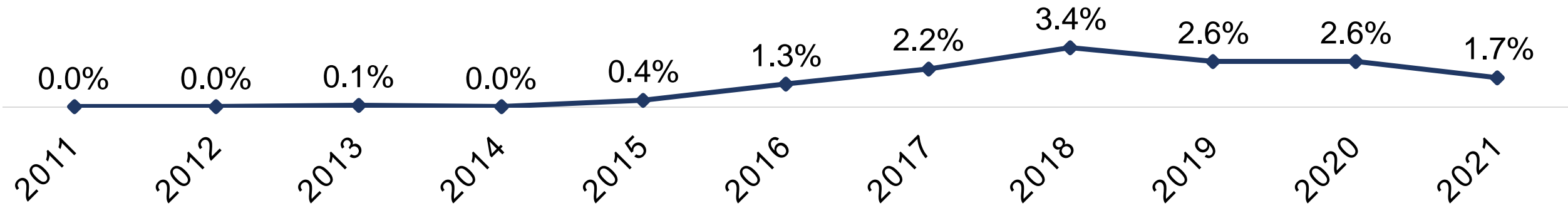
Operating Margin



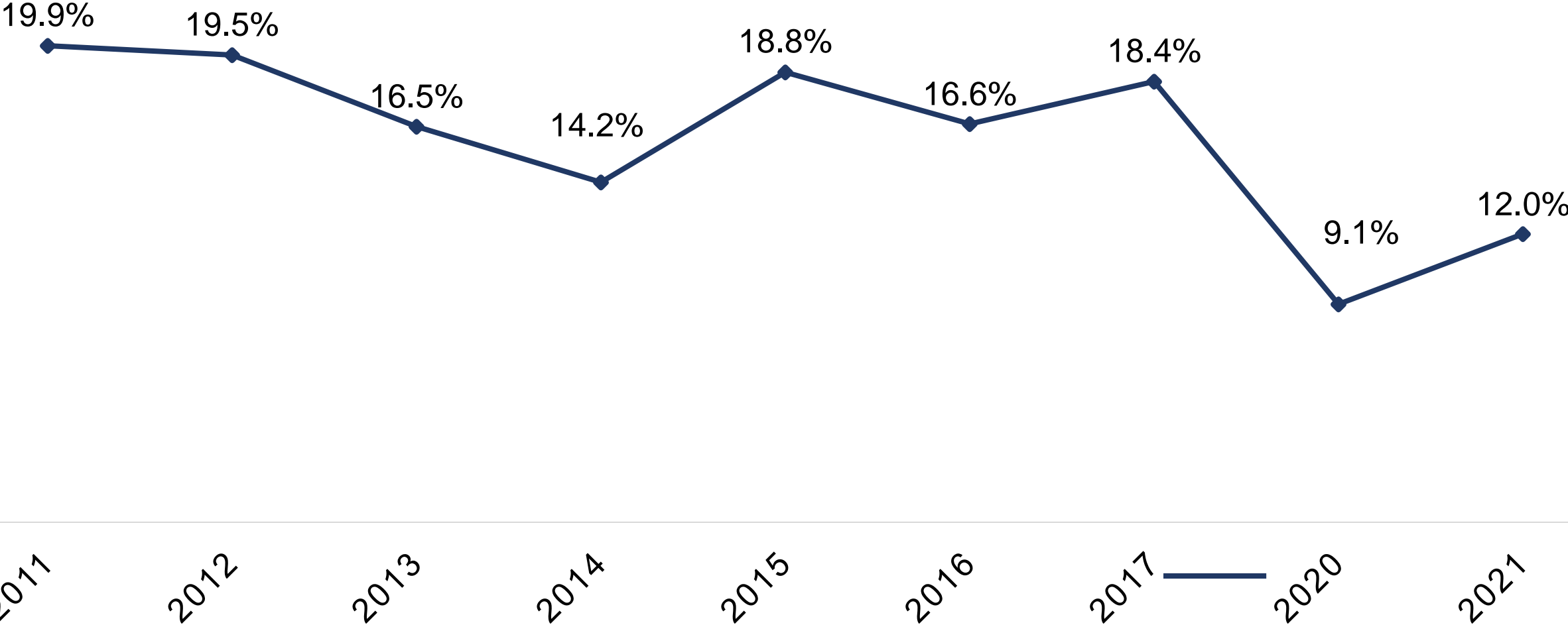
Interest as a % of Operating Income



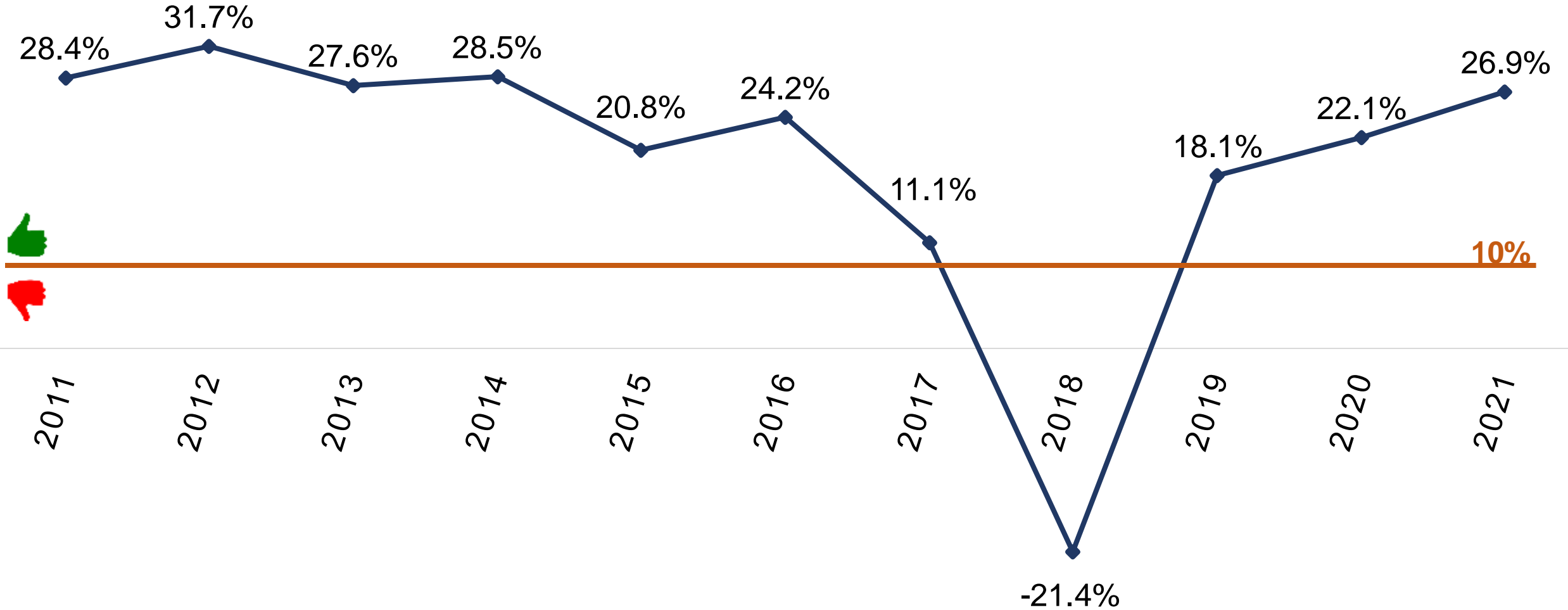
15%



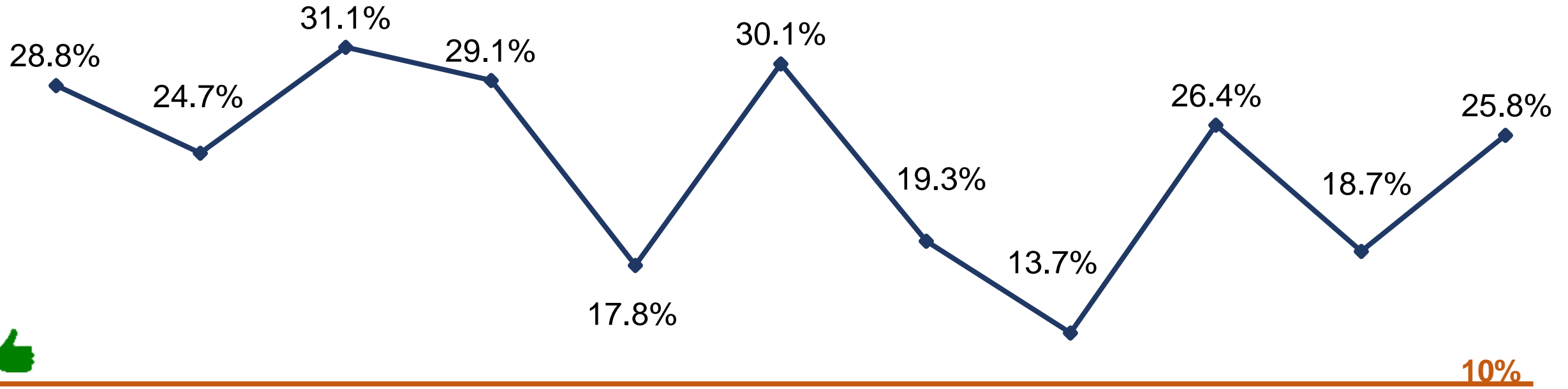
Effective Tax Rate



Net Margin



Free Cash Flow Margin



10%

2011

2012

2013

2014

2015

2016

2017

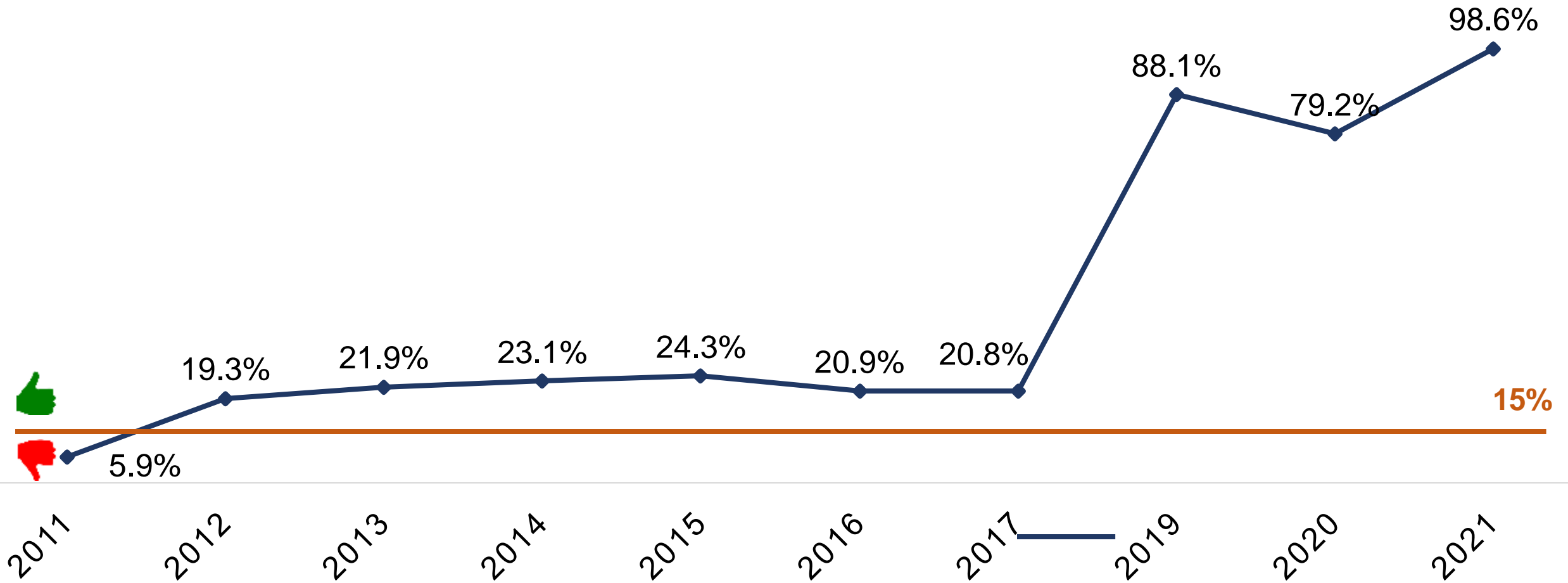
2018

2019

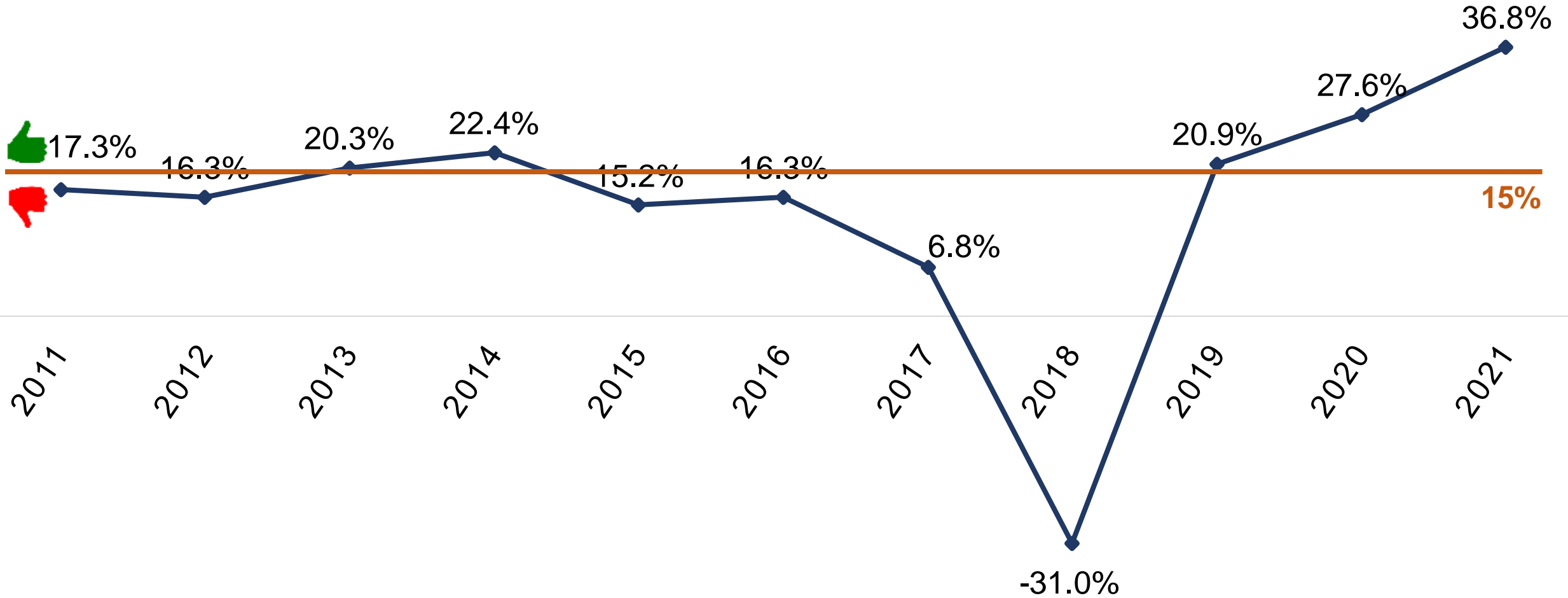
2020

2021

Return on Equity



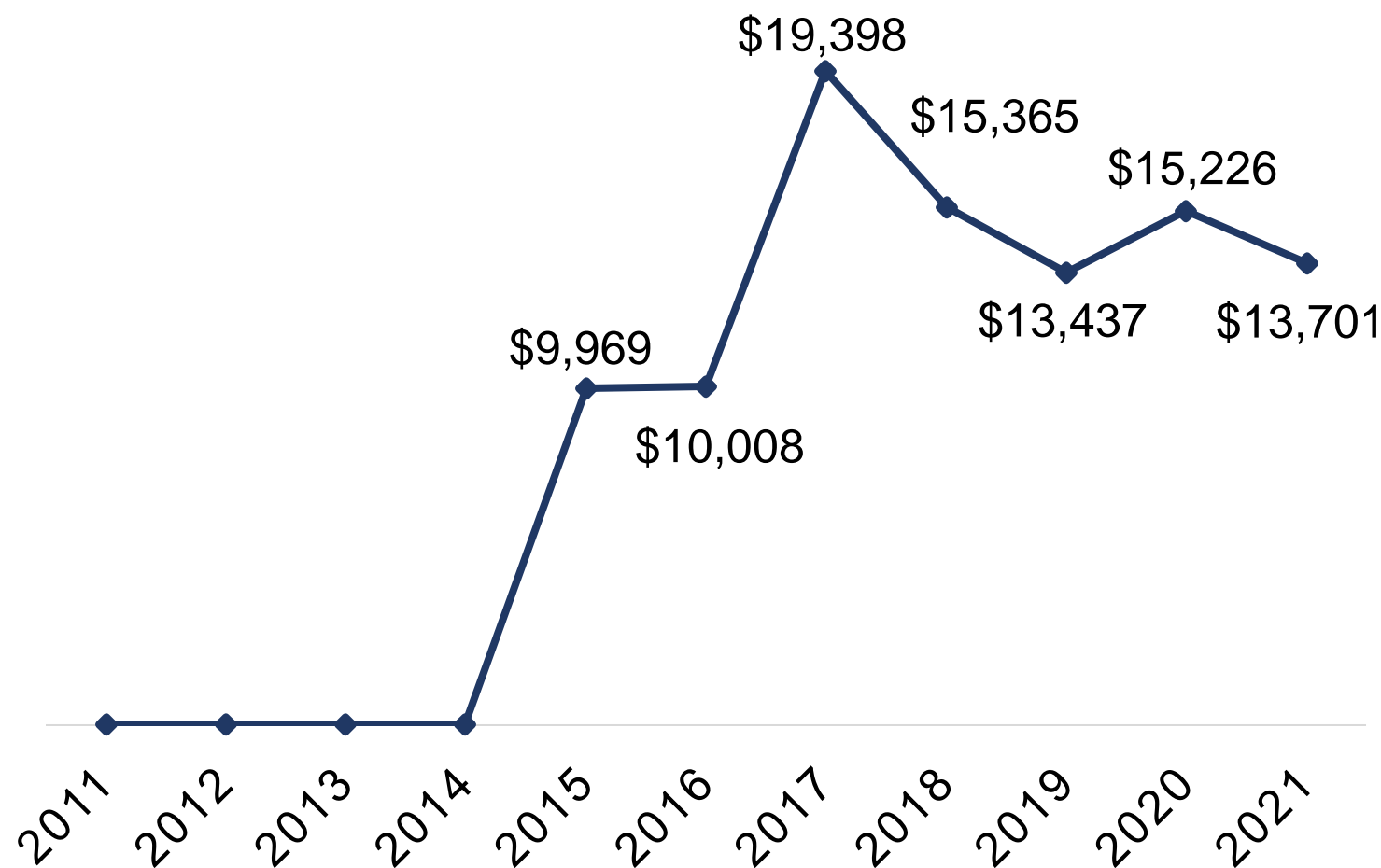
Return on Capital



Long Term Debt (in millions)

Obligation Ratio

(Calculations measured in millions)



Long-Term Debt	\$13,701
(+) Short Term Debt	\$2,042
(+) Leases x 7	\$141
(+) Pension Shortfall	\$0
(+) Preferred Stock	\$0
(-) Cash Assets	\$11,310
Net Income	\$9,043
Obligation Ratio 0.60 < 5 PASSES	

Management Overview

Management



Cristiano R. Amon
CEO



Akash Palkhiwala
CFO



Alex Rogers
President of QTL



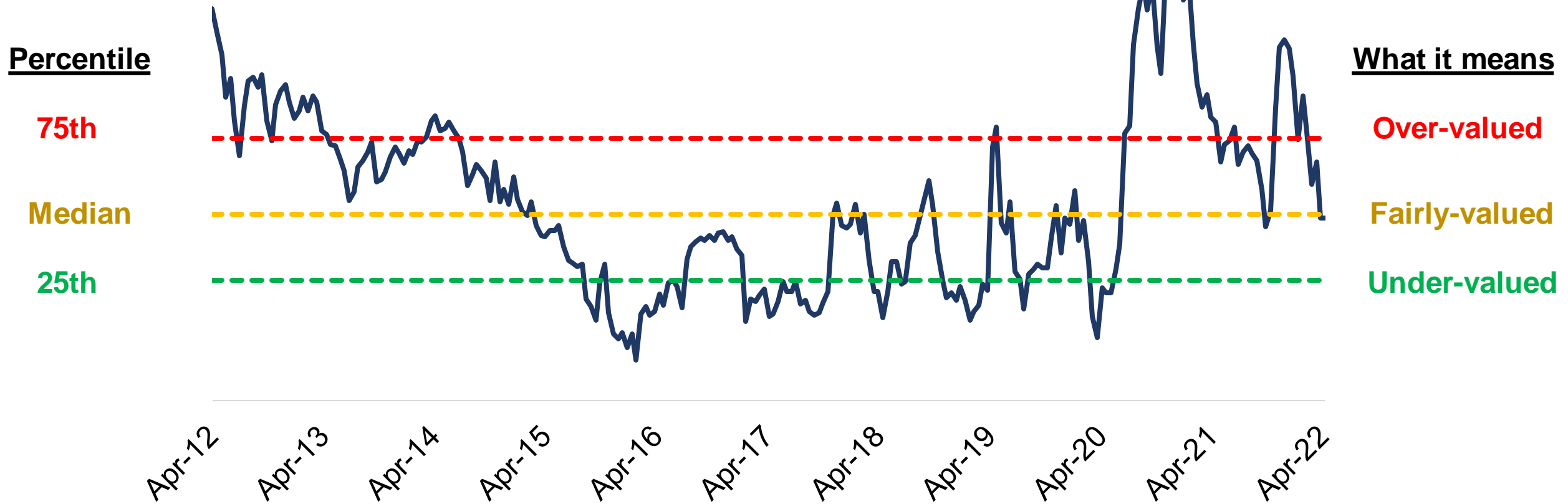
Dr. James H Thompson
CTO

Insider Ownership

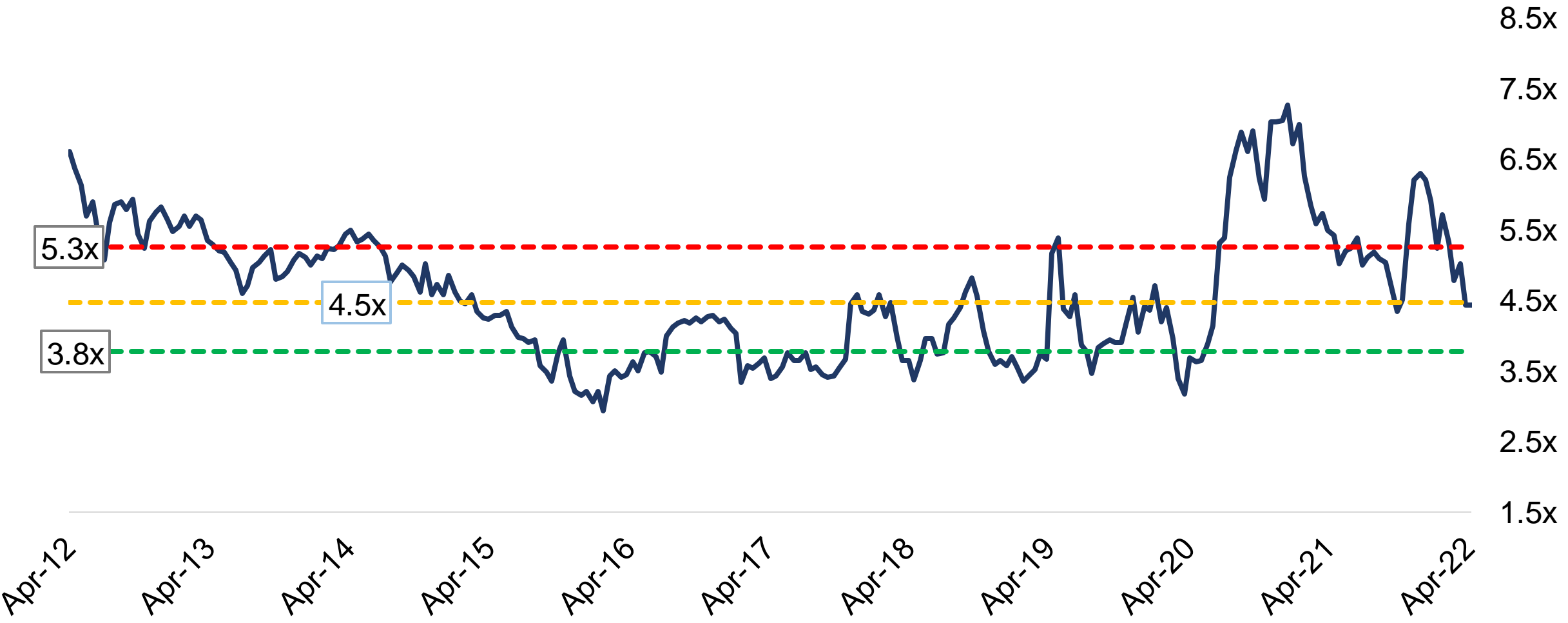
<u>Officer Level</u>	<u>Multiple of Base salary</u>
CEO	10x
CFO	2-10x
CTO	2-10x
QTL Pres.	2-10x

Name	Shares Owned	Share value (4/21/22)
Cristiano R. Amon	119,672	\$ 16,359,163.4
James Thompson	197,885	\$ 27,050,879.5
Akash Palkhiwala	38,879	\$ 5,314,759.3
Alex Rogers	37,388	\$ 5,110,939.6

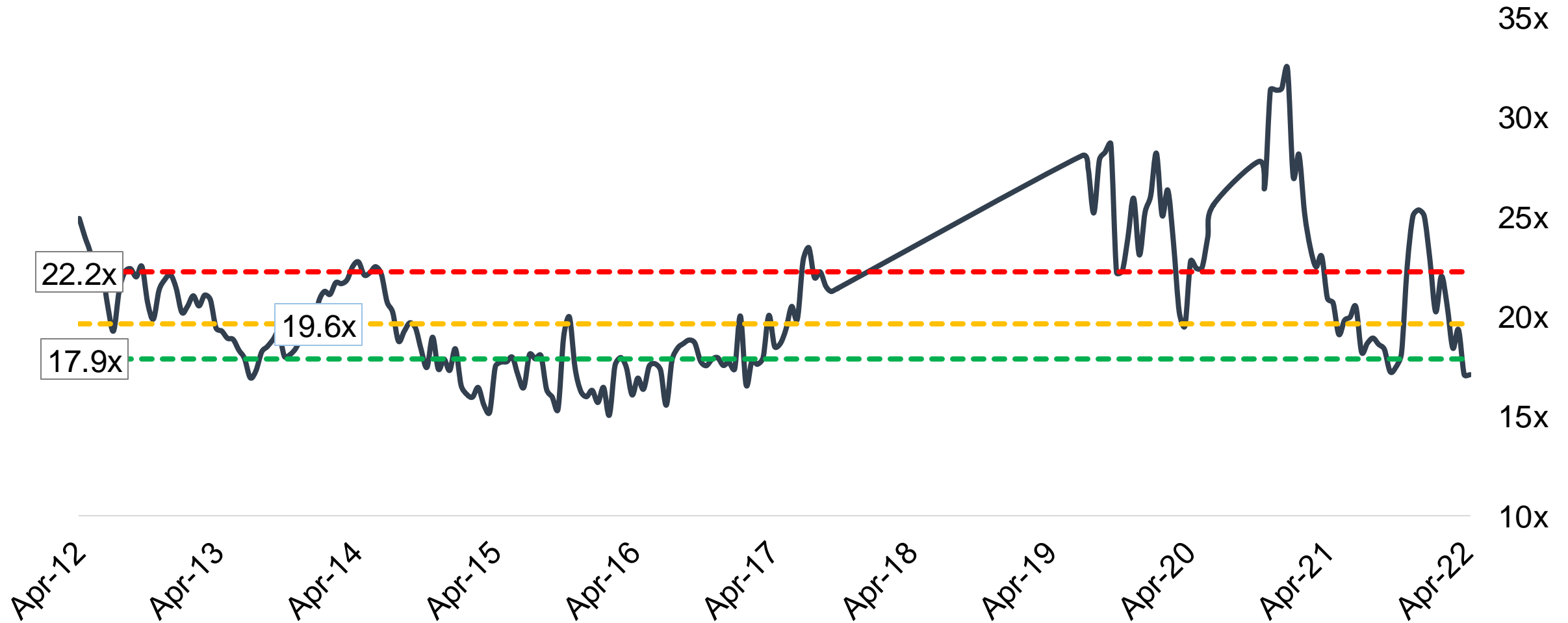
Value Bands



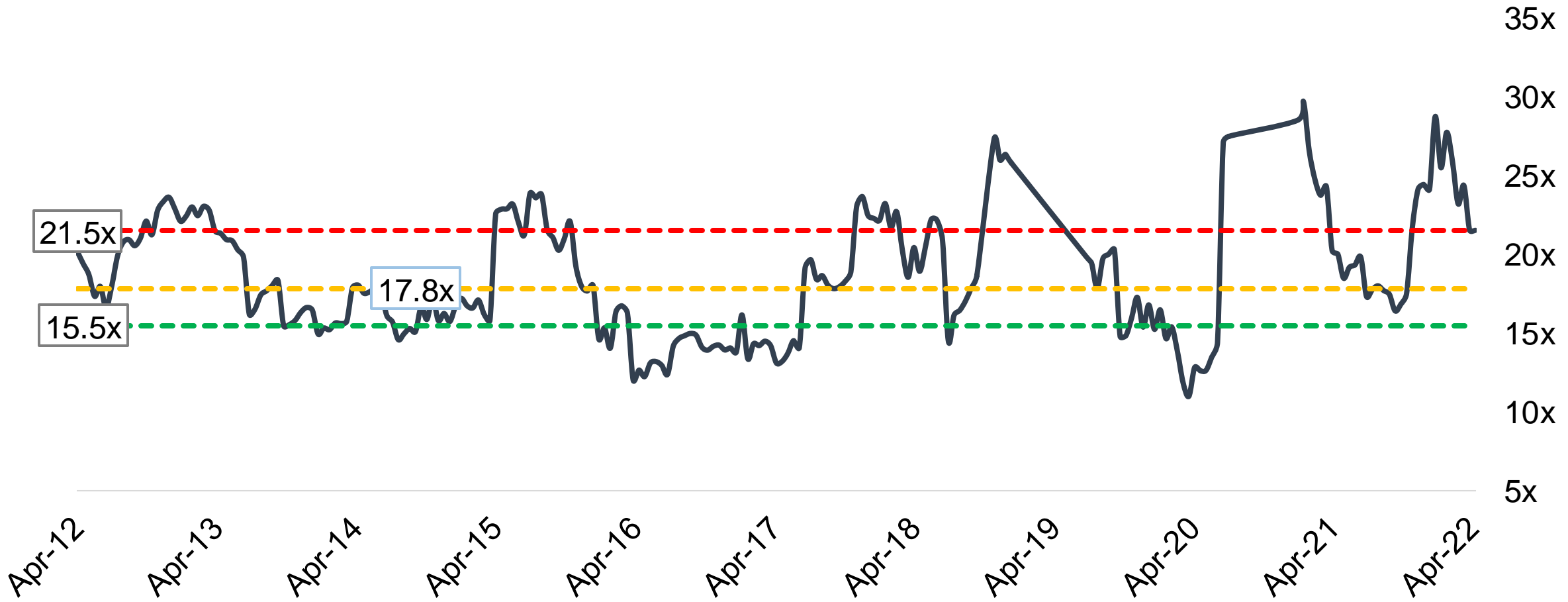
Price to Sales



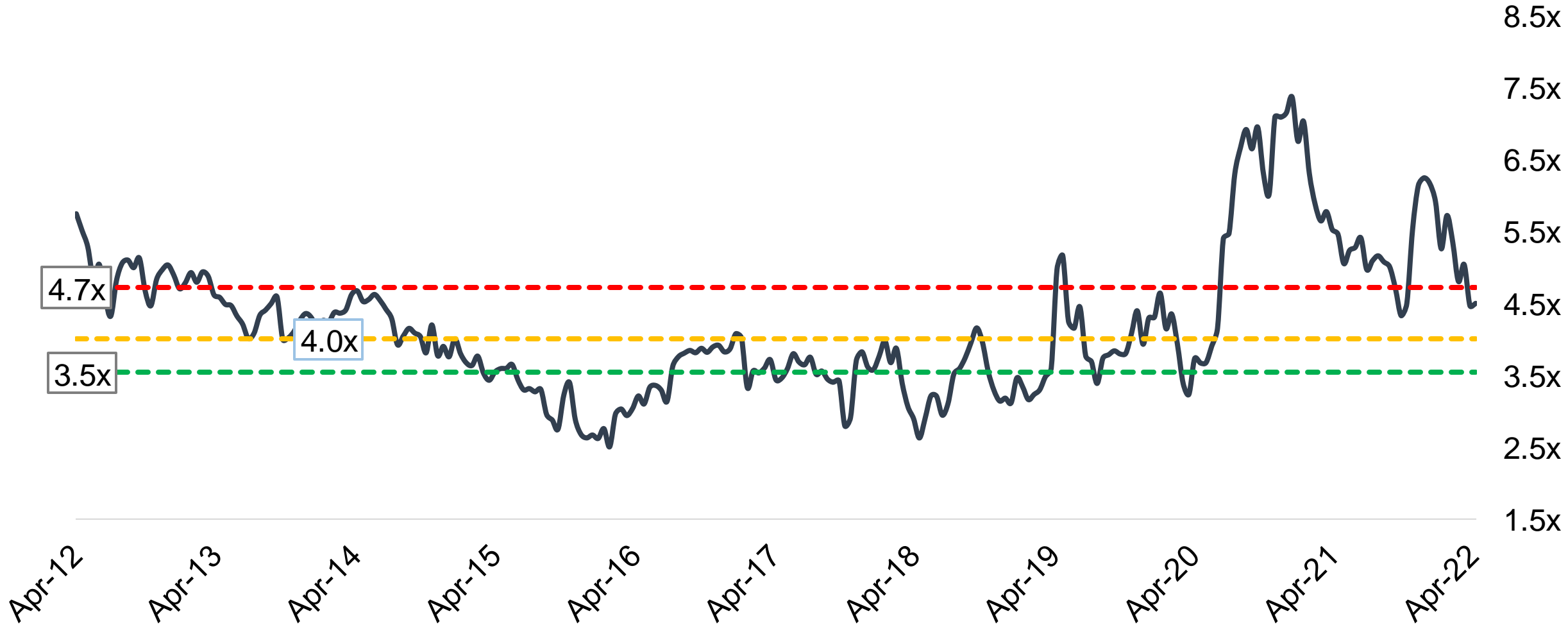
Price to Earnings



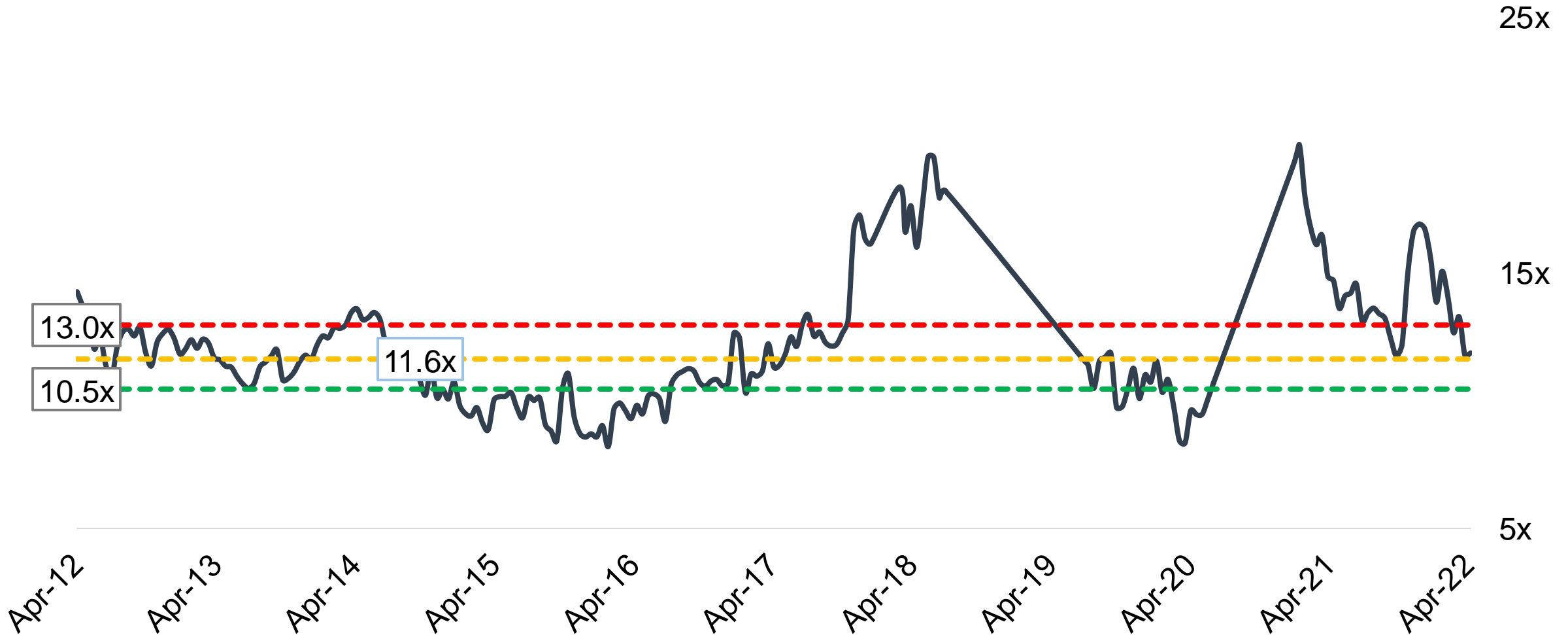
Price to Free Cash Flow



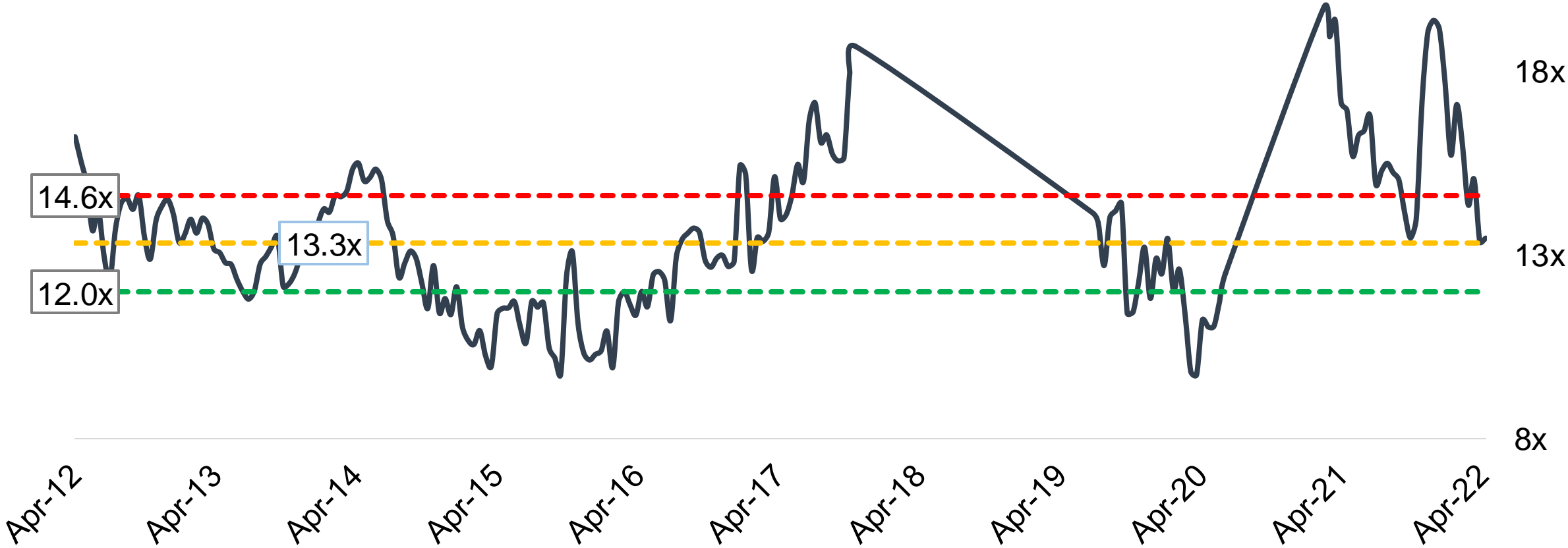
Enterprise Value to Sales



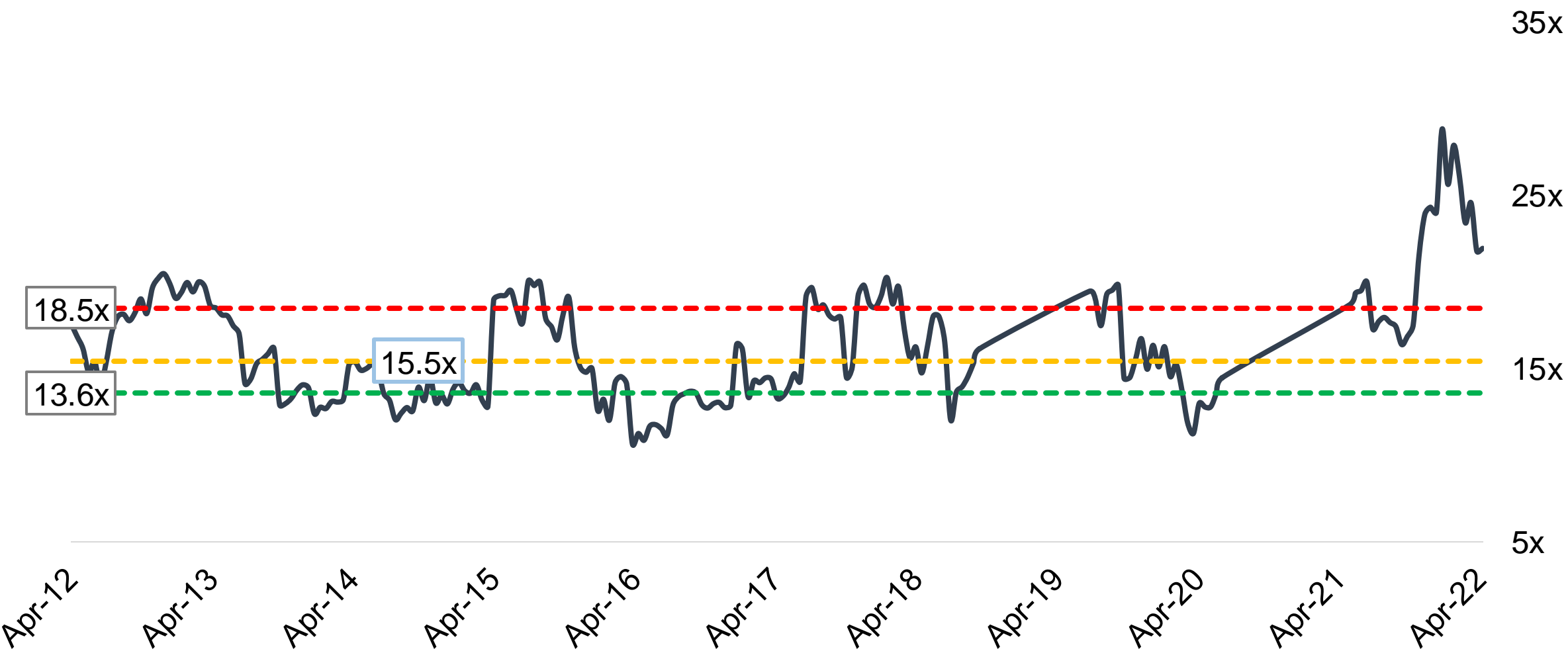
EV to Earnings Before Interest, Tax, Depreciation and Amortization



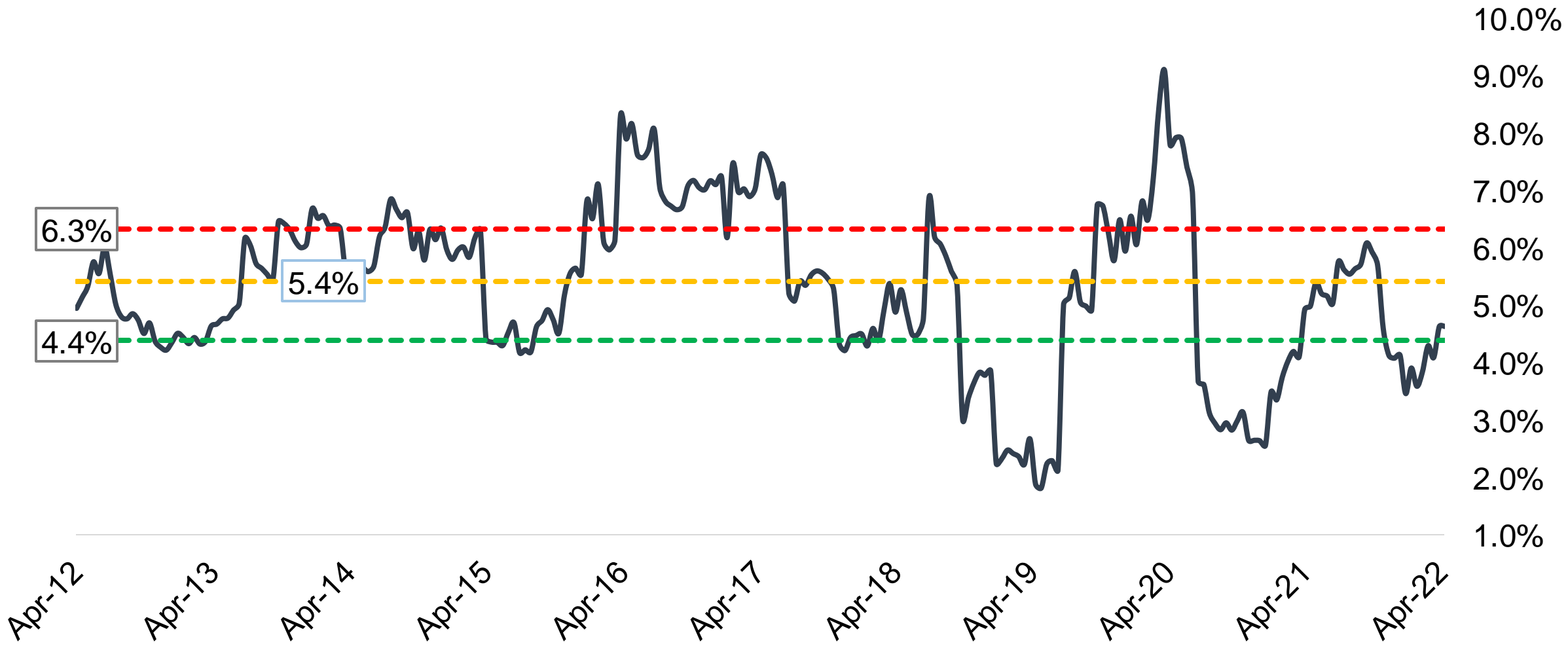
EV to Earnings Before Interest and Tax



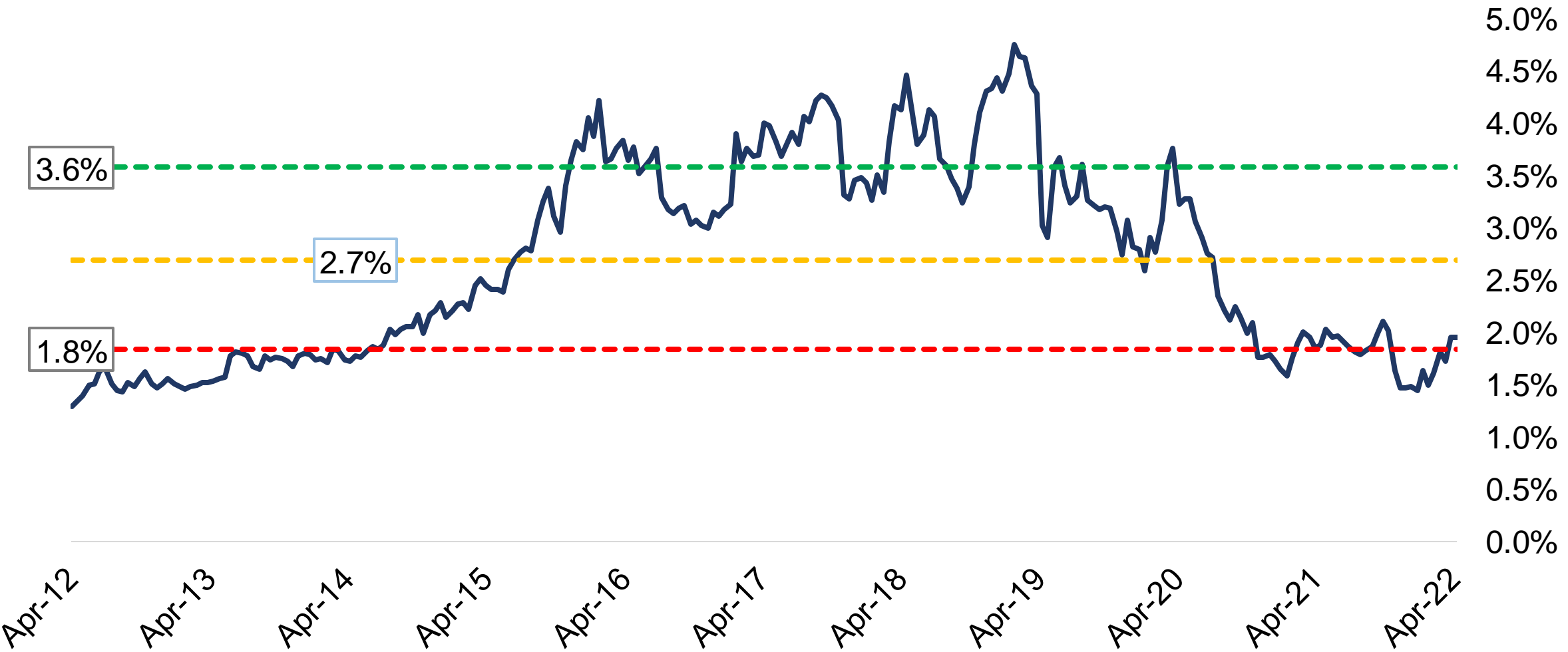
EV to Free Cash Flow



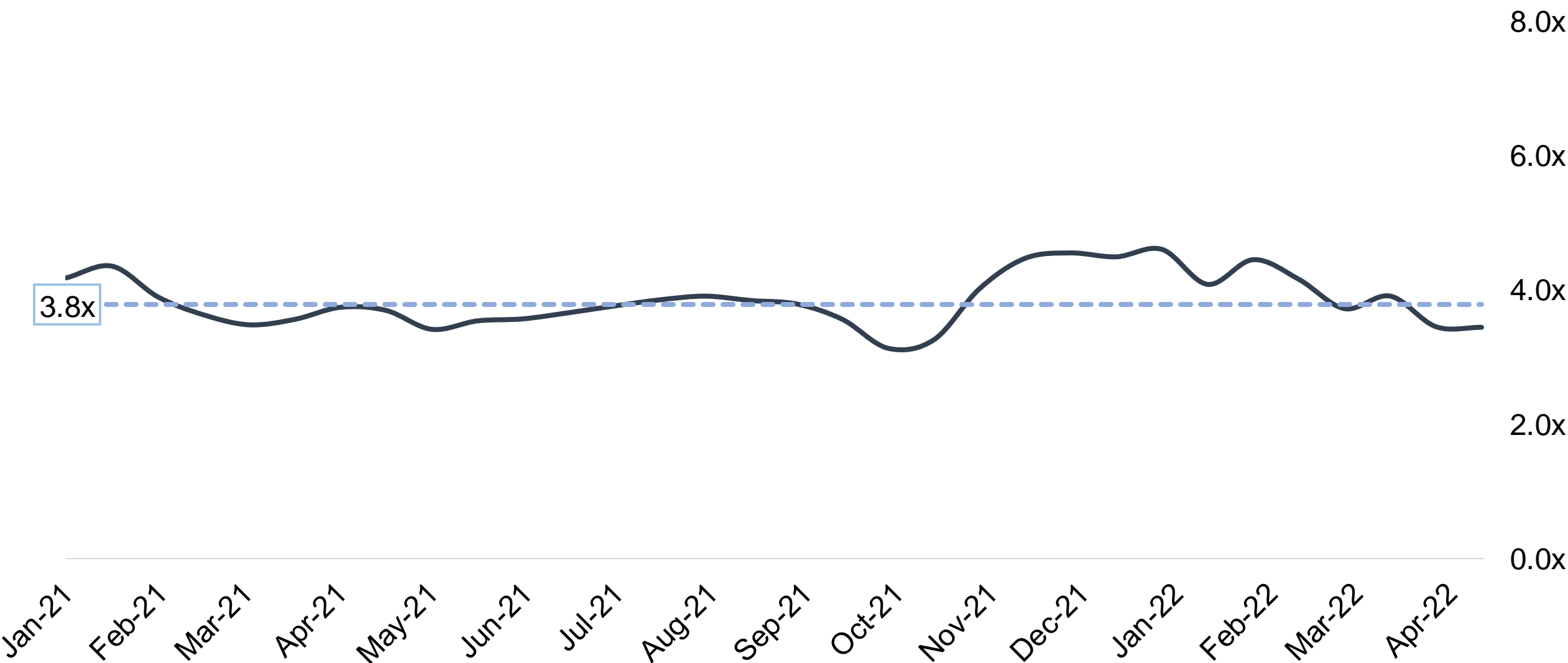
Free Cash Flow Yield



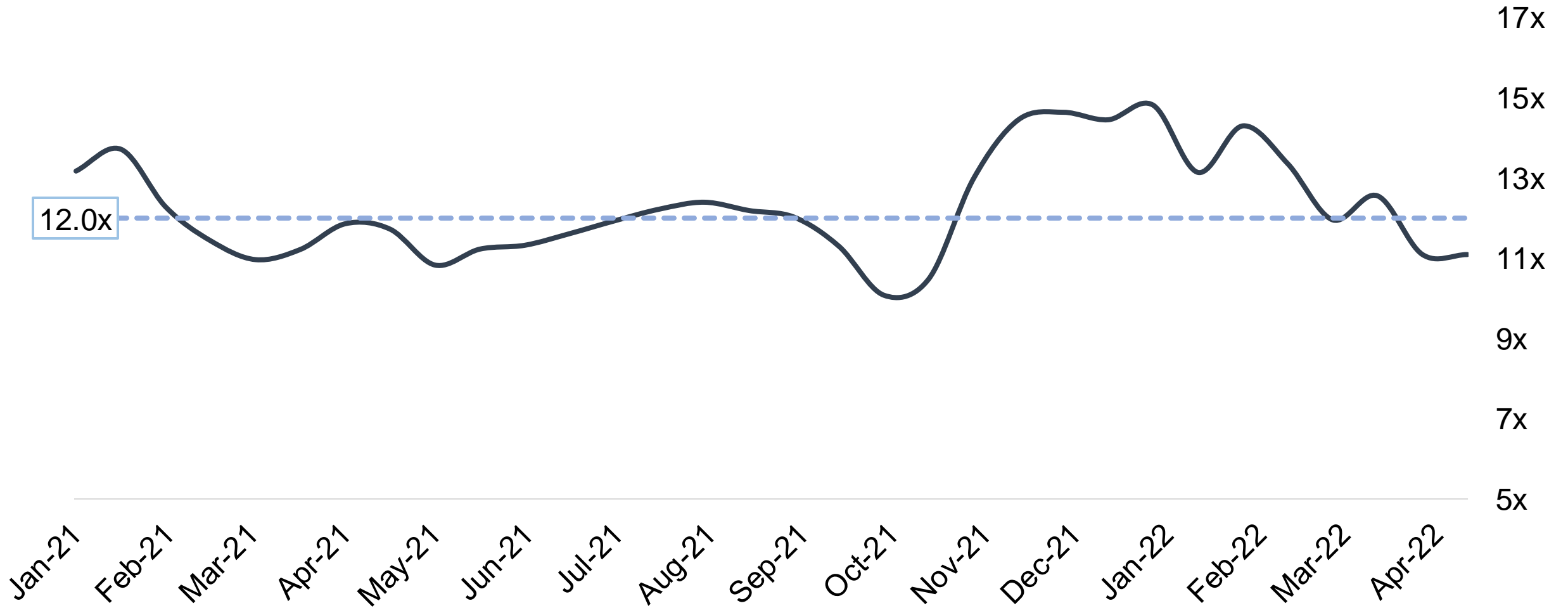
Dividend Yield



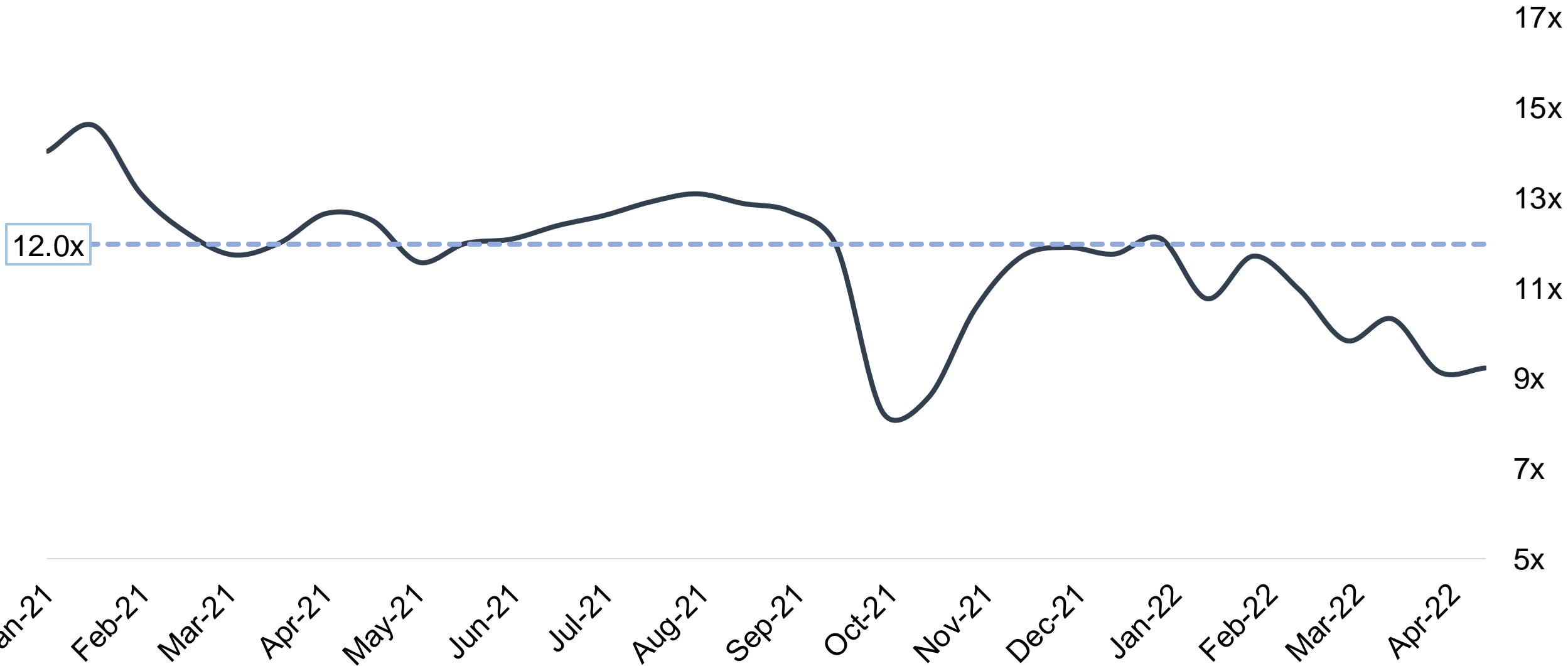
Forward Price to Sales



Forward Price to Earnings



Forward EV to EBITDA



BULL TEAM



Ramzi Issa

Team Leader
BBA, Management
MS, Data Analytics
1st year in BIC



Luis Green

Senior Analyst
BBA, Finance/Economics
MS, Data Analytics
4th year in BIC



Brandon Chaney

Senior Analyst
BBA, Management
Masters of Accountancy
3rd year in BIC



Ethan Sanchez

Senior Analyst
BBA, Finance/Economics
2nd year in BIC

Economic Moat

What is a moat?

- Network Effect
- Economies of Scale
- Switching Costs
- Intangible Assets



What is a moat?

- Network Effect
- Economies of Scale
- Switching Costs
- Intangible Assets



What is a moat?

- Network Effect
- Economies of Scale
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What is a moat?

- Network Effect
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What is a moat?

- Network Effect
- Economies of Scale
- Switching Costs
- Intangible Assets



What is a moat?

- Network Effect
- Economies of Scale
- Switching Costs
- Intangible Assets



Intangible Assets



- 140,000 patents
- 100 countries and jurisdictions
- Near monopoly on CDMA technology patents
- Royalty fee
 - 3%-5% of each 3g device sold

5G Intellectual Property Licensing

- Over 150 licensing agreements
- Faster speeds
- Network Improvements

Moat Defense in Action



- Tried and True Moat
- Ongoing Litigation
 - Consolidated Securities
 - Alleged Violation of SEC laws
 - Broadcom Merger
 - Alleged Violation of SEC rules
 - Consumer Class Action
 - ParkerVision
 - Alleged Patent Infringement
 - Korean Fair Trade Commission
- Prior Litigation
 - Icera – European Commission (2010)
 - \$275 million in expenses related to fine (2019)
 - Korean Fair Trade Commission (2017)
 - \$927 million
 - European Commission (2018)
 - \$1.2 billion charge

Apple's Expected Departure

Ongoing litigation came to a head in 2019:

- QCOM: received \$4.7 billion settlement for licensing revenues
- The companies entered a 6-year global patent agreement through 2025 for Apple to use Qualcomm's modem chips
- Apple acquired Intel's modem chip business and opted to use competitors' chips in iPhones around the same time

Apple Aftermath

- Apple leaving does not change the company's moat
 - The relationship between the two companies was hostile, and their relationship was the not the stickiest
 - Both companies are better off without each other
 - Qualcomm still benefits from Apple until 2025.
- Qualcomm is still home to the intellectual property of industry-leading technology

**Litigation:
Fines
v.
Settlement
Winnings**

Settlement Winnings

- Apple: \$4.7 billion

Fines Paid:

- KFTC: \$927 million
- Icera – EC: \$275 million
- European Commission: \$1.2 billion

Net Litigation Winnings:

\$2.3 billion

Growth Opportunities

Diversifying Global Trends

- **Internet of Things**
- **Automotive**
 - Self-driving vehicles
 - Electric Vehicles
- **Gaming**
- **Metaverse**
- **5G**

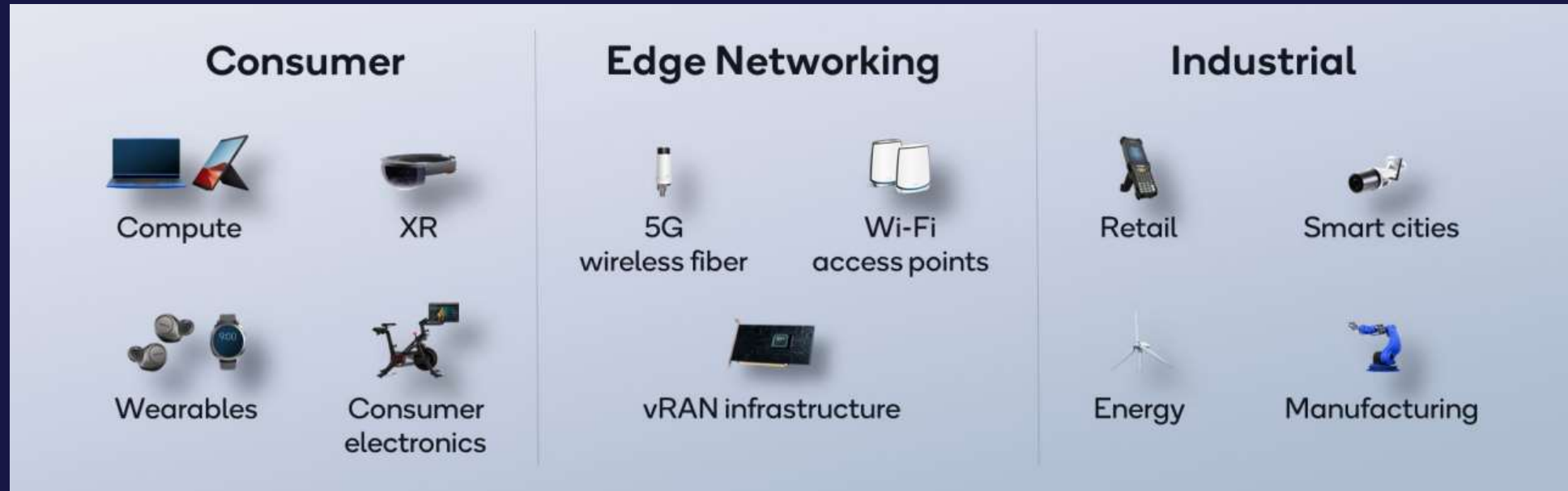
- Historically focused on mobile
- Handset 62% of FY 21 revenue
- 10% of revenues came from Apple, Samsung, and Xiaomi
- Threat of vertical integration
- CEO Cristiano Amon aims to diversify

Total TAM



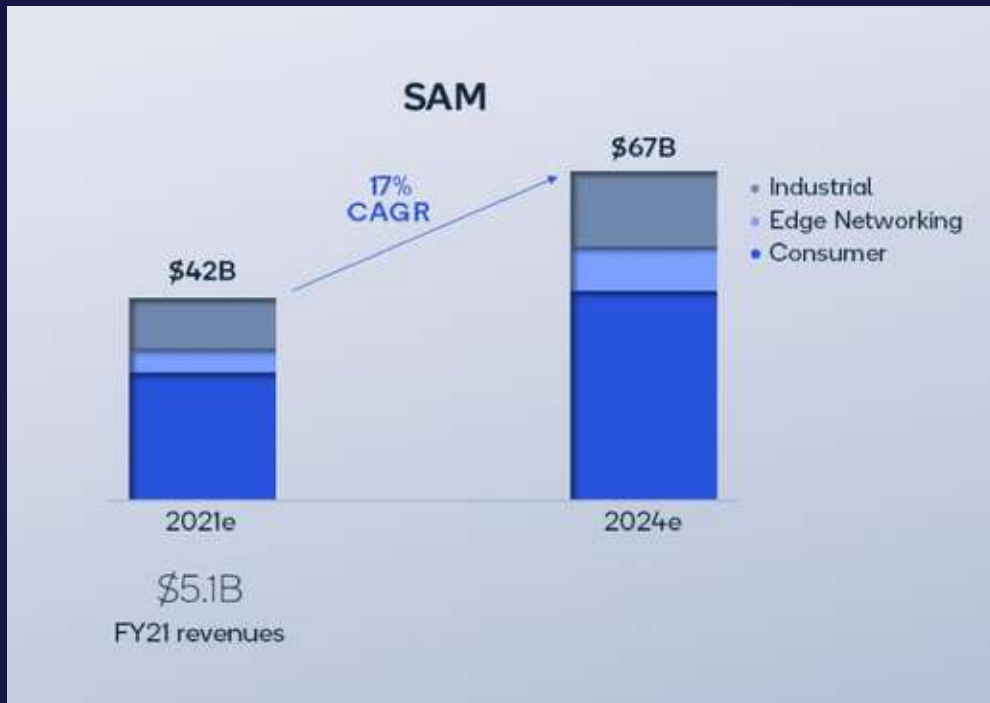
- Management's projected SAM
\$700B
- Global semiconductor market
expected to grow
- At a CAGR of 6%
- From \$430B in 2021 to \$808.5B by
2030

IoT



14K customers
Top 10 = 42% of revenues

IoT



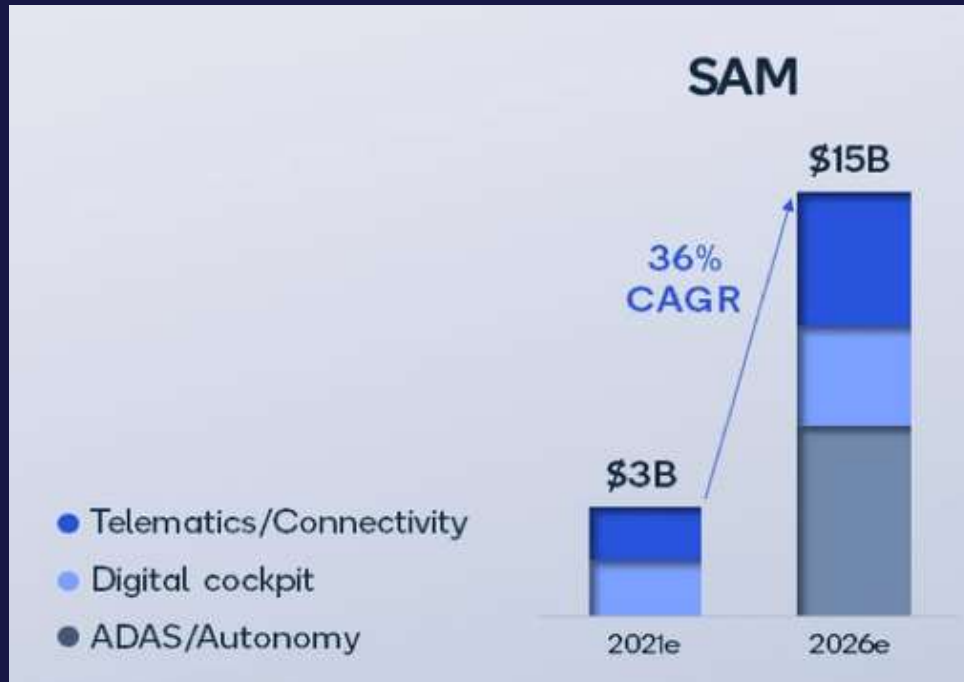
- SAM – Serviceable Addressable Opportunity
- Currently \$42B SAM is expected to grow by 17% through 2024
- \$5.1B in sales current market share of 12%
- Assuming market share stays the same
- IoT could be an \$8B segment

Automotive



- Signed 26 global automakers partners
- BMW, GM, Ferrari, Volvo, Honda, and Renault
- GM largest automaker
- FY 2021 6.3M deliveries
- All EVs by 2035
- Ultra-Cruise Cadillac in 2023

Automotive



- Global electric vehicle industry is expected to grow
- From \$163B in 2021 to \$823B by 2030 an 18% CAGR
- SAM to grow at a CAGR 36%
- \$1B revenue which is 33% of SAM
- QCOM expected revenue in 2026 \$3.5B
- 5-year Revenue CAGR of 28%
- That is a 23% of the SAM

Handset



- Q1 2022 reported handset revenue growth of 41%
- 55% of revenues
- Multiple partnerships
 - Samsung
 - Asus
 - Sony
- Two-year customer commitments
 - Xiaomi (China)
 - Honor (China)
 - Vivo (China)
 - Oppo (China)
- QCOM's 5G chip power Apple's iPhone

Handset



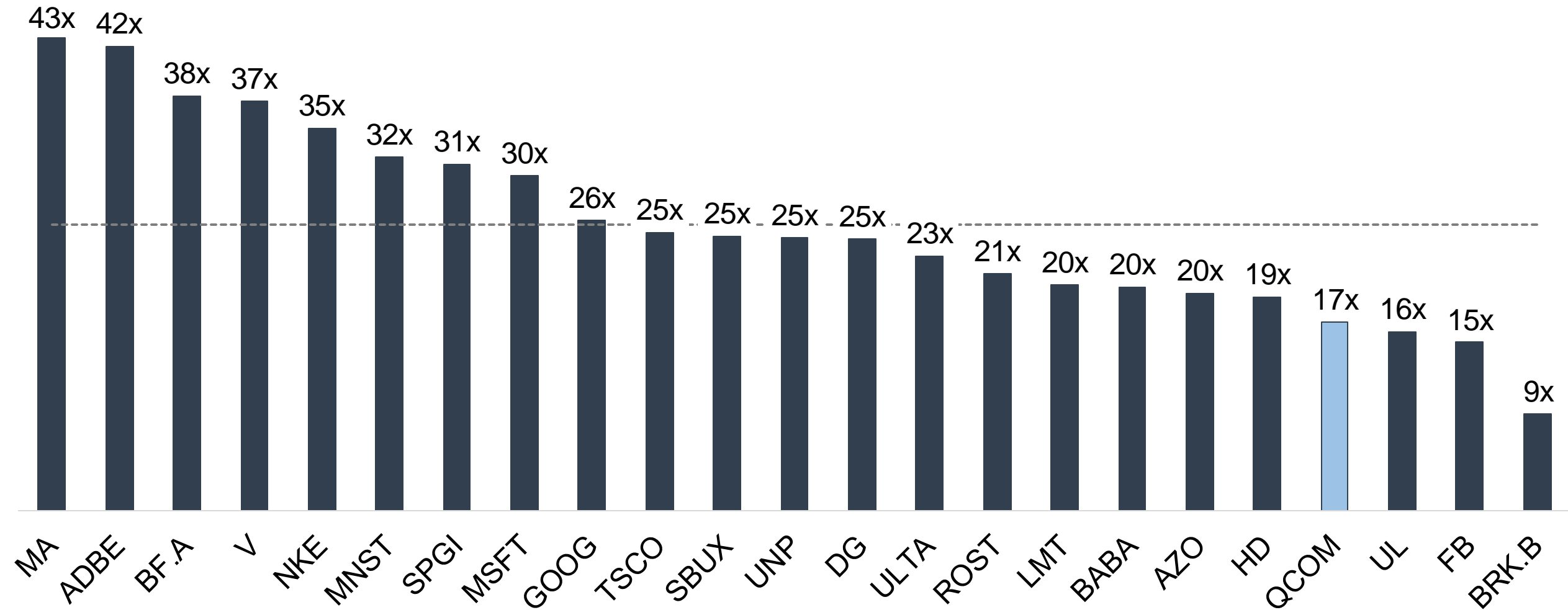
- Drivers 4G to 5G
- Increasing Snapdragon features
- Revenue to grow in line with SAM
- \$16B segment FY 2021
- 48% market share
- If market share stays the same handset would be a \$22B segment

Intraportfolio

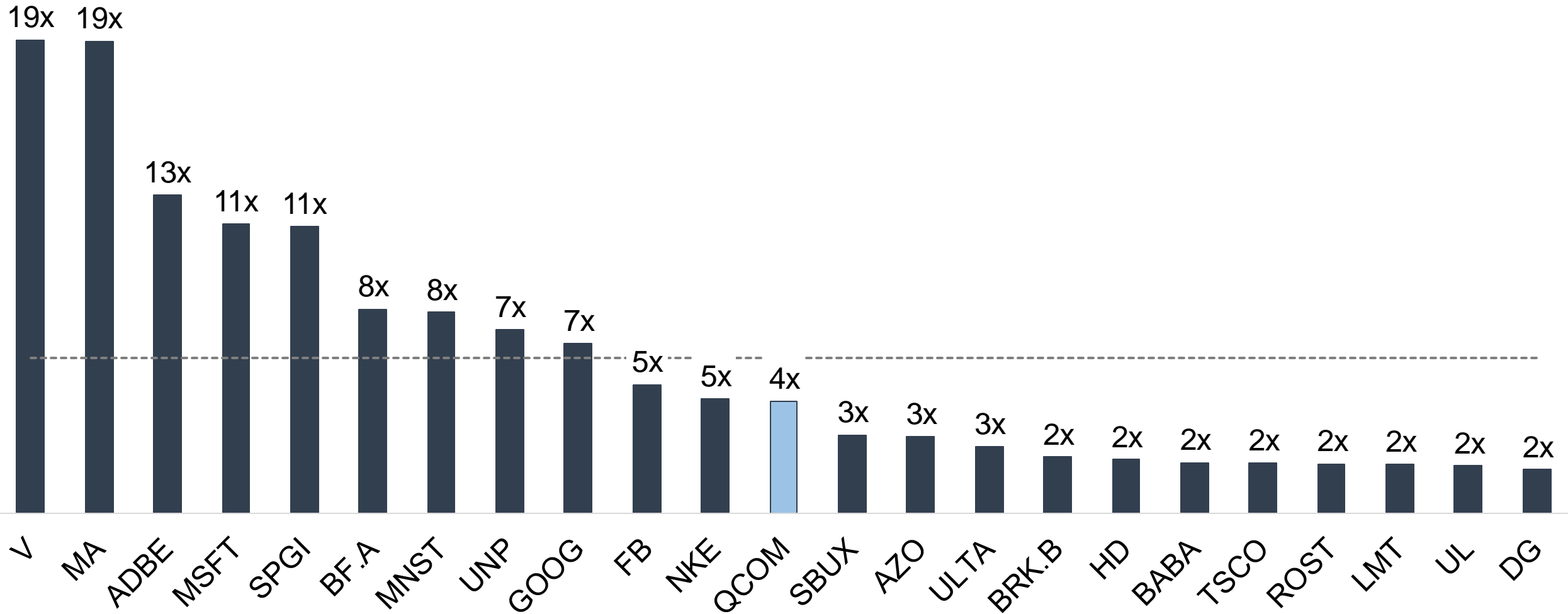
As of April 19, 2022

Citing Y-Charts (S&P Global)

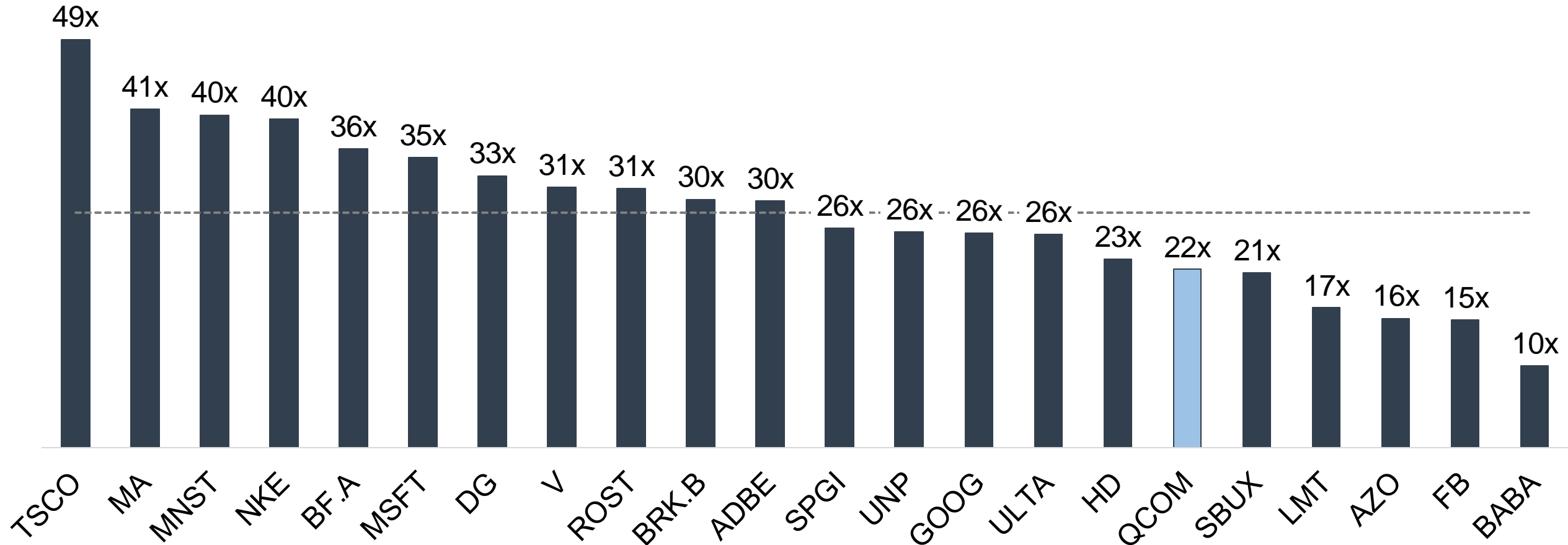
Price to Earning (P/E)



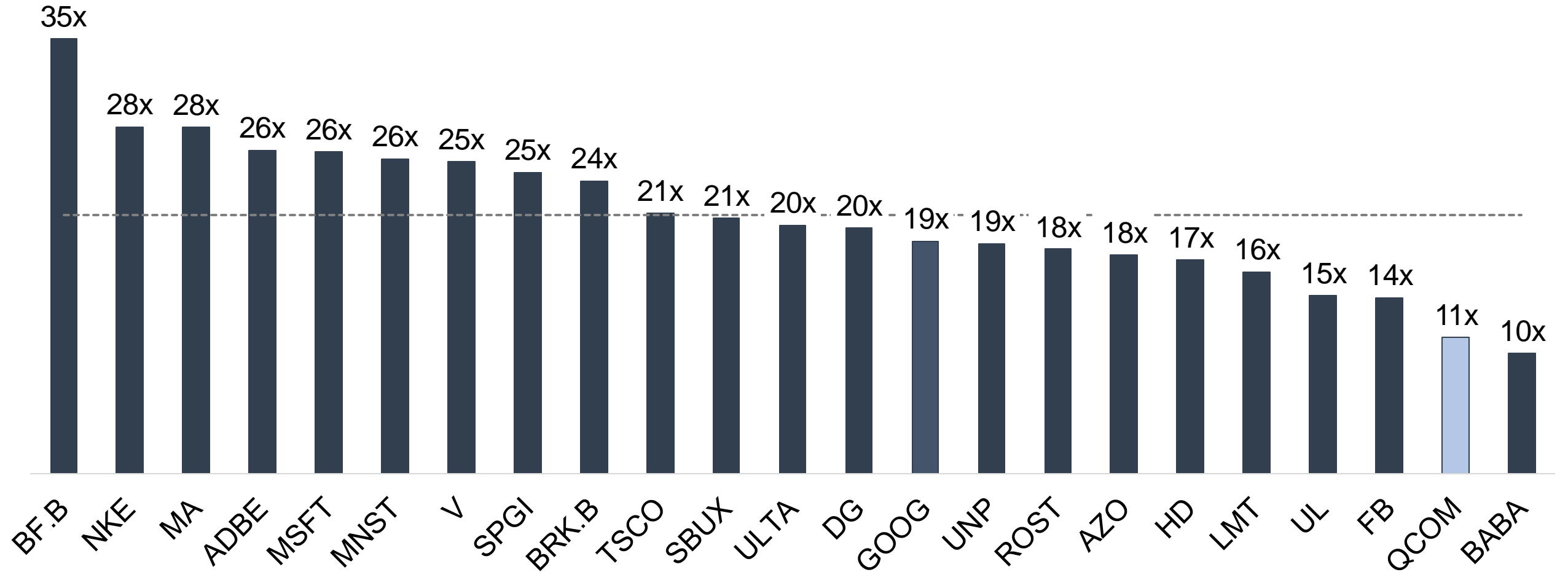
Price to Sales (P/S)



Price to Free Cash Flow (P/FCF)



Forward Price to Earnings (FP/E)



Guidance

- Goldman Sachs
 - 9/22: High-Twenties
 - 9/23-24: Low-Singles
- Value Line: 15%
- Morningstar: 8%
- Management
 - QCT: Mid-teens
 - QTL: Maintained Scale

Stock Buybacks & Dividends

- 2021 Q4 brought new Repurchase Program: \$10b
- Expect \$2-3b per Year for Repurchases
- Continue Dividend Growth
 - Quarterly Dividend/Share: \$0.68
- Intends to distribute 75% of Free Cash Flow

Discounted Cash Flows (EPS)

Valuation done April 19, 2022

Current Quote: ~\$134.17

Base Case DCF

Earnings per Share \$ 8.73

Growth 12%

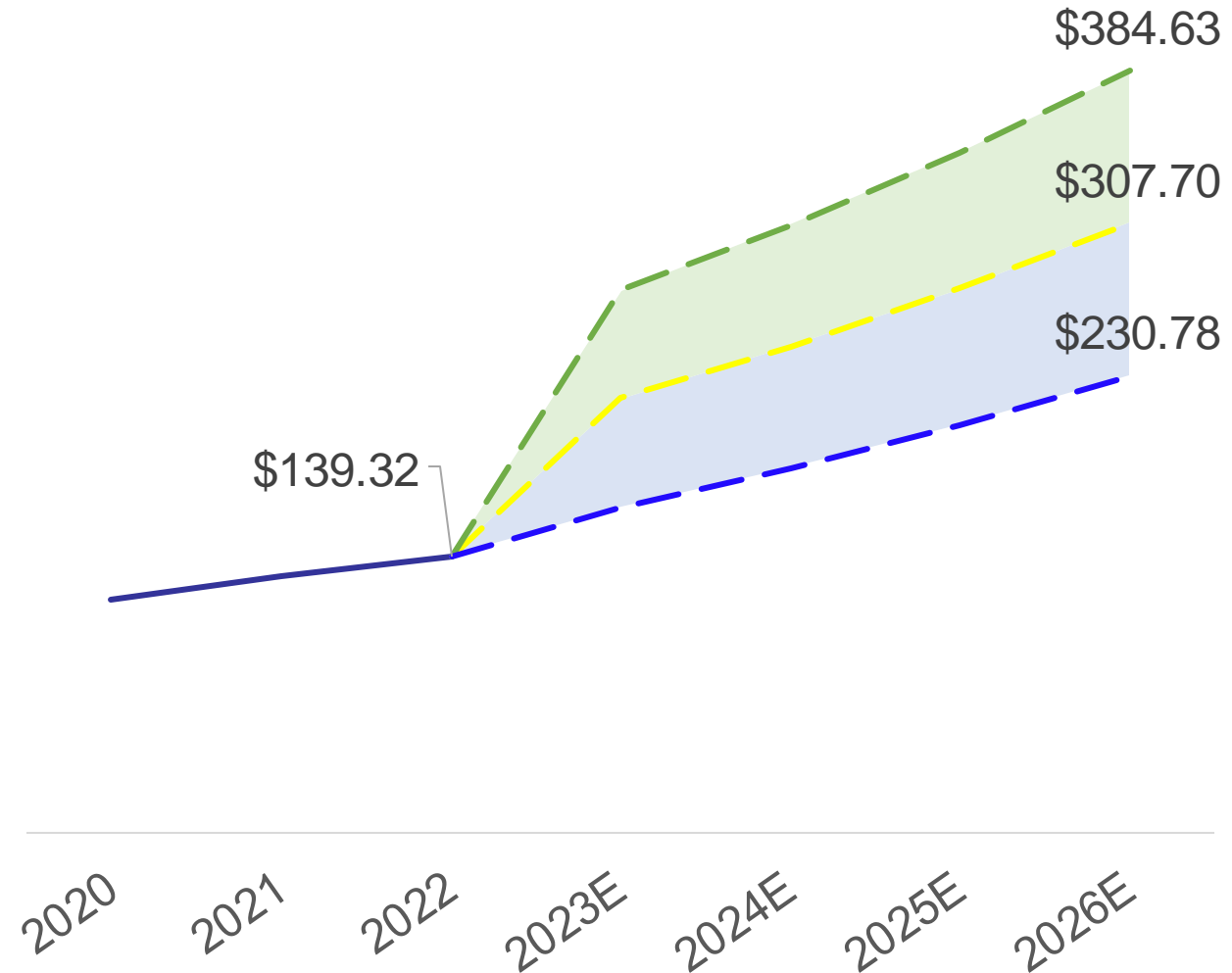
Discount 10%

Bear P/E 15x

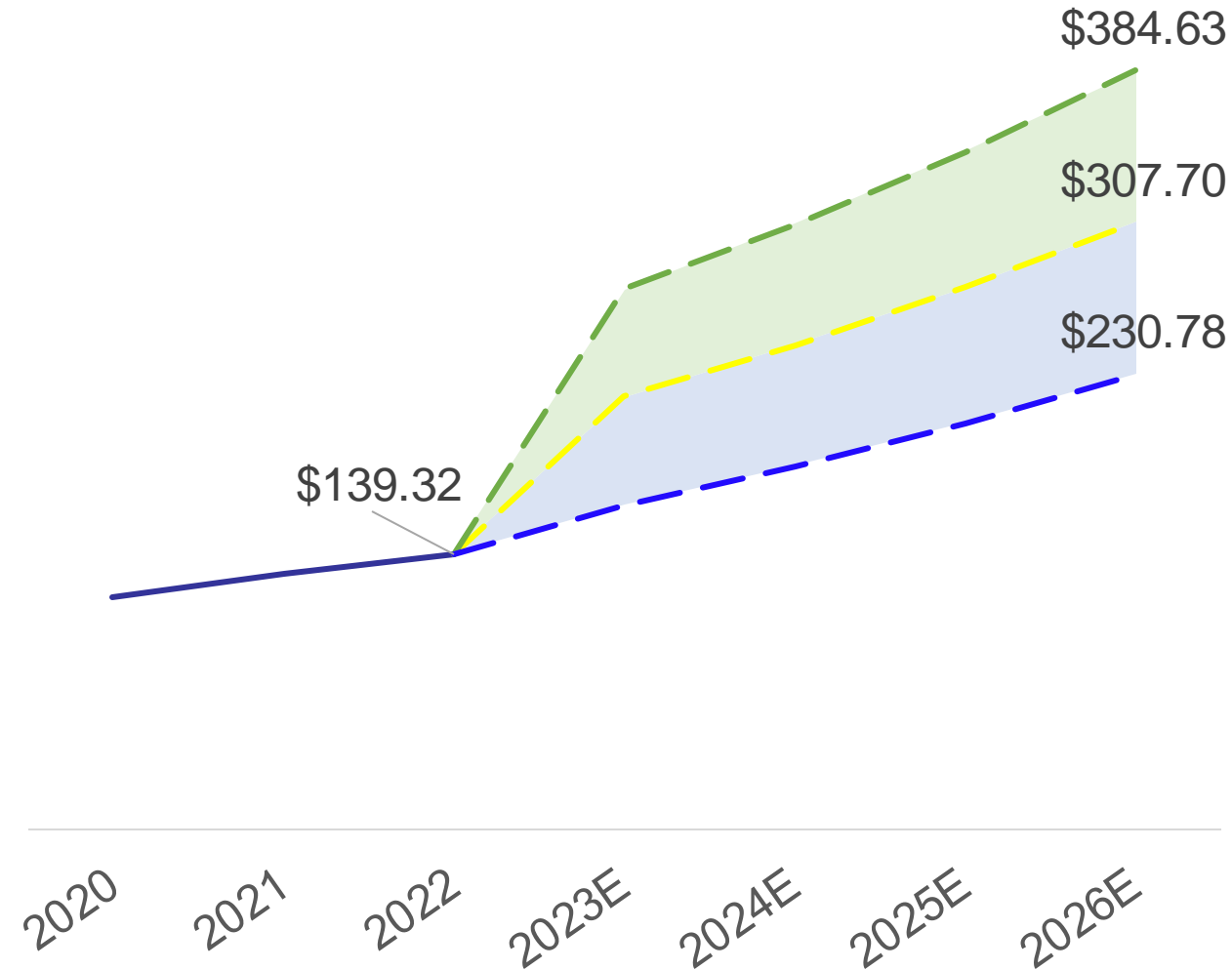
Base P/E 20x

Bull P/E 25x

PEG 1.67



Base Case DCF



Annualized Rate of Return

23.4%

18.2%

11.9%

Fair Value **\$ 199.41**

Current Price **\$ 140.00**

Margin of Safety **30%**

Bull Case DCF

Earnings per Share \$ 8.73

Growth **14%**

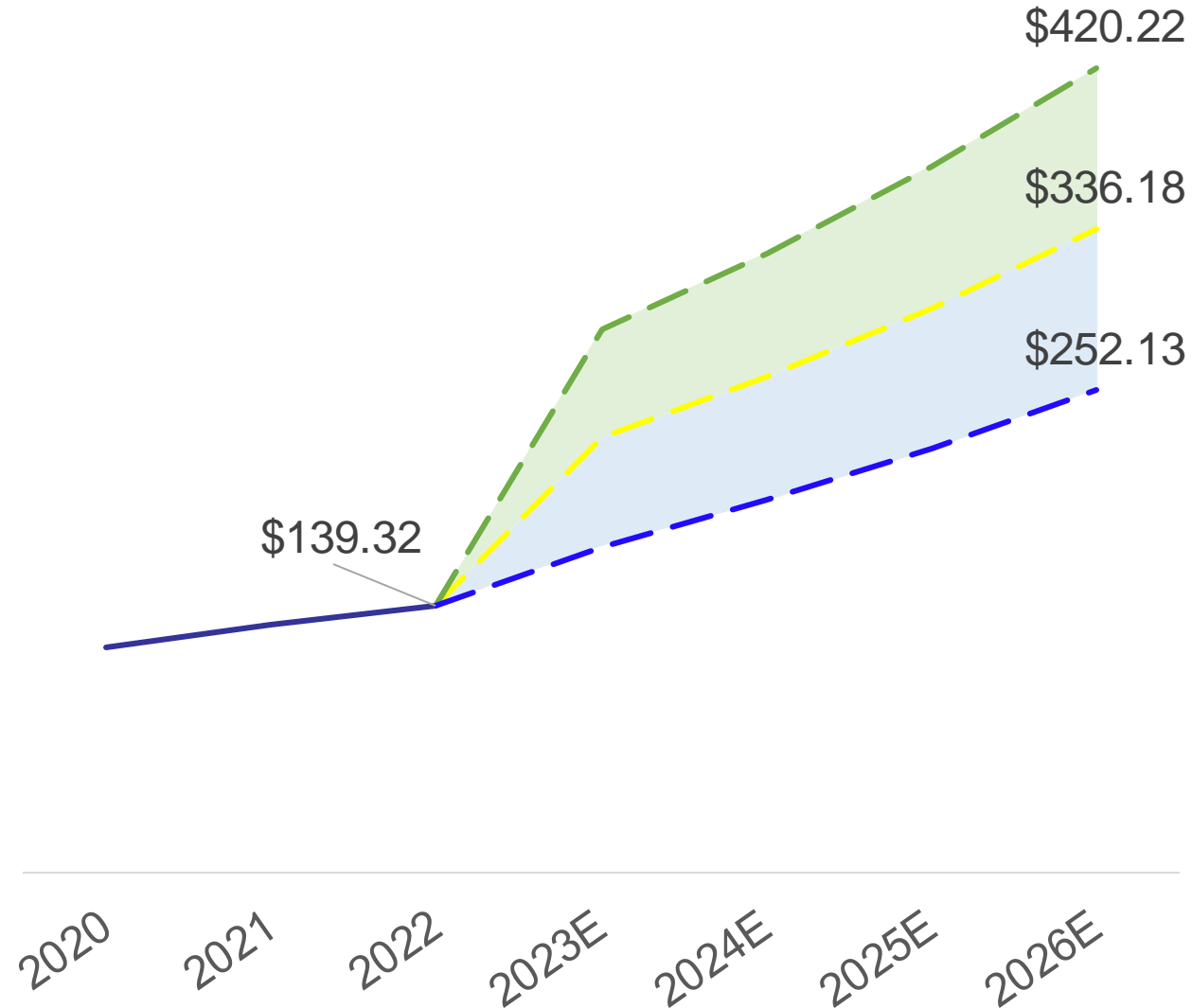
Discount 10%

Bear P/E 15x

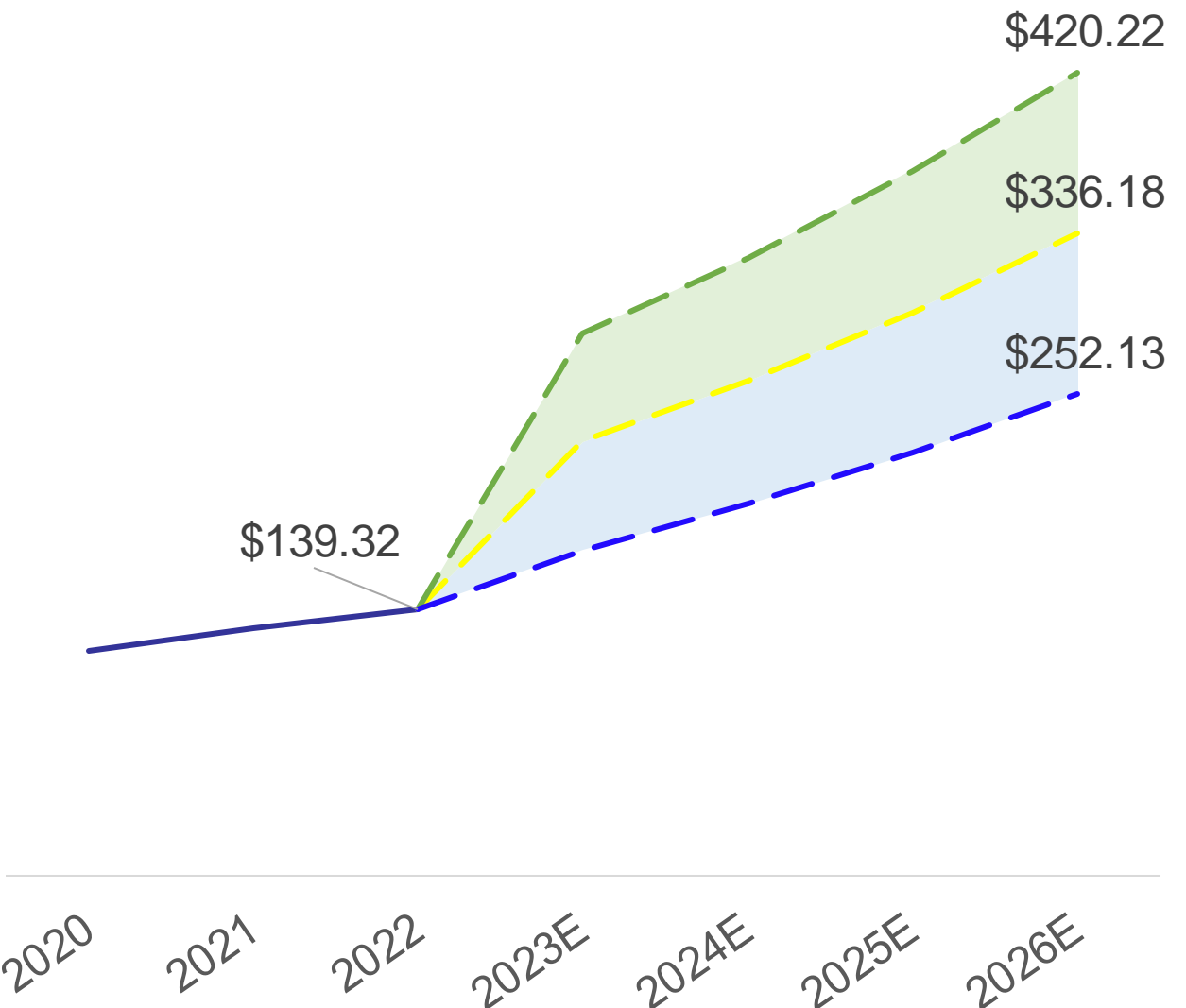
Base P/E 20x

Bull P/E 25x

PEG **1.79**



Bull Case DCF



Annualized Rate of Return

- 25.5%
- 20.2%
- 13.8%

Fair Value	\$ 217.09
Current Price	\$ 140.00
Margin of Safety	36%

Bear Case DCF

Earnings per Share \$ 8.73

Growth 10%

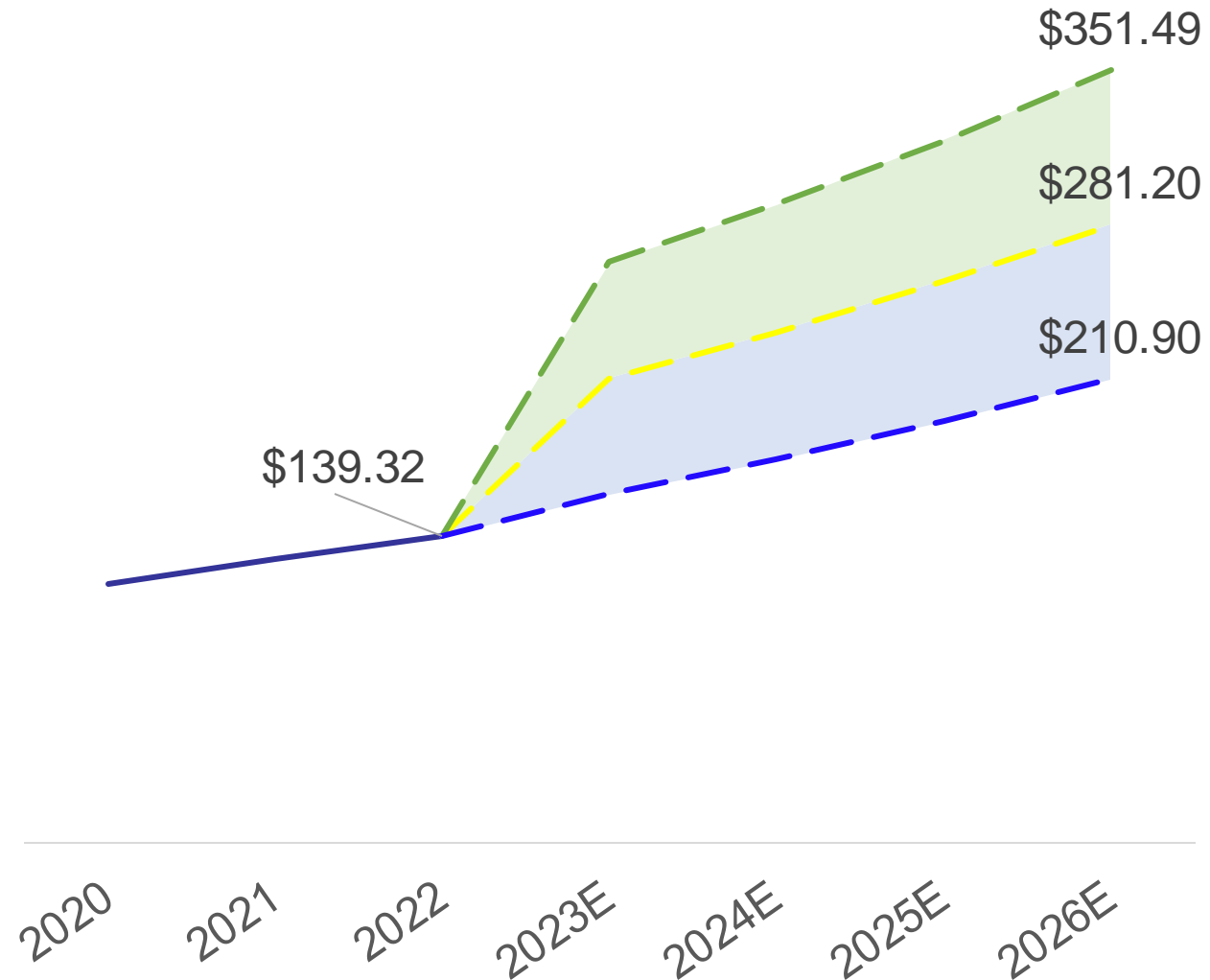
Discount 10%

Bear P/E 15x

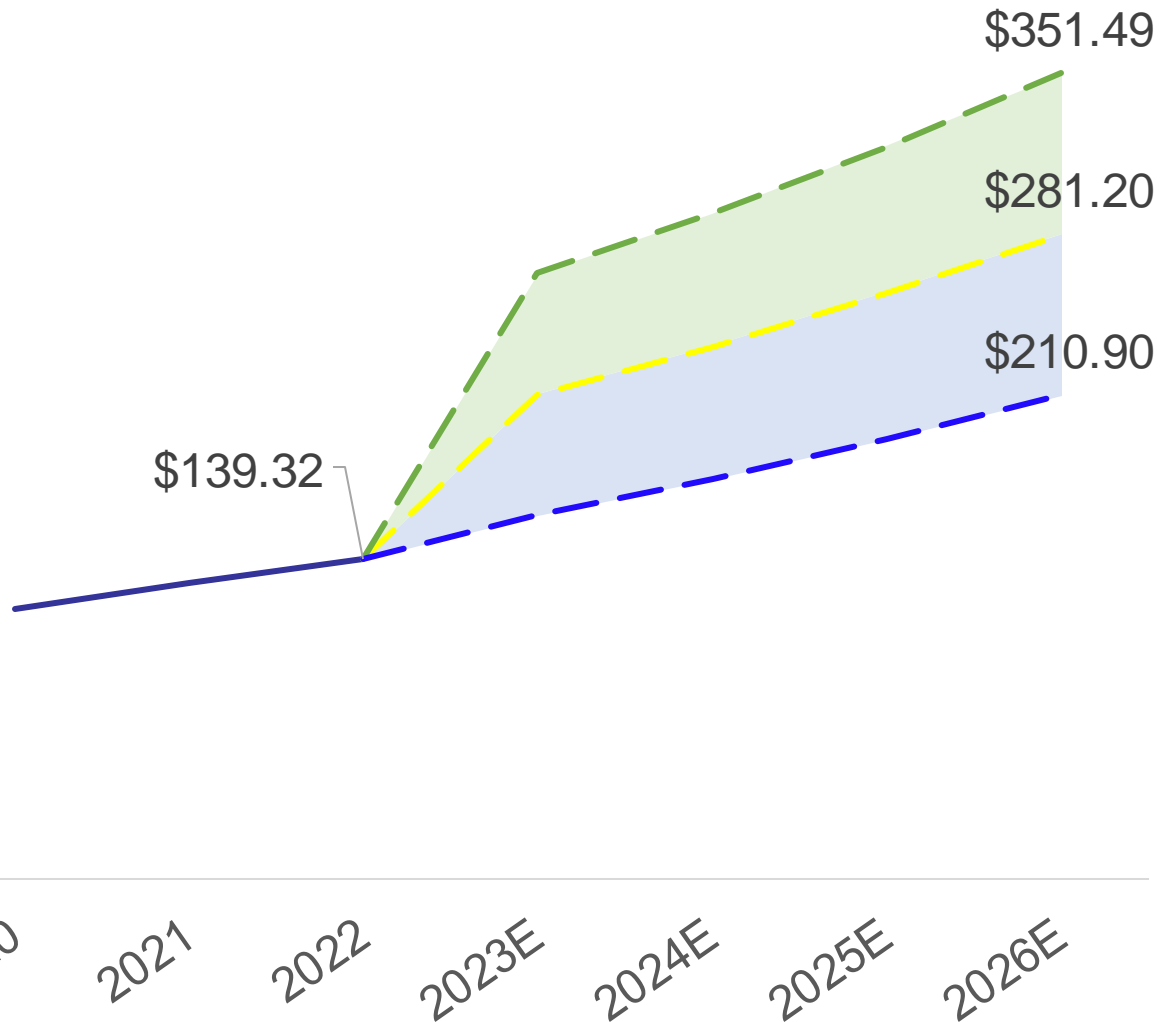
Base P/E 20x

Bull P/E 25x

PEG 1.50



Bear Case DCF



Annualized Rate of Return

21.2%

16.2%

10.0%

Fair Value **\$ 182.95**

Current Price **\$ 140.00**

Margin of Safety **23%**

Sensitivity Analysis

Estimated. EPS Growth

		10%	12%	14%
Price to Earnings	15.0x	10.0%	11.9%	13.8%
	20.0x	16.2%	18.2%	20.2%
	25.0x	21.2%	23.4%	25.5%

Recommendatio

n
Bull

- QCOM is currently ~1.2% of the portfolio
- Buy 200 shares out right via limit order
- Making it a 3% position

BEAR TEAM



Esam Hijazi
Team Leader
BBA,
Finance/Economics
MS, Data Analytics
5th year in BIC



Rich Tran
Team Mentor
BBA, Accounting
Master's of Accountancy
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Monique Sierra
Senior Analyst
BBA, Marketing
MS, Data Analytics
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Diego Garcia
Senior Analyst
BBA, Finance & Economics
2nd year in BIC

Key Points

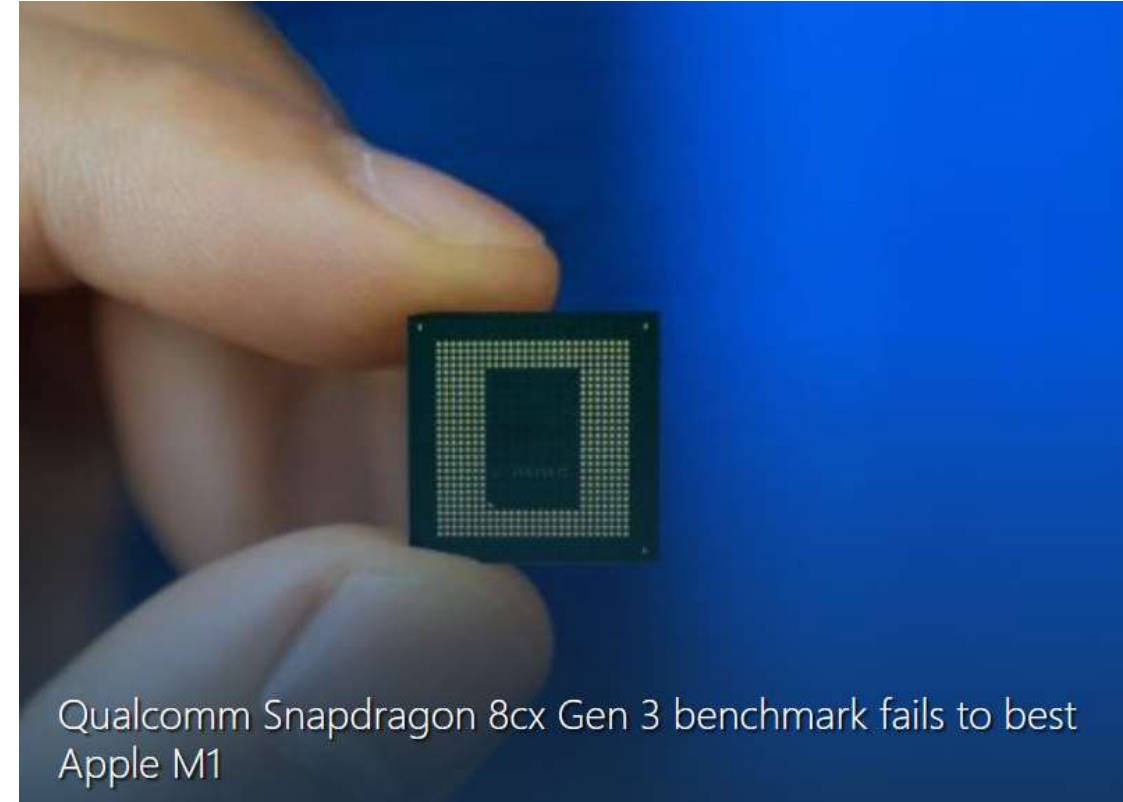
Bear Thesis



- Increased Competition
- Cyclical Industry
- Regulatory Risk
- Slower Growth

Increased Competition

- Vertical Integration
 - Apple
 - Samsung
 - Huawei
- Latest Semi-Conductors already being outperformed



Qualcomm Snapdragon 8cx Gen 3 benchmark fails to best Apple M1

Cyclical Industry

- Demand for their products is not predictable and consistent
- Shifting periods of highs and lows



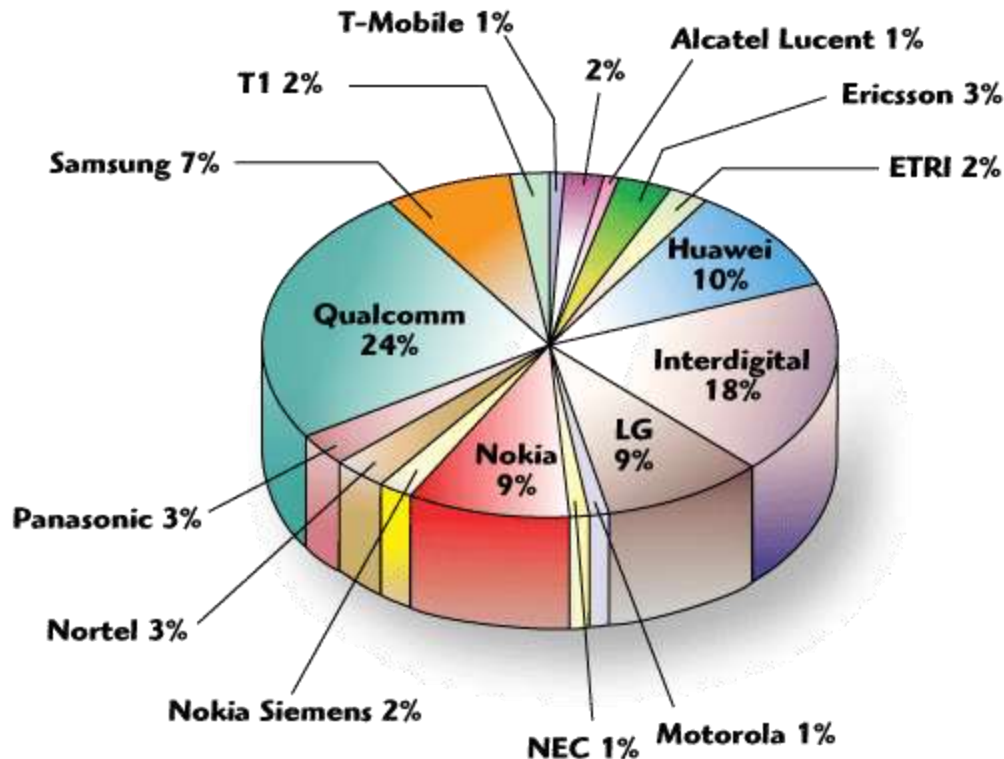
Regulatory Risk

- Notable Lawsuits
 - South Korea (2016)
 - Taiwan (2017)
 - Apple (2017)
- Threat to current business model



Slower Growth

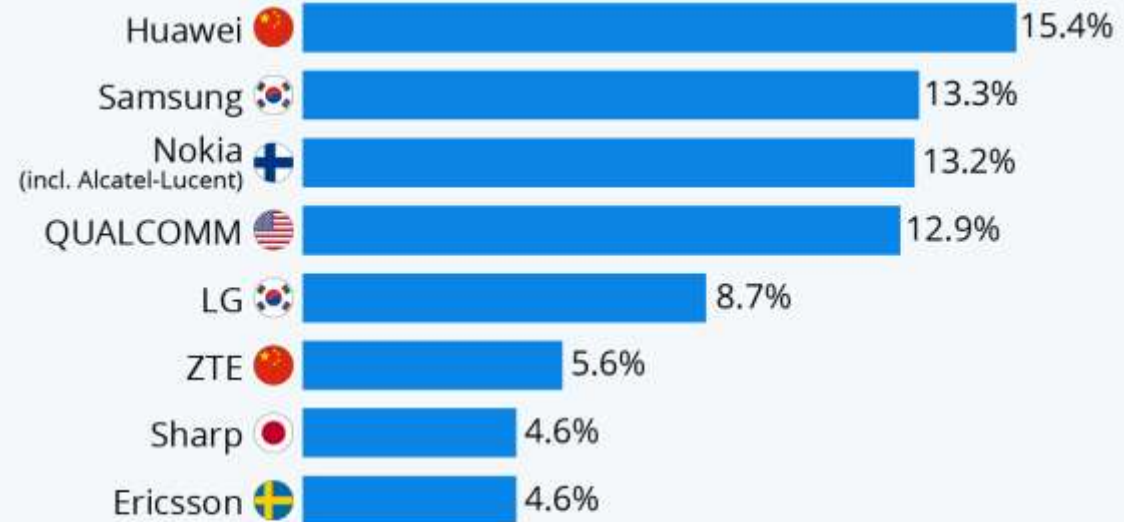
- No absolute rights to 5th Generation Patents



Source: ABI Research

Who Is Leading the 5G Patent Race?

Companies with the highest shares of global 5G technology patents*



As of February 2021

* Granted and active patent families (5G SEP patent families with at least one granted patent counted)

Source: IPLYtics



Competitive Comparison

Competitors By Industry

Semiconductors



Hardware



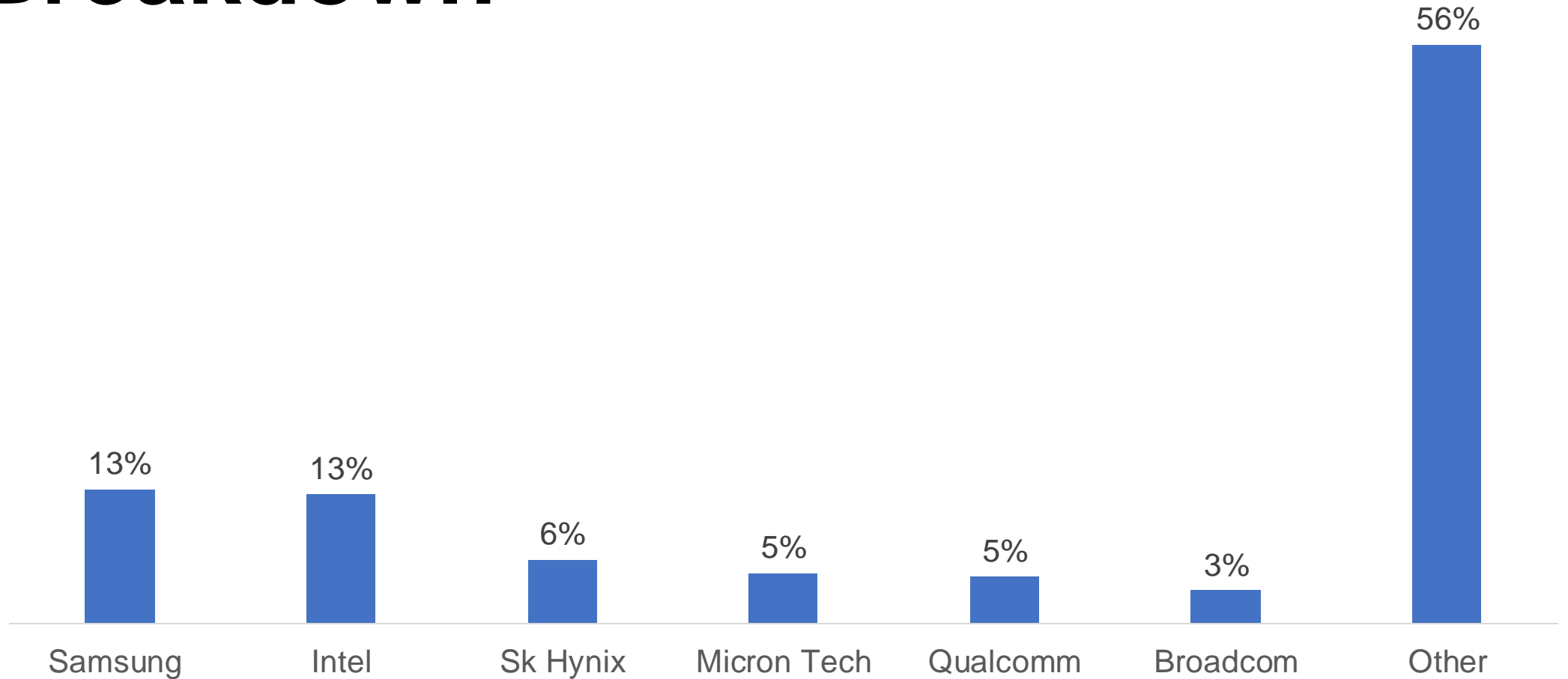
Automotive



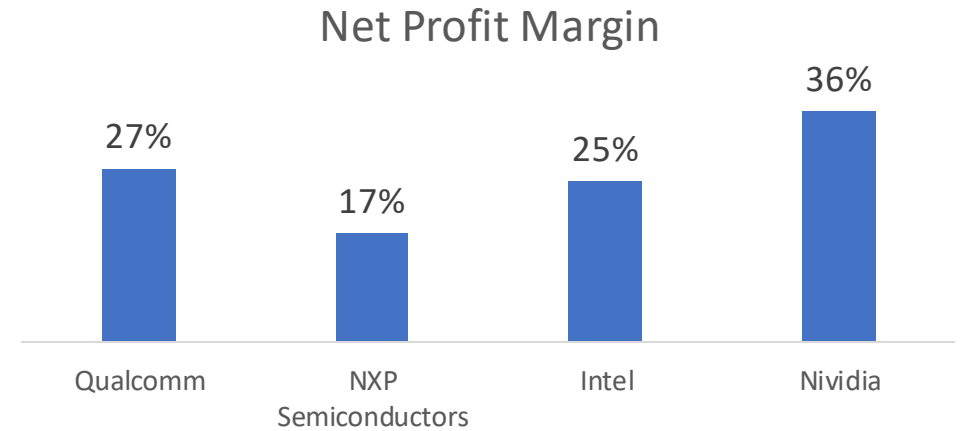
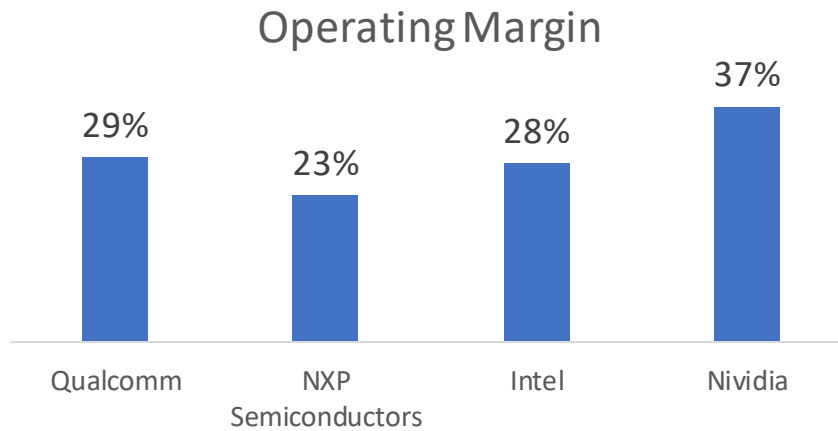
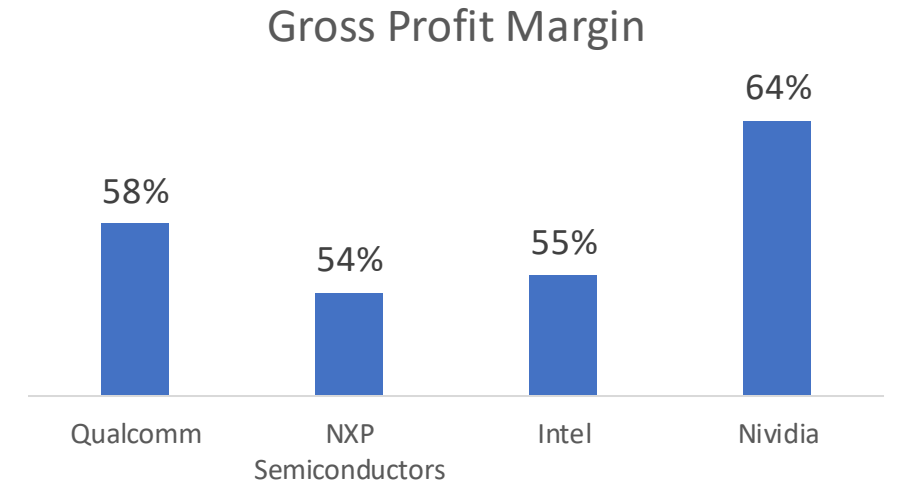
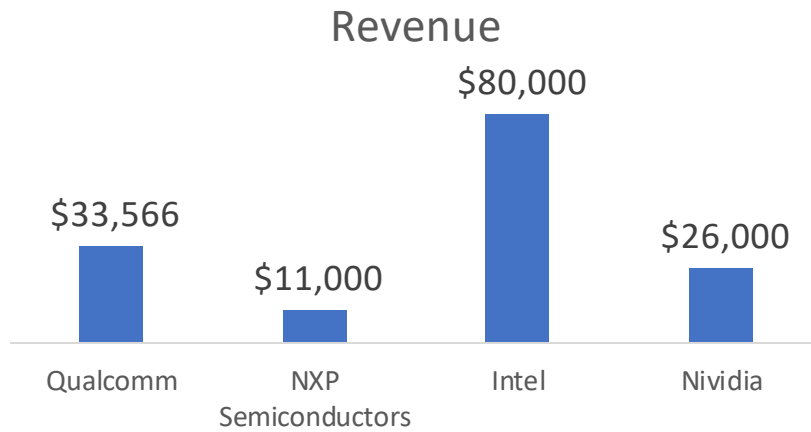
TESLA



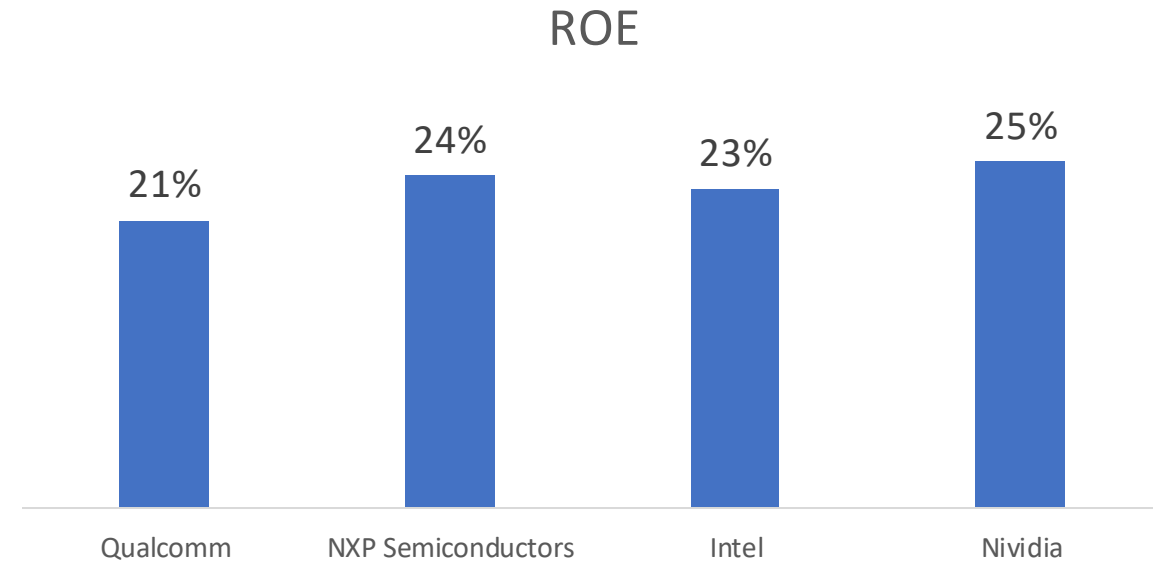
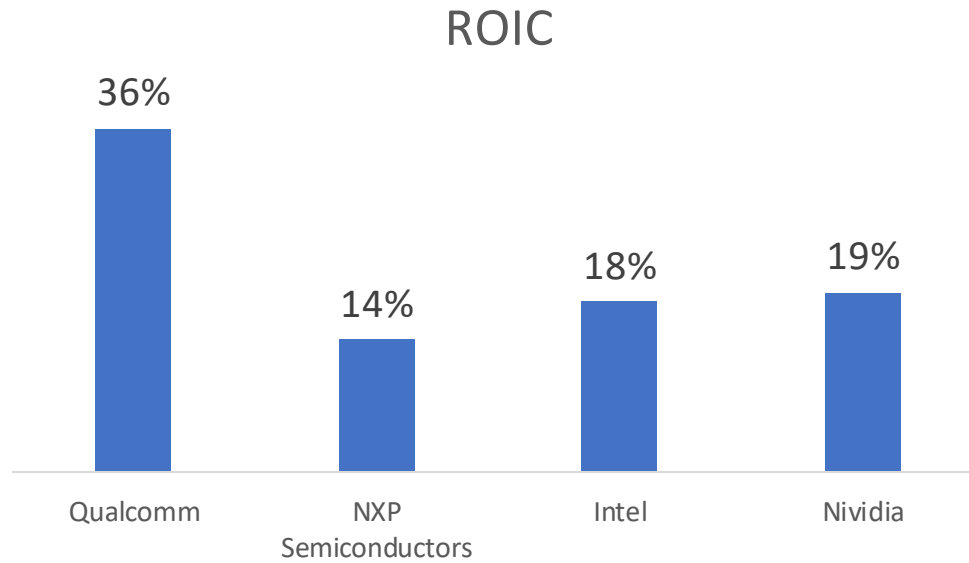
Semiconductors Market Breakdown



Semiconductors - Margins



Semiconductors - Returns

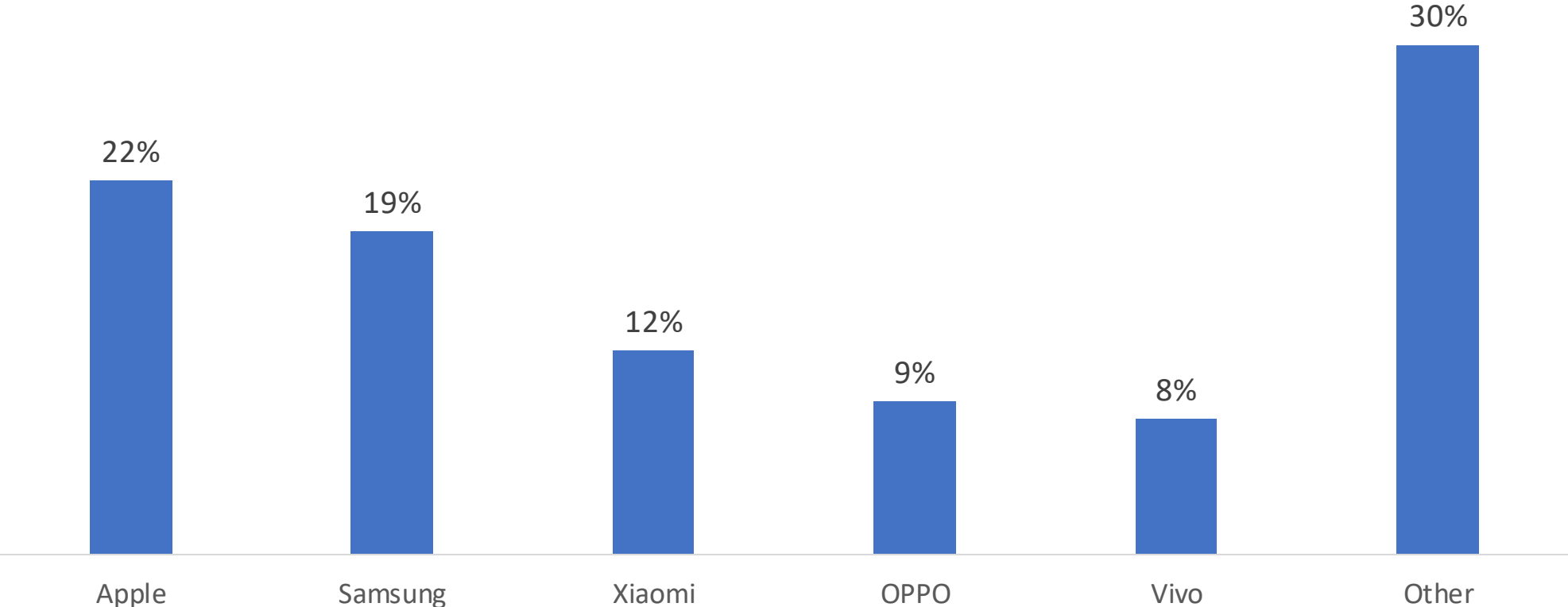


Semiconductor Battlefield

- Fierce Competitors
- Samsung eating up market-share
- Concentrated in the US
- More competitors emerge in the form of vertical integration

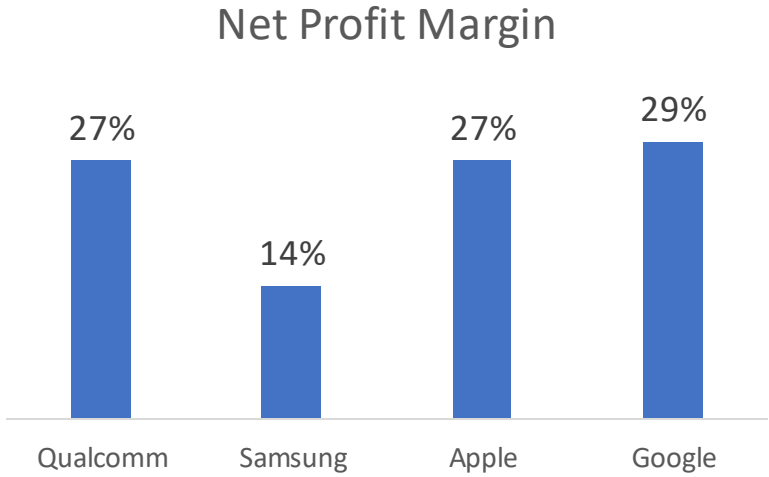
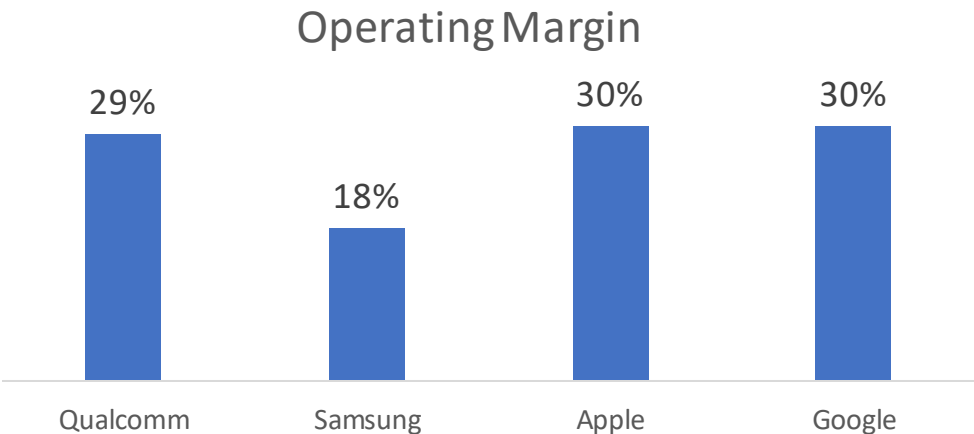
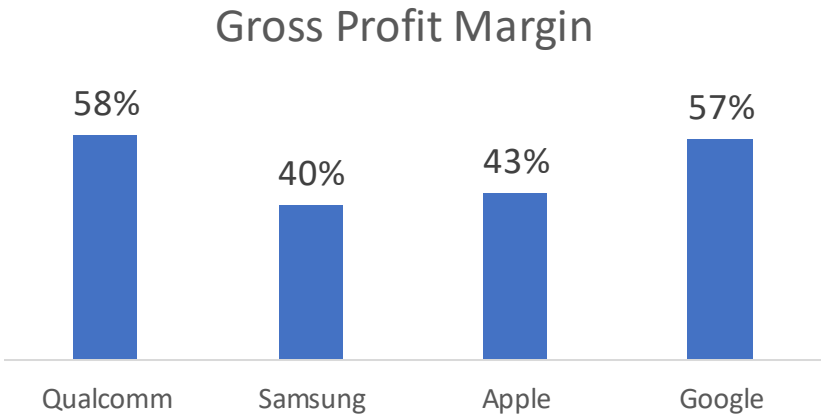
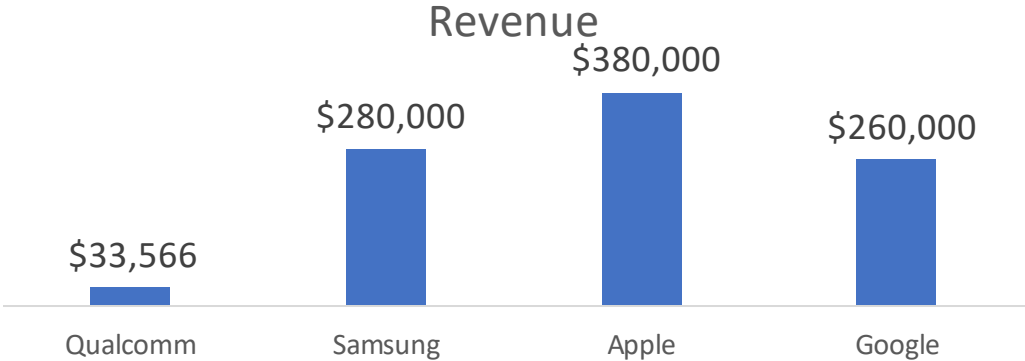


Hardware Market Breakdown

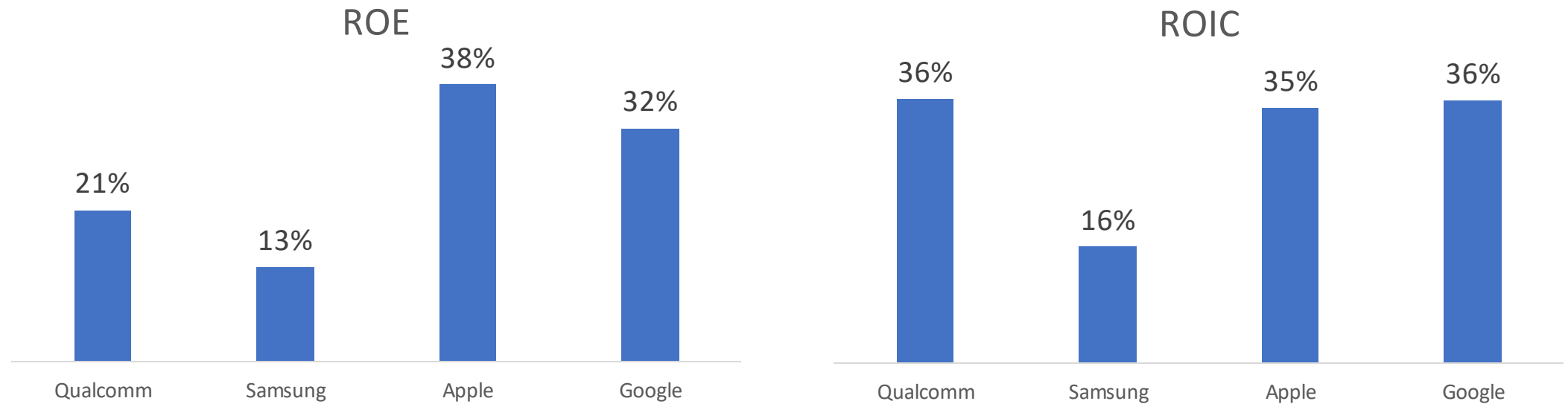


QCOM is somewhere in there ^

Hardware - Margins



Hardware - Returns



Hardware Battlefield

- Countless Competitors
- Big Players
- Not QCOM Core Competency



Automotive Battlefield

Concentrated in the US

Categories of Specialty:

- Microcontrollers
- Wireless Modems
- Camera & Sensors
- AI Brain

Cost of Development is high

Tesla and Baidu clear leaders



Eroding Moat

Vertical Integration



- Customers hiring talent to build out their own 5G + CDMA chips
 - Apple M1
- Big Tech flush with cash, now able to vertically integrate
- Customers sick of Qualcomm's manipulative tactics
- Every big customer that leaves takes a piece of the "**switching costs**" with them

Bargainin g Power?

Keep my patent's
name out your
mouth!!!



- 5G is a much more open playing field
- Qualcomm will no longer be able to strong-arm customers or competition
- Still will earn legacy 3G/4G revenues, but don't expect historical returns or growth
- **"Bread and butter" licensing business under threat**

Bargaining Power?

- 5G is a much more open playing field
- Qualcomm will no longer be able to strong-arm customers or competition
- Still will earn legacy 3G/4G revenues, but don't expect historical returns or growth
- "Bread and butter" licensing business under threat

Choices Choices

Imagine you are a QCOM client, and you have been price gouged and forced into unfavorable licensing agreements for decades. What are you going to do now?

- When you had no choice
- Now you have a choice.



Switching costs are weaker

That Just Leaves...



Fair Trade Commission



- **Intangible Assets** driver of moat going forward
- Intellectual property includes the patents as well as industry know-how
 - Former only lasts 30 years
 - Latter may leave as others offer competitive pay and benefits
- Patents already successfully challenged in international court (China, South Korea)
- Regulators everywhere are unfriendly to Qualcomm

Lawsuits

Past Lawsuits

- 2009 South Korea Federal Trade Commission - \$242.6m
- 2013 Chinese National Development and Reform Commission - \$975m
- 2016 South Korea Federal Trade Commission - \$854m
- 2017 Taiwan Fair Trade Commission - \$774m
- 2017 United States Federal Trade Commission, overturned
- 2018 European Union - \$1.2b

"No License, No Chip"



- 2017 Apple initially sued Qualcomm for \$1 billion
 - Extortion
 - Monopolistic Practices
 - Price gouging
- Drop lawsuit, undisclosed payments and six-year contract
- Taiwan Semiconductor Manufacturing Co.

Result

- Apple, Amazon, Meta, Tesla and Baidu plan on bringing chip development in-house
 - Apple's M1
 - Tesla's Mojo
 - Baidu Kunlun 2
- Custom-made chips fit applications better
 - Better integration
 - Reduced Energy Consumption

Other Risks

Customer Concentration

Customer/Licensee "W" - 23%

Customer/Licensee "X" - 14%

Customer/Licensee "Y" - 13%

Customer/Licensee "Z" - 9%

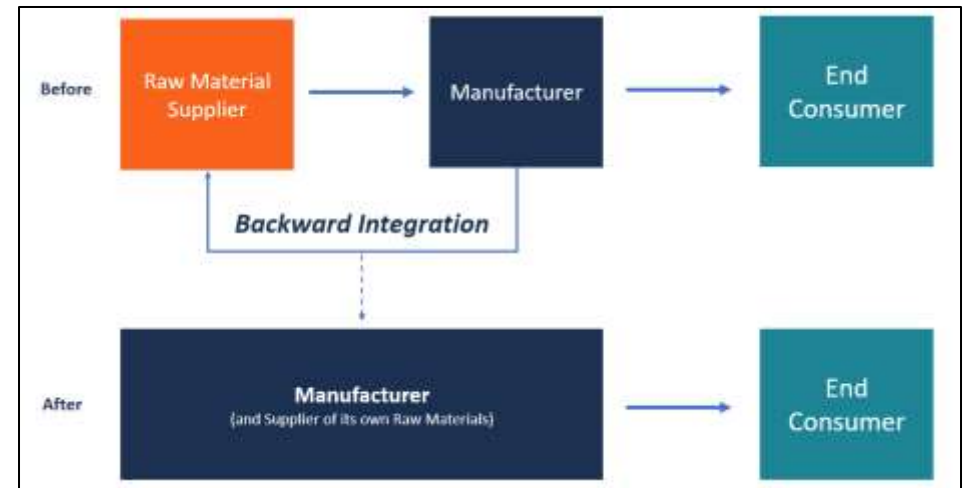


Top 4 customers make up ~60% of sales

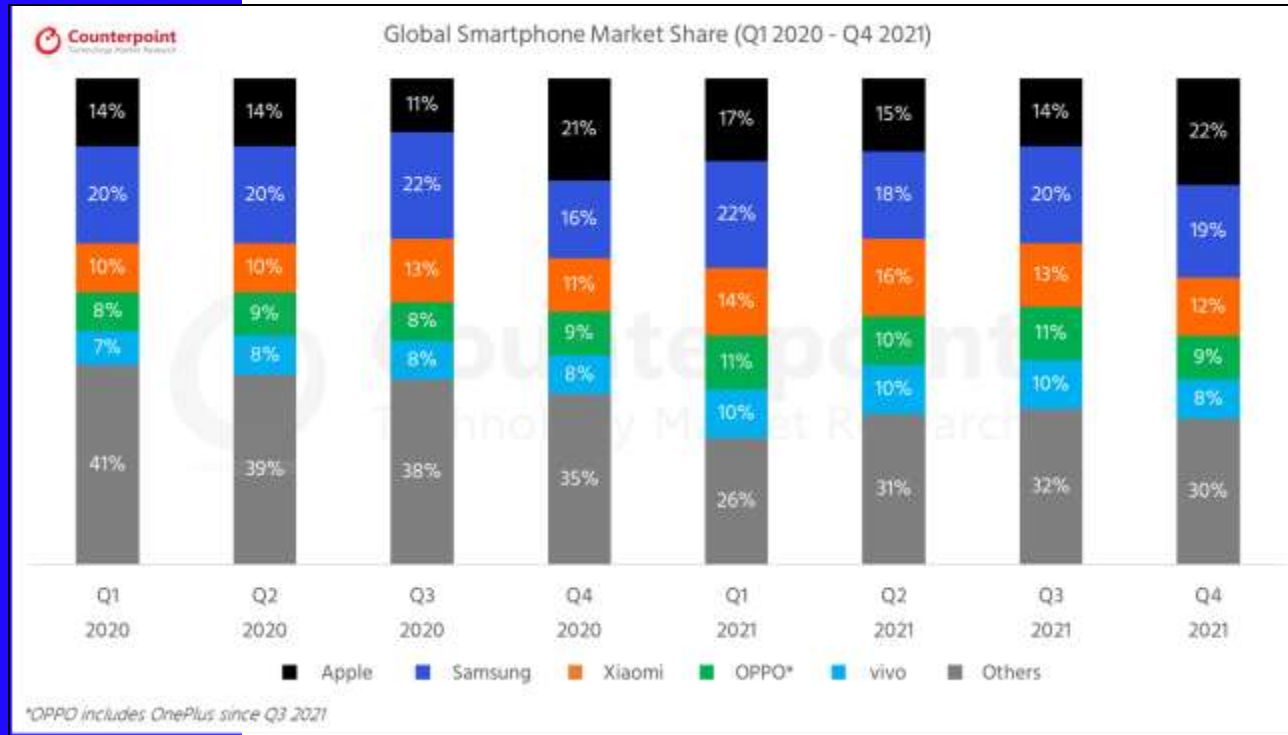
Significant Portion of Revenues Come from China

Vertical Integration of Customers

- Apple has successfully self-engineered CPU components to decrease reliance on QCOM chips
- Alphabet introduced new Tensor CPU in 2021
- Xiaomi, Vivo, Samsung, Huawei, Oppo and other customers have announced that they will do the same



Heavy Exposure to Foreign Markets

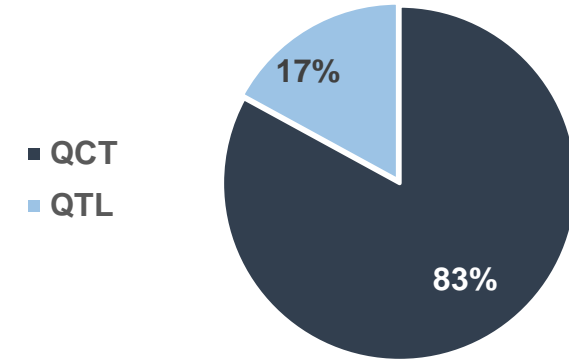


- Device market share is concentrated among a small number of companies
- QCOM derives a significant portion of revenue from Chinese OEMs who have a growing share of device market
- Taiwan Semiconductor accounts for 90% of worldwide chip production

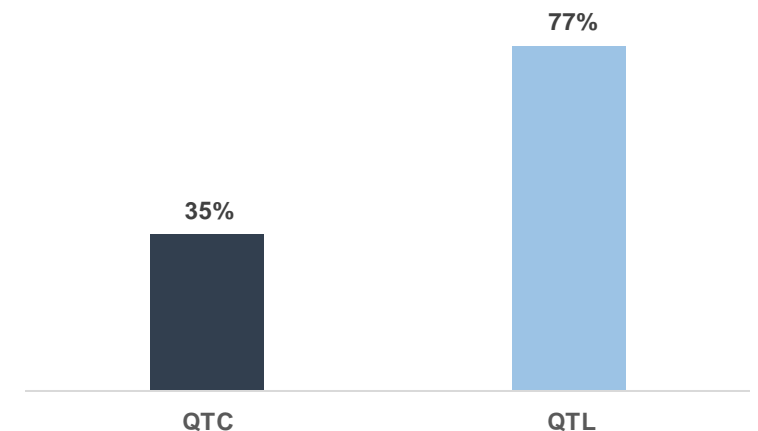
Dependence on QTL Segment for Stable Profits

- QTL Revenue is only positioned to grow at a CAGR of 3-5% in the next three years
- Means that QTL will become a significantly smaller part of total mix
- QTL is a significantly higher margin business, so margins will decline in QCT grows faster (as it is positioned to)

QCT vs QTL Revenue Mix



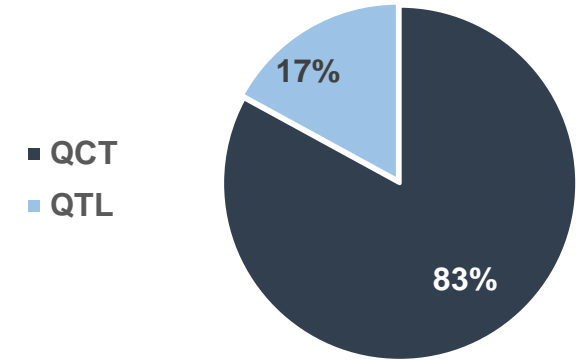
EBT Margin



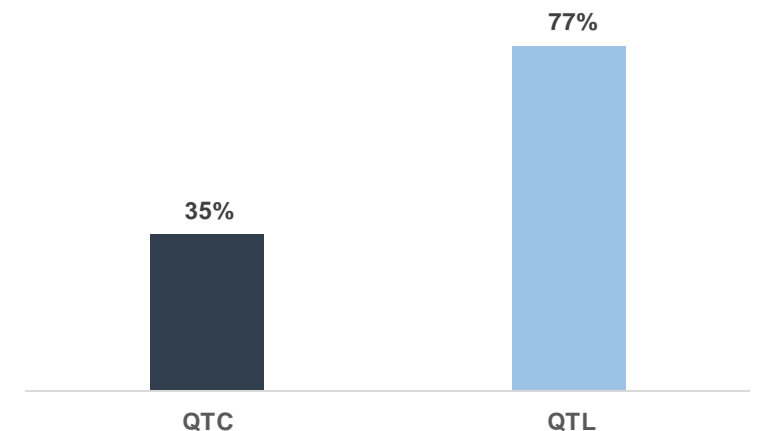
Dependence on Handset Revenue

- Handsets make up nearly 61% of total sales
- 90% of QTL revenues are derived from handsets
- While secular tailwinds in automotive and IoT will drive higher growth going forward, handset mix is likely to stay the same
- Haven't monetized non-handset QTL as effectively

QCT vs QTL Revenue Mix

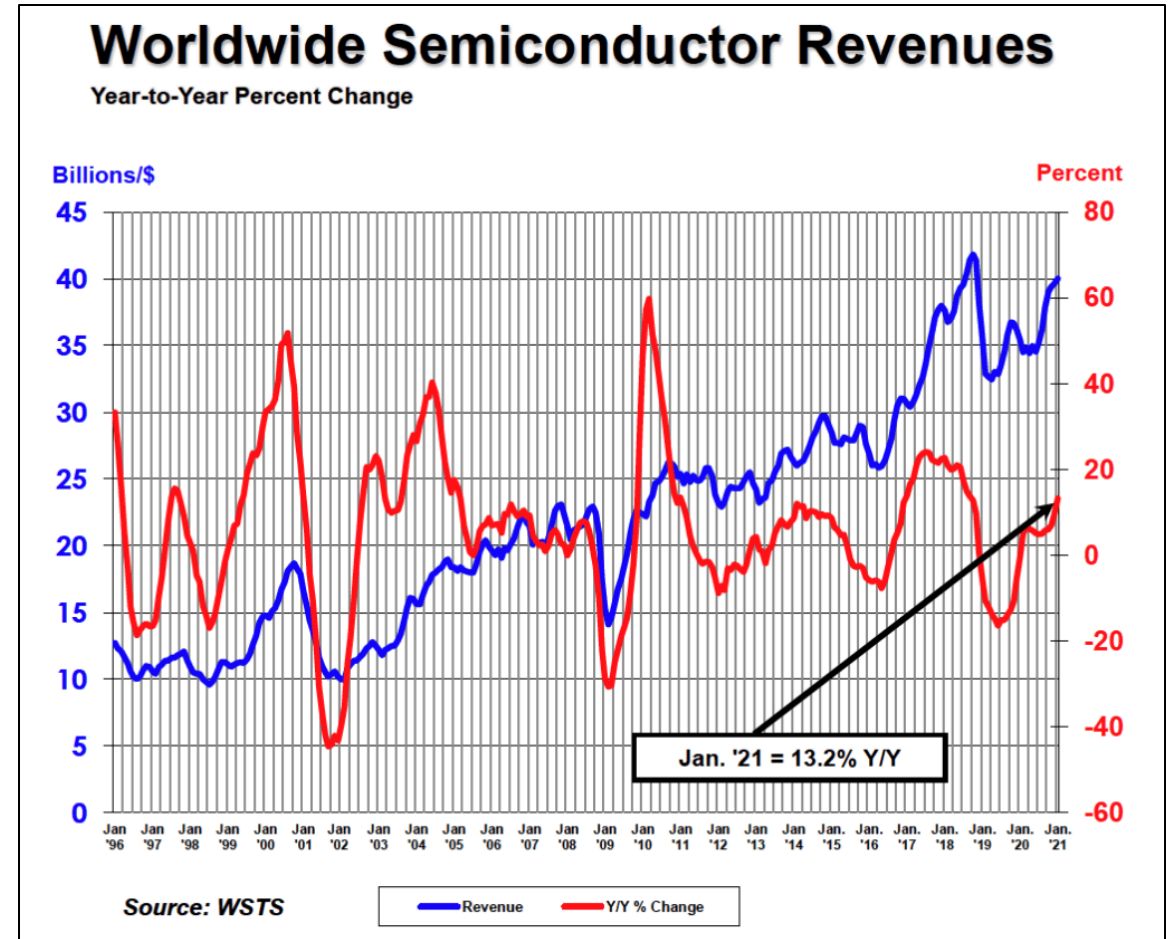


EBT Margin



Cyclical Nature of Semiconductor Demand

- Industry has periods of both high and low demand
- Although demand has some predictability, customer demand is subject to conditions affecting the demand for customers' products
- Not predictable and consistent



Conclusion

Bear & Bull

Recommendation

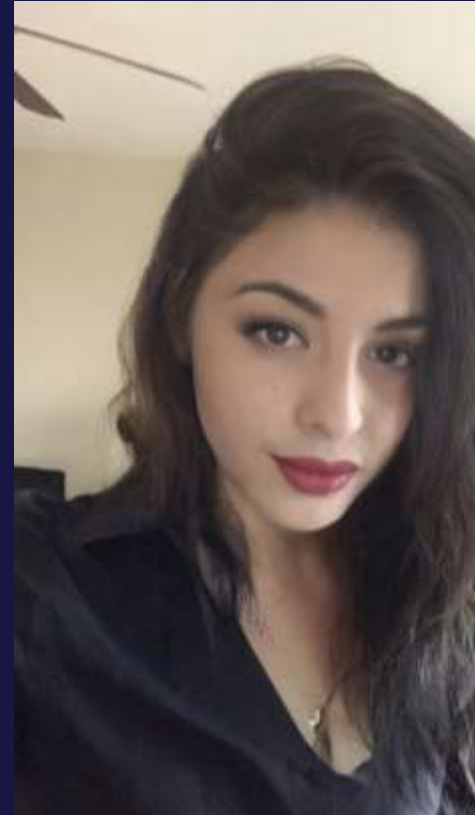
Bear

- Unpredictable and Cyclical industry
- Growth runway not as strong as before
 - Bigger TAM outweighed by more competition
- "Microscope" on licensing business going forward
- Concede that company has strong financials and appears cheap
- **HOLD**

Bull

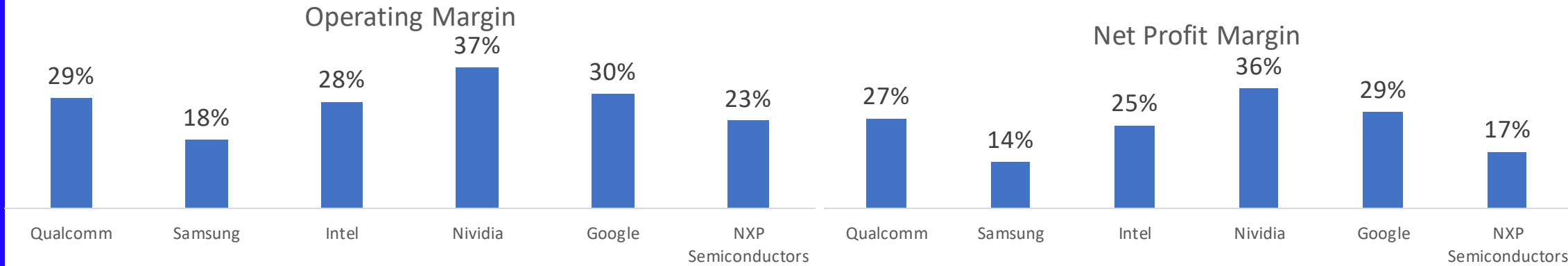
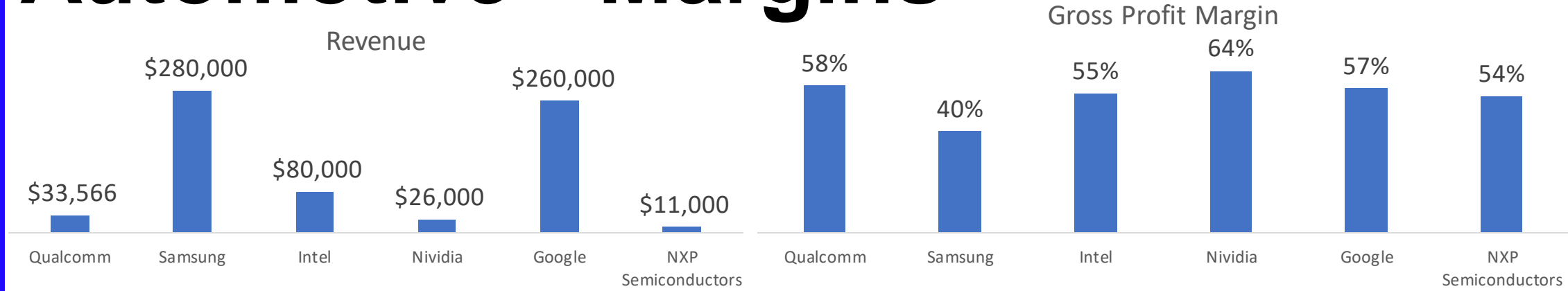


Bear

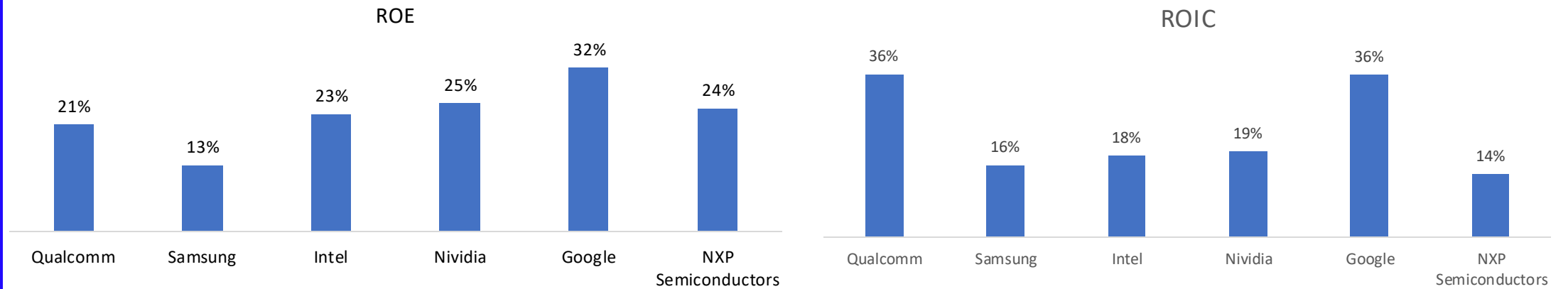


Appendix

Automotive - Margins



Automotive - Returns



Fiscal Period	Trend	Sep 07	Sep 08	Sep 09	Sep 10	Sep 11	Sep 12	Sep 13	Sep 14	Sep 15	Sep 16	Sep 17	Sep 18	Sep 19	Sep 20	Sep 21	TTM
Net Income From Continuing ...		03	3,160	1,592	3,247	4,242	6,059	6,845	7,299	5,268	5,702	2,444	-4,964	4,386	5,198	9,043	9,987
Cash Flow Depreciation, Depl...		83	456	635	666	1,061	897	1,017	1,150	1,214	1,428	1,461	1,561	1,401	1,393	1,582	1,624
Change In Receivables		16	-802	3,083	-18	-140	-456	-680	-281	550	-232	-1,104	734	1,373	-1,529	426	113
Change In Inventory		34	-47	69	-80	-62	-252	-300	-155	93	-49	-200	337	273	-1,157	-622	-1,322
Change In Payables And Ac...		09	247	1,041	-81	546	30	1,059	2	-1,236	413	2,296	911	-2,819	1,435	1,586	1,465
Change In Other Working C...		65	-106	-200	133	98	13	-194	-184	-1,354	-61	-95	-210	-51	-356	-1,851	-3,229
Change In Working Capital		24	-708	3,993	-46	442	-665	-115	-618	-1,947	71	897	1,772	-1,224	-1,607	-461	-2,973
Deferred Tax		-	306	-33	116	-1,204	395	268	298	47	-200	-412	4,481	1,976	-309	-245	-26
Stock Based Compensation		-	541	584	612	824	1,035	1,105	1,059	1,026	943	914	883	1,037	1,212	1,663	1,767
Asset Impairment Charge		-	535	763	125	180	167	277	822	517	172	253	348	338	405	38	37
Cash Flow from Others		01	-732	-362	-644	-645	-1,890	-619	-1,123	-619	-484	-556	-173	-628	-478	-1,084	-998
Cash Flow from Operations		11	3,558	7,172	4,076	4,900	5,998	8,778	8,887	5,506	7,632	5,001	3,908	7,286	5,814	10,536	9,418

Fiscal Period	Trend	Sep 07	Sep 08	Sep 09	Sep 10	Sep 11	Sep 12	Sep 13	Sep 14	Sep 15	Sep 16	Sep 17	Sep 18	Sep 19	Sep 20	Sep 21	TTM
Pretax Income		26	3,826	2,403	4,493	5,687	6,562	8,194	8,778	6,487	6,833	2,987	392	7,481	5,719	10,274	11,536
Tax Provision		23	-666	-611	-973	-1,132	-1,279	-1,349	-1,244	-1,219	-1,131	-543	-5,356	-3,095	-521	-1,231	-1,550