



AVX Corporation

Senior Analyst: Urja Lakhani

Junior Analysts: Carlota De Villa, Dana Hochman, Pandu Loksono, Askar Abuzarov

Recommendation Summary: AVX Corp.

Recommendation Summary

AVX Corp.

Ticker	AVX
Current Price (As of 04/10/2016)	\$11.99
Recommendation	HOLD
Target Price	13.58
Upside/Downside (%)	13%

Industry Overview

- The **electronic component manufacturing industry** consists of firms that are manufacturers, suppliers and resellers of electronic components such printed circuits, circuit boards, capacitors, transformers, connectors and switches.
- Customers include original equipment manufacturers (OEM's) in various industries.
- The industry has low market share concentration, high barriers to entry and rapidly increasing industry globalization.



Industry Overview

- Globally grew **1.6%** in 2015
- Expected to grow at **4.9% CAGR** over the next five years.
- Growth stimulated by:
 - Advanced in product technology, functionality, and design
 - Growing use of electronics in communications and automobile products
 - Growing use in home appliances and wearable devices
 - Increased applications in industrial production

Year	Revenue \$ billion	Growth %
2017	693.3	1.4
2018	704.4	1.6
2019	718.5	2.0
2020	732.1	1.9
2021	746.1	1.9
2022	761.0	2.0

Industry Trends

Increased Globalization

- Shift from developed countries such as USA and Western Europe to Asian countries.
- Lower rents and labor costs are the causes for this shift.

Mergers and Acquisitions

- Increased M&A to increased product base.
- Mergers with international companies to realize synergies and broaden market.

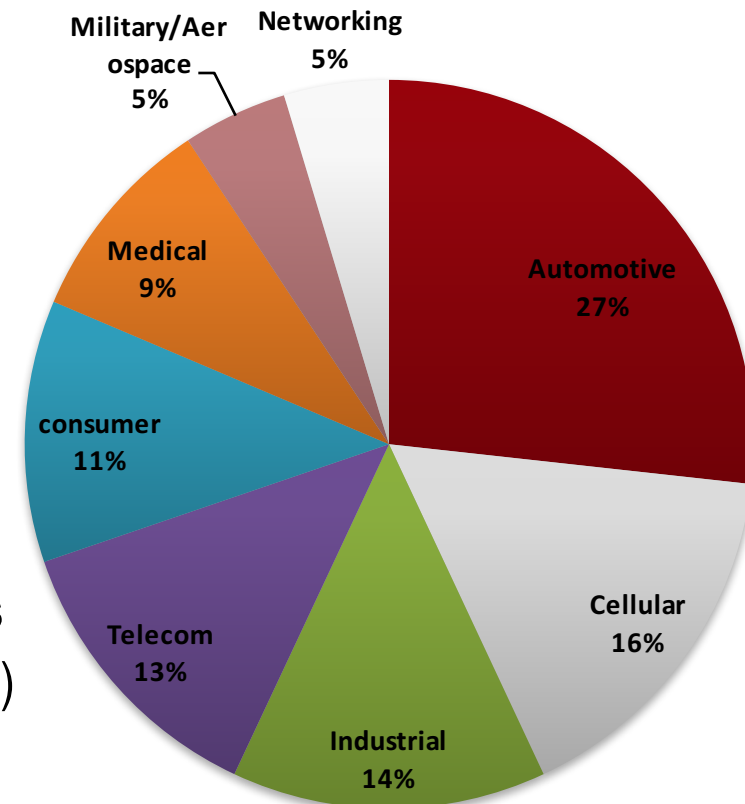
External Drivers

- Increasing GDP of BRIC nations and rise of global per capital income.
- Increasing global internet usage.

Company Overview

- **AVX Corporation** manufactures and supplies a variety of passive components and related products. Products include ceramic and tantalum capacitors which are used in many electronic products to store, filter and regulate electric energy.
- Holding Company: Kyocera (72% ownership)
- **Product Breakdown (% of sales):**
 - Passive Components (68%)
 - KED Resale (22%)
 - Interconnect Devices (10%)
- Customers in USA, Europe and Asia Pacific
- 20 Manufacturing facilities in 11 different countries (such as Mexico, Czech Republic, El Salvador etc.)

Customer Breakdown



Company Executives



John Sarvis: CEO

- Chief Executive Officer and President of AVX Corp. since April, 2015.
- Vice President of Ceramic Products at AVX Corp. from 2005 to March, 2015.
- Divisional Vice President of Ceramics Division at AVX Corp. from 1998 to 2005.
- Marketing and Operational positions at AVX Corp prior to that.

Kurt P. Cummings: CFO, Sr. VP and Treasurer



- Senior Vice President of AVX Corp. since August, 2015.
- Financial Officer and Treasurer since August 2000.
- Secretary since July 1997.
- Corporate Controller of AVX Corp. from June 1992 to August 2000 and Vice President until August, 2015.
- Prior to June 1992, he was a Partner with Deloitte & Touche LLP.

Company Trends



Demand from the automotive sector



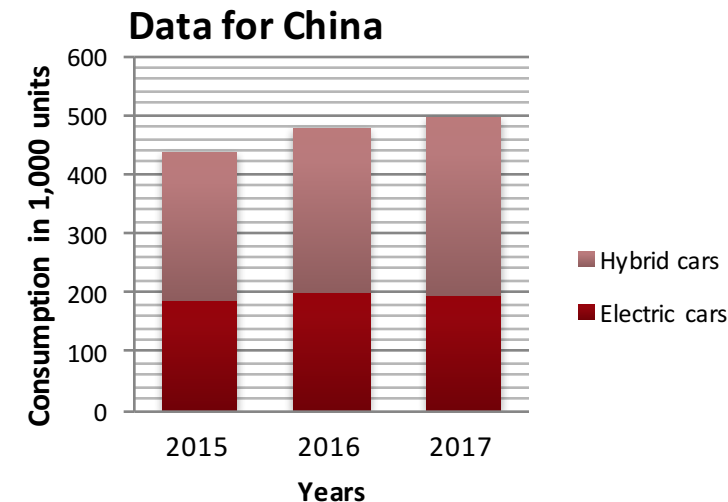
Rising use in smart phones



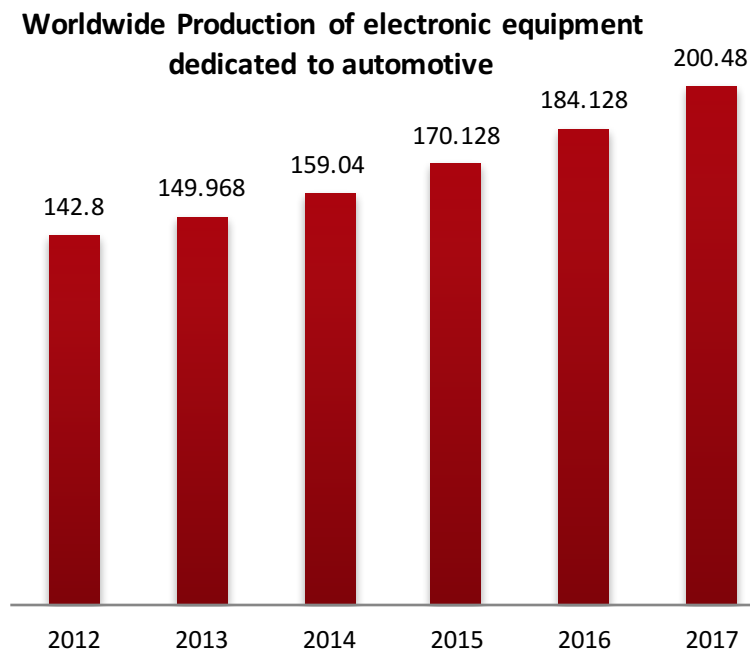
Strong margins due to declining costs

Trend 1: Demand from Automotive Sector

- Growth in gas fueled vehicles as well as EV's.
- AVX products are used throughout a vehicle, including engine control, transmission control, audio, brakes, and stability and safety control system.
- Currently, the automotive sector forms **27% of revenue** compared to **21% of revenue** in FY 2014.

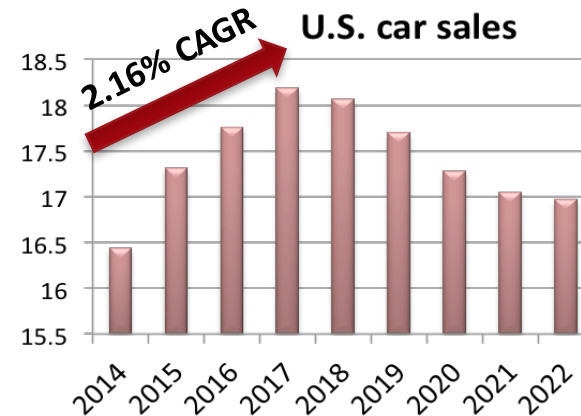
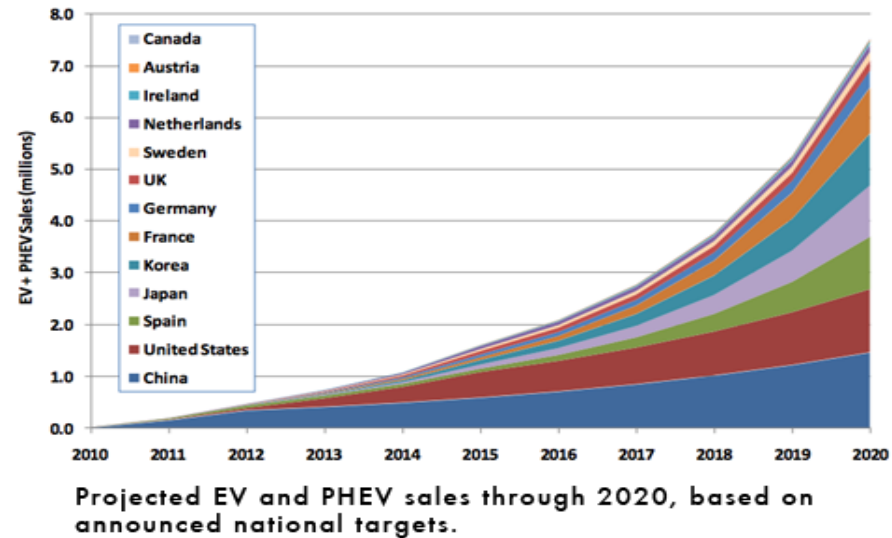


- Causes of growth in automobile sales:
 - Moderate gasoline prices.
 - Growing emerging markets.
 - *China slashes small car tax rate by half. Sales increased by 13%.*
 - *Increased subsidies on EV's in India and China.*
- Apart from organic growth in automobile sales, there is also growth in electric content in cars.



Trend 1: Demand from Automotive Sector

- **Rising demand for electric and hybrid cars in USA:**
 - Government incentives – Federal tax credits of over \$7500 in USA.
 - Rising environmental awareness
 - Declining purchase and maintenance costs of EV's
 - Sales of Tesla Model 3 to boost sales
- AVX is **increasing production capacity** of advanced power components group to meet this increased demand.

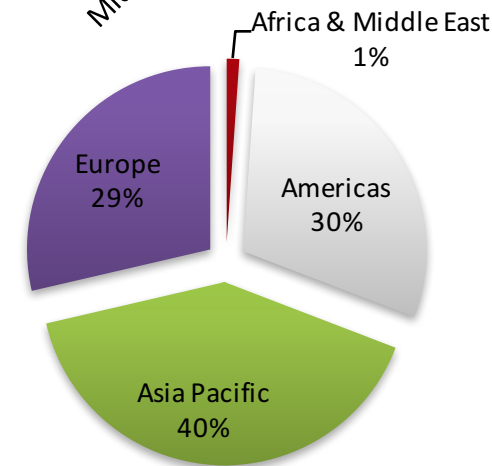
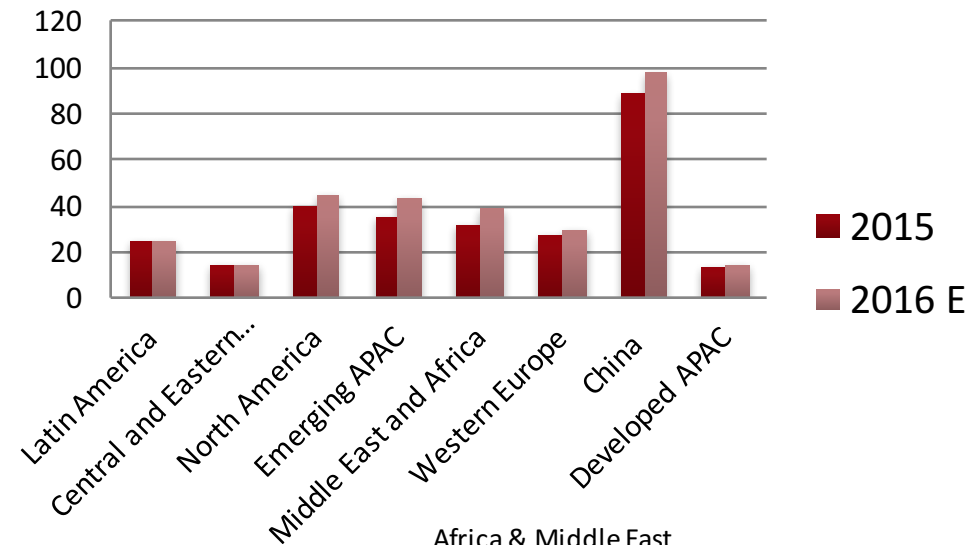


Key takeaway – Rising demand for EV's worldwide and overall increase in electric content in vehicles driving sales

Trend 2: Rising smart phone unit demand

- Passive components and fine pitch connectors are used in Mobile phones.
- AVX major customers: Nokia, Motorola
- In Emerging APAC, smartphone unit demand increased by +22 percent year-on-year in Q2 2015
- Rising smartphone demand from India:
 - Indian Govt. has spent USD 32B on 4G services
 - 65% of Internet surfing in India is on Mobile

Smartphone Sales (in million units)

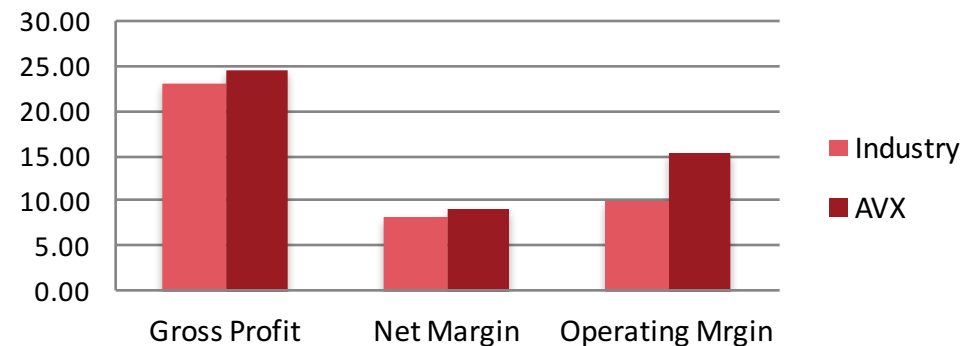


Revenue Breakdown by Region

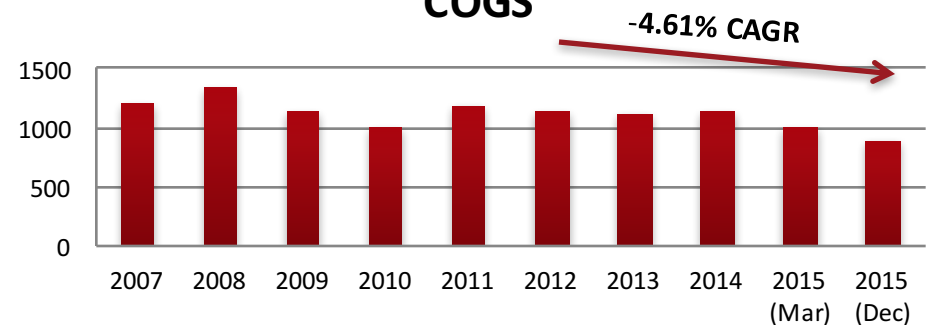
Trend 3: Strong Margins due to declining costs

- Spent \$100 million over the past three FY's to enhance worldwide manufacturing capabilities.
- Strategy: Transfer and expansion of manufacturing operations in lower cost countries such as El Salvador, Malaysia, Mexico, and Czech Republic.
- Increasing focus on the sale of value added and higher capacitance passive component sales with **better margin opportunities** and lower manufacturing and overhead costs.
- Costs were favorably impacted last year by approximately **\$37.3 million** due to the strength of the U.S. dollar.

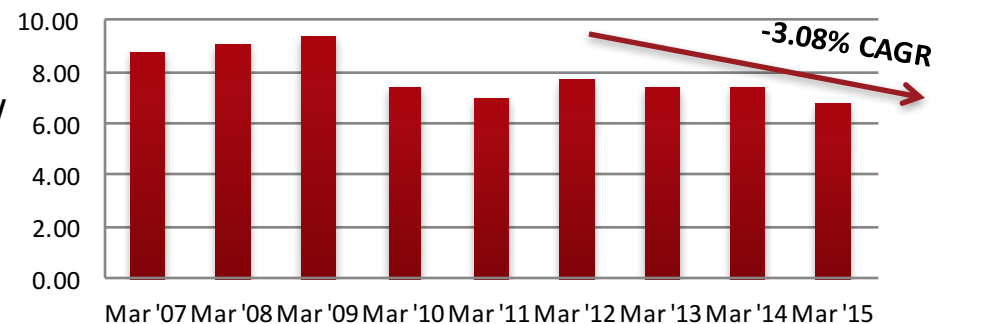
Margins – 5 Year Average



COGS



Rental Expenses



Company Risks

- **Fluctuations in commodity prices:**
Tantalum platinum, silver, nickel, gold, copper, palladium, and other raw materials
- **Currency rate fluctuation** affect AVC's sales, gross margins, and stockholder's equity since AVX trades with several international currencies.
- Costs unfavorably impacted by **\$28.1 million** in FY15 due to US dollar strength.
- **Steps taken by AVX to mitigate currency risk:**
 1. Entering forward exchange contracts to hedge currency transactions
 2. Producing products in the same country in which they are sold

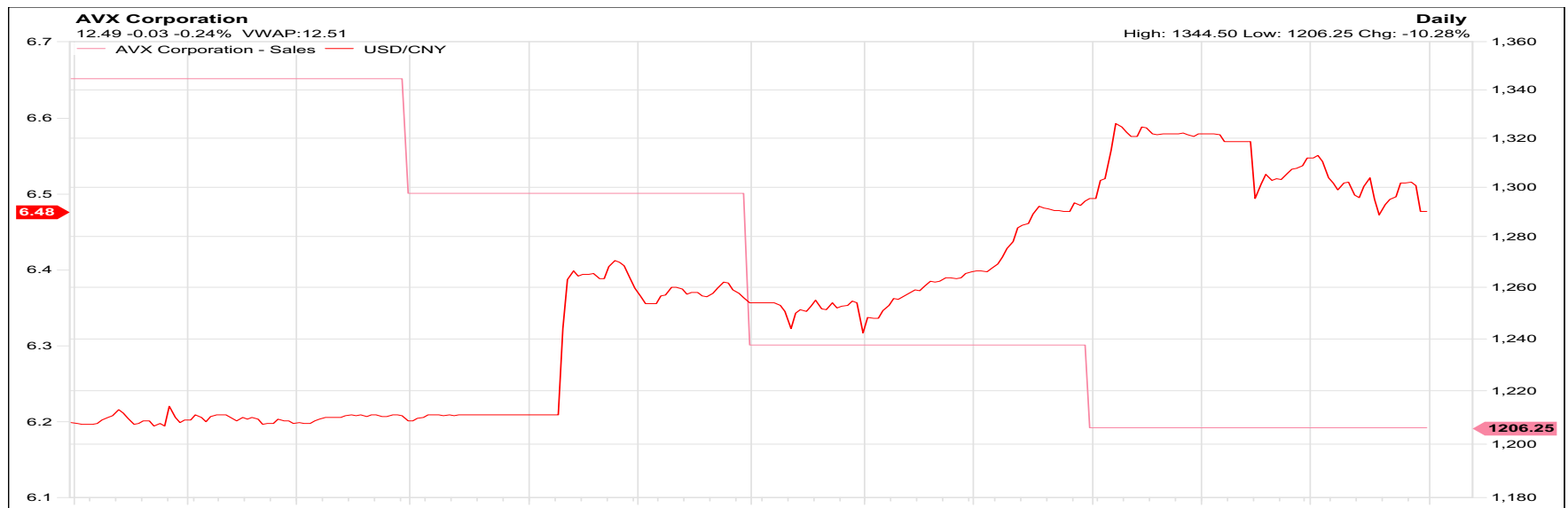
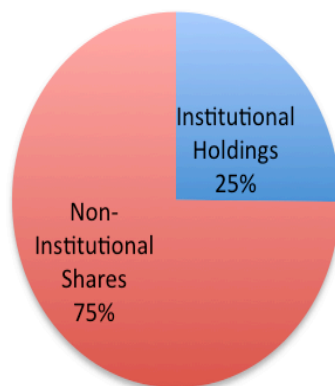


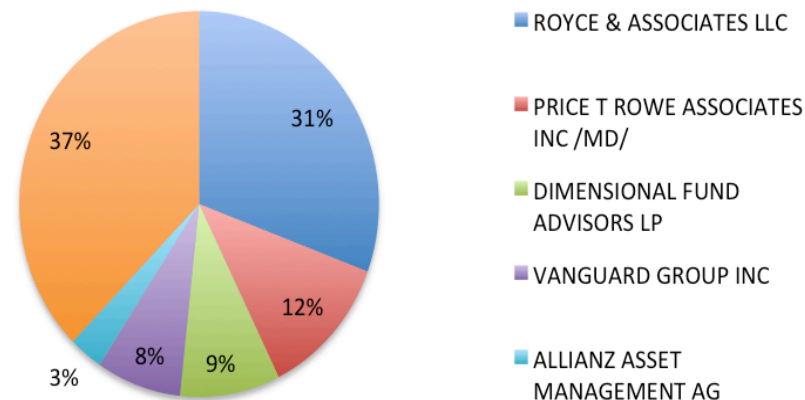
Chart showing correlation between strength of USD and sales

Investor information

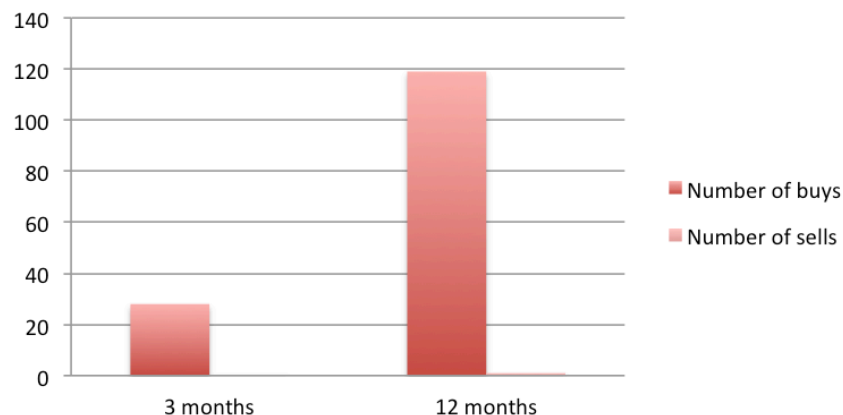
Institutional Holdings summary



Top 5 Institutional Holdings



Insider Trades Summary



- AVX is a part of some famous funds' portfolios
- Increasing buys from insiders over the recent past



AVX Corporation Valuation

Recommendation Summary

Recommendation Summary

Company (Ticker)	AVX
Current Trading Price (04-10-2016)	\$11.99
Recommendation	Hold
Target Price	\$13.58
<i>Upside Potential</i>	13%

Currently a Hold, but has potential to become a buy over time

Comparable Companies Valuation

Name	Market Cap - Consolidated	Enterprise Value	Net Margin TTM	Total Debt/ EV	ROA TTM	P/E TTM	EV/Sales TTM	EV/EBITDA TTM	EV/EBIT TTM
AVX CORPORATION	2,116.40	2,116.40	14.13%	0.00	7.42%	12.48x	1.8x	11.9x	8.65x
VISHAY INTERTECHNOLOGY, INC.	1,844.70	1,202.56	(4.72%)	0.36	2.31%	NEG	0.51x	4.06x	10.49x
KEMET CORPORATION	91.26	442.99	(7.83%)	0.89	(2.49%)	NEG	0.59x	14.23x	NEG
YAGEO CORPORATION	1,067.86	1,202.40	13.51%	0.40	7.35%	9.24x	1.46x	5.82x	8.20x
TAIYO YUDEN CO., LTD.	1,173.82	1,292.13	7.87%	0.38	7.18%	7.13x	0.63x	3.38x	6.85x
TDK CORPORATION	7,228.51	7,443.33	6.10%	0.40	5.06%	11.86x	0.77x	4.84x	8.79x
High	7,228.51	7,443.33	14.13%	0.89	7.42%	12.48x	1.46x	14.23x	10.49x
Mean	2,253.76	2,130.59	4.84%	0.40	4.47%	10.18x	1.4x	6.4x	8.59x
Median	1,509.26	1,202.48	6.98%	0.39	6.12%	10.55x	1.0x	5.9x	8.65x
Low	91.26	442.99	(7.83%)	0.00	(2.49%)	7.13x	0.51x	3.38x	6.85x

P/E

LTM EPS	\$1.02
Implied Price Target	\$12.38
Upside (Downside) %	3.22%

EV/EBITDA

LTM EBITDA	\$178.50
Implied Price Target	\$6.3274
Upside (Downside) %	-47.2%

EV/Revenue

LTM Revenue	\$1,206.25
Implied Price Target	\$7.2705
Upside (Downside) %	-39.4%

Discounted Cash Flow Valuation

Perpetuity Growth Method

Growth Rate	2.00%
Undiscounted TEV	\$2,750.17
Discounted TEV	\$1,683.47
DCF Value	\$2,342.18
Equity Value	\$2,342.18
Share Price	\$13.98
Implied Exit Multiple	12.56x

Exit Multiple Method

EBITDA Multiple	11.90x
Undiscounted TEV	\$2,605.48
Discounted TEV	\$1,594.90
DCF Value	\$2,253.61
Equity Value	\$2,253.61
Share Price	\$13.45
Implied Growth Rate	1.57%

Discounted Cash Flow Valuation

Key Statistics:

Current Trading Price (04-10-2016)	\$11.99
Market Cap	2,116.4
Net Debt	-
Beta	0.92
Shares Outstanding	167.57
Marginal Tax Rate	22.20%

WACC Calculation:

Cost of Debt	0.00%
% Weight	0%
Cost of Equity	10.31%
% Weight	100%
WACC	10.31%

Capital Asset Pricing Model

Beta	0.92
Risk-free Rate	2.41%
Base Risk Premium	6.70%
Market Cap	\$2,116.40
Size Premium	1.74%
CAPM	10.31%

Key Assumptions:

- WACC = Cost of Equity = 10.3%
- Tax Rate = 22.20
- Beta = 0.92 (Calculated weekly with Russell 2000)
- Terminal growth rate = 2%
- Exit multiple = 11.9x
- Assumed steady increase in Capex as % of Revenue
- Declining COGS and S&A as % of Revenue due to these expansion plans

Valuation summary with weights

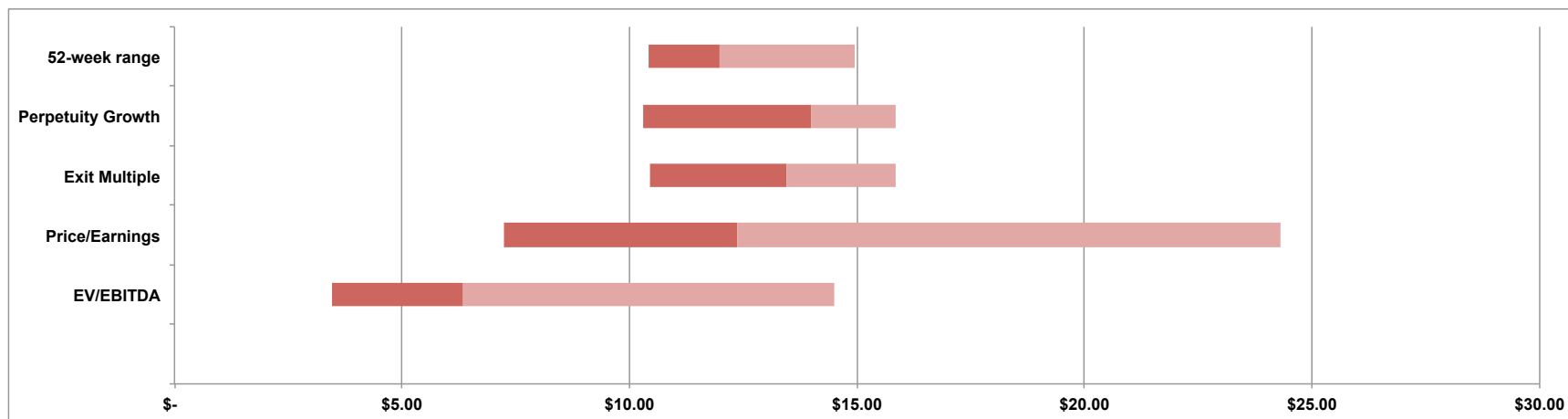
Valuation Summary

Method	Price	Weight
Discounted Cash Flow		
Perpetuity Growth Method	\$13.98	80%
Exit Multiple Method	\$13.45	10%
Comparable Company Analysis		
P/E	\$12.38	7%
EV/EBITDA	\$6.33	3%
EV/Revenue	\$7.27	0%
Target Price	\$13.58	

Reasoning:

- Highly heterogeneous industry argues for intrinsic valuation
- Comps produces skewed result due to market inefficiencies, esp. in tech sector
- Poor comparable companies overall
 - Major US competitors have negative net income
 - Other close competitors are foreign companies

Valuation Football Field



AVX Corp: Recommendation Summary

Company	AVX Corp. (AVX)
Recommendation	HOLD
Current Price	11.99
Target Price	13.58
%Upside/Downside	13%

-  Demand from the automotive sector
-  Rising use in smart phones
-  Strong margins due to declining costs

Appendix

- SWOT Analysis
- AVX growth summary (CAGR)
- Wide comps
- Insider Trades Summary
- Sensitivity table
- Free cash flow calculation
- Assumptions

SWOT Analysis

STRENGTHS

Strong financials and liquidity
Strong Operations Network
Synergy with Kyocera
Synergy with subsidiaries

WEAKNESSES

Reliance on commodity prices
Declining financial performance
Environmental and Patents
infringement concerns

AVX Corp.

OPPORTUNITIES

New product launches
Pull from the automotive industry
Positive outlook for EMS

THREATS

Rapid technology changes
Currency fluctuations
Highly competitive market

AVX Past Growth Summary (CAGR)

	1 Year	3 Years	5 Years	10 Years
Sales	-6.8	-4.5	0.6	0.5
EBITDA	20.2	-7.2	2.1	5.4
Net Income	77.8	13.9	9.6	15.0
EPS (Diluted)	78.7	14.2	9.8	15.4
Dividends	11.9	15.4	20.1	10.3

High CAGR for Net Income and EPS CAGR because negative numbers in beginning year

Wide Comps

Name	Market Cap - Consolidated	Enterprise Value	Sales TTM	Sales FY1	EBITDA TTM	EBITDA FY1	Net Income TTM	Net Margin TTM	Total Debt/ EV	ROA TTM	ROE TTM
AVX CORPORATION	2,116.40	1,200.13	1,206.25	1,187.60	178.50	202.20	170.40	14.13%	0.00	7.42%	8.06%
VISHAY INTERTECHNOLOGY, INC.	1,844.70	1,202.56	2,300.49	2,303.56	276.59	368.99	(108.51)	(4.72%)	0.36	2.31%	3.27%
AMPHENOL CORPORATION	17,755.30	18,848.30	5,568.70	6,119.24	1,292.70	1,384.22	763.50	13.71%	0.15	11.15%	24.85%
KEMET CORPORATION	91.26	442.99	744.61	-	31.13	-	(58.30)	(7.83%)	0.89	(2.49%)	(34.26%)
YAGEO CORPORATION	1,067.86	1,202.40	825.96	860.83	206.59	188.88	111.59	13.51%	0.40	7.35%	14.83%
TAIYO YUDEN CO., LTD.	1,173.82	1,292.13	2,044.50	1,995.32	382.44	395.04	160.83	7.87%	0.38	7.18%	12.64%
Murata Manufacturing Co., Ltd.	26,356.73	24,159.03	10,102.79	10,158.76	3,271.23	3,197.78	1,767.63	17.50%	0.00	14.68%	18.21%
TDK CORPORATION	7,228.51	7,443.33	9,719.86	9,727.36	1,536.86	1,516.16	592.86	6.10%	0.40	5.06%	9.53%
High	26,356.73	24,159.03	10,102.79	10,158.76	3,271.23	3,197.78	1,767.63	17.50%	0.89	14.68%	24.85%
Mean	7,204.32	6,973.86	4,064.14	4,621.81	897.01	1,036.18	425.00	7.53%	0.32	6.58%	7.14%
Median	1,980.55	1,247.34	2,172.49	2,303.56	329.52	395.04	165.61	10.69%	0.37	7.26%	11.09%
Low	91.26	442.99	744.61	860.83	31.13	188.88	(108.51)	(7.83%)	0.00	(2.49%)	(34.26%)

Name	P/E TTM	EV/Sales TTM	EV/Sales FY1	EV/EBITDA TTM	EV/EBITDA FY1	EV/EBIT TTM	EV/EBIT FY1
AVX CORPORATION	12.48x	0.99x	1.01x	6.72x	5.94x	8.65x	7.23x
VISHAY INTERTECHNOLOGY, INC.	NEG	0.51x	0.52x	4.06x	3.26x	10.49x	6.09x
AMPHENOL CORPORATION	23.89x	3.38x	3.08x	14.58x	13.62x	16.81x	15.89x
KEMET CORPORATION	NEG	0.59x	-	14.23x	-	NEG	-
YAGEO CORPORATION	9.24x	1.46x	1.40x	5.82x	6.37x	8.20x	10.54x
TAIYO YUDEN CO., LTD.	7.13x	0.63x	0.65x	3.38x	3.27x	6.85x	-
Murata Manufacturing Co., Ltd.	14.01x	2.39x	2.38x	7.39x	7.55x	9.78x	10.49x
TDK CORPORATION	11.86x	0.77x	0.77x	4.84x	4.91x	8.79x	-
High	23.89x	3.38x	3.08x	14.58x	13.62x	16.81x	15.89x
Mean	13.10x	1.34x	1.40x	7.63x	6.42x	9.94x	10.05x
Median	12.17x	0.88x	1.01x	6.27x	5.94x	8.79x	10.49x
Low	7.13x	0.51x	0.52x	3.38x	3.26x	6.85x	6.09x

Insider Trades Summary

Filer's Name	Relation Title	Trans. Date	Price	Mkt Value	Shares	Holdings
Thomas Keith	SR Corp VP, President & COO, KED	03/04/2016	11.91	12	1	19208
King Willing	Sr Corp VP, Tantalum Products	03/04/2016	11.91	36	3	8909
Cummings Kurt P	SR VP CFO Treasurer/Secretary	03/04/2016	11.91	24	2	13001
Venuto Peter	SR Corp VP of Sales	03/04/2016	11.91	24	2	1368
Thomas Keith	SR Corp VP, President & COO, KED	03/02/2016	11.72	750	64	19207
Venuto Peter	SR Corp VP of Sales	03/02/2016	11.72	750	64	1366
King Willing	Sr Corp VP, Tantalum Products	03/02/2016	11.72	410	35	8906
Cummings Kurt P	SR VP CFO Treasurer/Secretary	03/02/2016	11.72	750	64	12999
Venuto Peter	SR Corp VP of Sales	02/17/2016	11.65	82	7	225
Venuto Peter	SR Corp VP of Sales	02/17/2016	11.65	58	5	1302
Kelly Kathleen M	SR Corp VP Human Resources	02/17/2016	11.65	23	2	2307
Lawing John	SR VP Chief Technology Officer	02/17/2016	11.65	82	7	3466
Thomas Keith	SR Corp VP, President & COO, KED	02/17/2016	11.65	734	63	19143
Sarvis John	CEO and President	02/17/2016	11.65	198	17	13092
King Willing	Sr Corp VP, Tantalum Products	02/17/2016	11.65	163	14	8871
Cummings Kurt P	SR VP CFO Treasurer/Secretary	02/17/2016	11.65	629	54	12935

Sensitivity table

DCF - Perpetuity Growth Sensitivity

		WACC							
		8.8140							
		0%	9.3%	9.8%	10.3%	10.8%	11.3%	11.8%	12.3%
Terminal Growth Rate	3.0%	\$19.47	\$17.91	\$16.59	\$15.46	\$14.48	\$13.63	\$12.88	\$12.21
	2.5%	\$18.17	\$16.82	\$15.67	\$14.67	\$13.80	\$13.03	\$12.35	\$11.75
	2.0%	\$17.06	\$15.88	\$14.87	\$13.98	\$13.20	\$12.50	\$11.89	\$11.33
	1.50%	\$16.10	\$15.06	\$14.16	\$13.36	\$12.66	\$12.03	\$11.46	\$10.96
	1.00%	\$15.27	\$14.34	\$13.53	\$12.81	\$12.17	\$11.60	\$11.08	\$10.61
	0.50%	\$14.53	\$13.70	\$12.97	\$12.32	\$11.73	\$11.21	\$10.73	\$10.30

DCF - EV/EBITDA Exit Multiple Sensitivity

		WACC							
		8.8%	9.3%	9.8%	10.3%	10.8%	11.3%	11.8%	12.3%
Terminal EBITDA Multiple	13.9 x	\$15.84	\$15.57	\$15.30	\$15.05	\$14.80	\$14.56	\$14.32	\$14.09
	12.9 x	\$14.98	\$14.73	\$14.49	\$14.25	\$14.02	\$13.79	\$13.57	\$13.36
	11.9 x	\$14.12	\$13.89	\$13.67	\$13.45	\$13.24	\$13.03	\$12.83	\$12.63
	10.9 x	\$13.27	\$13.06	\$12.85	\$12.65	\$12.45	\$12.26	\$12.08	\$11.90
	9.9 x	\$12.41	\$12.22	\$12.03	\$11.85	\$11.67	\$11.50	\$11.33	\$11.17
	8.9 x	\$11.55	\$11.38	\$11.21	\$11.05	\$10.89	\$10.74	\$10.58	\$10.44

FCF Calculation

		<u>Forecasted</u>			
	2016	2017	2018	2019	2020
EBIT	\$140.65	\$155.01	\$166.99	\$179.94	\$195.22
- Taxes	\$9.38	\$10.34	\$11.14	12.00	13.02
	\$150.03	\$165.35	\$178.14	\$191.94	\$208.24
+ D&A	40.97	41.51	44.00	46.20	48.05
- CAPEX	(3.77)	(2.67)	(12.38)	(10.93)	(9.18)
- Δ in NWC	(85.82)	(6.24)	(31.78)	(28.28)	(22.94)
Unlevered FCF	\$101.41	\$197.94	\$177.97	\$198.93	\$224.17
Net Present Value	\$658.71				

Assumptions

Income Statement	2016	2017	2018	2019	2020
Revenue Growth Assumptions	-4.2%	1.3%	3.0%	5.0%	4.0%
COGS % Revenue Assumptions	71.0%	70.8%	70.5%	70.3%	70.0%
SG&A % Revenue Assumptions	16.8%	16.0%	16.0%	15.8%	15.5%

Cash Flows	2016	2017	2018	2019	2020
Capital Expenditures % Revenue	-0.3%	-0.2%	-0.9%	-0.8%	-0.6%