



Micron Technology Inc. (MU)

Updated September 29th, 2019 by Lyn Alden

Key Metrics

Current Price:	\$43	5 Year CAGR Estimate:	15.8%	Volatility Percentile:	95.9%
Fair Value Price:	\$44	5 Year Growth Estimate:	15.0%	Momentum Percentile:	35.9%
% Fair Value:	97%	5 Year Valuation Multiple Estimate:	0.7%	Growth Percentile:	97.1%
Dividend Yield:	0.0%	5 Year Price Target	\$89	Valuation Percentile:	64.0%
Dividend Risk Score:	N/A	Retirement Suitability Score:	N/A	Total Return Percentile:	94.2%

Overview & Current Events

Micron Technology Inc. (MU) was founded in 1978 in Boise Idaho, and is now one of the top three producers of DRAM in the world, as well as one of the world's top six NAND producers. DRAM refers to volatile dynamic random access memory that computers, servers, smartphones, and embedded devices use to operate. NAND refers to non-volatile flash memory that serves as data storage for all these devices. With a market capitalization of \$47 billion and 36,000 employees, Micron produced approximately \$23 billion in revenue in 2019. Its fiscal year ends in August of each year.

On September 26th, 2019, Micron reported fourth quarter results for the period ending August 29th, 2019. The DRAM and NAND industries are highly cyclical and commodity-like in nature, which means that prices and margins can vary dramatically over the course of a manufacturing cycle. These markets are currently in a downtrend persisting through multiple quarters, where supply has outpaced demand resulting in low prices. As such, Micron reported \$4.87 billion in revenue for this quarter compared to \$8.44 billion in the same quarter of 2018, and non-GAAP diluted earnings per share of \$0.56 compared to \$3.53 per share in the year-ago period.

Management provided guidance for Q1 2020 of approximately \$5 billion in revenue, gross margins of 26.5%, and diluted EPS of approximately \$0.46 per share, indicating a stabilization but not yet a resurgence in memory pricing. The company has been cutting its DRAM and NAND wafer starts to help the industry balance its supply and demand.

Growth on a Per-Share Basis

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2024
EPS	-\$2.29	\$1.85	\$0.17	-\$1.04	\$1.13	\$2.54	\$2.47	-\$0.27	\$4.41	\$11.95	\$6.35	\$12.77
DPS	---	---	---	---	---	---	---	---	---	---	---	---
Shares¹	850	996	988	1,018	1,052	1,074	1,084	1,094	1,112	1,161	1,128	1,000

Micron's rate of growth is highly volatile, and the numbers change dramatically depending on what time period is used for calculations. The five-year revenue growth rate is 7.1% and the ten-year revenue growth rate is 17.0%. The 3-year growth rate from the top of the previous cycle in 2015 to the top of the cycle in 2018 was approximately 24%. Profit margins and earnings per share fluctuate even more than revenue, with earnings historically going into negative territory at the bottom of semiconductor pricing cycles in 2009, 2012, and 2016.

We estimate 15% annual EPS growth over the next five years from 2019, although the actual growth rate will be highly variable depending on how the current semiconductor pricing cycle plays out and subject to potential political risks involving ongoing international trade disputes.

Valuation Analysis

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Now	2024
Avg. P/E	---	4.7	48.0	---	8.0	9.6	11.4	---	5.6	4.0	6.8	7.0
Avg. Yld.	---	---	---	---	---	---	---	---	---	---	---	---

¹ Share count is in millions.

Disclosure: This analyst is long Micron.



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Micron does not pay a dividend. As a highly cyclical stock, Micron's EPS occasionally turns negative, resulting in a negative P/E ratio. We conservatively estimate an earnings multiple of 7.0x in five years. With shares presently trading just below this mark, this implies the potential for a small valuation tailwind.

Safety, Quality, Competitive Advantage, & Recession Resiliency

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2024
Payout	---	---	---	---	---	---	---	---	---	---	---	---

The worldwide DRAM industry has consolidated from over a dozen producers two decades ago, to six major producers a decade ago, to only three major producers today. Samsung, SK Hynix, and Micron currently produce more than 95% of the global supply of DRAM. These companies constitute a DRAM oligopoly for the entire world, and two of them operate out of South Korea while Micron operates out of the United States. While DRAM pricing is commodity-like in nature and thus highly reliant on the supply and demand balance with limited product differentiation, the small number of producers may stabilize DRAM prices compared to the past, which could reduce cyclical volatility.

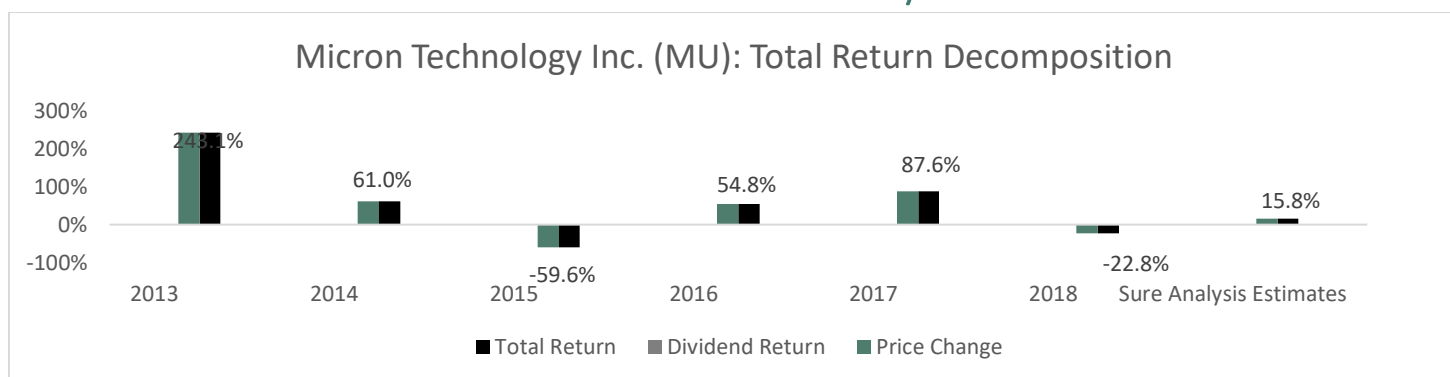
Micron brought on Sanjay Mehrotra as CEO in 2017. He is an industry veteran who co-founded SanDisk in 1988, with many patents to his name. Under his recent leadership, Micron strengthened its balance sheet and currently has more cash than debt, which means it is in a stronger financial position during this downturn in DRAM and NAND pricing than the financial position that it entered previous downturns with. While Micron's moat is narrow due to the commodity-like nature of its products, its strong financial position and oligopolistic nature may provide a degree of resilience.

Final Thoughts & Recommendation

Micron is a wildly cyclical stock that historically has provided strong returns when purchased during semiconductor pricing downturns. The company has strengthened its balance sheet, cut production costs, and increased research and development to provide cutting-edge products.

A significant risk for Micron is that it sells over half of its products to China, including more than 10% to Huawei which is now on the U.S. government's list of restricted buyers for national security reasons. Micron has been winding down sales to Huawei during the past quarter, and could suffer if China sales continue to be weak or banned. Additionally, China is investing heavily in developing its own DRAM industry to reduce its reliance on exports, although their products are currently several generations behind what Micron offers and are produced at low quantities. If China develops a competitive DRAM industry over the next several years, it could threaten the existing DRAM oligopoly and reduce Micron's revenue and profits. Overall, we consider Micron to be a speculative buy, but it is best thought of as a high-risk and high-reward stock, with potential for significant outperformance in exchange for extreme volatility, substantial political risk, and potential capital loss.

Total Return Breakdown by Year



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Income Statement Metrics

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Revenue	4803	8482	8788	8234	9073	16358	16192	12399	20322	30391
Gross Profit	-440	2714	1758	968	1847	5437	5215	2505	8436	17891
Gross Margin	354	528	592	620	562	707	719	659	743	813
SG&A Exp.	2186	1922	2105	2141	1804	2103	2667	2980	3861	4759
D&A Exp.	-1548	1562	669	-597	359	3370	2984	231	5864	14926
Operating Profit	-1882	1850	167	-1032	1190	3045	2899	-276	5089	14135
Operating Margin	718	2480	-66	415	369	2592	1187	-2649	3419	8521
Net Profit	1	-19	203	-17	8	128	157	19	114	168
Net Margin	4803	8482	8788	8234	9073	16358	16192	12399	20322	30391
Free Cash Flow	-440	2714	1758	968	1847	5437	5215	2505	8436	17891
Income Tax	354	528	592	620	562	707	719	659	743	813

Balance Sheet Metrics

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total Assets	11459	14693	14752	14328	19118	22416	24143	27540	35336	43376
Cash & Equivalents	1485	2913	2160	2459	2880	4150	2287	4140	5109	6506
Accounts Receivable		1238	1105	933	2069	2524	2188	1765	3490	5056
Inventories	987	1770	2080	1812	2649	2455	2340	2889	3123	3595
Goodwill & Int. Ass.	344	323	414	371	386	468	472	568	1615	1559
Total Liabilities	4520	4877	4900	5911	9112	10854	10904	14612	15866	10212
Accounts Payable	526		1187	818	1048	996	1020	1186	1333	1692
Long-Term Debt	2803	2360	2001	3262	4785	5668	6598	8504	9965	3794
Shareholder's Equity	4953	8020	8470	7700	9142	10760	12302	12080	18621	32294
D/E Ratio	0.57	0.29	0.24	0.42	0.52	0.53	0.54	0.70	0.54	0.12

Profitability & Per Share Metrics

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Return on Assets	-15.1%	14.1%	1.1%	-7.1%	7.1%	14.7%	12.5%	-1.1%	16.2%	35.9%
Return on Equity	-33.8%	28.5%	2.0%	-12.8%	14.1%	30.6%	25.1%	-2.3%	33.2%	55.5%
ROIC	-17.5%	16.9%	1.4%	-8.8%	9.0%	19.0%	15.6%	-1.3%	20.0%	42.6%
Shares Out.	849.8	996.3	987.6	1018	1052	1074	1084	1094	1112	1161
Revenue/Share	6.00	8.07	8.72	8.31	8.58	13.65	13.84	11.97	17.61	24.73
FCF/Share	0.90	2.36	-0.07	0.42	0.35	2.16	1.01	-2.56	2.96	6.93

Note: All figures in millions of U.S. Dollars unless per share or indicated otherwise.

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