Applied Materials (NASDAQ:AMAT)

Growth Projections are Too Optimistic for a Technology Company Losing its Technological Edge

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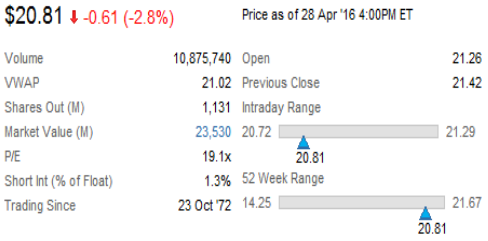
Fiscal 2015 Statistics

Net Sales	$9,659
Operating Margin	17.53%
Net Income	$1,377
Diluted EPS	$ 1.20
Debt/Equity	46.64%
P/2015E	19.45x
EV/EBITDA	12.27x



Note: AMAT performance YTD, AMAT is in blue, Semiconductor Index is in green, NASDAQ is in red

- **Recommendation: Sell (Target: $17.65, 15% downside)**
- We expect operating income to grow at a CAGR of 2.76% from 2015 – 2021, as net sales are projected to expand from $10.1bn in 2015 to $13.7bn in 2021, with an operating margin between 15 – 16%
- Wording in company presentations has masked AMAT's market share loss in the semiconductor equipment industry
- To ameliorate this market share loss, AMAT will have to substantially expand its R&D expenditures from 15.02% of net sales in 2015 to 18.02% of net sales in 2021, reducing net income in the upcoming years
- The market is bullish on AMAT, pushing its price up 35% since February on hopes of Display and Applied Global Services growth, which we project will grow at CAGRs of 9.21% and 5.26% from 2015 – 2021, respectively
- AMAT will have trouble completing its share repurchase program in 2016, of which it has $1.05bn remaining, as substantial debt commitments and purchase obligations will leave the company short of the necessary U.S.-sourced cash
- Growth in Organic Light-Emitting Diode Technology (OLED)[1] will cannibalize existing Liquid Crystal Display (LCD) sales in the Display segment, dampening the segment's overall growth
- Please refer to back page for important disclaimer regarding the information in this report

[1] See Glossary section for a list and definition of important terms.

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1.) Company Overview

Applied Materials has four reportable segments: Silicon Systems, Applied Global Services, Display, and Energy and Environmental Solutions (E&ES). Silicon Systems develops, manufactures, and sells a wide range of manufacturing equipment used to fabricate semiconductor chips. The majority of these sales are to leading integrated device manufacturers and foundries worldwide.[2] Silicon Systems is AMAT's largest segment, comprising 64% of fiscal 2015 net sales. The Applied Global Services segment provides solutions to optimize equipment, fab performance, and productivity, including spares, upgrades, services, factory automation software, and others. This segment represented 26% of fiscal 2015 net sales. The Display segment consists of products for manufacturing liquid crystal displays (LCDs), organic light-emitting diodes (OLEDs), and other display technologies for TVs, PCs, tablets, smartphones, and other consumer-oriented devices. Display represented 8% of fiscal 2015 net sales. The Energy and Environmental Solutions segment includes products for fabricating crystalline-silicon solar photovoltaic (PV) cells, as well as roll-to-roll deposition equipment for flexible electronics, packaging, and other applications. This is the smallest reportable segment, comprising only 2% of fiscal 2015 revenues. Applied Materials has about 15,500 employees. Figures 1 and 2 illustrate AMAT's revenue breakdown by segment and region.

Figure 1: Fiscal 2015 Revenue by Segment

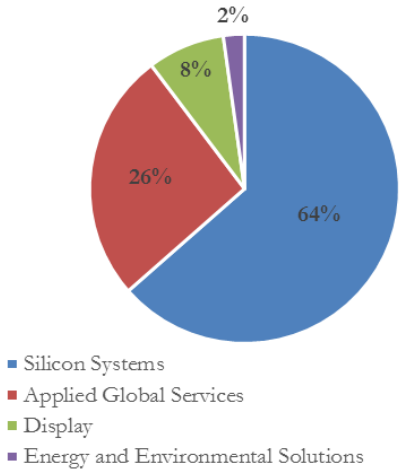
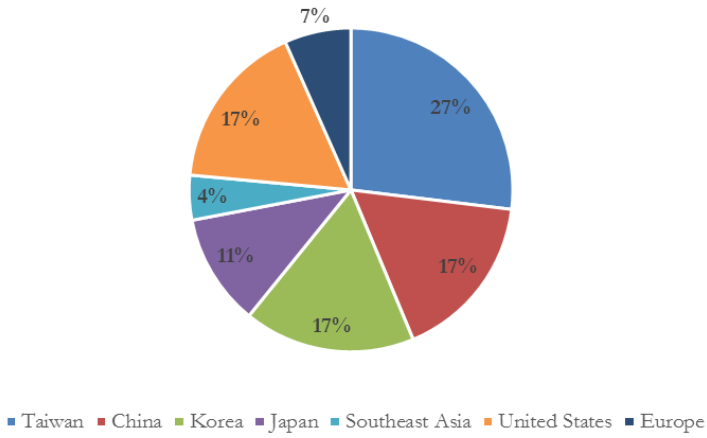


Figure 2: Fiscal 2015 Revenue by Geography



Source: Company filings

2.) Why a Short Opportunity Exists - Market is Bullish on Applied Materials

- Stock price has risen 35% since FY Q1 2016 earnings were released in early February due to high growth in the Applied Global Services segment as well as optimism OLED technology will drive further growth in the Display segment (see Figure 3)
- The company touts its expanding market share in certain products such as Etch and CVD,[3] masking a decline in its position in the overall semiconductor equipment industry, as will be explained in section 7
- Equity research is projecting heavy gains in the Display segment due to Organic Light-Emitting Diode (OLED) adoption while ignoring cannibalization of existing Liquid Crystal Display sales
- Equity research also forecasts margin expansion and capital return going forward in the form of share buybacks

[2] AMAT FY 2015 10-K.
[3] Both Etch and CVD defined in the Glossary section.

- We see gross margins expanding but market share loss necessitating increased R&D expenditures
- AMAT does not have enough cash onshore to fulfill its share buyback program given its other obligations

- Figure 4 shows sell-side optimism surrounding AMAT's prospects, but we believe this is evidence of the historical over-optimism of sell-side equity research

Figure 3: AMAT Stock Price Performance in 2016

Source: YahooFinance

Figure 4: Analyst Ratings

	#	%
Buy	14	70.00%
Hold	5	25.00%
Sell	1	5.00%

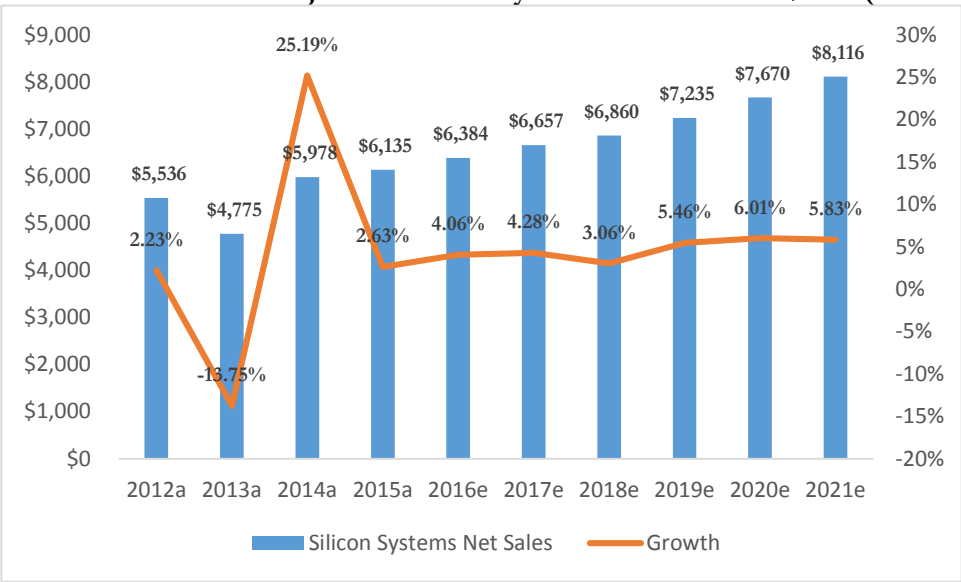
Source: Factset

3.) Silicon Systems – Steady Mid-Single Digits Projected Growth

- Growth in this segment over the past years has been volatile, dropping 13.75% in 2013 before increasing 25.19% in 2014 and then leveling out at 2.63% in 2015, as shown in Figure 5
- Changes in customer investments in semiconductor equipment drove the volatility in net sales in 2013 and 2014
  - Often times huge changes in revenue growth are driven by accounting effects of acquisitions, dispositions, or a change in reporting segments, but AMAT's volatility in 2013 and 2014 was explained by changing demand cycles[4]
  - Consolidation in the semiconductor industry has resulted in a constantly increasing customer concentration for AMAT's Silicon Systems segment, as Samsung and Taiwan Semiconductor Manufacturing Company comprised 41% of Silicon System's net sales in fiscal 2015 and 31% of AMAT's consolidated net sales[5]
- The main drivers for the Silicon Systems segment are investments by memory manufacturers and foundry investments, as AMAT's products are used in wafer fabrication processes

[4] AMAT FY 2014 10-K.
[5] AMAT FY 2015 10-K, Factset.

Figure 5: Historical and Projected Silicon Systems Net Sales in $mm (2012 – 2021)



- For 2016 – 2018, we use the average of four projections as baseline growth rates: Gartner's forecast for capital spending in the global semiconductor industry, Factset's estimates for World Semiconductor Capital Expenditures Growth, Gartner's estimates for Wafer Fabrication Equipment growth, and Factset's estimates for capital expenditure growth for AMAT's six largest customers, which represent equity research consensus
    - We believe that Gartner's estimates for the industry are accurate, as Figure 6 illustrates the technology research firm's historical accuracy in its semiconductor market revenue forecast

Figure 6: Gartner Semiconductor Estimated vs. Actual Market Revenue

	2012	2013	2014	2015
Estimated Revenue	297,550	315,390	339,811	333,718
Actual Revenue	299,912	314,991	340,331	*332,813*
Deviation	-0.79%	0.13%	-0.15%	-0.3%

Source: Gartner

- In 2016, we add 150bps to Silicon Systems growth because projected capital expenditures growth for AMAT's 6 main customers is 7.92%,[6] higher than the average baseline projection
    - In 2017, the average baseline growth is 4.28% compared to 4.57% for AMAT's top 6 customers, so we do not make an adjustment to the growth rate
    - In 2018, Factset predicts a -3.52% growth rate in capital expenditures for AMAT's top 6 customers, likely due to the cyclical nature of the industry and how quickly oversupply concerns and excess manufacturing affect prices and subsequent investment
        - Evidenced by the volatility in historical revenues for the company
        - Therefore, we subtract 150bps from the baseline projection in 2018 to account for our conviction that AMAT's customers' capital expenditures will weigh more heavily on segment revenues than overall industry growth

[6] Factset.

    - We think AMAT's customers' capital expenditures growth should be weighted more heavily than industry spending forecasts because the customers' capital expenditures actually drive AMAT's revenues
        - Given the maturity of the semiconductor industry and limited customer base in this segment (AMAT's top 3 customers represented 52% of Silicon System's fiscal 2015 net sales), we do not believe that AMAT will increase market share in 2016, thus making its existing customers even more important in affecting Silicon Systems net sales
        - In fact, AMAT has consistently lost market share in the Wafer Fabrication Equipment market since 2001 (despite company claims to the contrary),[7] and we see no clear catalyst for a reversal of that trend
            - We do not see AMAT gaining market share in the mature, consolidating semiconductor equipment industry unless it merges with another company, which we think has a low likelihood of happening given its failed merger with Tokyo Electron in 2015
- For 2019 – 2021, we use Semiconductor and Equipment and Materials International (SEMI) estimates for the growth rate of the semiconductor market worldwide as our projected growth rates
    - Silicon Systems is ultimately driven by how quickly the semiconductor industry grows, as this determines capital investment by semiconductor manufacturers
        - In 2019 – 2021, AMAT's customer base may not be exactly the same as it is today, so we do not think it prudent to use estimates for company-specific capital expenditures if they may not be AMAT's main/only customers at that point in time
    - SEMI is a global trade association representing semiconductor and flat panel display equipment companies and focuses on the manufacturing supply chain, making its estimates particularly relevant for a semiconductor manufacturing supplier such as AMAT
        - It is the only organization that collects actual data from global semiconductor equipment, components and materials suppliers
        - Its estimates for 2019 – 2021 growth are between 5.5% and 6%, mirroring Silicon Systems overall growth for the last four years

4.) Applied Global Services – Sticky Business with Room to Grow

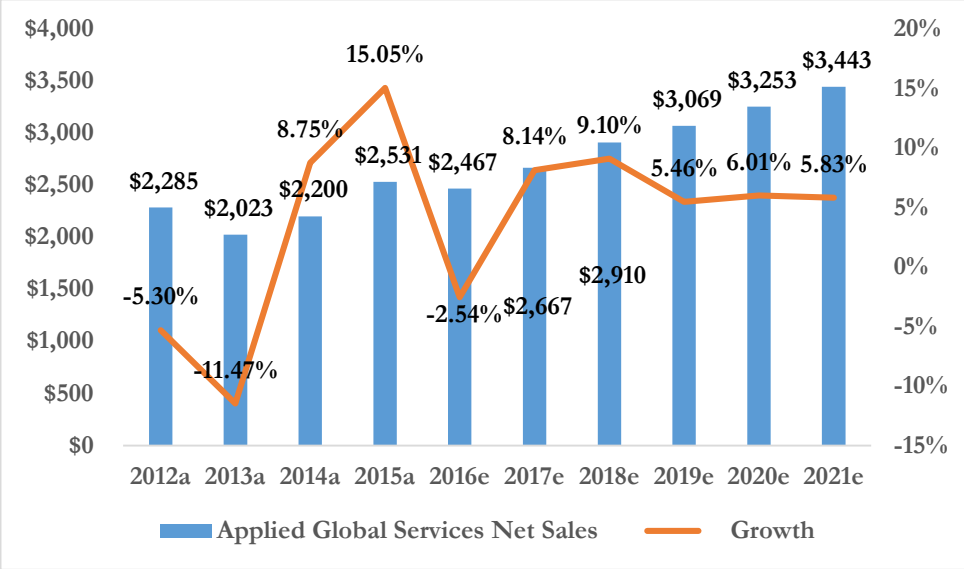
- While currently only 26% of fiscal 2015 net sales, the Applied Global Services segment is one of AMAT's highest priorities, as the segment recorded an all-time high in revenue for fiscal 2015 and also set a record with the highest ever service orders in Q1 2016[8]
- We like this business because by providing services to its customers, AMAT can increase switching costs, enhance product differentiation, and improve customer stickiness both in the Applied Global Services segment but also in Silicon Systems
- Additionally, as technology becomes more complex, 3D NAND ramps up, and linewidths on chips continue to decrease, customers will need more expertise to manufacture efficiently, expanding the overall market for Applied Global Services

[7] Cowen and Company – March 30, 2016.
[8] AMAT FY Q1 2016 Earnings Call.

- UBS analysts estimate that AMAT's attach rate[9] on silicon sales has been consistently lower than competitors Lam Research and KLA-Tencor,[10] so we believe there is room for AMAT to take market share even in a relatively flat market
    - While cost is an important consideration for semiconductor manufacturers, they need to consistently and efficiently develop new technology, so we think Applied Global Services is an extremely important aspect of AMAT's business
    - We believe that AMAT will take market share through its investments in R&D (discussed later in the report), as we see improved product quality combined with a company focus on supplemental service driving market share gains for AMAT
    - AMAT has only recently started focusing on Applied Global Services, as evidenced by its lower attach rate on silicon sales than its competitors, giving us belief the company will continue to drive substantial growth in this segment

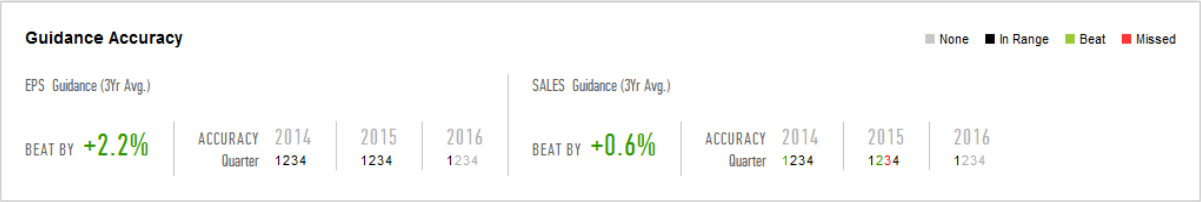
- The primary driver of Applied Global Services is semiconductor manufacturers' wafer starts, so our projection for Applied Global Service's addressable market in 2016-2018 is Gartner's Worldwide Wafer Fab Equipment spending forecasts
- Growth projections in 2019 – 2021 track the growth rate of AMAT's Silicon Systems segment; once Applied Global Services is established and AMAT's attach rate reaches its ceiling, the main driver will be sales of semiconductor equipment
- Figure 7 illustrates historical and projected growth rates for the Applied Global Services segment. Our estimates are basically consistent with management guidance for $3bn in revenue by fiscal 2018, as we project $2.9bn in fiscal 2018. Analyzing management's historical track record in terms of EPS and Sales targets, shown in Figure 8, gives us confidence in our estimated growth rates

Figure 7: Historical & Projected Applied Global Services Net Sales in $mm (2012 – 2021)



[9] Represents number of units of a secondary product/service sold as a direct or implied consequence of the sale of a primary product/service.
[10] UBS Equity Research – April 13, 2016.

Figure 8: AMAT Management Historical Guidance



Source: Factset

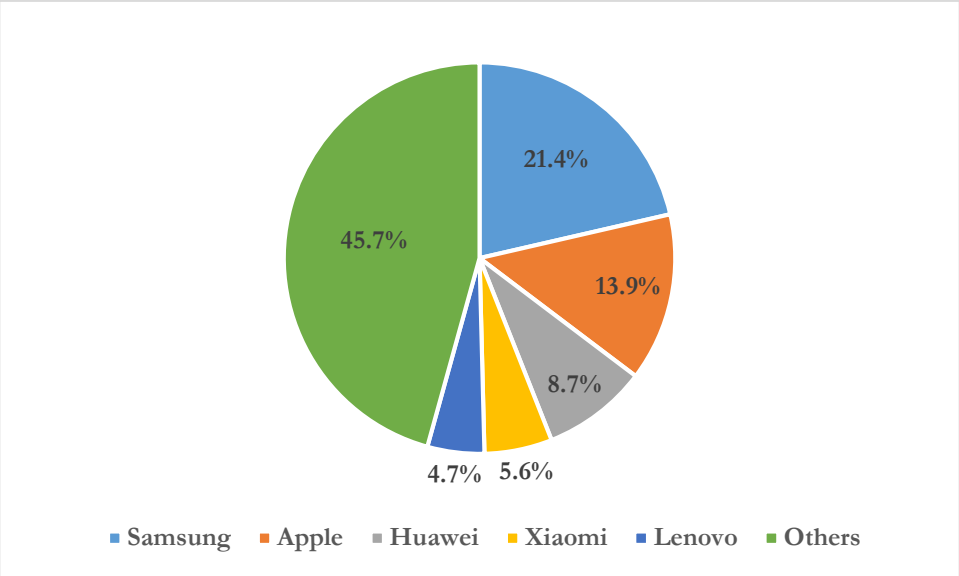
5.) Display – Rapidly Growing Industry But With Hidden, Unrealized Headwinds

- The Display segment has been AMAT's fastest growing segment over the last three years, growing at an average rate of 18.29% from the end of 2012 to the end of 2015
- Consumer demand for increasingly larger and more advanced TVs and high resolution displays for next generation mobile devices drive growth in this segment,[11] and equity research is extremely bullish on Display given the increasing adoption of organic light-emitting diodes (OLED) technology
    - AMAT predicts the OLED serviceable addressable market is 3x as big as the liquid crystal display (LCD) serviceable addressable market
    - Credit Suisse projects the display segment will grow at 10% year-over-year through 2025, while IDTechEx, a technology-focused market research firm, predicts a 6% CAGR through 2025 for OLED displays in just mobile phones (excluding growth in OLED TVs)
    - JP Morgan projects Display revenues of $1.1bn by 2018, while Cowen and Company predict $1.1bn by 2017 as Apple unveils OLED technology in its 2017 iPhone
    - In late April 2016, MacRumors picked up a report from the Korea Herald suggesting the iPhone 7S, due to come out in 2017, will have OLED Display technology[12]
- While we think that OLED Display will grow rapidly in both smartphones and TVs, we think the market is overlooking two important aspects of this growth: (1) reduced pricing for OLED TVs by the only two companies making these TVs (LG and Panasonic) and (2) cannibalization of LCD sales, which currently represent 50% of AMAT's small-screen revenue,[13] as OLED display takes hold
    - In late October 2015, LG announced a price decline of 30-45% on its next-gen OLED TVs in an effort to enhance sales and adoption of the technology by consumers[14]
    - Panasonic's CEO also predicted that "OLED TVs will get cheaper…probably within two or three years"[15]
    - While the rationale behind price drops may be to sell more TVs, we think this negatively affects an OLED supplier like AMAT; if LG and Panasonic dramatically cut prices, they will need to cut costs as well, reducing revenue growth for AMAT going forward

[11] AMAT FY 2015 10-K.
[12] The Week – April 20, 2016.
[13] Cowen and Company – March 30, 2016.
[14] Stephanie Topacio Long – Digital Trends.
[15] Luke Westaway – CNET.

- As OLED sales grow, LCD sales, an older technology, will necessarily fall as more and more TVs are converted to OLED
- We think the market assumes AMAT's Display segment will grow at the same rate as the OLED market, but pricing decreases by the only two OLED TV manufacturers and a fall in LCD sales will dampen growth going forward
- Additionally, if the iPhone 7S rumors prove to be false, we believe the smartphone manufacturing industry will be slower to adopt the technology, as Apple (along with Samsung) is a market leader and dictates product trends
- Figure 9 illustrates the market share of the top global smartphone manufacturers, and the only top five player with an existing phone with OLED technology is Samsung, showing the OLED market's relative infancy
- Some other companies with OLED display smartphones are Meizu, Vivo, ZTE, Konka, and HiSense,[16] all companies with very low market share

Figure 9: Q2 2015 Market Share of Global Smartphone Manufacturers



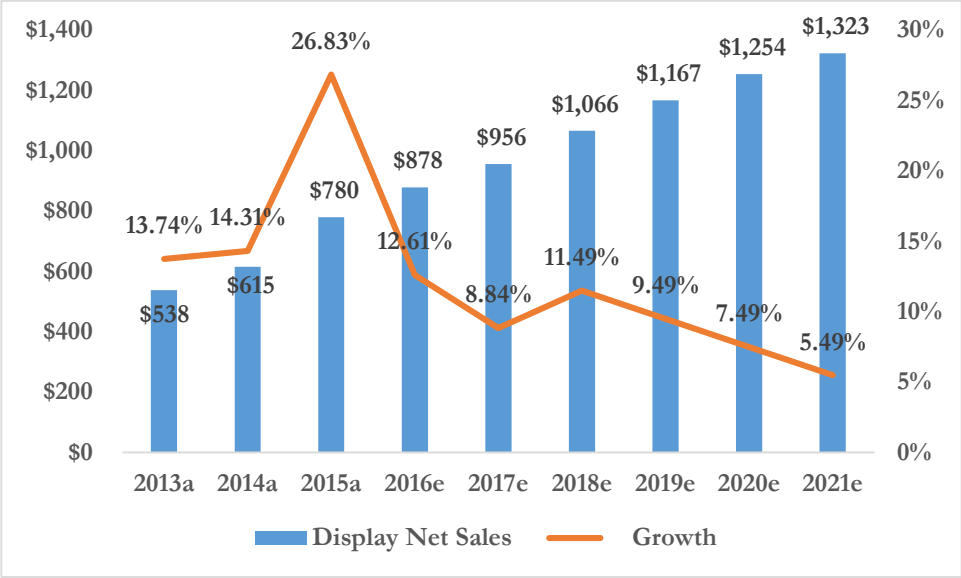
Source: International Data Corporation (as of Q2 2015)

- For 2016 and 2017, we take the average of the following four projected growth rates: 10%,[17] 6%,[18] 24.46%,[19] and consensus estimates for the growth rate in capital expenditures at LG and Panasonic[20] as our projected baseline growth rate for Display
- 2018 uses the same averages excluding capital expenditure estimates for LG and Panasonic, as we do not believe estimates for company capital expenditures three years in the future are reliable
- For 2016 – 2018, we apply a 200bps discount to growth to account for LCD cannibalization, pricing concerns in the endmarket, and a severely concentrated customer base

[16] OLED-Info.com – Q1 2016.
[17] Credit Suisse projection for AMAT Display growth.
[18] IDTechEx projected CAGR for OLED Displays in Mobile Phone from 2015-2025.
[19] iSuppli's prediction for OLED TV growth in 2016 and 2017.
[20] 18% in 2016, 3% in 2017 – Factset.

- In 2019 – 2021, we expect growth to slow 200bps per year as the initial jump due to Apple's entry into the market and LG and Panasonic's sales pushes wears off and overall market growth slows
    - We think continued pricing weakness for both OLED TVs and smartphones could reduce investment post 2018, leading to slower overall industry growth
    - There is also potential for overcapacity in the market, diminishing future growth rates
- Figure 10 illustrates historical and projected Display net sales and growth rates – our estimates are below those of equity research, which predicts $1.1bn in sales in 2017 or 2018, whereas our model projects the segment will not hit $1.1bn in net sales until 2019

Figure 10: Historical and Projected Display Net Sales in $mm (2013 – 2021)

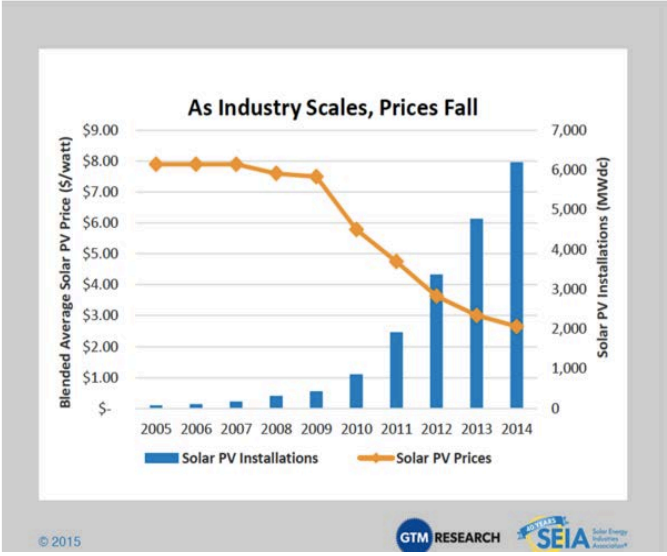


6.) Energy and Environmental Solutions – Overcapacity Will Work Itself Out

- This segment has struggled over the past few years due to excess manufacturing capacity in the solar industry, as global photovoltaic (PV) production capacity has exceeded anticipated demand[21]
- Figure 11 shows the rapid decline in Solar PV prices combined with exponential growth in Solar PV installations as evidence of oversupply in the market
- Our estimates take an aggregate of projections from 13 different agencies, shown in Figure 12, to estimate capacity growth
- However, we apply "demand" discounts of 25% in 2016, 15% in 2017, 10% in 2018, 5% in 2019, 2.50% in 2020, and 1% in 2021 for our overall growth rates to account for diminishing oversupply

[21] AMAT FY 2015 10-K.

Figure 11: Solar PV Installations and Solar PV Prices (2005 – 2014)



Source: Solar Energy Industries Association

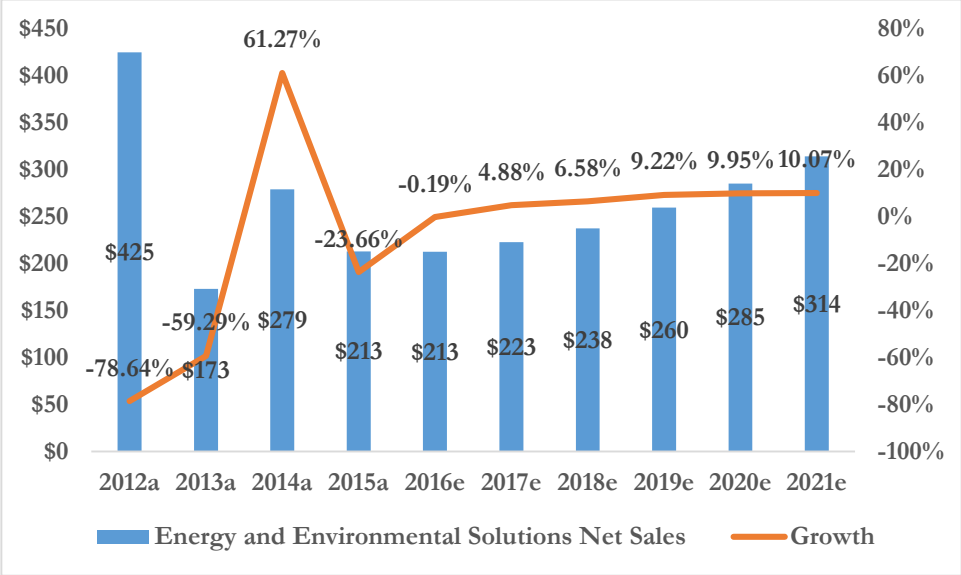
Figure 12: Aggregate Projections for Global PV Capacity

in gigawatts	2015	2016	2017	2018	2019	2020	2021
IEA	213	251	289	327	365	403	441
GlobalData	219	258	297	336	375	414	453
SPE/EPIA	224	268	312	356	400	444	488
Frost & Sullivan	221	266	311	356	401	446	491
IEA	230	282	334	386	438	490	542
Grand View Research	230	282	334	386	438	490	542
Citigroup	230	284	338	392	446	500	554
PVMA	236	296	356	416	476	536	596
HIS	241	306	371	436	501	566	631
BNEF	244	313	382	451	520	589	658
SPE/EPIA	255	330	405	480	555	630	705
Fraunhofer	258	340	422	504	586	668	750
GTM Research	266	352	438	524	610	696	782
Average	236	294	353	412	470	529	587
Growth		*24.81%*	*19.88%*	*16.58%*	*14.22%*	*12.45%*	*11.07%*

- Government subsidies and the rapidly expanding Chinese market for solar photovoltaic cells will drive growth starting in 2017 as some firms exit the business and excess capacity gets utilized
    - Growth will be driven by several factors: (1) government subsidies (a new feed-in tariff program in China pays solar generators a fixed competitive price for all energy created),[22] (2) the Chinese government's ambitious Five-Year Plan,[23] and China's drive for clean energy brought on by its air pollution crisis[24]
- Figure 13 shows our projected Energy and Environmental Solutions (E&ES) net sales and growth projections, illustrating steadily increasing growth rates from 2017 – 2021

[22] Fortune – June 18, 2015.
[23] Fortune – June 18, 2015.
[24] Fortune – June 18, 2015.

Figure 13: Historical and Projected E&ES Net Sales in $mm (2012 – 2021)

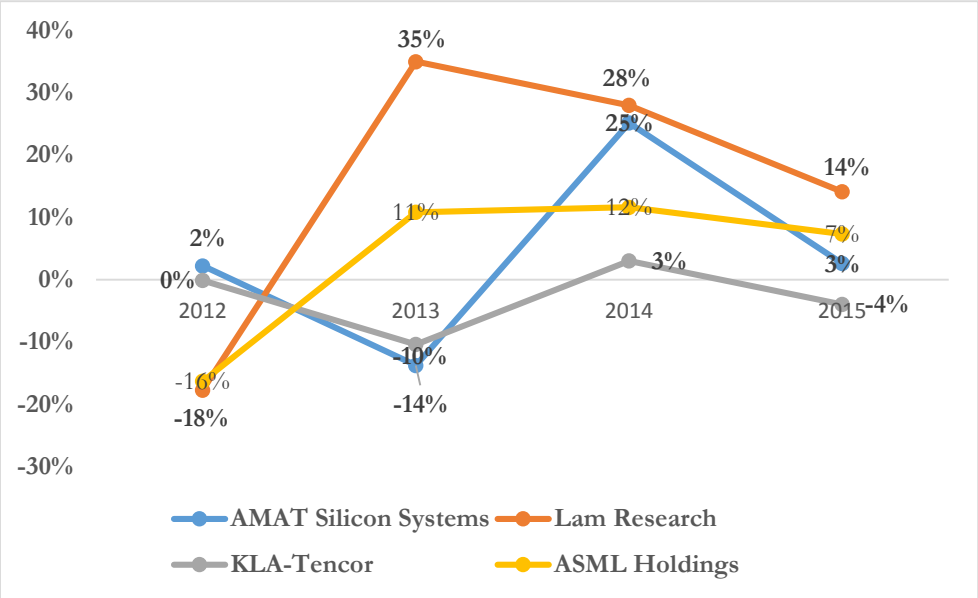


7.) Shrinking Market Share → Deteriorating Technology → Need for Increased R&D

- In company earnings calls, management says, "Our leadership businesses…have high market share" and "Our high-growth businesses…are winning substantial market share" and "I'm encouraged by the progress we're making in semiconductor systems market share" and "we believe our share of WFE will be higher,"[25] suggesting that AMAT is gaining market share in its core business (Silicon Systems)
- However, an analysis of revenue growth in the semiconductor equipment segment of AMAT compared to its major competitors reveals a different pattern, as Figure 14 illustrates that AMAT's major competitors, with the exception of KLA-Tencor, all have grown faster than AMAT since 2012
    - KLA-Tencor, Lam Research, and ASML Holdings only have one reportable segment because their businesses are primarily semiconductor equipment, whereas AMAT breaks out semiconductor equipment into its Silicon Systems segment, so we use AMAT's Silicon Systems growth rate as a proxy for growth in the traditional semiconductor equipment market
    - AMAT's Silicon Systems experienced a four year CAGR of 3.48%, Lam Research was at 25.43%, KLA-Tencor showed -3.91%, and ASML Holdings increased 9.94%
        - However, KLA-Tencor and Lam Research announced a merger in October 2015, so pro-forma AMAT's two major competitors have significantly outpaced the company in terms of semiconductor equipment growth

[25] AMAT FY Q1 2016 Earnings Call.

Figure 14: Growth Rate of Semiconductor Equipment Companies (2012 – 2015)



Source: Company Filings

- Every year, Intel honors a couple dozen companies with its Preferred Quality Supplier award, which is important because Intel has one of the largest capital expenditures budgets, consistently leads the market in technological innovation, and the award serves as a check against market share claims by suppliers, as being one of Intel's preferred suppliers generally means companies have achieved substantial market share[26]
    - On March 10, 2016, Intel recognized 27 companies with its 2015 Preferred Quality Supplier award, and AMAT was left off the list, despite winning the award in 2014[27]
    - Major competitors such as KLA-Tencor, Lam Research, ASM International, and Hitachi High-Technologies all made the list, reinforcing the idea that AMAT's performance is declining
- We think that sliding market share and AMAT's removal from Intel's Preferred Quality Supplier list are evidence of deteriorating technology and product quality
    - The main consequence of this will be increased R&D costs to mitigate further share loss and performance disappointments, as continued declines in product quality would be disastrous for the company
    - We foresee AMAT falling to 3rd largest behind KLA-Tencor / Lam Research as well as ASML Holdings in the semiconductor equipment segment, justifying a steady increase in R&D costs as a % of sales from 15.02% in 2015 (the lowest % in 3 years) to 18.02% in 2021[28]
    - This is one of our main differentiated viewpoints from the market, as we think the company has done a good job hiding its market share loss in its core business
        - Management points out market share growth in specific products without addressing its overall losing position

[26] Robert Castellano – SeekingAlpha.
[27] Robert Castellano – SeekingAlpha.
[28] We add 50bps to R&D margin in every year from 2016-2021.

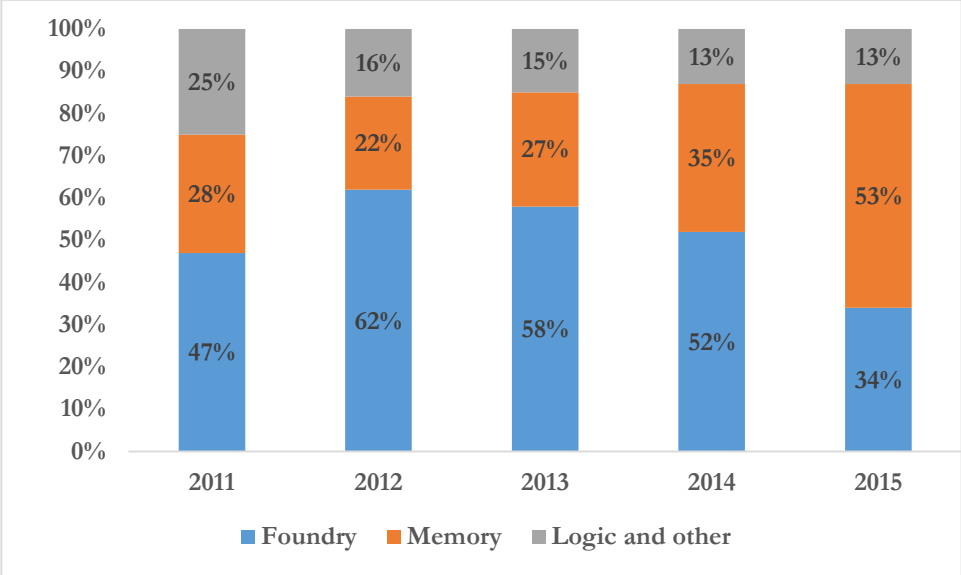
- The KLA-Tencor / Lam Research merger allows those companies to gain market share at the expense of AMAT
- AMAT's overall growth has been driven by display and services over the last few years, hiding mediocre growth in Silicon Systems, its main revenue driver

8.) Growth in Services, Consolidation in the Industry, and an Improving Product Mix Will Drive Gross Margin Expansion

- For gross margin, AMAT is targeting 42% in 2016, a level management confirmed in AMAT's FY Q1 2016 earnings call they are on target to hit, so we project 42% gross margin in 2016
    - AMAT has hit EPS targets for the past nine quarters (see Figure 8 earlier in the presentation), so we believe that a gross margin of 42% is attainable, especially given its average gross margin over the past two years of 41.64%
- We believe consolidation in the semiconductor equipment industry, as evidenced by the KLA-Tencor / Lam Research merger as well as AMAT's attempted takeover of Tokyo Electron, point to economies of scale in production as well as increasing leverage with suppliers and customers, driving improved gross margin going forward
- Additionally, we think that as Applied Global Services increases its contribution to AMAT's revenue, AMAT's consolidated gross margin will expand because services are more labor intensive and less capital intensive than supplying semiconductor parts
    - Applied Global Service's average operating margin over the last three years was 300bps higher than Silicon System's, and we believe most of this comes from better gross margins as services are more labor and marketing intensive[29]
    - Services growth will increase AMAT's customers' switching costs and allow AMAT to improve pricing across both Silicon Systems and Applied Global Services, having a major effect on gross margins, especially if AMAT's R&D investments are successful
- Product mix in the Silicon Systems segment is also an important driver of gross margin, as management said in its Q1 2016 earnings call that an expansion of foundry demand is likely to drive gross margin expansion
    - UBS projects foundry will grow 8.1% in 2016, whereas the company projects relatively flat logic and memory growth
    - Management and sell-side analysts believe a more favorable mix of foundry sales will drive gross margin expansion,[30] and AMAT is more exposed to foundry capital expenditures than competitors KLA-Tencor and Lam Research[31]
    - Figure 15 illustrates that foundry's % of Silicon Systems net sales was at a five-year low in 2015, so we believe product mix will show some reversion to historical averages over the next few years and drive gross margin expansion

[29] The company does not break out gross margin by segment, so we must infer each segment's margin profile.
[30] AMAT FY Q1 2016 Earnings Call.
[31] UBS Equity Research – April 13, 2016.

Figure 15: Demand Mix for AMAT's Silicon Systems Segment (2011 – 2015)



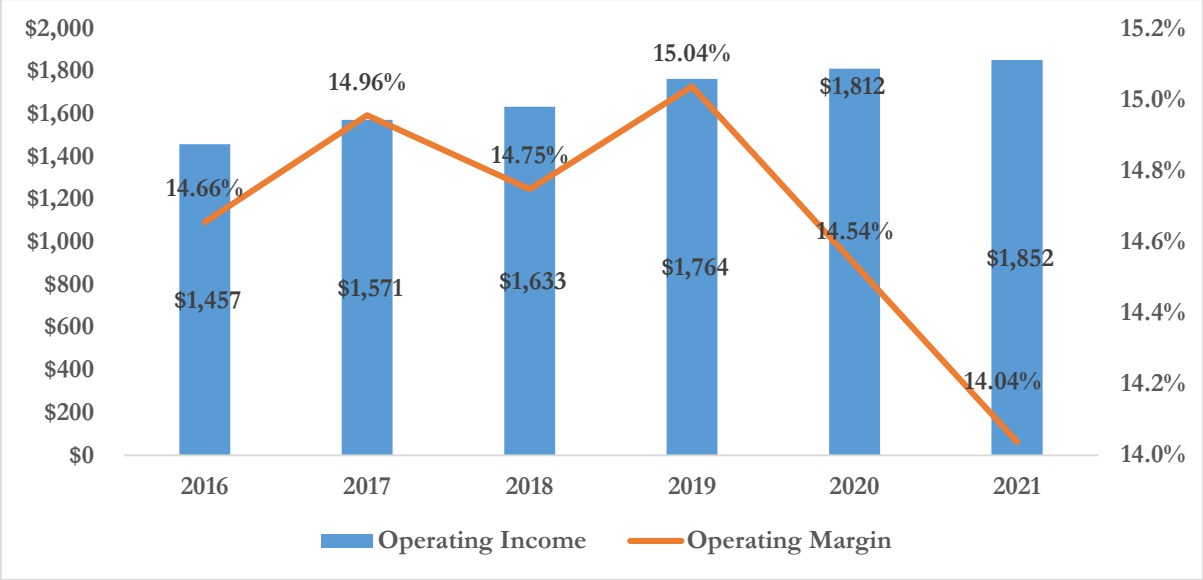
- Consolidation, improved product mix in the Silicon Systems segment, and growth in the Applied Global Services segment will result in a projected 25bps increase in gross margin from 2017 – 2019, with constant gross margins of 42.50% from 2019 - 2021
    - KLA-Tencor achieved an average gross margin of 57% in 2014 and 2015, while Lam Research averaged a 43% gross margin and ASML Holdings averaged 45%,[32] showing that AMAT's projected margin expansion is possible

9.) General and Administrative Costs, Marketing and Selling, and Operating Margin

- For 2019 – 2021, we assume general and administrative costs will remain at their historical percentage of revenue of 5.54%
- However, as of October 25, 2015, AMAT had $262mm in total unrecognized compensation expense related to grants of share-based awards and shares issued under Applied's Stock Purchase Plan for Offshore Employees, which will be recognized over a period of 2.4 years[33]
    - We model in an additional $87.33mm[34] in compensation expense for 2016 – 2018 to account for this slight increase in labor expense
- We assume marketing and selling costs will remain at their five year historical average of 4.90%
- Figure 16 illustrates AMAT's projected Operating Income and Operating Margin from 2016 – 2021, showing mediocre growth with margin expansion through 2019 but then a substantial drop in 2020 and 2021 as R&D costs continue growing while gross margin expansion slows down

[32] Company filings.
[33] AMAT FY 2015 10-K.
[34] $262mm / 3 = $87.33mm

Figure 16: AMAT Projected Operating Income (in $mm) and Operating Margin



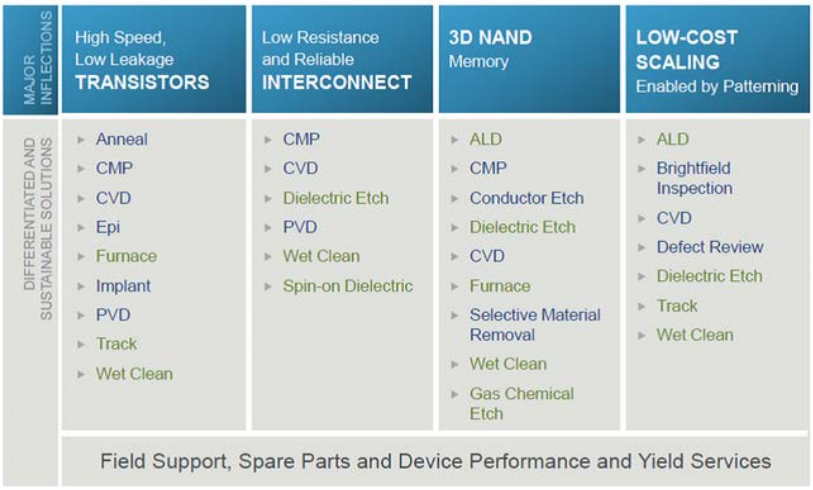
10.) A Tale of Two Attempted Mergers Leaves AMAT in a Worse Market Position

- Upon announcement of the KLA-Tencor / Lam Research merger in October 2015, Lam Research jumped 10% and currently trades at a 20% premium to its pre-announcement price, while KLA-Tencor's stock price added 23% upon announcement and currently trades at a 35% premium to its pre-announcement price[35]
    - This illustrates market belief in the synergies touted by the companies, as well as the complimentary pairing of Lam's capabilities in deposition, etch and clean and KLA-Tencor's dominant position in inspection and metrology
    - AMAT was trading at ~$16 per share before the announcement of the merger and is currently about 25% higher
    - AMAT is a main competitor of KLA-Tencor and Lam; by adding to the market value of Lam and KLA-Tencor while *simultaneously* adding market value to AMAT, the market indicates its belief that the merger will benefit both parties, which is hard to believe given the projected flat wafer fabrication equipment environment and overall pricing pressure in the consolidating semiconductor equipment industry
    - While it is possible that industry consolidation could help all industry participants, we think that economies of scale in the semiconductor manufacturing segment are very important because they helps margins in an increasingly commoditized endmarket
        - Therefore, a merged Lam Research / KLA-Tencor may put AMAT at a disadvantage because the combined company can offer lower prices to its customers, potentially taking even more market share from AMAT
    - We believe that the merger will help KLA-Tencor and Lam gain market share as they realize cost synergies, hurting other competitors such as AMAT
- AMAT also attempted to consolidate its market share and expand into the Asia Pacific region, where 81% of its new orders were placed in fiscal 2015,[36] by acquiring Tokyo Electron, a Japanese electronics and semiconductor company

[35] YahooFinance.com.
[36] AMAT FY 2015 10-K.

- However, in April 2015, Tokyo Electron and AMAT scrapped their merger plans after an unfavorable ruling from the US Department of Justice, sending AMAT's stock price down over 8%[37]
- This merger would have allowed AMAT to expand in Asia and take market share in a rapidly developing market; rather, now Tokyo Electron will be a fierce competitor in Asia, adding to AMAT's already declining market share in the global semiconductor equipment industry
- Figure 17 illustrates the complimentary nature of Tokyo Electron and AMAT's pro-forma portfolio, positioning the combined company across a broad spectrum of products and technologies

Figure 17: Portfolio After Merger of Applied Materials and Tokyo Electron



Source: Market Realist, Applied Materials and Tokyo Electron Presentation

- While M&A empirically has no impact on companies,[38] sometimes it is beneficial in a consolidating industry with a commoditizing endmarket such as the semiconductor equipment industry
  - We believe that AMAT's inability to consolidate, combined with a successful closing of the KLA-Tencor / Lam Research merger, adds to AMAT's market share difficulties, especially if KLA-Tencor / Lam Research begins pricing aggressively to utilize their economies of scale in production

11.) Potential Catalyst – Shortage of Cash for Share Repurchases

- In response to the failed merger, AMAT announced a $3bn share buyback program through 2018, of which the company has $1.05bn remaining as of FY Q1 2016
- However, the manner in which they repurchased shares in 2015 reduces our confidence in future timely repurchases
  - To avoid paying US corporate taxes, AMAT intends to indefinitely reinvest about $2.3bn of $2.7bn (85%) of cash, cash equivalents, and marketable securities held by foreign subsidiaries
  - Only about 17% of AMAT's net sales were generated in the U.S. in fiscal 2015

[37] Kofi Bofah – SeekingAlpha.
[38] Professor Matthew Spiegel – Yale University.

- In September 2015, AMAT "started to get a little bit tight on U.S.-sourced cash,"[39] so one of AMAT's foreign subsidiaries raised $800mm of debt, which was used to execute the buyback and was tax-free

- Company management estimates about 50% of its $2.962bn of cash and cash equivalents is onshore as of FY Q1 2016, which comes to $1.481bn
  - However, the company has $1.235bn of purchase obligations due in 2016; given that 74% of AMAT's long-lived assets are in the U.S., we believe about $940mm (74%) of the $1.235bn purchase obligations are denominated in US Dollars
  - The company also has $1.2bn in debt due in 2016, in addition to $25mm in operating lease commitments, $171mm in projected interest expense, and $239mm in projected capital expenditures in 2016
  - These commitments alone total $2.6bn, and even with $1.2bn in projected 2016 unlevered FCF, AMAT does not have nearly enough U.S.-based cash to honor these commitments as well as its share buyback program
  - Leveraging to pay back shareholders is not sustainable, so we believe that the share buyback will either be put on hold or the market will realize the equity is riskier if the company continues to lever to repurchase shares, both of which scenarios will pressure AMAT's stock price
- We leave basic and diluted shares outstanding as they were at the end of FY Q1 2016 in our calculation of implied price per share to quantify our view on a shortage of U.S.-based cash to execute the share repurchase program

12.) Interest, Taxes, Capital Expenditures, Depreciation and Amortization

- We assume that AMAT will not raise any further debt in the time period projected unless it does so to fund its share repurchase program
  - Therefore, we project out interest expense based on current debt outstanding but use an APV valuation technique to account for potential changes in the capital structure due to further leverage
  - Interest expense and debt levels are shown in Figures 18 and 19
- While AMAT has NOL Carryforwards, they all have long-dated expirations, so we do not foresee the company utilizing them within the projected timeframe

Figure 18: Projection of AMAT Total Debt Levels (2016 – 2021)

Debt	Principal	Effective Rate	2016	2017	2018	2019	2020	2021
2.650% Senior Notes Due 2016	$ 400	2.666%	$ 400	$ 0	$ 0	$ 0	$ 0	$ 0
Other debt	$ 800	1.125%	$ 800	$ 0	$ 0	$ 0	$ 0	$ 0
7.125% Senior Notes Due 2017	$ 200	7.190%	$ 200	$ 200	$ 0	$ 0	$ 0	$ 0
2.625% Senior Notes Due 2020	$ 600	2.640%	$ 600	$ 600	$ 600	$ 600	$ 600	$ 0
4.300% Senior Notes Due 2021	$ 750	4.326%	$ 750	$ 750	$ 750	$ 750	$ 750	$ 750
3.900% Senior Notes Due 2025	$ 700	3.944%	$ 700	$ 700	$ 700	$ 700	$ 700	$ 700
5.100% Senior Notes Due 2045	$ 500	5.127%	$ 500	$ 500	$ 500	$ 500	$ 500	$ 500
5.850% Senior Notes Due 2041	$ 600	5.879%	$ 600	$ 600	$ 600	$ 600	$ 600	$ 600
Total	$ 4,550	3.755%	$ 4,550	$ 3,350	$ 3,150	$ 3,150	$ 3,150	$ 2,550

[39] AMAT FY Q1 2016 Earnings Call.

Figure 19: Projection of AMAT Interest Expense (2016 – 2021)

Debt	Principal	Effective Rate	2016	2017	2018	2019	2020	2021
2.650% Senior Notes Due 2016	$ 400	2.666%	$ 11	$ 0	$ 0	$ 0	$ 0	$ 0
Other debt	$ 800	1.125%	$ 9	$ 0	$ 0	$ 0	$ 0	$ 0
7.125% Senior Notes Due 2017	$ 200	7.190%	$ 14	$ 14	$ 0	$ 0	$ 0	$ 0
2.625% Senior Notes Due 2020	$ 600	2.640%	$ 16	$ 16	$ 16	$ 16	$ 16	$ 0
4.300% Senior Notes Due 2021	$ 750	4.326%	$ 32	$ 32	$ 32	$ 32	$ 32	$ 32
3.900% Senior Notes Due 2025	$ 700	3.944%	$ 28	$ 28	$ 28	$ 28	$ 28	$ 28
5.100% Senior Notes Due 2045	$ 500	5.127%	$ 26	$ 26	$ 26	$ 26	$ 26	$ 26
5.850% Senior Notes Due 2041	$ 600	5.879%	$ 35	$ 35	$ 35	$ 35	$ 35	$ 35
Interest Expense	$ 4,550		$ 171	$ 151	$ 137	$ 137	$ 137	$ 121

- We looked at four equity research reports (Cowen and Company, UBS, JPMorgan, and RBC) that all projected a 17% tax rate going forward, but the five-year average historical tax rate is 30%
    - While the reports showed no evidence for a 17% tax rate, we assume an average tax rate of 23.6% (in the middle of 30% and 17%) to give our short recommendation a margin of safety
        - We do not think that the company will be able to utilize any NOL Carryforwards, as wording from the 10-K did not suggest that they would be used during our projection period
- Depreciation and amortization, as well as Capital Expenditures, both make up less than 5% of AMAT's net sales in every year from 2011 – 2015
    - We project both D&A and CapEx to equal the five-year historical average as a % of net sales from 2016 – 2021
- Figure 20 illustrates important projected income statement drivers from 2016 – 2021

Figure 20: Projected Income Statement Drivers (2016 – 2021)

Key Drivers	2016	2017	2018	2019	2020	2021
Net sales growth	2.92%	5.65%	5.43%	5.93%	6.24%	5.89%
COGS Margin	58.00%	57.75%	57.50%	57.50%	57.50%	57.50%
Gross Margin	42.00%	42.25%	42.50%	42.50%	42.50%	42.50%
Research, development, & engineering / Revenue	15.52%	16.02%	16.52%	17.02%	17.52%	18.02%
Marketing & selling / Revenue	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%
General and administrative / Revenue	6.42%	6.38%	6.33%	5.54%	5.54%	5.54%
Operating Margin	14.66%	14.96%	14.75%	15.04%	14.54%	14.04%
Interest Expense / Revenue	1.72%	1.44%	1.24%	1.17%	1.10%	0.92%
Interest and other income / Revenue	0.24%	0.24%	0.24%	0.24%	0.24%	0.24%
Tax Rate	-23.62%	-23.62%	-23.62%	-23.62%	-23.62%	-23.62%
EBITDA (before SBC)	$ 2,056	$ 2,204	$ 2,301	$ 2,471	$ 2,563	$ 2,648

13.) Adjusted Present Value Model Output and Projected Income Statement

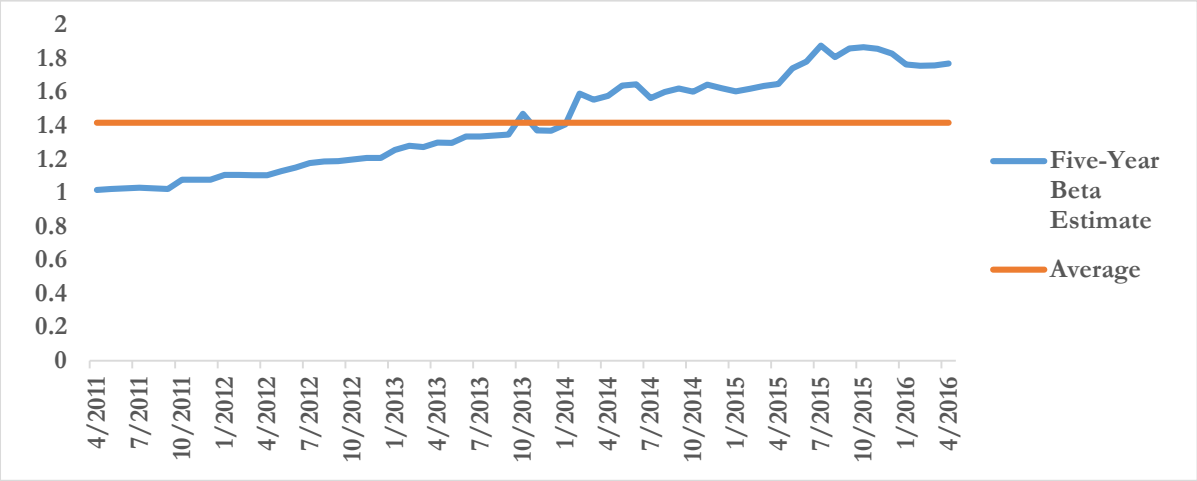
- We use an APV analysis to account for the possibility AMAT raises further debt to fund its share repurchase program, a maneuver the company used in 2015
- Our assumptions are shown in the following table, leading to a 15% implied downside at AMAT's current price of $20.81 (as of April 27, 2016)

5 Year Average Rolling Beta	1.42
Unlevered Asset Beta	1.20
Implied ERP	5.15%
Risk-Free Rate	1.91%
Cost of Equity	8.08%
Cost of Debt	3.75%
Tax Rate	23.62%
Debt / Equity	14.83%

- We regress AMAT returns against the Russell 3000 for 120 months to generate a five year rolling beta starting in April 2011, as shown in Figure 21
- AMAT's beta as of April 29, 2016 is 1.77, but we believe that its true beta is lower, as the company beta has steadily risen since 2011

- We believe that the company beta has been artificially high due to volatile swings in its Silicon Systems segment in 2013 and 2014, and now that we project more stable growth of 3-6% in AMAT's core segment from 2016-2021, company earnings and thus stock price fluctuations will be less volatile
    - The average five-year beta of its competitors (KLA-Tencor, Lam Research, Tokyo Electron, ASM, and Veeco Instruments) is 1.22,[40] which we believe indicates a beta of 1.79 is too high
    - We foresee AMAT's beta reverting back to its five-year historical average of 1.42, which is very similar to Factset's five-year estimate of 1.43
- We unlever the beta using the current capital structure to get an asset beta of 1.20, which generates a cost of equity of 8.08%
- We use a long-term growth rate of 2% (Federal Reserve's target inflation rate)
- Our Equity Risk Premium (ERP) comes from Professor Aswath Damodaran at NYU Stern, while the risk-free rate is the 10-year US Treasury yield as of April 26, 2016
- We use AMAT's weighted average cost of debt of 3.75% to discount the tax shields and a 23.62% tax rate

Figure 21: April 2011 – April 2016 Rolling Beta for Applied Materials



	2016	2017	2018	2019	2020	2021	Terminal Value
Operating Income (EBIT)	$ 1,457	$ 1,571	$ 1,633	$ 1,764	$ 1,812	$ 1,852	
(-) Taxes	(310)	(341)	(360)	(391)	(403)	(417)	
(+) Depreciation and Amortization	410	433	457	484	514	544	
(-) Capital Expenditures	(233)	(246)	(259)	(275)	(292)	(309)	
(-) Change in Net Working Capital	(158)	(125)	(248)	(242)	(285)	(324)	
Unlevered Free Cash Flows	$ 1,167	$ 1,292	$ 1,223	$ 1,340	$ 1,346	$ 1,347	$ 22,589
Discounted Free Cash Flows (all-equity)	$ 1,079	$ 1,106	$ 968	$ 982	$ 913	$ 845	$ 14,171
Sum of Discounted Free Cash Flows (all-equity)	**$ 20,064**						
Projected Interest Expense	171	151	137	137	137	121	
Interest Tax Shield at 23.62% Tax Rate	40	36	32	32	32	29	
Terminal Value of Tax Shield Assuming that Debt Grows at 2%							479
Tax Shields Discounted at 3.75%	39	33	29	28	27	23	384
Present Value of Financing Effects	**$ 563**						
(+) Cash as of FY Q1 2016	2,962						
(-) Debt as of FY Q1 2016	(3,343)						
Implied Market Value of Equity	$20,245						
Diluted Shares Oustanding	1,147						
Implied Price per share	**$17.65**						
Current price (as of 4/27/2016 close)	**$20.81**						
Implied Premium / (Discount)	(15.18%)						

[40] Factset, collaboration with Professor Matthew Spiegel.

		Cost of Equity						
		7.2%	7.5%	7.8%	8.1%	8.4%	8.7%	9.0%
LT Growth Rate	0.5%	$ 17.06	$ 16.31	$ 15.62	$ 14.99	$ 14.41	$ 13.87	$ 13.36
	1.0%	$ 18.09	$ 17.24	$ 16.46	$ 15.75	$ 15.10	$ 14.50	$ 13.94
	1.5%	$ 19.30	$ 18.32	$ 17.43	$ 16.63	$ 15.89	$ 15.22	$ 14.60
	2.0%	$ 20.75	$ 19.60	$ 18.58	$ 17.65	$ 16.81	$ 16.05	$ 15.35
	2.5%	$ 22.50	$ 21.14	$ 19.93	$ 18.86	$ 17.89	$ 17.01	$ 16.22
	3.0%	$ 24.68	$ 23.02	$ 21.57	$ 20.30	$ 19.16	$ 18.15	$ 17.23
	3.5%	$ 27.44	$ 25.38	$ 23.60	$ 22.05	$ 20.70	$ 19.50	$ 18.43

	2016	2017	2018	2019	2020	2021
New Orders	$10,339	$10,923	$11,517	$12,199	$12,961	$13,725
Growth	*2.33%*	*5.65%*	*5.43%*	*5.93%*	*6.24%*	*5.89%*
Net sales	$ 9,942	$10,503	$11,074	$ 11,730	$ 12,463	$ 13,197
Growth	*2.92%*	*5.65%*	*5.43%*	*5.93%*	*6.24%*	*5.89%*
Cost of products sold	5,766	6,066	6,368	6,745	7,166	7,588
Gross Margin	4,175	4,438	4,706	4,985	5,297	5,609
Growth						
Operating Expenses						
Research, development and engineering	1,543	1,683	1,830	1,997	2,184	2,378
Marketing and selling	487	514	542	574	610	646
General and administrative	638	670	701	650	691	732
Loss (gain) on derivatives	-	-	-	-	-	-
Impairment of goodwill and intangible assets	-	-	-	-	-	-
Restructuring charges and asset impairments	50	-	-	-	-	-
Gain on sale of facilities, net	-	-	-	-	-	-
Total Operating Expenses	2,718	2,867	3,073	3,221	3,485	3,756
Operating Income	$ 1,457	$ 1,571	$ 1,633	$ 1,764	$ 1,812	$ 1,852
Growth	*-13.94%*	*7.81%*	*3.97%*	*8.00%*	*2.71%*	*2.25%*
Impairment of strategic investments	-	-	-	-	-	-
Interest Expense	171	151	137	137	137	121
Interest and other income, net	24	26	27	29	31	32
Income before income taxes	$ 1,311	$ 1,446	$ 1,524	$ 1,656	$ 1,706	$ 1,764
Income Tax Provision	310	341	360	391	403	417
Net Income	**$ 1,001**	**$ 1,104**	**$ 1,164**	**$ 1,265**	**$ 1,303**	**$ 1,347**
Growth	*-27.30%*	*10.29%*	*5.41%*	*8.68%*	*3.00%*	*3.42%*

14.) Multiples Show Company Trading Mostly in Line With Peers

- Figure 21 illustrates that AMAT is trading mostly in line with peers, if not slightly below
- However, we think this is the result of two factors:
  - Estimated EPS is too high from sell-side analysts
  - Our analysis suggests deteriorating product quality and technology, necessitating a discount to peers until heavy R&D expenditures can help mitigate this problem
- While a simple multiples analysis does not show AMAT to be expensive relative to its peers, we think that company-specific factors indicate an overvaluation, especially given the recent stock price run-up

- We think that the absence of a clear overvaluation or undervaluation based on market multiples gives our thesis more credibility and market differentiation, as our recommendation is based more on fundamental factors than market-based metrics

Figure 21: Comparable Companies Analysis

Market Data & Price Multiples

as of 4/20/16

Name	Ticker	Last Period End Date	Price	Enterprise Value	P/E TTM	P/E FY1	PEG FY1	Price/ Cash Flow TTM	Price/ Cash Flow FY1
APPLIED MATERIALS, INC.	**AMAT-US**	**01/31/2016**	**21.20**	**24,198.34**	**19.45**	**16.13**	**1.71**	**13.86**	**14.15**
LAM RESEARCH CORPORATION	LRCX-O	12/27/2015	82.77	11,230.40	17.09	13.86	0.90	10.06	10.76
KLA-TENCOR CORPORATION	KLAC-O	12/31/2015	73.12	12,271.42	22.05	19.10	0.86	18.78	18.38
ASML Holding	ASML-AE	12/31/2015	95.87	39,009.42	27.40	26.86	11.62	18.93	22.69
ENTEGRIS, INC.	ENTG-O	12/31/2015	13.65	2,237.61	23.99	16.94	NEG	11.64	-
ASM Intl	ASM-AE	06/30/2015	41.85	2,235.56	13.45	15.06	NEG	20.08	16.68
ASM Pacific Technology Limited	522-HK	12/31/2015	7.97	3,281.91	25.99	18.35	0.62	12.64	15.53
SCREEN Holdings Co.,Ltd.	7735-TO	12/31/2015	7.80	2,030.47	13.67	14.28	0.64	9.67	12.00
Mean			-	-	20.39	17.57	2.72	14.46	15.74
Median			-	-	20.75	16.53	0.88	13.25	15.53
High			95.87	39,009.42	27.40	26.86	11.62	20.08	22.69
Low			7.80	2,030.47	13.45	13.86	0.62	9.67	10.76

15.) Risks to Our Thesis

- Further consolidation or attempted consolidation by AMAT could be received positively by the market, although management gives no indication it is actively searching for acquisition targets
    - The market also may punish AMAT for an announced merger if the market does not believe it is the right fit
- LG and Panasonic increase prices due to strong demand for OLED TVs
    - We believe recent events as well as management announcements indicate that pricing will come down and TVs will be cheaper in the future
- If the KLA-Tencor / Lam Research merger falls through, AMAT may be able to pick up market share given the resources the two companies have devoted towards the merger
    - The deal is expected to close in mid-2016,[41] so any news about the merger is likely to affect the stock price of AMAT

16.) Glossary

OLED – Organic Light-Emitting Diode
LCD – Liquid Crystal Display
WFE – Wafer Fabrication Equipment
Foundry – Semiconductor Fabrication Plant Operation
Memory – Electronic data storage device implemented on a semiconductor-based integrated circuit
Logic – Process digital data to control the operation of electronic systems
PV – Photovoltaic
E&ES – Energy and Environmental Solutions
Etch – Process used in microfabrication to chemically remove layers from the surface of a wafer during manufacturing
CVD – Chemical Vapor Deposition, chemical process used to produce high-quality, high-performance, solid materials

[41] KLA-Tencor Press Release – February 19, 2016.

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