ASML: The Future of Advanced AI Chip Manufacturing ( and

ASML

### By: David Rowland

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# What is a semiconductor?

### What is a semiconductor?

Simply put, Semiconductors are microchips. Small chips used in electrical circuits that enables the usage of our phones, cars, computers, TVs, headphones, telecommunications, medical devices, and even aerospace defense. They are not solely limited to these usages, these are simply the main examples. Most importantly, semiconductors are crucial in the successful production of advanced AI, hence, **they enable our future**.

#### Hardware V.S. Software

Hardware: Physical machinery ex.) I.) Keyboard II.) Mouse III.) Computer frame IV.) Semiconductor chips	Software: Applications ex.) I.) Chrome II.) MacOs III.) Powerpoint IV.) Refinitiv
• 6 steps to successful	semiconductor production

	4
I	Deposition
I	• Photoresist
Ш	• Lithography
v	• Etch
/	• Ionization
/	• Packaging

### How does ASML fit in?

In order for companies like Intel, TSMC, and Samsung to achieve their AI production needs, they rely on semiconductors. ASML does Lithography, the 3<sup>rd</sup> step, where they use very tiny waves of photoelectric light to make tiny engravings in the microchips. They have a monopoly on the production of a specific type of lithography named **EUV lithography**. EUV lithography enables the extremely tiny while accurate engravings to occur on semiconductors as tiny as 13nm. This level of specificity is what enables the production of advanced AI, hence, the world relies on ASML for advanced

AI

## **Investment Thesis**



#### **Thesis Conclusion:**

Buy Shares of ASML at below Price of \$1,000 per share



## **Company Overview**

#### **ASML's Direction & Main Attraction**

ASML looks to use 2024, as a year to gear up for 2025, a year of large expected growth

ASML looks at 2024 as a year to introduce & develop new machines particularly their 3rd generation EUV Machine: Twinscan NXE:3800E.

Currently, ASML's main attraction in terms of products are the High NA EUV machines:

EUV Lithography machines tend to be about the size of a school bus — according to ASML 2021'





#### Revenue projection positive for years to come...

#### ASML's Key profit Drivers:

**I.) Sales:** ASML's Sales make up the entirety of their earnings, hence driving their profits. Not only that, but they have 39Bn in backlogged sales. It is safe to say ASML has stability as a company

**II.) EUV Capabilities:** ASML is the ONLY Company that successfully produces EUV lithography machines. EUV lithography is necessary for the producing AI efficiently.

**III.) Expansive nature of the semiconductor manufacturing industry:** Recently, the semiconductor industry has had massive growth; in 1yr ASML's customers, such as Intel, Samsung, & TSMC have seen an average of 34.375% with a weighted avg contribution to ASML's growth of 6.65%. ASML's total stock growth over the past yr is 43.6%.

### **ASML Stock Overview**

#### **ASML QoQ EPS Valuation**

Based on the past 4 quarters of EPS predictions, ASML beat them **Every Time** 

ASML anticipating **10-15% hit to sales** due to trade restrictions by Dutch government on China. These trade restrictions on China are working in tandem with the trade restrictions set on ASML by the U.S Gov't in 2019



With the Q1 Earnings report that just came out we can see a

decline, this is inline with the projected **10-15% hit to sales**.







Estimate Actual

### Addressing Concerns



# Machine Overview



# Competitors



Optical DUV Lithography Machine Manufacturer

### Canon Nikon





### Peer Group Margin Analysis

Peers	Gross Profit Margin	Net Profit Margin	EBITA Margin	Operating Margin	Market Cap
Nikon	46.04%	6.89%	13.77%	8.74%	3.48 Bn
Canon ricker: CAJPY	45.34%	6.45%	14.26%	8.77%	28.83 Bn
SCREEN Ticker: DINRF	33.65%	12.47%	18.94%	16.59%	11.2372 Bn
<b>ASML</b> Ticker: ASML	51.29%	28.44%	35.50%	32.81%	386.52 Bn

### Peer Group Financials Analysis

Peers	P/E	P/S	Quick Ratio	ROIC	Market Cap
<b>Nikon</b>	16.05	0.70	1.03	4.01%	3.48 Bn
Canon ricker: CAJPY	15.53	0.98	0.75	6.82%	28.83 Bn
SCREEN Ticker: DINF	29.54	3.76	0.97	18.01%	11.2372 Bn
ASML Ticker: ASML	45.55	13.05	0.91	50.10%	386.52 Bn



### **Geopolitical Status**

### U.S Trade War Against China

In 1990 the U.S. produced 40% of the global semiconductors prior to the Chips Act it dropped down to 12%. 1 year later companies reported \$166 Bn in semiconductor and electronics investments.



#### China Trade Restrictions

Since 2019 ASML has been banned by the United States from selling EUV lithography machines with China necessary for advanced AI.

### Worry Not! ASML Plays Both sides

As a long-standing player— 1984 to date—in the lithography machine production industry, ASML has established a known customer base consisting of the 3 largest semiconductor companies:



ASML DCF												
Conservative												
Case	2018	2019	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E
Revenue	109,480	118,190	139,780	186,110	211,730	275,590	280,630	356,990	389,170	415,330	499,610	588,740
% growth	21%	8%	18%	33%	14%	30%	2%	27%	9%	8%	6%	5%
Conservative Case	_						2%	19%	6%	5%	3%	2%
Street Case							2%	27%	9%	8%	6%	5%
Optimistic Case							2%	35%	12%	10%	9%	8%
EBIT	29,660	27,900	40,510	67,060	64,560	90,840	87,590	133,870	154,640	186,900	244,470	297,210
% of sales	27%	24%	29%	36%	30%	33%	31%	37%	40%	40%	40%	40%
Conservative Case							31%	36%	38%	38%	38%	38%
Street Case							31%	37%	40%	40%	40%	40%
Optimistic Case							31%	39%	42%	42%	42%	42%
Taxes							3 149	8 083	13 115	20 417	32 678	46 989
							0,117	0,000	10,110	20,117	(12)	10,505
% OFEBIT							4%	6%	8%	11%	13%	16%
EBIAT							84,441	125,787	141,525	166,483	211,792	250,221
D&A	5,200	5,100	5,700	5,400	6,600	8,400	8,481	10,789	11,762	12,552	15,099	17,793
% of sales	5%	4%	4%	3%	3%	3%	3%	3%	3%	3%	3%	3%
CapEx	7,200	9,900	11,400	11,100	13,900	23,700	19,765	25,143	27,409	29,252	35,187	41,465
% of sales	7%	8%	8%	6%	7%	9%	7%	7%	7%	7%	7%	7%
Change in NWC	300	2,400	(2,200)	2,000	(900)		1,048	1,333	1,453	1,551	1,865	2,198
% of sales	0%	2%	-2%	1%	0%		0.373%	0.373%	0.373%	0.373%	0.373%	0.373%
Unlevered FCF							72,110	110,100	124,424	148,233	189,838	224,351
Present Value of FCF							70,431	101,648	107,588	120,048	143,994	159,382

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DCF Analysis results on	a						Cost of Capital Assumptions	
Conservative Basis							Tax Rate	15.81%
Period	0.72	1.72	2.72	3.72	4.72	5.72	Risk Free Rate	2.9%
Discount Period	0.36	1.22	2.22	3.22	4.22	5.22	Beta (5Y monthly)	1.12
							Market Risk Premium	4.5%
Terminal Value					4,	320,999	Cost of Debt	
							Tax Rate	15.81%
					-		Cost of Debt	1.49%
Present Value of Termina	al value				3,	069,693		
							Cost of Equity	
Enterprise Value					3,	772,783	Risk Free Rate	2.9%
							Beta	1.12
							Market Risk Premium	4.5%
(+) Cash						110,000		4.3%
							Cost of Equity	7.94%
<u>(-) Debt</u>						20,000	Cost of Capital (WACC)	
								0/ of Total
Equity Value			40.00/		3,	<u>862,783</u>		% 0110181
			42.8%				Market Value of Equity	75.00%
Diluted Shares			Increase from current			3 000		
Diffeted Shares						3,000	Market Value of Debt	25.00%
Implied Stock Price					\$1	,287.59	Cost of Capital (WACC)	6.27%

### BUY ASML NOW at <\$1,000 per share

### SELL IN 16-20 Months