



## ASML Holding NV (NASDAQ: ASML)

Technology – Semiconductors and Semiconductor Equipment

<b>Stock Rating:</b> <b>SELL</b>	Current Price:	\$654.66
	Target Price:	\$420

### Analysts

Hunter Denson | [hdenson@uiowa.edu](mailto:hdenson@uiowa.edu)

Jonathan Mincieli | [jmincieli@uiowa.edu](mailto:jmincieli@uiowa.edu)

### Investment Thesis

We recommend a **SELL** rating for ASML with a potential downside of over 35%. Despite ASML being a leader in the semiconductor equipment industry, we believe the current market price is significantly overvalued. We believe that current estimates have built unreasonable growth expectations into the current price, leading to such a high market valuation.

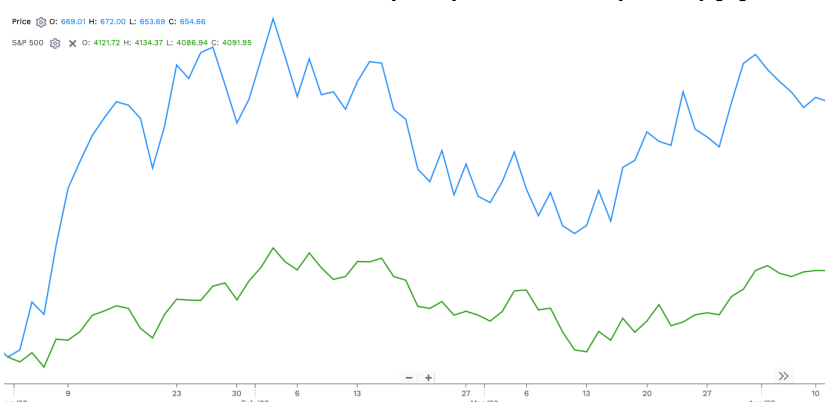
#### Drivers of Thesis

- We forecasted an 8.39% ten-year revenue CAGR with high short-term growth and still cannot justify ASML's current valuation, with it currently trading at around 44x its EPS. Current estimates are pricing in a five-year revenue CAGR of over 17% [7].
- Conflict with China has led to a ban on exporting semiconductor equipment to China, including the machines that ASML produces. This will result in the loss of one of their highest selling markets, as China made up around 14% of their customer base in 2022.
- Their industry leading EUV machines cost \$185 million on average, and almost every machine they have ever shipped is still in use [4]. This makes the accessibility of their products very costly, and their customer pool smaller each year.

#### Risks to Thesis

- ASML has net profit margins of +27% currently, with the possibility of improving to +30% based on our forecast.
- Global demand for semiconductors is forecasted to grow at a cumulative average annual rate of 5% over the next decade, and manufacturing capacity is expected to increase correspondingly by 56% [5].
- ASML is still the sole producer of EUV lithography systems in the world making them the semiconductor equipment industry leader and will maintain that position until at least 2025.

#### YTD ASML Performance (Blue) vs. S&P 500 (Green) [7]



### Company Overview

ASML Holding (ASML) is the leading manufacturer of essential equipment used in the production of micro-processing chips. ASML is recognized as being the only company in the world that makes Extreme Ultraviolet (EUV) lithography machines that can produce chips with advanced computing capabilities. Through their core operations of developing, producing, selling, and servicing their advanced semiconductor equipment systems, ASML has been able to grow from a small firm in The Netherlands, to a global force in the semiconductor industry.

### Financial Snapshot

#### Model Price Projections

DCF:	\$420
DDM:	\$437
Relative Valuation:	\$387 - \$451

#### Price Data

Current Price:	\$654.66
52-Week Range:	\$363.15-\$698.59
YTD Performance:	+19.12%

#### Key Statistics:

Shares Outstanding:	394.59 M
2022 EPS:	\$14.85
P/E:	44.08x
1Y Forward P/E	39.14x
Dividend Yield:	1.52%
Market Capitalization:	266.8 B
Beta:	1.23
WACC:	9.57%
2022 Revenue:	\$22.25 B

#### Ratios

Profit Margin:	27%
ROE:	51%
ROA:	15%

## Company Analysis

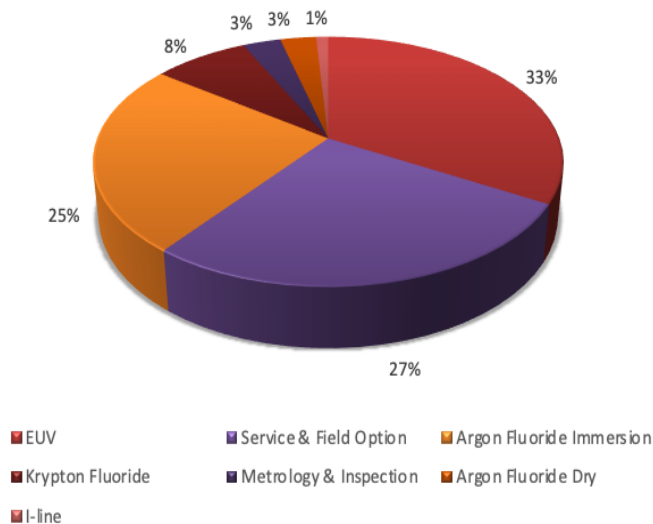
### Company Overview

ASML is the leading manufacturer of the world's most advanced semiconductor manufacturing equipment. They supply the world's leading chipmakers with state-of-the-art chipmaking machines and servicing so that they can produce advanced microchips at scale. ASML is the only company in the world able to produce EUV lithography machines. These are the most advanced chipmaking machines and have enabled chipmakers to produce more powerful and efficient microchips than ever before.

Beginning in 1984 in Eindhoven (now headquartered in Veldhoven), The Netherlands, ASML has grown from a small shed to a global corporation with over 39,000 employees, offices in Europe, the U.S., and Asia, and customers all around the world. They are now a powerhouse in the semiconductor industry [9] [19].

### Revenue Analysis

ASML's 2022 total revenue was \$22.25 billion up 1.16% from 2021, and 2021 revenue of \$21.99 billion, up 38.05% from 2020. The majority of these revenues are from the sales and servicing of ASML's EUV and DUV lithography machines [7].



Data from [7]

### EUV Lithography

ASML's EUV or "extreme ultraviolet" lithography machines are one of its ASML's top three revenue streams with revenue of over \$5 billion, \$7 billion and, \$7 billion in 2020, 2021, and 2022 respectively [7]. These

complex machines use ultraviolet light to manufacture high volumes of leading-edge microchips to power smartphones, smart watches, and gaming consoles. ASML offers two EUV lithography machines of varying complexity in its portfolio [4]. With an \$185 million average sale price these machines made up 33% of ASML's revenue in 2022 at only 40 units. In addition to being very profitable, these machines are manufactured solely by ASML.

In our ten-year forecast for ASML's EUV machine's revenue we kept this monopoly in mind; however, we also considered the high longevity of these machines and the United States' recent ban on semiconductor exports to China. Of all ASML's EUV machine sales, nearly 100% of machines are still in use. While this is a great feature of these machines, it makes future sales harder for ASML, as every sale decreases the demand for EUV machines almost permanently. Further, the ban on exports to China also impacted our forecast as China was ASML's third highest revenue stream by geography in 2020, 2021, and 2022. With this information we forecasted 12.5% steady-state growth from 2026 beyond for ASML's EUV machine revenues.

### DUV Lithography

Following ASML's EUV lithography machines, are its second line of lithography machines, DUV, or "deep ultraviolet". These machines, described by ASML as its "workhorses" are used to create the less complex layers which make up the majority of chips and do not need the use of EUV machines. These machines have a much wider product line than EUV and make up a large portion of ASML's revenue including the Argon Fluoride Immersion, Krypton Fluoride, Argon Fluoride Dry, and I-line revenue streams. The Argon Fluoride Immersion systems are ASML's most advanced with the TWINSCAN NXT: 2050i model which launched in 2022. The remainder of the DUV systems are "old" or dry systems which produce even less complex chip layers than the immersion systems. These systems provide a much more cost efficient and low maintenance product to customers with an average sale price of approximately \$70 million [4].

These DUV systems proved steady revenue for ASML historically, due to constant demand for affordable yet complex lithography machines, specifically through dry systems. Due to this, we forecasted 4% steady-state growth for the Argon Fluoride Immersion, Argon Fluoride Dry, and I-line revenue streams and 5% for the Krypton Fluoride stream. We chose higher growth for Krypton

Fluoride machines due to them having the highest growth in recent years of ASML's DUV products, specifically in 2020 and 2021, with 59% and 27% growth respectively [7].

## **Expense Analysis**

ASML's expenses are cost of goods sold, depreciation, amortization, SG&A, research and development, and interest. Of these expenses, research and development and cost of goods sold were the most crucial to ASML totaling nearly 75% of sales in 2021 and 2022 [7].

### **Cost of Goods Sold**

ASML's largest expense is cost of goods sold. This expense was approximately 50% of sales in 2020, 2021, and 2022 [7]. While this figure seems high, cost of goods sold of 50% of sales is quite standard in the semiconductor industry as it is capital-intensive. As described in the revenue analysis, this cost is due to the complexity of machines and high level of skill required in their production. In our ten-year forecast we used the five-year historical average of 49.38% of sales, following closely to ASML's cost of goods sold in the past five years. We did not forecast much change in the cost of goods sold, however, we do feel there is some opportunity for decrease in cost of goods sold in future years as ASML continues to invest in the development new machines and processes which may increase efficiency in production.

### **Research and Development**

ASML's other main expense is research and development. This expense is somewhat staggering for ASML with approximately 15-20% of sales in 2020, 2021, and 2022 [7]. Similar to cost of goods sold we followed this closely and used the five-year growth historical average of 14.28% for the research and development ten-year forecast. We used this prediction due to ASML's plans to increase investment into the production of its next generation of EUV machines which move away from its current NXE system to the more complex EXE system [4]. These machines are set to launch in 2023 and reach full scale production by 2025, which will require considerable development investment in coming years. Further, not only has ASML stated its intention to increase research and development, but with semiconductor industry growth, we expect ASML to invest in staying ahead of competition as more companies push to develop their own EUV machines.

## **Capital Structure**

ASML's total Debt/Equity in December 2021 was 41.35%, and 39.89% in December 2022. This is far above their 5Y average of 33.70%. This increase in debt in the recent years is due to their increase in spending for their share buyback program. ASML states that their objectives when managing capital structure are to safeguard the ability to satisfy capital providers by maintaining a capital structure that targets a solid investment grade credit rating and provides a sustainable dividend per share, while returning excess cash to shareholders through buybacks or capital repayment. Their current credit rating from Moody's is A2 (Stable) and their current rating from Fitch is A- (Stable). This rating is very similar to ASML's peers' ratings which are as follows: LRCX: A-, KLAC: A-, AMAT: A, MKS: BB, and CDNS: A- [7]. As of 2022, ASML's long-term debt totaled \$3.912 billion. The current portion of long-term debt totaled \$847.18 million. The operating cash flow from 2022 totaled \$8.92 billion. Thus, we believe operating cash flow is sufficient to pay off their debt without impacting capital expenditures or dividends.

### **Capital Expenditures**

ASML's main capital expenditures is purchases of property, plant, and equipment. Their PPE spending was \$1.39 billion in 2022, \$1.11 billion in 2021, and \$1.10 billion in 2020 [7]. In their 2022 annual report, they explain that the increase in PPE from 2021 to 2022 was related to expansion and upgrades of facilities, prototypes, and evaluation and training systems. We expect ASML's PPE expenditures to increase in the short term as they aim to further upgrade and expand their facilities. In our forecast we included a \$2.5 billion capital expenditure for 2023E which was provided by ASML's 2022 annual report [9]. For the remainder of our ten-year forecast, we used the five-year historical average and accounted for an average inflation rate of 3% over the forecast horizon.

### **Payout Policy**

ASML intendeds to distribute a dividend that will grow over time and be paid semi-annually. In 2022 they declared a dividend of \$5.14 per share. In 2021, they declared a dividend in the total of \$5.08 per share, a 100% increase compared to 2020 [7]. While this dividend is continually increasing, the rate at which it increases staggers dramatically as seen in 2022 with growth of just over 1% following growth of 100% in the year before. However, on July 21, 2021, ASML announced a share buyback program to be completed by EOY 2025 [9]. This

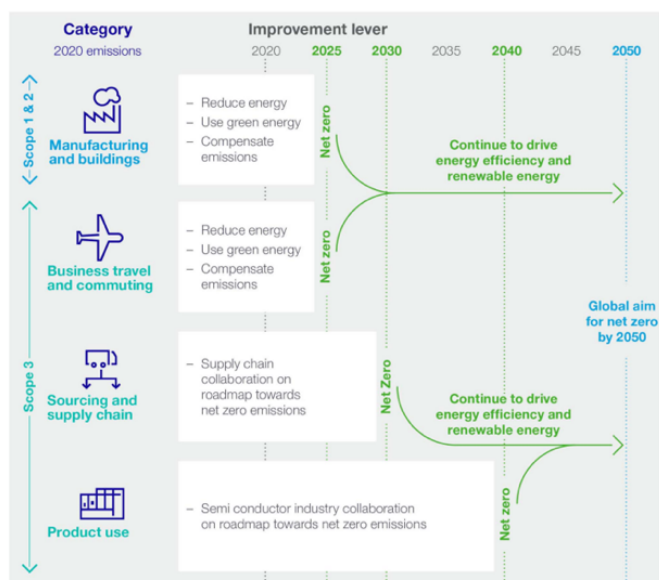
buyback program will ensure positive EPS in future years for shareholders despite this inconsistent payout policy.

## S.W.O.T Analysis

### Strengths

ASML's biggest strength comes in the form of the "monopoly" they have over the semiconductor equipment market. They are currently the only manufacturer of EUV lithography machines which are the highest quality machines in the industry, and they are integral for companies who want to produce the highest quality microchips. Their EUV segment is the biggest driver of their revenue growth in recent years. This segment saw growth of over 78% in 2018, and 41% - 62% growth in 2019 – 2022. No other company has this revenue stream, which has aided in ASML's rise above their competitors like Applied Materials, or Lam Research. As mentioned on page one, ASML's profit margin was over 27% in 2022, which was mainly driven by their EUV sales, which also drove our forecasted profit margins of up to +30%.

Another major strength of ASML is their commitment to sustainability, which has become increasingly important for companies looking to have success in the modern landscape. With a low ESG score of 11.25 [11], ASML's environmental dedication lies in remaining energy efficient, and responsible in their consumption and production. They have developed a program to match the global aim of net zero emissions by 2050 which is laid out below.

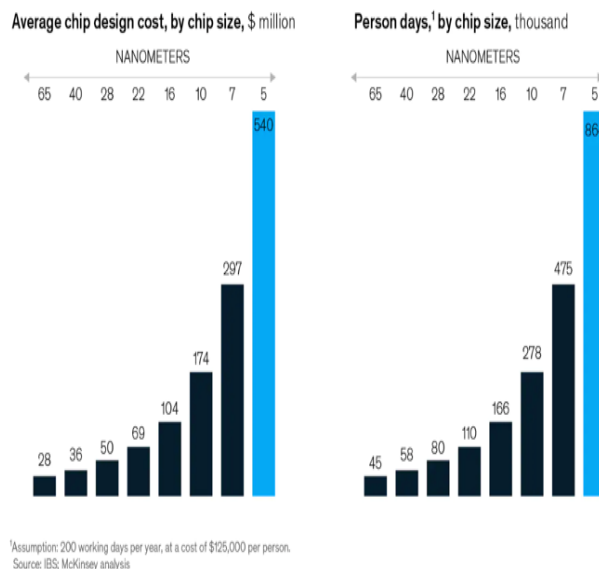


Data from [9]

### Weaknesses

While ASML's advanced EUV lithography machines may be state of the art and ahead of the competition, they come with a massive \$185 million price tag on average in 2022. We see this as a weakness in ASML. Almost every machine ASML has ever produced is still working to this day, so their customer base is shrinking. Combine that with such a high price tag, we believe that there are fewer and fewer companies who will be able to afford these machines, especially in times when companies are less willing to invest in their growth, such as times of decreasing GDP, or rising interest rates.

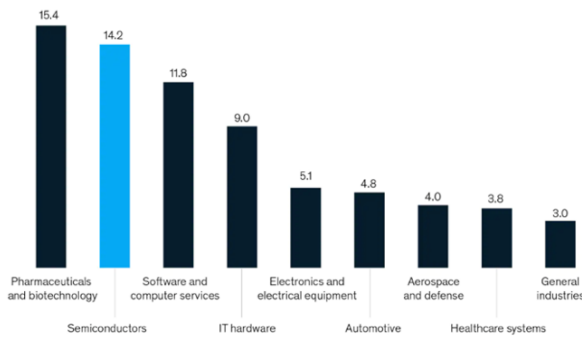
Another weakness of ASML is the increasing complexity of production as their technology advances. Production costs have soared as semiconductor chip development has gotten complex and difficult, which can be seen in the figure below. The costs for design, and human labor increase as the chips become smaller and more complex which is important as ASML develops machines that manufacture the most complex chips.



Data from [22]

On top of that, the costs of R&D have also increased as the semiconductor and semiconductor equipment technology has been advancing. This is shown in the figure below and was built into our forecast as we straight-lined a 14.98 average percent of sales for R&D throughout our forecast horizon, which is similar to the 14.2 average percent of sales for the semiconductor industry. So, we see these rising costs as a weakness for ASML; however, these rising costs are the industry standard as the technology has been advancing.

Average R&D spending intensity in 2020, % of sales



Source: EU Industrial R&D Investment Scoreboard; IC Insights

Data from [22]

### Opportunities

The semiconductor and semiconductor equipment market has rapidly expanded over the last few years, growing from a \$440 billion industry to a 573.5 billion industry in 2022, a year that saw a 3.2% increase in semiconductor sales overall [12]. Megatrends such as AI, and electric vehicles are causing higher demand for high quality semiconductors and microchips, which is emerging new markets for semiconductors. The American, Japanese, and European markets all saw an increase in semiconductor sales in 2022, outselling the other top markets like China, which can be seen in the figure below.

December 2022			
Billions			
Month-to-Month Sales			
Market	Last Month	Current Month	% Change
Americas	12.12	11.34	-6.5%
Europe	4.47	4.44	-0.7%
Japan	3.99	3.96	-0.8%
China	13.39	12.63	-5.7%
Asia Pacific/All Other	11.44	11.04	-3.5%
<b>Total</b>	<b>45.41</b>	<b>43.40</b>	<b>-4.4%</b>
Year-to-Year Sales			
Market	Last Year	Current Month	% Change
Americas	12.14	11.34	-6.6%
Europe	4.30	4.44	3.3%
Japan	3.94	3.96	0.6%
China	17.16	12.63	-26.4%
Asia Pacific/All Other	13.32	11.04	-17.1%
<b>Total</b>	<b>50.85</b>	<b>43.40</b>	<b>-14.7%</b>
Three-Month-Moving Average Sales			
Market	July/Aug/Sept	Oct/Nov/Dec	% Change
Americas	12.03	11.34	-5.8%
Europe	4.52	4.44	-1.7%
Japan	4.05	3.96	-2.3%
China	14.41	12.63	-12.4%
Asia Pacific/All Other	11.99	11.04	-8.0%
<b>Total</b>	<b>47.00</b>	<b>43.40</b>	<b>-7.7%</b>

Data from [12]

We mentioned on page one that the global demand of semiconductors is expected to grow at around 5% over the next decade [5]. So, with new markets growing and increasing global demand, ASML has the opportunity to capitalize on the growth of their industry. ASML's top

three markets geographically are Taiwan, South Korea, and China. With the Chinese market likely going away due to a semiconductor export ban, ASML could capitalize on the growing American, Japanese, and European markets and increasing global demand. Many companies operating in these emerging markets are aiming to develop AI or electric vehicle technologies, which require the high-end semiconductor equipment that ASML produces.

### Threats

As mentioned above, a big threat to ASML currently is the ban on semiconductor exports to China that the United States put in place, and The Netherlands adopted soon after. This poses a major threat to ASML because China is their third largest sales region, accounting for around 14% of ASML's total revenues. Not only is this a threat to their sales, but it is forcing Chinese companies to develop technology that could rival ASML. Chinese company SMIC (Semiconductor Manufacturing International Corporation) is on track to develop EUV technology by 2025 that is equivalent to the machines that ASML produces [13]. So not only are these bans going to affect ASML and the industries sales, but it is forcing competition on ASML, who has benefitted massively from having no competition in their EUV segment.

Another threat to ASML is their reliance on conflict minerals. Production of semiconductors and semiconductor equipment contains materials that are considered "conflict minerals" such as neon, tantalum, tungsten, tin, gold, and 3TG materials [14]. A lot of these materials are often mined or extracted in areas involved in illegal or unethical working conditions. This could obviously be cause for concern of unethical practices for ASML, but also lead to instability in supply of vital raw materials.

## Industry Analysis

### Semiconductor Industry

The semiconductor industry is all of the companies that design and produce semiconductors and related devices such as transistors, integrated circuits, or microchips. ASML operates in the semiconductor manufacturing equipment sub-industry as their machines are mostly used for mass producing microchips that are sketched using ASML's EUV and DUV lithography machines. ASML does not make the chips themselves. Rather, they supply their main customers (chipmaking firms) with high quality lithography systems that are essential to

producing microchips and other products within the semiconductor industry.

As mentioned, the main source of revenue for firms in the semiconductor manufacturing equipment sub-industry is through the sales and servicing of semiconductor manufacturing machines. Companies in this sub-industry are able to differentiate themselves by developing more advanced machines that can produce more efficient microchips. This will only become increasingly important as innovation in the technology sector is going to rely on having better and better microchips going forward.

### **Industry Trends and Growth Projections**

A study from McKinsey projects the semiconductor industry as a whole to be a trillion-dollar industry by 2030 [20]. On top of that, we have mentioned that the global demand for semiconductors is projected to grow at a CAGR of 5% over the next decade [5]. With these facts in mind, it can be seen that the industry is projected to recover from a slow 2022 brought on by supply chain issues. The semiconductor industry is going to be increasingly important going forward as technology advances in AI, robotics, electric vehicles, etc.

As we have mentioned, another recent trend is the recent ban on semiconductor equipment to China. This rule was first put into place by the United States, and many other countries have since adopted the rule including The Netherlands. This is problematic for the industry as a whole. China imported \$378 billion of semiconductors and assembled 35% of the world's electronic devices in 2020 [21]. For ASML specifically, China accounted for 14% of their total revenues in 2022. The loss of the Chinese market is monumental for impacted firms, and it will give the Chinese semiconductor companies a chance to increase their R&D spending and get ahead of the industry's current technology.

### **Comparison to Industry and Competition**

We identified ASML's main competitors to be Lam Research (LRCX), KLA Corp. (KLAC), Applied Materials (AMAT), MKS Instruments (MKS), and Cadence Design Systems (CDNS). While these firms are similar, it is hard to compare ASML to any other firm due to how different they are, and the differentiation they have achieved within the industry due to their EUV technology. Below is a table of some key figures of ASML and these competitors.

Peer Comparison	ASML	LRCX	KLAC	AMAT	MKS	CDNS
Market Cap (\$Billion)	\$ 266.80	\$ 67.58	\$ 51.94	\$ 95.41	\$ 5.50	\$ 58.56
2022 Revenue (\$Billion)	\$ 22.23	\$ 17.42	\$ 9.20	\$ 25.69	\$ 3.55	\$ 3.56
Revenue Growth Change	1.16%	17.48%	33.00%	11.39%	20.25%	19.21%
Net Profit Margin	26.56%	26.80%	36.10%	25.40%	9.39%	23.84%

Data from [7]

Analysis of these figures shows ASML's strong position in the industry. While ASML had a slower 2022 in terms of sales growth compared to their peers, they dwarf them in market capitalization. ASML has strong profit margins (on par with their peers), especially when considering the expensive cost to produce products in this industry. As mentioned, ASML's unique position makes them tough to compare to other companies as even these competitors do not offer EUV lithography machines.

Peer Comparison	ASML	LRCX	KLAC	AMAT	MKS	CDNS
Price	\$ 654.66	\$ 484.62	\$ 364.66	\$ 109.71	\$ 82.38	\$ 212.08
P/E	44.08	13.75	14.56	12.06	15.24	52.04

Data from [7]

Analysis of the P/E ratio of these companies also shows ASML's difference in the industry as they are trading at a much higher price than their competitors, with a large P/E ratio as well. A company with similar revenues (AMAT) is trading at around \$110, with similar margins, and a better revenue change in 2022. To us, these comparisons suggest ASML may be trading at a higher price than they are really worth.

While these other firms do not sell EUV technology and ASML is the industry leader, we believe that it is not long until the industry begins to catch up. As we have previously mentioned, firms like SMIC in China are aiming to have EUV technology developed by 2025. ASML is trading high right now due to higher revenue growth expectations in the future, which we believe won't come to fruition as the industry begins to catch up to ASML by 2025.

## **Porter's Five Forces Analysis**

### **Threat of New Entrants (Low)**

Entering into the semiconductor and semiconductor equipment industry requires a large amount of capital up-front. Semiconductors and semiconductor equipment is not cheap to make which can be seen in high COGS, and R&D expenses. Investments into R&D are pivotal to the industry in order to produce machines that are quality, and able to be scaled. New firms aiming to enter the market will also face many strict licensing, legal, and governmental requirements before they can

begin to sell their machines. These two reasons make entering the semiconductor industry a tough task, and means new entrants are a low threat for established firms in the industry.

### **Threat of Substitute Products/Services (Low)**

Currently, ASML produces the highest quality products in the industry, and it took years of significant investment for them to develop their state-of-the-art EUV lithography machines. Currently, there are no known machines in development that will overtake their EUV machines, and any companies looking to rival ASML are simply trying to catch up to their level of technology, which is no simple task. It took ASML large investment, and many years to develop their EUV machines, and companies that are looking to develop a competing product will have to undergo a similar path.

### **Bargaining Power of Customers (Low)**

There are very few semiconductor equipment manufacturing companies, especially compared to companies producing the actual semiconductors or microchips. So, the bargaining power is low for customers in the industry. In the case of ASML, their main customers like Intel, AMD, or TSMC rely almost exclusively on the EUV machines that only ASML produces. Therefore, ASML has strong pricing power on their expensive EUV machines, until other companies are able to catch up to the technology that ASML has developed.

### **Bargaining Power of Suppliers (Low)**

Suppliers in the semiconductor equipment sub-industry have a very low bargaining power. There is a far greater number of firms supplying the raw materials and other products that are needed for semiconductor equipment than there are firms producing the semiconductor equipment. Moreover, a lot of semiconductor equipment firms have taken part in reducing supply chain risk by acquiring key suppliers. This includes ASML who has acquired firms like SVG, Cymer, Berliner Glas Group, and other firms that supply their materials. This reduces supply chain instability and risks for a firm.

### **Rivalry Among Existing Firms (Low – Moderate)**

The semiconductor industry as a whole is very competitive with many firms. Price competition, product differentiation, and innovative products are common among the chipmaking companies. However, when looking at the semiconductor equipment sub-industry that ASML is in, there is hardly any competition. As mentioned previously, there is no firm competing with

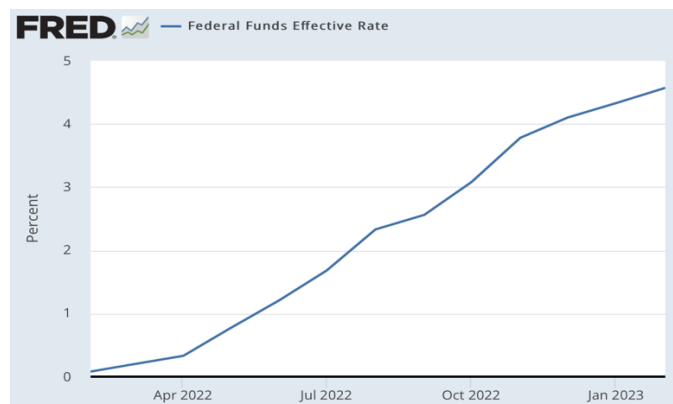
ASML as they are the only company that has developed the advanced EUV lithography machines. Other firms are currently developing these technologies, like SMIC who we previously mentioned. This still means that competition is a few years off in the EUV segment, and ASML should maintain their top position in the industry until 2025.

There is still competition between semiconductor equipment firms in the DUV product market. DUV technology is much less advanced than EUV, so more firms have been able to produce and scale the production and distribution of DUV machines. For ASML, most of their machines ever produced are still in use and working to this day. This gives them an edge over the competition as even their refurbished machines are highly sought after.

## **Economic Analysis**

### **Interest Rates**

Interest rates are a key economic gauge for the technology sector. The U.S. Federal Reserve sets the federal funds rate, which is the rate at which banks borrow from each other in the overnight lending market. The federal funds rate is what guides interest rates. Changes in the federal funds rates influence the saving, borrowing, and treasury bond rates. To fight inflation, the Federal Reserve has been raising the fed funds rate (seen in the figure below) to a current range of 4.75% to 5.00% as of March 2023. We look at the relationship that interest rates have with the 10-year U.S. treasury bond yield because that is typically the rate which companies base their borrowing costs at. Interest rates are important to the tech sector because they affect a firm's investment as well as consumer demand. So, as the fed funds rate increases to combat inflation, 10-year bond yields will increase, firm values will decrease, and consumer demand will decrease.



Data from [6]

Increasing interest rates is going to increase the discount rate that is used in valuation models, resulting in a lower present value of cash flows. Rising rates is problematic for the technology industry because technology companies invest a lot of capital into projects and realize value in higher present values of future cash flows. The growth-oriented nature of the technology industry sees rising rates result in more expensive projects, which cuts into firms' long-term growth and profitability.

Rising interest rates also become problematic for the technology industry due to the industry's reliance on consumer demand and discretionary purchases. Rising interest rates result in a more expensive cost of living for the consumer. Mortgage, credit card, loan, etc., payments will all see increases as rates rise. Consumers will have to direct more of their spending towards interest payments and consumer staple products, leading to an overall negative impact on the technology sector.

We projected lower revenue growth into our model as we believe these rising interest rates in the short term will decrease firms' investment into their growth, resulting in lower revenues for ASML's products since their products are very expensive investments for other tech companies.

**Inflation**

Inflation is a broad driver on the technology industry. The impact of changing inflation is felt across all industries as it drives up prices for labor, equipment, R&D, shipping costs, and many more key aspects of business. Even as the Federal Reserve continues to raise interest rates to combat inflation, the technology industry is not immune to these affects as inflation was a driver for 46% of budget changes in technology companies in North America in 2022 [1].

Inflation has been growing at its highest rate since the 1980s due to worldwide factors such as the COVID-19 pandemic and the Russia-Ukraine conflict. Consumers and producers have felt this inflation increase. However, seen in the graph below, the Consumer Price Index and Producer Price Index have mostly moved together during the rising and falling inflation (PPI even dropping below CPI in 2022), signaling that firms have been able to pass on these costs to the consumer. So, while things are getting more expensive for both the producer and consumer, producers have been able to pass along costs to the consumer, especially for firms offering non-

discretionary products or services that consumers need, no matter the economic climate.

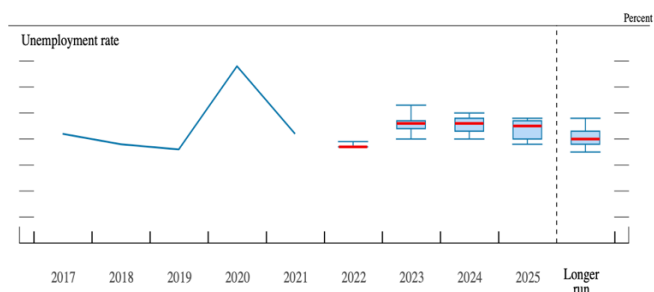


Data from [7]

For the technology industry, many consumers now consider the products and services offered by technology firms as requirements, rather than discretionary purchases. So, the technology industry has an advantage in that firms are now able to pass along rising costs to the consumer during times of inflation.

**Unemployment**

Unemployment is a big driver for the technology industry as technology companies are always aiming to attract and retain skilled workers. Unemployment peaked at around 14.7% during the COVID-19 pandemic, but it has since fallen back to pre-pandemic levels at around 3.5%. With the Federal Reserve raising interest rates, they predict the unemployment to increase and sit at around 4.4-4.6% in 2023-2025 and level off at around 4.0% in 2026 onward [2]. For the technology industry, low unemployment can be a cause for concern. Low unemployment often leads to wage growth as well as skilled employees taking part in "job hopping" as they know there is another company who will pay them more. So, while we have seen many of the tech giants laying off workers, this signals that labor constraints are not an issue for the technology industry currently. Skilled workers are less willing to leave for other opportunities for fear of not having a job, and firms are retaining skilled workers.



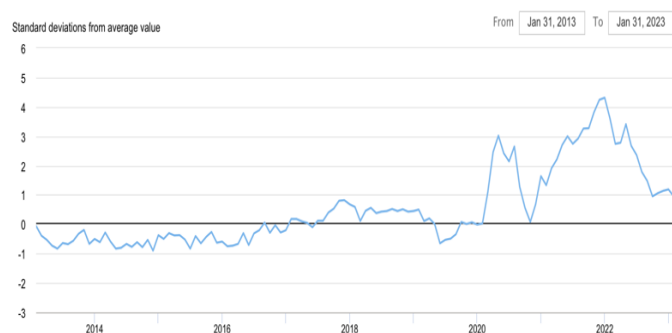
Data from [2]



## Supply Chain

The supply chain is crucial to the technology industry and the economy as a whole. Disruptions in the supply chain can cause companies to cut back on production and can create imbalances in a firm's inventories. A pressured supply chain can increase prices not only for the consumer, but also the producer, as production and shipping costs will rise.

The COVID-19 pandemic put a ton of pressure on the supply chain. At the peak of the pandemic, the Global Supply Chain Pressure Index (GSCPI) saw an increase of 4.3 standard deviations over the historical average, the highest ever recorded. However, as it stands in 2023, the effects of the pandemic on the supply chain have largely worn off as the GSCPI has dropped back down towards the historical average at .95 standard deviations (as seen below).



Data from [3]

For the technology industry, the pandemic-driven supply chain problems had many firms unsure when shipments might arrive, causing them to order excess inventory. These companies have now found themselves having inventory surpluses. Surplus isn't too big of a deal for many industries, but for technology, surplus is bad as speed-of-product obsolescence is very fast and the product that was needed at the time of order, may not be needed now.

## Real GDP

Real GDP is a key indicator for the technology sector. It can affect firm investment in growth, as well as consumer demand. Historically, the tech sector performs well or even outperforms during times of increasing real GDP and economic output and underperforms in times of decreasing GDP. Real GDP can indicate a recession, if it is decreasing for two months in a row, which was seen in the first two quarters of 2022. Because real GDP affects firm investment in growth and consumer

demand, it is no surprise that during the brief recession in 2022 tech company stocks were down.

The IMF's expectations projects real GDP to slow to around 2.9% in 2023 and rise to 3.1% in 2024 [10]. We also believe that economic output will slow in the short term, leading to lower investment into growth for firms in the tech sector. We built this into the model as we believe the price of ASML's products (mainly their EUV machines) are very expensive, so we built lower growth in the revenue of their products as companies are going to be investing less into their growth during a time of low real GDP growth.

## Valuation Analysis

### Revenue

As we mentioned earlier, there are high expectations for ASML's growth. We forecasted a revenue 10-year CAGR of 8.39%. We believe this growth will be driven by their EUV lithography machines as ASML is still the sole producer of these very high-quality machines. However, due to the very high cost to acquire these machines (about \$185 million on average), we believe that the customer pool for these machines is shrinking. Add on the fact that almost every ASML machine ever produced is still in use today, we believe that the high growth ASML saw in their EUV machines will slow down by 2025.

Current consensus market estimates are pricing in a 5-year CAGR of over 17% which we believe to be unrealistic, especially when combined with the fact that current conflicts with China are seeing a ban on semiconductor equipment exports to China, which is ASML's third largest segment at around 14% of their total sales. So, while we think ASML will still experience substantial growth, we differ from the market on how much that growth will actually be.

### Cost of Goods Sold

ASML's management did not provide much guidance regarding cost of goods sold. Because their products are not rapidly changing and take a long time to develop, we looked at a five-year historical average as we thought that would accurately represent their cost of goods sold going forward. We calculated an average COGS as a percent of sales of 49.38% and used that number as a straight-line forecast for our entire forecast period.

### Other Operating Expenses

Management also did not provide a lot of guidance for their other operating expenses, which come in the form

of R&D and other SG&A. We found these expenses to be relatively stable historically, so we used a five-year historical average to forecast both expenses. We straight-lined R&D at 14.28% and other SG&A at 4.01% for our entire forecast horizon.

### **Capital Expenditures**

For CapEx, management provided only one year of guidance, stating that their estimates were about \$2.5 billion of CapEx for 2023. We built that into our model, and then used a five-year historical average plus an average inflation rate of 3% going forward into the end of our forecast horizon. ASML management stated this increase is due to the “expansion and upgrades of facilities” [9], so we feel that the historical average plus inflation best represents CapEx after the temporary increase in CapEx in 2023.

### **Cost of Equity**

We calculated ASML’s cost of equity of 9.67% using the Capital Asset Pricing Model (CAPM). In the CAPM we use ASML’s 5-year monthly beta, the 10-year U.S. treasury as the risk-free-rate, and the 1928-2022 geometric average premium as the equity risk premium. We took their 5-year monthly beta of 1.23 as we believe it best represents their current volatility and risk compared to the rest of the current market. We chose the 10-year U.S. treasury rate of 3.40% as the risk-free-rate as it matched our model’s forecast horizon of ten years into 2032E. Using these assumptions as well as a 5.10% equity risk premium, we calculated a 9.67% cost of equity using the CAPM.

### **Cost of Debt**

We calculated ASML’s after-tax cost of debt of 4.06% by assuming a 10-year maturity on an ASML corporate bond as ten years matches our forecast horizon. ASML’s bonds are not sold in the U.S.; however, they have been given an A2 credit rating by Moody’s. Using this rating, we were able to average the maturity of 10-year bonds of other A2 rated companies to find an assumed 10-year maturity of 4.78% as ASML’s pre-tax cost of debt. We found the implied default premium by subtracting the risk-free-rate of 3.40% from the company’s pre-tax cost of debt to get a 1.38% implied default risk premium. Using these figures as well as a 15% marginal tax rate, we were able to calculate ASML’s after-tax cost of debt of 4.06%

### **WACC**

To calculate the WACC of ASML, we had to assume the risk-free rate, beta, equity risk premium, and 10-year

corporate bond yield for Moody’s A2 rated companies. We used these assumptions to calculate ASML’s implied cost of equity and cost of debt as explained above. Using the implied cost of equity and cost of debt, we added the market value of shares outstanding and the market value of the total debt for ASML. Then we solved for their total weights, multiplied by their respective cost, and calculated a WACC of 9.57% for ASML.

## **Valuation Models**

### **Discounted Cash Flow & Economic Profit (DCF & EP)**

When using the discounted cash flow and economic profit models, we calculated an intrinsic share price of \$420.11 for ASML. Calculating these models require assumptions for the CV growth of NOPLAT, CV year ROIC, cost of equity, and WACC. We calculated a CV year ROIC of 118.77%, a cost of equity of 9.67% and a WACC of 9.57%. For the CV growth of NOPLAT, we assumed a 5% growth rate factoring in an average GDP growth of 2%, and an average historical inflation rate of 3%. With these calculations and assumptions, we arrived at an implied share price of \$420.11 after discounting our FCF and EP estimates and adjusting for non-operating expenses through 2032E.

The DCF and EP models incorporate almost all our forecasts, leading us to place the most emphasis on these models when estimating ASML’s value as we believe they best represent the current intrinsic value of ASML’s stock.

### **Dividend Discount Model (DDM)**

When using the dividend discount model, we calculated an intrinsic share price of \$437.15 for ASML. ASML aims to deliver a dividend that is growing over time. However, they do not maintain a consistent payout policy, making their dividend growth inconsistent over time. They are currently in an aggressive share repurchase program (about \$13B of shares by 2025), which we believe to be a main driver of ASML’s EPS growth, and their ability to deliver value back to the shareholder.

We found the present value of annual dividends per share into 2032E by discounting them by the cost of equity. We used a CV Year ROE of 29.35% and a 6% CV growth of EPS to find the continuing value and discount that by the cost of equity. Finally, we added the present value of the future cash flows and found an intrinsic price of \$437.15 after year-end adjustments.

Because of ASML’s inconsistent dividend policy over time, we found it difficult to forecast a CV growth of EPS rate, which is an important driver of the dividend discount model. Having a CV growth of EPS rate that we feel less confident with, we are putting less emphasis on the DDM model when estimating ASML’s target price.

**Relative Price-to-Earnings Model (Relative P/E)**

Our relative valuation model included two different tables. One included five of ASML’s top competitors within the industry. These competitors were Lam Research, KLA Corp., Applied Materials, MKS Instruments, and Cadence Design Systems. The second table included these same competitors while also factoring in four of ASML’s top semiconductor manufacturing customers. The top customers we identified were Intel Corporation, Taiwan Semiconductor Manufacturing Co., Advanced Micro Devices, and NXP Semiconductors NV. For both tables, we used the price-to-earnings multiple to find ASML’s implied relative value. We found 2023 and 2024 EPS estimates for each competitor/customer using FactSet and we pulled ASML’s 2023 and 2024 EPS estimates from our calculations on the forecasted income statement.

For table one (just the competitors) we wanted to see how ASML compared to some of their main competitors. We calculated an implied relative price of \$387.19 for 2023 and \$350.54 for 2024. For table two (the competitors and customers) we wanted to get a broader look at ASML compared to similar firms. We calculated an implied relative price of \$451.93 for 2023E and \$319.07 for 2024E.

Due to ASML’s unique position as a dominant leader in their industry, we do not place a lot of weight on the Relative P/E models as there are essentially no companies to compare them to for a truly accurate Relative P/E model.

**Conclusion**

Our valuation of \$420 for the intrinsic value of a share of ASML stock is based on our DCF and EP models. While all three models resulted in similar numbers, we believe that the DCF and EP models include the majority of our forecasts, and best represent the true value of ASML. We cannot place much emphasis on the Relative P/E model as ASML is so unique and is hard to compare to other companies even inside the semiconductor industry. For the DDM, we do not feel confident in our forecasted CV growth of EPS due to ASML’s inconsistent dividend

payout policy and lack of guidance; so, we do not place emphasis on the DDM either.

With a forecasted revenue CAGR of 8.39%, we find ASML significantly overvalued. The loss of their third largest geographic sales region (China), their expensive products, and a shrinking customer pool due to the long lifespan of their machines leads us to believe ASML will receive lower growth than what the market is currently estimating. We believe that the DCF and EP models best represent these expectations for ASML, leading us to the \$420 valuation for ASML.

**Sensitivity Analysis**

**Beta vs. Equity Risk Premium**

These two variables are key to calculating a firm’s WACC. We found that when the beta and equity risk premium decrease or are “safer”, the intrinsic value of ASML increases. We found that incremental changes in the beta and equity risk premium have a moderate to high impact on the intrinsic value of ASML’s stock. Just a .05 increase in the beta results in around a \$24 decrease in the stock price. A .10% increase in the equity risk premium sees the stock price decrease by around \$12.

	DCF		Beta					
	420.11	1.08	1.13	1.18	1.23	1.28	1.33	1.38
Equity Risk Premium	4.80%	557.27	520.26	487.66	458.73	432.89	409.67	388.69
	4.90%	540.01	504.41	473.02	445.14	420.21	397.79	377.52
	5.00%	523.75	489.46	459.19	432.28	408.20	386.54	366.93
	5.10%	508.39	475.32	446.10	420.11	396.83	375.87	356.90
	5.20%	493.87	461.94	433.71	408.57	386.04	365.74	347.36
	5.30%	480.11	449.25	421.95	397.61	375.79	356.12	338.29
	5.40%	467.06	437.21	410.77	387.20	366.04	346.96	329.65

**CV Growth of NOPLAT vs. WACC**

The two main drivers in the DCF model are the CV growth of NOPLAT and the WACC. The projected free cash flows in the model are discounted by the WACC, and the continuing value makes up about 70% of ASML’s value in this model. So, it is no surprise that incremental changes in these two variables have a high impact on the intrinsic value of ASML’s stock. When the CV growth of NOPLAT is increased by .25%, the stock price increased about \$18, and a .20% increase in the WACC sees the price decrease about \$19.

	DCF		CV Growth of NOPLAT					
	420.11	4.25%	4.50%	4.75%	5.00%	5.25%	5.50%	5.75%
WACC	8.97%	430.60	447.71	466.84	488.39	512.83	540.80	573.11
	9.17%	411.50	426.93	444.10	463.33	485.01	509.65	537.89
	9.37%	393.92	407.87	423.34	440.58	459.91	481.73	506.58
	9.57%	377.67	390.34	404.32	419.83	437.14	456.58	478.55
	9.77%	362.61	374.14	386.83	400.84	416.40	433.79	453.33
	9.97%	348.62	359.15	370.69	383.39	397.43	413.05	430.51
	10.17%	335.59	345.22	355.75	367.30	380.02	394.10	409.77

### Avg. COGS as a % of Sales vs. Avg. SG&A as a % of Sales

Cost of goods sold and selling, general, and administrative expenses make up over half of ASML's yearly expenses; so, we decided to test their sensitivity to the intrinsic value of ASML stock. We found that incremental changes in COGS had a greater effect on the intrinsic value of ASML than SG&A, which had a more moderate effect. Both variables cause ASML's intrinsic value to decrease as the expenses increase. A 1% increase in COGS saw about a \$16 decrease in the stock price, and a .50% increase in SG&A saw about an \$8 decrease in the stock price.

Avg. SG&A (Non-R&D) % of Sales	DCF		Avg. COGS % of Sales					
	420.11	46.38%	47.38%	48.38%	49.38%	50.38%	51.38%	52.38%
2.51%	488.78	473.53	458.27	443.01	427.76	412.50	397.25	
3.01%	481.16	465.90	450.64	435.39	420.13	404.87	389.62	
3.51%	473.53	458.27	443.01	427.76	412.50	397.25	381.99	
4.01%	465.90	450.64	435.39	420.13	404.87	389.62	374.36	
4.51%	458.27	443.01	427.76	412.50	397.25	381.99	366.73	
5.01%	450.64	435.39	420.13	404.87	389.62	374.36	359.10	
5.51%	443.01	427.76	412.50	397.25	381.99	366.73	351.48	

### CV Growth of EPS vs. Cost of Equity

The CV growth of EPS and the cost of equity are two integral assumptions in the Dividend Discount Model. By testing these assumptions, we found that incremental changes in both variables have a high impact on the intrinsic value of ASML's stock. This is because the CV growth of EPS affects the continuing value as well as the cash flows of ASML, and the cost of equity is what discounts the cash flows in the DDM model. We found that just a .25% increase in the CV growth of EPS increased the stock price of ASML by around \$24. Even more so, the stock price decreased around \$26 when the cost of equity was increased by .20%

Cost of Equity	DDM		CV Growth of EPS					
	437.15	5.25%	5.50%	5.75%	6.00%	6.25%	6.50%	6.75%
9.07%	454.60	478.49	505.98	537.95	575.58	620.53	675.17	
9.27%	427.87	448.81	472.73	500.31	532.46	570.40	615.88	
9.47%	403.73	422.19	443.13	467.09	494.77	527.11	565.40	
9.67%	381.84	398.19	416.62	437.57	461.58	489.37	521.92	
9.87%	361.91	376.45	392.75	411.16	432.11	456.18	484.09	
10.07%	343.69	356.67	371.15	387.41	405.80	426.77	450.89	
10.27%	326.97	338.60	351.52	365.95	382.17	400.55	421.53	

### Cost of Equity vs. Pre-Tax Cost of Debt

These two variables are the major drivers in finding ASML's cash flow discount rate. We tested these variables against each other to see how the intrinsic value of ASML's stock changes when the cash flow discount rate changes. We found that changes in the cost of equity have a much larger effect on the share price when changed, compared to changes in the pre-tax cost of debt which did not have much impact on the share price. A .20% increase in the cost of equity resulted in about a \$19 decrease in the stock price of ASML, and a

.20% increase of the pre-tax cost of debt only resulted in about a 40-cent decrease in value.

Pre-Tax Cost of Debt	DCF		Cost of Equity					
	420.11	9.07%	9.27%	9.47%	9.67%	9.87%	10.07%	10.27%
4.18%	488.45	464.06	441.87	421.61	403.03	385.94	370.16	
4.38%	487.93	463.58	441.43	421.20	402.66	385.59	369.84	
4.58%	487.41	463.11	441.00	420.80	402.28	385.24	369.51	
4.78%	486.90	462.63	440.56	420.40	401.91	384.90	369.19	
4.98%	486.38	462.16	440.13	420.00	401.54	384.55	368.86	
5.18%	485.86	461.69	439.69	419.60	401.17	384.20	368.54	
5.38%	485.35	461.22	439.26	419.19	400.79	383.86	368.22	

### Depreciation Rate as a % of Net PPE vs. Avg. R&D as a % of Sales

Another major expense for ASML is R&D. They spend a significant amount of their revenue in R&D as they aim to develop new products such as their EUV technology and also improve their current products. When testing their average R&D as a percent of sales vs. their depreciation as a percent of PPE, we can conclude that the intrinsic value of ASML's stock is more sensitive to incremental changes in their R&D expense, compared to changes in the depreciation rate which had a very minimal effect on their stock price. A .50% increase in R&D showed a decrease of about \$8 in the stock price, while a 1% increase in the depreciation rate showed almost no change.

Avg. R&D % of Sales	DCF		Depreciation Rate as a % of Net PPE					
	420.11	8.70%	9.70%	10.70%	11.70%	12.70%	13.70%	14.70%
12.78%	443.61	443.31	443.10	442.96	442.90	442.89	442.93	
13.28%	435.99	435.68	435.47	435.33	435.27	435.26	435.30	
13.78%	428.36	428.05	427.84	427.71	427.64	427.63	427.67	
14.28%	420.73	420.43	420.21	420.08	420.01	420.00	420.04	
14.78%	413.10	412.80	412.58	412.45	412.38	412.37	412.41	
15.28%	405.47	405.17	404.96	404.82	404.75	404.75	404.79	
15.78%	397.84	397.54	397.33	397.19	397.13	397.12	397.16	

## Important Disclaimer

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## ASML Holding NV

## Revenue Decomposition

All Figures in Millions of US Dollars

Fiscal Years Ending Dec. 31	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
<b>Sales Revenue</b>													
Total	15,935	21,998	22,253	24,346	26,541	28,776	30,978	33,399	36,066	39,005	42,249	45,832	49,794
Growth %	20.45%	38.05%	1.16%	9.40%	9.02%	8.42%	7.65%	7.82%	7.98%	8.15%	8.32%	8.48%	8.64%

## Net System Sales Per Technology

<b>EUV</b>	5,089	7,428	7,404	8,885	10,440	12,006	13,507	15,195	17,095	19,232	21,636	24,340	27,383
Growth %	62.39%	45.96%	-0.31%	20.00%	17.50%	15.00%	12.50%	12.50%	12.50%	12.50%	12.50%	12.50%	12.50%
<b>Service &amp; Field Option</b>	4,174	5,860	6,036	6,338	6,655	6,987	7,337	7,703	8,089	8,493	8,918	9,364	9,832
Growth %	32.08%	40.39%	2.99%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
<b>Argon Fluoride Immersion</b>	4,465	5,862	5,503	5,724	5,953	6,191	6,438	6,696	6,964	7,242	7,532	7,833	8,146
Growth %	-15.26%	31.28%	-6.12%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
<b>Krypton Fluoride</b>	1,154	1,562	1,738	1,825	1,916	2,012	2,113	2,218	2,329	2,446	2,568	2,696	2,831
Growth %	51.69%	35.33%	11.29%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
<b>Metrology &amp; Inspection</b>	399	607	693	694	695	696	697	698	699	701	702	703	704
Growth %	29.95%	52.14%	14.17%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
<b>Argon Fluoride Dry</b>	487	510	655	657	658	659	660	661	662	663	664	665	666
Growth %	8.40%	4.87%	28.40%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
<b>I-line</b>	167	168	222	223	224	225	226	227	229	230	231	232	233
Growth %	11.69%	0.78%	32.16%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%

## Net System Sales by Unit

<b>EUV</b>	31	42	40	48	56	65	73	82	92	104	117	131	148
Avg Sale Price (M)	164	177	185	185	185	185	185	185	185	185	185	185	185
Growth %	19.23%	35.48%	-4.76%	20.00%	17.50%	15.00%	12.50%	12.50%	12.50%	12.50%	12.50%	12.50%	12.50%
<b>Argon Fluoride Immersion</b>	68	81	81	84	88	91	95	99	102	107	111	115	120
Avg Sale Price (M)	66	72	68	68	68	68	68	68	68	68	68	68	68
Growth %	-17.07%	19.12%	0.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
<b>Krypton Fluoride</b>	103	131	151	159	166	175	184	193	202	212	223	234	246
Avg Sale Price (M)	11	12	12	12	12	12	12	12	12	12	12	12	12
Growth %	58.46%	27.18%	15.27%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
<b>Metrology &amp; Inspection</b>	137	196	216	225	234	243	253	263	273	284	296	307	320
Avg Sale Price (M)	3	3	3	3	3	3	3	3	3	2	2	2	2
Growth %	19.13%	43.07%	10.20%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
<b>Argon Fluoride Dry</b>	22	22	28	29	30	31	33	34	35	37	38	40	41
Avg Sale Price (M)	22	23	23	23	22	21	20	19	19	18	17	17	16
Growth %	0.00%	0.00%	27.27%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
<b>I-line</b>	34	33	45	47	49	51	53	55	57	59	62	64	67
Avg Sale Price (M)	5	5	5	5	5	4	4	4	4	4	4	4	3
Growth %	0.00%	-2.94%	36.36%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%

## Sales by Geographic Region

<b>Taiwan</b>	5,394	8,661	8,508	9,308	10,148	11,002	11,844	12,770	13,790	14,913	16,154	17,524	19,038
Growth %	-10.04%	60.59%	-1.77%	9.40%	9.02%	8.42%	7.65%	7.82%	7.98%	8.15%	8.32%	8.48%	8.64%
<b>South Korea</b>	4,733	7,355	6,354	6,951	7,578	8,216	8,845	9,536	10,298	11,137	12,063	13,086	14,218
Growth %	92.02%	55.42%	-13.62%	9.40%	9.02%	8.42%	7.65%	7.82%	7.98%	8.15%	8.32%	8.48%	8.64%
<b>China</b>	2,650	3,240	3,065	3,353	3,655	3,963	4,266	4,600	4,967	5,372	5,819	6,312	6,858
Growth %	71.84%	22.26%	-5.40%	9.40%	9.02%	8.42%	7.65%	7.82%	7.98%	8.15%	8.32%	8.48%	8.64%
<b>United States</b>	1,889	1,871	2,093	2,290	2,496	2,706	2,913	3,141	3,392	3,668	3,973	4,310	4,683
Growth %	-14.77%	-0.93%	11.84%	9.40%	9.02%	8.42%	7.65%	7.82%	7.98%	8.15%	8.32%	8.48%	8.64%
<b>Japan</b>	619	543	1,060	1,160	1,264	1,371	1,476	1,591	1,718	1,858	2,013	2,183	2,372
Growth %	19.35%	-12.27%	95.26%	9.40%	9.02%	8.42%	7.65%	7.82%	7.98%	8.15%	8.32%	8.48%	8.64%
<b>EMEA</b>	551	159	656	718	783	849	914	985	1,064	1,150	1,246	1,352	1,469
Growth %	56.47%	-71.12%	312.54%	9.40%	9.02%	8.42%	7.65%	7.82%	7.98%	8.15%	8.32%	8.48%	8.64%
<b>Singapore</b>	97	149	500	547	596	646	696	750	810	876	949	1,029	1,118
Growth %	-27.94%	54.12%	235.02%	9.40%	9.02%	8.42%	7.65%	7.82%	7.98%	8.15%	8.32%	8.48%	8.64%
<b>Netherlands</b>	2	17	10	11	12	13	13	15	16	17	18	20	22
Growth %	-37.32%	820.20%	-42.39%	9.40%	9.02%	8.42%	7.65%	7.82%	7.98%	8.15%	8.32%	8.48%	8.64%
<b>Rest of Asia</b>	2	2	8	8	9	10	11	11	12	13	14	16	17
Growth %	-37.32%	16.65%	255.67%	9.40%	9.02%	8.42%	7.65%	7.82%	7.98%	8.15%	8.32%	8.48%	8.64%
<b>Total</b>	15,935	21,998	22,253	24,346	26,541	28,776	30,978	33,399	36,066	39,005	42,249	45,832	49,794



**ASML Holding NV***Income Statement*

All Figures Reported in millions of US Dollars

<i>Fiscal Years Ending Dec. 31</i>	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
Sales	15,935	21,998	22,253	24,346	26,541	28,776	30,978	33,399	36,066	39,005	42,249	45,832	49,794
Cost of Goods Sold (COGS) incl. D&A	8,377	10,591	11,245	12,655	13,968	15,106	16,225	17,456	18,810	20,299	21,939	23,746	25,740
COGS excluding D&A	7,836	10,053	10,635	12,023	13,107	14,211	15,298	16,494	17,811	19,263	20,864	22,634	24,591
Depreciation	401	380	468	493	728	768	807	845	883	921	958	996	1,033
Amortization of Intangibles	141	157	142	139	133	127	120	116	116	116	116	116	116
<b>Gross Income</b>	<b>7,558</b>	<b>11,407</b>	<b>11,008</b>	<b>11,691</b>	<b>12,573</b>	<b>13,671</b>	<b>14,752</b>	<b>15,944</b>	<b>17,256</b>	<b>18,706</b>	<b>20,310</b>	<b>22,086</b>	<b>24,054</b>
SG&A Expense	2,939	3,681	4,176	4,452	4,853	5,262	5,664	6,107	6,595	7,132	7,725	8,380	9,105
Research & Development	2,358	2,874	3,228	3,476	3,789	4,109	4,423	4,769	5,149	5,569	6,032	6,544	7,110
Other SG&A	581	808	948	975	1,063	1,153	1,241	1,338	1,445	1,563	1,693	1,836	1,995
<b>EBIT (Operating Income)</b>	<b>4,619</b>	<b>7,726</b>	<b>6,832</b>	<b>7,239</b>	<b>7,720</b>	<b>8,409</b>	<b>9,088</b>	<b>9,837</b>	<b>10,661</b>	<b>11,574</b>	<b>12,585</b>	<b>13,706</b>	<b>14,950</b>
Nonoperating Interest Income	10	12	17	468	246	280	336	626	949	1,309	1,711	2,158	2,656
Other Income (Expense)	-	253	-	-	-	-	-	-	-	-	-	-	-
Interest Expense	49	65	64	227	263	277	291	306	322	339	358	379	401
<b>Pretax Income</b>	<b>4,579</b>	<b>7,926</b>	<b>6,785</b>	<b>7,479</b>	<b>7,704</b>	<b>8,413</b>	<b>9,133</b>	<b>10,157</b>	<b>11,288</b>	<b>12,544</b>	<b>13,938</b>	<b>15,486</b>	<b>17,205</b>
Income Taxes	(629)	(1,207)	(1,019)	(1,086)	(1,158)	(1,261)	(1,363)	(1,476)	(1,599)	(1,736)	(1,888)	(2,056)	(2,242)
Equity in Earnings of Affiliates	101	235	145	152	160	168	177	186	195	205	215	226	238
<b>Net Income</b>	<b>4,051</b>	<b>6,954</b>	<b>5,911</b>	<b>6,546</b>	<b>6,706</b>	<b>7,319</b>	<b>7,946</b>	<b>8,867</b>	<b>9,884</b>	<b>11,013</b>	<b>12,265</b>	<b>13,656</b>	<b>15,200</b>
<b>Per Share</b>													
EPS	9.67	16.94	14.85	16.73	17.41	19.29	21.10	23.54	26.24	29.24	32.57	36.26	40.36
Weighted Average Shares Outstanding	418.30	409.80	397.70	391.36	385.15	379.40	376.62	376.62	376.62	376.62	376.62	376.62	376.62
Total Shares Outstanding	416.51	402.60	394.59	388.14	382.17	376.62	376.62	376.62	376.62	376.62	376.62	376.62	376.62
Dividends per Share	2.78	5.08	5.14	5.79	6.02	6.67	7.30	8.14	9.08	10.12	11.27	12.54	13.96

## ASML Holding NV

## Balance Sheet

All Figures Reported in millions of US Dollars

Fiscal Years Ending Dec. 31	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
<b>ASSETS</b>													
<b>Cash &amp; Short-Term Investments</b>	<b>8,995.05</b>	<b>8,631.69</b>	<b>7,872.04</b>	<b>3,382.86</b>	<b>3,944.56</b>	<b>4,911.86</b>	<b>10,492.72</b>	<b>16,722.01</b>	<b>23,673.08</b>	<b>31,426.53</b>	<b>40,071.83</b>	<b>49,708.59</b>	<b>60,447.80</b>
Cash Only	5,510.99	5,481.42	5,037.63	405.04	816.06	1,625.06	7,039.60	13,094.16	19,861.67	27,422.27	35,864.95	45,288.83	55,804.41
Total Short Term Investments	3,484.06	3,150.27	2,834.40	2,977.82	3,128.50	3,286.80	3,453.12	3,627.84	3,811.41	4,004.27	4,206.89	4,419.75	4,643.39
<b>Short-Term Receivables</b>	<b>4,077.97</b>	<b>5,182.11</b>	<b>7,520.91</b>	<b>6,249.50</b>	<b>6,812.99</b>	<b>7,386.91</b>	<b>7,952.04</b>	<b>8,573.63</b>	<b>9,258.11</b>	<b>10,012.66</b>	<b>10,845.32</b>	<b>11,765.11</b>	<b>12,782.14</b>
Accounts Receivable, Net	1,749.06	3,630.62	5,822.60	3,995.10	4,355.32	4,722.21	5,083.48	5,480.85	5,918.41	6,400.77	6,933.06	7,521.05	8,171.21
Other Receivables	2,328.91	1,551.48	1,698.31	2,254.40	2,457.66	2,664.70	2,868.56	3,092.79	3,339.70	3,611.89	3,912.26	4,244.06	4,610.93
<b>Inventories</b>	<b>5,916.11</b>	<b>6,217.87</b>	<b>8,196.05</b>	<b>8,221.49</b>	<b>8,962.78</b>	<b>9,717.81</b>	<b>10,461.25</b>	<b>11,278.99</b>	<b>12,179.45</b>	<b>13,172.09</b>	<b>14,267.49</b>	<b>15,477.51</b>	<b>16,815.46</b>
<b>Other Current Assets</b>	<b>502.02</b>	<b>654.23</b>	<b>1,027.01</b>	<b>958.39</b>	<b>1,032.21</b>	<b>1,107.93</b>	<b>1,183.59</b>	<b>1,265.94</b>	<b>1,355.68</b>	<b>1,453.59</b>	<b>1,560.54</b>	<b>1,677.52</b>	<b>1,805.60</b>
Prepaid Expenses	341.00	425.65	724.24	640.29	698.02	756.82	814.72	878.40	948.53	1,025.84	1,111.15	1,205.39	1,309.58
Miscellaneous Current Assets	161.02	228.58	302.78	318.10	334.20	351.11	368.87	387.54	407.15	427.75	449.39	472.13	496.02
<b>Total Current Assets</b>	<b>19,491.15</b>	<b>20,685.90</b>	<b>24,616.01</b>	<b>18,812.24</b>	<b>20,752.54</b>	<b>23,124.51</b>	<b>30,089.59</b>	<b>37,840.57</b>	<b>46,466.32</b>	<b>56,064.87</b>	<b>66,745.18</b>	<b>78,628.72</b>	<b>91,851.01</b>
<b>Net Property, Plant &amp; Equipment</b>	<b>3,224.18</b>	<b>3,397.95</b>	<b>4,209.45</b>	<b>6,216.75</b>	<b>6,558.99</b>	<b>6,893.26</b>	<b>7,221.48</b>	<b>7,545.32</b>	<b>7,866.34</b>	<b>8,185.90</b>	<b>8,505.27</b>	<b>8,825.59</b>	<b>9,147.88</b>
Gross PPE	6346.31	6391.52	7459.44	9,959.44	9,959.44	11,029.33	12,131.32	13,266.37	14,435.46	15,639.63	16,879.93	18,157.44	19,473.27
Accumulated Depreciation	3122.13	2993.57	3249.99	3,742.69	4,470.34	5,238.05	6,044.89	6,890.14	7,773.30	8,694.03	9,652.16	10,647.68	11,680.69
<b>Operating Lease Right-of-Use</b>	<b>220.36</b>	<b>181.38</b>	<b>205.66</b>	<b>303.73</b>	<b>320.45</b>	<b>336.78</b>	<b>352.82</b>	<b>368.64</b>	<b>384.32</b>	<b>399.94</b>	<b>415.54</b>	<b>431.19</b>	<b>446.94</b>
<b>Total Long-Term Investments</b>	<b>1,673.33</b>	<b>1,513.39</b>	<b>1,374.62</b>	<b>1,479.24</b>	<b>1,597.42</b>	<b>1,728.86</b>	<b>1,873.32</b>	<b>2,030.67</b>	<b>2,200.90</b>	<b>2,384.03</b>	<b>2,580.21</b>	<b>2,789.62</b>	<b>3,012.53</b>
LT Investment - Affiliate Companies	1004.17	1014.95	985.71	1,138.08	1,298.17	1,466.35	1,643.04	1,828.68	2,023.71	2,228.60	2,443.86	2,670.02	2,907.62
Other Long Term Investments	151.48	53.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Long-Term Note Receivable	517.68	444.65	388.91	341.15	299.26	262.51	230.27	202.00	177.19	155.43	136.34	119.60	104.91
<b>Intangible Assets</b>	<b>6,947.32</b>	<b>6,263.36</b>	<b>5,761.02</b>	<b>5,621.72</b>	<b>5,488.81</b>	<b>5,361.76</b>	<b>5,241.42</b>	<b>5,125.23</b>	<b>5,009.04</b>	<b>4,892.85</b>	<b>4,776.66</b>	<b>4,660.47</b>	<b>4,544.28</b>
Goodwill	5,663.94	5,180.63	4,861.96	4,861.96	4,861.96	4,861.96	4,861.96	4,861.96	4,861.96	4,861.96	4,861.96	4,861.96	4,861.96
Other Intangible Assets	1,283.38	1,082.73	899.05	759.75	626.84	499.79	379.45	263.26	147.07	30.88	(85.31)	(201.50)	(317.69)
<b>Deferred Tax Assets</b>	<b>821.61</b>	<b>1,249.44</b>	<b>1,785.30</b>	<b>1,784.68</b>	<b>1,784.06</b>	<b>1,783.45</b>	<b>1,782.83</b>	<b>1,782.22</b>	<b>1,781.60</b>	<b>1,780.99</b>	<b>1,780.37</b>	<b>1,779.76</b>	<b>1,779.14</b>
<b>Other Assets</b>	<b>985.08</b>	<b>1,087.28</b>	<b>789.55</b>	<b>736.31</b>	<b>658.37</b>	<b>590.75</b>	<b>532.01</b>	<b>481.66</b>	<b>438.80</b>	<b>402.65</b>	<b>372.54</b>	<b>347.91</b>	<b>328.27</b>
Deferred Charges	966.85	928.75	772.58	677.71	594.49	521.48	457.45	401.27	351.99	308.77	270.85	237.59	208.42
Tangible Other Assets	18.23	158.53	16.97	58.60	63.88	69.26	74.56	80.39	86.81	93.88	101.69	110.32	119.85
<b>Total Assets</b>	<b>33,363.03</b>	<b>34,378.69</b>	<b>38,741.60</b>	<b>34,954.65</b>	<b>37,160.64</b>	<b>39,819.36</b>	<b>47,093.46</b>	<b>55,174.31</b>	<b>64,147.32</b>	<b>74,111.23</b>	<b>85,175.77</b>	<b>97,463.25</b>	<b>111,110.05</b>
<b>LIABILITIES</b>													
<b>ST Debt &amp; Curr. Portion LT Debt</b>	<b>75.74</b>	<b>628.64</b>	<b>847.18</b>	<b>294.52</b>	<b>318.98</b>	<b>343.99</b>	<b>368.80</b>	<b>395.94</b>	<b>425.67</b>	<b>458.28</b>	<b>494.08</b>	<b>533.44</b>	<b>576.75</b>
<b>Accounts Payable</b>	<b>1,685.93</b>	<b>2,406.66</b>	<b>2,737.71</b>	<b>2,500.29</b>	<b>2,725.73</b>	<b>2,955.34</b>	<b>3,181.43</b>	<b>3,430.12</b>	<b>3,703.97</b>	<b>4,005.84</b>	<b>4,338.97</b>	<b>4,706.96</b>	<b>5,113.85</b>
<b>Income Tax Payable</b>	<b>134.59</b>	<b>343.32</b>	<b>336.50</b>	<b>340.85</b>	<b>363.51</b>	<b>395.93</b>	<b>427.92</b>	<b>463.17</b>	<b>501.98</b>	<b>544.95</b>	<b>592.57</b>	<b>645.36</b>	<b>703.90</b>
<b>Other Current Liabilities</b>	<b>6,183.45</b>	<b>10,606.66</b>	<b>15,271.60</b>	<b>12,630.46</b>	<b>13,769.29</b>	<b>14,929.22</b>	<b>16,071.35</b>	<b>17,327.62</b>	<b>18,710.98</b>	<b>20,235.95</b>	<b>21,918.78</b>	<b>23,777.71</b>	<b>25,833.17</b>
<b>Total Current Liabilities</b>	<b>8,079.71</b>	<b>13,985.29</b>	<b>19,193.00</b>	<b>15,766.12</b>	<b>17,177.51</b>	<b>18,624.48</b>	<b>20,049.51</b>	<b>21,616.85</b>	<b>23,342.60</b>	<b>25,245.03</b>	<b>27,344.41</b>	<b>29,663.46</b>	<b>32,227.67</b>
<b>Long-Term Debt</b>	<b>5,863.99</b>	<b>4,768.28</b>	<b>3,912.22</b>	<b>5,199.87</b>	<b>5,470.69</b>	<b>5,749.27</b>	<b>6,028.14</b>	<b>6,333.09</b>	<b>6,666.11</b>	<b>7,030.17</b>	<b>7,428.62</b>	<b>7,865.19</b>	<b>8,344.07</b>
<b>Deferred Tax Liabilities</b>	<b>291.57</b>	<b>273.61</b>	<b>284.96</b>	<b>284.97</b>	<b>284.99</b>	<b>285.01</b>	<b>285.03</b>	<b>285.04</b>	<b>285.06</b>	<b>285.08</b>	<b>285.10</b>	<b>285.11</b>	<b>285.13</b>
<b>Other Liabilities</b>	<b>2,162.75</b>	<b>3,819.63</b>	<b>5,948.10</b>	<b>4,250.08</b>	<b>4,619.83</b>	<b>4,996.98</b>	<b>5,369.54</b>	<b>5,778.39</b>	<b>6,227.60</b>	<b>6,721.70</b>	<b>7,265.79</b>	<b>7,865.56</b>	<b>8,527.39</b>
Other Liabilities (excl. Deferred Income)	156.25	151.36	323.80	340.19	357.40	375.49	394.49	414.45	435.42	457.45	480.60	504.92	530.46
Deferred Income	2,006.50	3,668.27	5,624.30	3,909.89	4,262.43	4,621.50	4,975.06	5,363.95	5,792.18	6,264.25	6,785.19	7,360.64	7,996.93
<b>Total Liabilities</b>	<b>16,398.02</b>	<b>22,846.80</b>	<b>29,338.28</b>	<b>25,501.05</b>	<b>27,553.02</b>	<b>29,655.74</b>	<b>31,732.22</b>	<b>34,013.39</b>	<b>36,521.37</b>	<b>39,281.97</b>	<b>42,323.91</b>	<b>45,679.33</b>	<b>49,384.27</b>
<b>SHAREHOLDER'S EQUITY</b>													
<b>Common Equity</b>	<b>16,965.01</b>	<b>11,531.89</b>	<b>9,403.33</b>	<b>9,453.61</b>	<b>9,607.63</b>	<b>10,163.63</b>	<b>15,361.25</b>	<b>21,160.92</b>	<b>27,625.96</b>	<b>34,829.26</b>	<b>42,851.87</b>	<b>51,783.93</b>	<b>61,725.78</b>
Common Stock	4,671.15	4,449.41	4,244.56	4,244.56	4,244.57	4,244.57	4,244.57	4,244.57	4,244.57	4,244.57	4,244.57	4,244.57	4,244.57
Retained Earnings	13,130.53	9,458.43	9,655.09	9,705.37	9,859.38	10,415.38	15,613.01	21,412.68	27,877.71	35,081.01	43,103.62	52,035.68	61,977.54
Accumulated Other Comprehensive Income	(836.66)	(2,375.95)	(4,496.32)	(4,496.32)	(4,496.32)	(4,496.32)	(4,496.32)	(4,496.32)	(4,496.32)	(4,496.32)	(4,496.32)	(4,496.32)	(4,496.32)
<b>Total Shareholders' Equity</b>	<b>16,965.01</b>	<b>11,531.89</b>	<b>9,403.33</b>	<b>9,453.61</b>	<b>9,607.63</b>	<b>10,163.63</b>	<b>15,361.25</b>	<b>21,160.92</b>	<b>27,625.96</b>	<b>34,829.26</b>	<b>42,851.87</b>	<b>51,783.93</b>	<b>61,725.78</b>
<b>Total Liabilities &amp; Shareholders' Equity</b>	<b>33,363.03</b>	<b>34,378.69</b>	<b>38,741.60</b>	<b>34,954.65</b>	<b>37,160.64</b>	<b>39,819.37</b>	<b>47,093.47</b>	<b>55,174.31</b>	<b>64,147.32</b>	<b>74,111.23</b>	<b>85,175.77</b>	<b>97,463.25</b>	<b>111,110.05</b>

**ASML Holding NV***Historical Cash Flow Statement*

All Figures Reported in millions of US Dollars

<b>Fiscal Years Ending Dec. 31</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>OPERATING ACTIVITIES</b>					
Net Income / Starting Line	3,057.44	2,901.43	4,051.13	6,953.83	5,910.89
<b>Depreciation, Depletion &amp; Amortization</b>	<b>494.43</b>	<b>493.25</b>	<b>541.72</b>	<b>556.71</b>	<b>613.35</b>
<b>Deferred Taxes &amp; Investment Tax Credit</b>	<b>(281.37)</b>	<b>(265.04)</b>	<b>(240.88)</b>	<b>(495.96)</b>	<b>(592.96)</b>
Other Funds	424.59	412.56	317.37	22.22	422.49
Funds from Operations	3,695.09	3,542.20	4,669.34	7,036.81	6,353.77
<b>Changes in Working Capital</b>	<b>(70.08)</b>	<b>124.91</b>	<b>606.01</b>	<b>5,782.72</b>	<b>2,565.64</b>
Receivables	(547.05)	(392.07)	(704.39)	(1,433.27)	(2,234.16)
Inventories	(608.40)	(452.96)	(805.62)	(571.13)	(2,186.97)
Accounts Payable	115.50	(13.54)	381.09	849.37	426.91
Other Accruals	280.43	91.89	54.15	410.86	462.11
Other Assets/Liabilities	689.45	891.59	1,680.78	6,526.90	6,097.75
Net Operating Cash Flow	3,625.02	3,667.11	5,275.35	12,819.53	8,919.41
<b>INVESTING ACTIVITIES</b>					
<b>Capital Expenditures</b>	<b>(719.06)</b>	<b>(991.54)</b>	<b>(1,140.89)</b>	<b>(1,111.42)</b>	<b>(1,386.55)</b>
Net Assets from Acquisitions	-	-	(253.99)	-	-
Sale of Fixed Assets & Businesses	-	-	-	388.87	-
<b>Purchase/Sale of Investments</b>	<b>134.02</b>	<b>(305.00)</b>	<b>(132.69)</b>	<b>784.48</b>	<b>557.44</b>
Purchase of Investments	1,085.96	1,445.51	1,682.03	1,374.29	351.34
Sale/Maturity of Investments	1,219.98	1,140.51	1,549.34	2,158.77	908.78
<b>Other Funds</b>	<b>5.19</b>	<b>1.01</b>	<b>(13.91)</b>	<b>(147.04)</b>	<b>(252.23)</b>
Net Investing Cash Flow	(579.85)	(1,295.53)	(1,541.47)	(85.10)	(1,081.35)
<b>FINANCING ACTIVITIES</b>					
<b>Cash Dividends Paid</b>	<b>(704.43)</b>	<b>(1,483.79)</b>	<b>(1,215.67)</b>	<b>(1,617.30)</b>	<b>(2,690.28)</b>
<b>Change in Capital Stock</b>	<b>(1,326.51)</b>	<b>(428.45)</b>	<b>(1,333.31)</b>	<b>(10,060.19)</b>	<b>(4,790.24)</b>
<b>Issuance/Reduction of Debt, Net</b>	<b>(3.30)</b>	<b>(4.25)</b>	<b>1,690.58</b>	<b>-</b>	<b>520.86</b>
Repayments of Operating Lease Liabilities				(14.30)	(542.51)
Net Financing Cash Flow	(2,034.24)	(1,916.49)	(858.40)	(11,691.80)	(7,502.17)
<b>All Activities</b>					
Exchange Rate Effect	6.13	5.15	(6.04)	23.99	(3.26)
Net Change in Cash	1,017.06	460.24	2,869.43	1,066.62	332.63

**ASML Holding NV**
*Forecasted Cash Flow Statement*

All Figures in Millions of US Dollars

<b>Fiscal Years Ending Dec. 31</b>	<b>2023E</b>	<b>2024E</b>	<b>2025E</b>	<b>2026E</b>	<b>2027E</b>	<b>2028E</b>	<b>2029E</b>	<b>2030E</b>	<b>2031E</b>	<b>2032E</b>
<b>OPERATING ACTIVITIES</b>										
Net Income / Starting Line	6,545.99	6,705.68	7,319.42	7,946.46	8,866.91	9,884.15	11,012.86	12,265.48	13,655.90	15,199.74
<b>Depreciation, Depletion &amp; Amortization</b>	<b>632.00</b>	<b>860.56</b>	<b>894.76</b>	<b>927.18</b>	<b>961.44</b>	<b>999.35</b>	<b>1,036.92</b>	<b>1,074.33</b>	<b>1,111.71</b>	<b>1,149.20</b>
<b>Changes in Working Capital</b>	<b>(1,657.04)</b>	<b>(7.77)</b>	<b>1.61</b>	<b>0.58</b>	<b>3.33</b>	<b>6.28</b>	<b>9.75</b>	<b>13.60</b>	<b>17.90</b>	<b>22.71</b>
Receivables	1,271.41	(563.49)	(573.93)	(565.12)	(621.60)	(684.48)	(754.55)	(832.66)	(919.79)	(1,017.03)
Inventories	(25.43)	(741.29)	(755.03)	(743.44)	(817.74)	(900.46)	(992.64)	(1,095.40)	(1,210.02)	(1,337.95)
Other Current Assets	68.63	(73.83)	(75.71)	(75.67)	(82.35)	(89.74)	(97.91)	(106.95)	(116.98)	(128.09)
Deferred Tax Assets	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Accounts Payable	(237.42)	225.44	229.62	226.09	248.69	273.85	301.88	333.13	367.99	406.89
Income Tax Payable	4.35	22.65	32.43	31.99	35.25	38.81	42.98	47.62	52.79	58.55
Other Current Liabilities	(2,641.14)	1,138.83	1,159.93	1,142.13	1,256.27	1,383.36	1,524.97	1,682.83	1,858.93	2,055.46
Deferred Tax Liabilities	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Operating Right-of-Use Assets	(98.07)	(16.72)	(16.33)	(16.04)	(15.82)	(15.68)	(15.61)	(15.60)	(15.65)	(15.75)
<b>Net Operating Cash Flow</b>	<b>5,520.95</b>	<b>7,558.47</b>	<b>8,215.79</b>	<b>8,874.21</b>	<b>9,831.69</b>	<b>10,889.78</b>	<b>12,059.53</b>	<b>13,353.40</b>	<b>14,785.51</b>	<b>16,371.65</b>
<b>INVESTING ACTIVITIES</b>										
Changes in short term Investments	(143.42)	(150.68)	(158.30)	(166.31)	(174.73)	(183.57)	(192.86)	(202.62)	(212.87)	(223.64)
Changes in Gross PPE (CapEx)	(2,500.00)	(1,069.89)	(1,101.99)	(1,135.05)	(1,169.10)	(1,204.17)	(1,240.30)	(1,277.51)	(1,315.83)	(1,355.31)
Changes in Long Term Investments	(104.62)	(118.19)	(131.43)	(144.46)	(157.36)	(170.22)	(183.14)	(196.18)	(209.41)	(222.91)
Changes in Other Assets	53.24	77.94	67.62	58.74	50.35	42.86	36.15	30.11	24.64	19.64
<b>Net Investing Cash Flow</b>	<b>(2,694.79)</b>	<b>(1,260.82)</b>	<b>(1,324.10)</b>	<b>(1,387.08)</b>	<b>(1,450.84)</b>	<b>(1,515.10)</b>	<b>(1,580.14)</b>	<b>(1,646.19)</b>	<b>(1,713.48)</b>	<b>(1,782.22)</b>
<b>FINANCING ACTIVITIES</b>										
Changes in ST Debt and Current Portion of LT Debt	(552.67)	24.47	25.01	24.81	27.14	29.73	32.61	35.80	39.35	43.31
Changes in LT Debt	1,287.66	270.81	278.58	278.88	304.95	333.01	364.06	398.45	436.57	478.88
Changes in Other Liabilities	(1,698.02)	369.75	377.15	372.56	408.85	449.20	494.10	544.09	599.77	661.84
Dividends Paid	(2,245.71)	(2,301.66)	(2,513.42)	(2,748.83)	(3,067.24)	(3,419.12)	(3,809.56)	(4,242.87)	(4,723.84)	(5,257.88)
Shares Repurchased	(4,250.00)	(4,250.00)	(4,250.00)	-	-	-	-	-	-	-
<b>Net Financing Cash Flow</b>	<b>(7,458.75)</b>	<b>(5,886.63)</b>	<b>(6,082.68)</b>	<b>(2,072.59)</b>	<b>(2,326.29)</b>	<b>(2,607.17)</b>	<b>(2,918.79)</b>	<b>(3,264.53)</b>	<b>(3,648.14)</b>	<b>(4,073.86)</b>
<b>Net Change in Cash</b>	<b>(4,632.59)</b>	<b>411.02</b>	<b>809.00</b>	<b>5,414.55</b>	<b>6,054.56</b>	<b>6,767.50</b>	<b>7,560.60</b>	<b>8,442.68</b>	<b>9,423.89</b>	<b>10,515.57</b>
Cash and Cash Equivalents at the Beginning of Period	5,037.63	405.04	816.06	1,625.06	7,039.60	13,094.16	19,861.67	27,422.27	35,864.95	45,288.83
Cash and Cash Equivalents at the End of Period	405.04	816.06	1,625.06	7,039.60	13,094.16	19,861.67	27,422.27	35,864.95	45,288.83	55,804.41

**ASML Holding NV**

*Common Size Income Statement*

All Figures in Millions of US Dollars

<b>Fiscal Years Ending Dec. 31</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023E</b>	<b>2024E</b>	<b>2025E</b>	<b>2026E</b>	<b>2027E</b>	<b>2028E</b>	<b>2029E</b>	<b>2030E</b>	<b>2031E</b>	<b>2032E</b>
Sales	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Cost of Goods Sold (COGS) incl. D&A	52.57%	48.14%	50.53%	51.98%	52.63%	52.49%	52.38%	52.26%	52.16%	52.04%	51.93%	51.81%	51.69%
COGS excluding D&A	49.17%	45.70%	47.79%	49.38%	49.38%	49.38%	49.38%	49.38%	49.38%	49.38%	49.38%	49.38%	49.38%
Depreciation	2.52%	1.73%	2.10%	2.02%	2.74%	2.67%	2.60%	2.53%	2.45%	2.36%	2.27%	2.17%	2.07%
Amortization of Intangibles	0.88%	0.71%	0.64%	0.57%	0.50%	0.44%	0.39%	0.35%	0.32%	0.30%	0.28%	0.25%	0.23%
<b>Gross Income</b>	<b>47.43%</b>	<b>51.86%</b>	<b>49.47%</b>	<b>48.02%</b>	<b>47.37%</b>	<b>47.51%</b>	<b>47.62%</b>	<b>47.74%</b>	<b>47.84%</b>	<b>47.96%</b>	<b>48.07%</b>	<b>48.19%</b>	<b>48.31%</b>
SG&A Expense	18.44%	16.73%	18.77%	18.28%	18.28%	18.28%	18.28%	18.28%	18.28%	18.28%	18.28%	18.28%	18.28%
Research & Development	14.80%	13.06%	14.51%	14.28%	14.28%	14.28%	14.28%	14.28%	14.28%	14.28%	14.28%	14.28%	14.28%
Other SG&A	3.64%	3.67%	4.26%	4.01%	4.01%	4.01%	4.01%	4.01%	4.01%	4.01%	4.01%	4.01%	4.01%
<b>EBIT (Operating Income)</b>	<b>28.98%</b>	<b>35.12%</b>	<b>30.70%</b>	<b>29.73%</b>	<b>29.09%</b>	<b>29.22%</b>	<b>29.34%</b>	<b>29.45%</b>	<b>29.56%</b>	<b>29.67%</b>	<b>29.79%</b>	<b>29.91%</b>	<b>30.02%</b>
Nonoperating Interest Income	0.06%	0.05%	0.08%	1.92%	0.93%	0.97%	1.08%	1.87%	2.63%	3.36%	4.05%	4.71%	5.33%
Other Income (Expense)	0.00%	1.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Interest Expense	0.31%	0.29%	0.29%	0.93%	0.99%	0.96%	0.94%	0.92%	0.89%	0.87%	0.85%	0.83%	0.81%
<b>Pretax Income</b>	<b>28.73%</b>	<b>36.03%</b>	<b>30.49%</b>	<b>30.72%</b>	<b>29.03%</b>	<b>29.23%</b>	<b>29.48%</b>	<b>30.41%</b>	<b>31.30%</b>	<b>32.16%</b>	<b>32.99%</b>	<b>33.79%</b>	<b>34.55%</b>
Income Taxes	-3.95%	-5.49%	-4.58%	-4.46%	-4.36%	-4.38%	-4.40%	-4.42%	-4.43%	-4.45%	-4.47%	-4.49%	-4.50%
Equity in Earnings of Affiliates	0.63%	1.07%	0.65%	0.63%	0.60%	0.58%	0.57%	0.56%	0.54%	0.53%	0.51%	0.49%	0.48%
<b>Net Income</b>	<b>25.42%</b>	<b>31.61%</b>	<b>26.56%</b>	<b>26.89%</b>	<b>25.27%</b>	<b>25.44%</b>	<b>25.65%</b>	<b>26.55%</b>	<b>27.41%</b>	<b>28.23%</b>	<b>29.03%</b>	<b>29.80%</b>	<b>30.53%</b>

## ASML Holding NV

## Common Size Balance Sheet

All figures in millions of US Dollars

Fiscal Years Ending Dec. 31	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
<b>ASSETS</b>													
<b>Cash &amp; Short-Term Investments</b>	<b>56.45%</b>	<b>39.24%</b>	<b>35.38%</b>	<b>13.90%</b>	<b>14.86%</b>	<b>17.07%</b>	<b>33.87%</b>	<b>50.07%</b>	<b>65.64%</b>	<b>80.57%</b>	<b>94.85%</b>	<b>108.46%</b>	<b>121.40%</b>
Cash Only	34.58%	24.92%	22.64%	1.66%	3.07%	5.65%	22.72%	39.20%	55.07%	70.30%	84.89%	98.81%	112.07%
Total Short Term Investments	21.86%	14.32%	12.74%	12.23%	11.79%	11.42%	11.15%	10.86%	10.57%	10.27%	9.96%	9.64%	9.33%
<b>Short-Term Receivables</b>	<b>25.59%</b>	<b>23.56%</b>	<b>33.80%</b>	<b>25.67%</b>	<b>25.67%</b>	<b>25.67%</b>	<b>25.67%</b>	<b>25.67%</b>	<b>25.67%</b>	<b>25.67%</b>	<b>25.67%</b>	<b>25.67%</b>	<b>25.67%</b>
Accounts Receivable, Net	10.98%	16.50%	26.17%	16.41%	16.41%	16.41%	16.41%	16.41%	16.41%	16.41%	16.41%	16.41%	16.41%
Other Receivables	14.61%	7.05%	7.63%	9.26%	9.26%	9.26%	9.26%	9.26%	9.26%	9.26%	9.26%	9.26%	9.26%
<b>Inventories</b>	<b>37.13%</b>	<b>28.27%</b>	<b>36.83%</b>	<b>33.77%</b>	<b>33.77%</b>	<b>33.77%</b>	<b>33.77%</b>	<b>33.77%</b>	<b>33.77%</b>	<b>33.77%</b>	<b>33.77%</b>	<b>33.77%</b>	<b>33.77%</b>
<b>Other Current Assets</b>	<b>3.15%</b>	<b>2.97%</b>	<b>4.62%</b>	<b>3.94%</b>	<b>3.89%</b>	<b>3.85%</b>	<b>3.82%</b>	<b>3.79%</b>	<b>3.76%</b>	<b>3.73%</b>	<b>3.69%</b>	<b>3.66%</b>	<b>3.63%</b>
Prepaid Expenses	2.14%	1.93%	3.25%	2.63%	2.63%	2.63%	2.63%	2.63%	2.63%	2.63%	2.63%	2.63%	2.63%
Miscellaneous Current Assets	1.01%	1.04%	1.36%	1.31%	1.26%	1.22%	1.19%	1.16%	1.13%	1.10%	1.06%	1.03%	1.00%
<b>Total Current Assets</b>	<b>122.32%</b>	<b>94.04%</b>	<b>110.62%</b>	<b>77.27%</b>	<b>78.19%</b>	<b>80.36%</b>	<b>97.13%</b>	<b>113.30%</b>	<b>128.84%</b>	<b>143.74%</b>	<b>157.98%</b>	<b>171.56%</b>	<b>184.46%</b>
<b>Net Property, Plant &amp; Equipment</b>	<b>21.62%</b>	<b>16.27%</b>	<b>19.84%</b>	<b>25.54%</b>	<b>24.71%</b>	<b>23.95%</b>	<b>23.31%</b>	<b>22.59%</b>	<b>21.81%</b>	<b>20.99%</b>	<b>20.13%</b>	<b>19.26%</b>	<b>18.37%</b>
Gross PPE	39.83%	29.06%	33.52%	40.91%	41.56%	42.16%	42.83%	43.22%	43.36%	43.28%	42.98%	42.49%	41.83%
Accumulated Depreciation	19.59%	13.61%	14.60%	15.37%	16.84%	18.20%	19.51%	20.63%	21.55%	22.29%	22.85%	23.23%	23.46%
<b>Operating Lease Right-of-Use</b>	<b>1.38%</b>	<b>0.82%</b>	<b>0.92%</b>	<b>1.25%</b>	<b>1.21%</b>	<b>1.17%</b>	<b>1.14%</b>	<b>1.10%</b>	<b>1.07%</b>	<b>1.03%</b>	<b>0.98%</b>	<b>0.94%</b>	<b>0.90%</b>
<b>Total Long-Term Investments</b>	<b>10.50%</b>	<b>6.88%</b>	<b>6.18%</b>	<b>6.08%</b>	<b>6.02%</b>	<b>6.01%</b>	<b>6.05%</b>	<b>6.08%</b>	<b>6.10%</b>	<b>6.11%</b>	<b>6.11%</b>	<b>6.09%</b>	<b>6.05%</b>
LT Investment - Affiliate Companies	6.30%	4.61%	4.43%	4.67%	4.89%	5.10%	5.30%	5.48%	5.61%	5.71%	5.78%	5.83%	5.84%
Other Long Term Investments	0.95%	0.24%	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Long-Term Notes Receivable	3.25%	2.02%	1.75%	1.40%	1.13%	0.91%	0.74%	0.60%	0.49%	0.32%	0.32%	0.26%	0.21%
<b>Intangible Assets</b>	<b>43.60%</b>	<b>28.47%</b>	<b>25.89%</b>	<b>23.09%</b>	<b>20.68%</b>	<b>18.63%</b>	<b>16.92%</b>	<b>15.35%</b>	<b>13.89%</b>	<b>12.54%</b>	<b>11.31%</b>	<b>10.17%</b>	<b>9.13%</b>
Goodwill	35.54%	23.55%	21.85%	19.97%	18.32%	16.90%	15.69%	14.56%	13.48%	12.46%	11.51%	10.61%	9.76%
Other Intangible Assets	8.05%	4.92%	4.04%	3.12%	2.36%	1.74%	1.22%	0.79%	0.41%	0.08%	-0.20%	-0.44%	-0.64%
<b>Deferred Tax Assets</b>	<b>5.16%</b>	<b>5.68%</b>	<b>8.02%</b>	<b>7.33%</b>	<b>6.72%</b>	<b>6.20%</b>	<b>5.76%</b>	<b>5.34%</b>	<b>4.94%</b>	<b>4.57%</b>	<b>4.21%</b>	<b>3.88%</b>	<b>3.57%</b>
<b>Other Assets</b>	<b>6.18%</b>	<b>4.94%</b>	<b>3.55%</b>	<b>3.02%</b>	<b>2.48%</b>	<b>2.05%</b>	<b>1.72%</b>	<b>1.44%</b>	<b>1.22%</b>	<b>1.03%</b>	<b>0.88%</b>	<b>0.76%</b>	<b>0.66%</b>
Deferred Charges	6.07%	4.22%	3.47%	2.78%	2.24%	1.81%	1.48%	1.20%	0.98%	0.79%	0.64%	0.52%	0.42%
Tangible Other Assets	0.11%	0.72%	0.08%	0.24%	0.24%	0.24%	0.24%	0.24%	0.24%	0.24%	0.24%	0.24%	0.24%
<b>Total Assets</b>	<b>209.37%</b>	<b>156.28%</b>	<b>174.10%</b>	<b>143.58%</b>	<b>140.01%</b>	<b>138.37%</b>	<b>152.02%</b>	<b>165.20%</b>	<b>177.86%</b>	<b>190.00%</b>	<b>201.60%</b>	<b>212.65%</b>	<b>223.14%</b>
<b>LIABILITIES</b>													
<b>ST Debt &amp; Curr. Portion LT Debt</b>	<b>0.48%</b>	<b>2.86%</b>	<b>3.81%</b>	<b>1.21%</b>	<b>1.20%</b>	<b>1.20%</b>	<b>1.19%</b>	<b>1.19%</b>	<b>1.18%</b>	<b>1.17%</b>	<b>1.17%</b>	<b>1.16%</b>	<b>1.16%</b>
<b>Accounts Payable</b>	<b>10.58%</b>	<b>10.94%</b>	<b>12.30%</b>	<b>10.27%</b>	<b>10.27%</b>	<b>10.27%</b>	<b>10.27%</b>	<b>10.27%</b>	<b>10.27%</b>	<b>10.27%</b>	<b>10.27%</b>	<b>10.27%</b>	<b>10.27%</b>
<b>Income Tax Payable</b>	<b>0.84%</b>	<b>1.56%</b>	<b>1.51%</b>	<b>1.40%</b>	<b>1.37%</b>	<b>1.38%</b>	<b>1.38%</b>	<b>1.39%</b>	<b>1.39%</b>	<b>1.40%</b>	<b>1.40%</b>	<b>1.41%</b>	<b>1.41%</b>
<b>Other Current Liabilities</b>	<b>38.80%</b>	<b>48.22%</b>	<b>68.63%</b>	<b>51.88%</b>	<b>51.88%</b>	<b>51.88%</b>	<b>51.88%</b>	<b>51.88%</b>	<b>51.88%</b>	<b>51.88%</b>	<b>51.88%</b>	<b>51.88%</b>	<b>51.88%</b>
<b>Total Current Liabilities</b>	<b>50.70%</b>	<b>63.58%</b>	<b>86.25%</b>	<b>64.76%</b>	<b>64.72%</b>	<b>64.72%</b>	<b>64.72%</b>	<b>64.72%</b>	<b>64.72%</b>	<b>64.72%</b>	<b>64.72%</b>	<b>64.72%</b>	<b>64.72%</b>
<b>Long-Term Debt</b>	<b>36.80%</b>	<b>21.68%</b>	<b>17.58%</b>	<b>21.36%</b>	<b>20.61%</b>	<b>19.98%</b>	<b>19.46%</b>	<b>18.96%</b>	<b>18.48%</b>	<b>18.02%</b>	<b>17.58%</b>	<b>17.16%</b>	<b>16.76%</b>
<b>Deferred Tax Liabilities</b>	<b>1.83%</b>	<b>1.24%</b>	<b>1.28%</b>	<b>1.17%</b>	<b>1.07%</b>	<b>0.99%</b>	<b>0.92%</b>	<b>0.85%</b>	<b>0.79%</b>	<b>0.73%</b>	<b>0.67%</b>	<b>0.62%</b>	<b>0.57%</b>
<b>Other Liabilities</b>	<b>13.57%</b>	<b>17.36%</b>	<b>26.73%</b>	<b>17.46%</b>	<b>17.41%</b>	<b>17.36%</b>	<b>17.33%</b>	<b>17.30%</b>	<b>17.27%</b>	<b>17.23%</b>	<b>17.20%</b>	<b>17.16%</b>	<b>17.13%</b>
Other Liabilities (excl. Deferred Income)	0.98%	0.69%	1.46%	1.40%	1.35%	1.30%	1.27%	1.24%	1.21%	1.17%	1.14%	1.10%	1.07%
Deferred Income	12.59%	16.68%	25.27%	16.06%	16.06%	16.06%	16.06%	16.06%	16.06%	16.06%	16.06%	16.06%	16.06%
<b>Total Liabilities</b>	<b>102.90%</b>	<b>103.86%</b>	<b>131.84%</b>	<b>104.75%</b>	<b>103.81%</b>	<b>103.06%</b>	<b>102.43%</b>	<b>101.84%</b>	<b>101.26%</b>	<b>100.71%</b>	<b>100.18%</b>	<b>99.67%</b>	<b>99.18%</b>
<b>SHAREHOLDER'S EQUITY</b>													
<b>Common Equity</b>	<b>106.46%</b>	<b>52.42%</b>	<b>42.26%</b>	<b>38.83%</b>	<b>36.20%</b>	<b>35.32%</b>	<b>49.59%</b>	<b>63.36%</b>	<b>76.60%</b>	<b>89.29%</b>	<b>101.43%</b>	<b>112.99%</b>	<b>123.96%</b>
Common Stock	29.31%	20.23%	19.07%	17.43%	15.99%	14.75%	13.70%	12.71%	11.77%	10.88%	10.05%	9.26%	8.52%
Retained Earnings	82.40%	43.00%	43.39%	39.87%	37.15%	36.19%	50.40%	64.11%	77.30%	89.94%	102.02%	113.54%	124.47%
Accumulated Other Comprehensive Income	-5.25%	-10.80%	-20.21%	-18.47%	-16.94%	-15.63%	-14.51%	-13.46%	-12.47%	-11.53%	-10.64%	-9.81%	-9.03%
<b>Total Shareholders' Equity</b>	<b>106.46%</b>	<b>52.42%</b>	<b>42.26%</b>	<b>38.83%</b>	<b>36.20%</b>	<b>35.32%</b>	<b>49.59%</b>	<b>63.36%</b>	<b>76.60%</b>	<b>89.29%</b>	<b>101.43%</b>	<b>112.99%</b>	<b>123.96%</b>
<b>Total Liabilities &amp; Shareholders' Equity</b>	<b>209.37%</b>	<b>156.28%</b>	<b>174.10%</b>	<b>143.58%</b>	<b>140.01%</b>	<b>138.37%</b>	<b>152.02%</b>	<b>165.20%</b>	<b>177.86%</b>	<b>190.00%</b>	<b>201.60%</b>	<b>212.65%</b>	<b>223.14%</b>

ASML Holding NV  
Value Driver Estimation  
All figures in millions of US Dollars

Fiscal Years Ending Dec. 31	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
<b>NOPLAT:</b>													
<b>Revenue</b>	<b>15,935.13</b>	<b>21,997.85</b>	<b>22,252.70</b>	<b>24345.53</b>	<b>26540.65</b>	<b>28776.44</b>	<b>30977.93</b>	<b>33399.42</b>	<b>36065.89</b>	<b>39005.30</b>	<b>42249.00</b>	<b>45832.13</b>	<b>49794.09</b>
Less: COGS excluding D&A	7,835.73	10,053.46	10,635.02	12,022.92	13,106.97	14,211.10	15,298.29	16,494.13	17,810.95	19,262.56	20,864.45	22,633.96	24,590.55
Less: Depreciation & Amortization Expense	541.72	537.33	609.88	632.00	860.56	894.76	927.18	961.44	999.35	1,036.92	1,074.33	1,111.71	1,149.20
<b>Less: SG&amp;A Expense</b>	<b>2,939.08</b>	<b>3,681.16</b>	<b>4,175.73</b>	<b>4,451.51</b>	<b>4,852.88</b>	<b>5,261.69</b>	<b>5,664.23</b>	<b>6,106.99</b>	<b>6,594.55</b>	<b>7,132.01</b>	<b>7,725.11</b>	<b>8,380.28</b>	<b>9,104.71</b>
Research & Development	2,358.49	2,873.51	3,228.17	3,476.02	3,789.44	4,108.66	4,422.99	4,768.72	5,149.44	5,569.12	6,032.25	6,543.85	7,109.53
Other SG&A	580.59	807.65	947.56	975.49	1,063.45	1,153.03	1,241.24	1,338.27	1,445.11	1,562.89	1,692.86	1,836.43	1,995.18
<b>Add: Implied Interest in Operating Leases</b>	<b>11.02</b>	<b>10.53</b>	<b>8.67</b>	<b>9.83</b>	<b>14.52</b>	<b>15.32</b>	<b>16.10</b>	<b>16.86</b>	<b>17.62</b>	<b>18.37</b>	<b>19.12</b>	<b>19.86</b>	<b>20.61</b>
<b>EBITA</b>	<b>4,629.63</b>	<b>7,736.43</b>	<b>6,840.74</b>	<b>7,248.93</b>	<b>7,734.76</b>	<b>8,424.21</b>	<b>9,104.34</b>	<b>9,853.72</b>	<b>10,678.66</b>	<b>11,592.17</b>	<b>12,604.23</b>	<b>13,726.05</b>	<b>14,970.24</b>
<b>Tax Rate</b>	<b>13.58%</b>	<b>15.61%</b>	<b>14.90%</b>	<b>15.00%</b>	<b>15.00%</b>	<b>15.00%</b>	<b>15.00%</b>	<b>15.00%</b>	<b>15.00%</b>	<b>15.00%</b>	<b>15.00%</b>	<b>15.00%</b>	<b>15.00%</b>
Income Taxes	628.70	1,207.28	1,019.34	1,085.87	1,158.04	1,261.33	1,363.24	1,475.53	1,599.16	1,736.07	1,887.77	2,055.93	2,242.44
Plus: Tax Shield on Operating Lease Interest	1.50	1.64	1.29	1.47	2.18	2.30	2.41	2.53	2.64	2.76	2.87	2.98	3.09
Plus: Tax shield on Interest Expense	6.70	10.07	9.52	34.12	39.39	41.51	43.69	45.87	48.25	50.85	53.69	56.81	60.22
Less: Tax on Interest Income	1.30	1.84	2.54	70.18	36.90	42.06	50.40	93.86	142.33	196.38	256.62	323.73	398.46
Less: Tax on non-operating Income	-	39.47	-	-	-	-	-	-	-	-	-	-	-
<b>Total Adjusted Taxes</b>	<b>635.60</b>	<b>1,177.68</b>	<b>1,027.62</b>	<b>1,051.28</b>	<b>1,162.71</b>	<b>1,263.08</b>	<b>1,358.94</b>	<b>1,430.07</b>	<b>1,507.71</b>	<b>1,593.29</b>	<b>1,687.70</b>	<b>1,791.98</b>	<b>1,907.29</b>
<b>Change in Deferred Taxes</b>	<b>(293.31)</b>	<b>(445.79)</b>	<b>(524.51)</b>	<b>0.63</b>	<b>0.63</b>	<b>0.63</b>	<b>0.63</b>	<b>0.63</b>	<b>0.63</b>	<b>0.63</b>	<b>0.63</b>	<b>0.63</b>	<b>0.63</b>
<b>NOPLAT</b>	<b>3,700.73</b>	<b>6,112.97</b>	<b>5,288.61</b>	<b>6,198.28</b>	<b>6,572.69</b>	<b>7,161.76</b>	<b>7,746.03</b>	<b>8,424.29</b>	<b>9,171.58</b>	<b>9,999.52</b>	<b>10,917.16</b>	<b>11,934.70</b>	<b>13,063.58</b>
<b>Invested Capital:</b>													
PLUS: Normal Cash	3187.03	4399.57	4450.54	4869.11	5308.13	5755.29	6195.59	6679.88	7213.18	7801.06	8449.80	9166.43	9958.82
PLUS: Accounts Receivable, Net	1,749.06	3,630.62	5,822.60	3,995.10	4,355.32	4,722.21	5,083.48	5,480.85	5,918.41	6,400.77	6,933.06	7,521.05	8,171.21
PLUS: Other Receivables	2,328.91	1,551.48	1,698.31	2,254.40	2,457.66	2,664.70	2,868.56	3,092.79	3,339.70	3,611.89	3,912.26	4,244.06	4,610.93
PLUS: Inventories	5,916.11	6,217.87	8,196.05	8,221.49	8,962.78	9,717.81	10,461.25	11,278.99	12,179.45	13,172.09	14,267.49	15,477.51	16,815.46
PLUS: Other Current Assets	502.02	654.23	1,027.01	958.39	1,032.21	1,107.93	1,183.59	1,265.94	1,355.68	1,453.59	1,560.54	1,677.52	1,805.60
PLUS: Operating Lease Right-of-Use	220.36	181.38	205.66	303.73	320.45	336.78	352.82	368.64	384.32	399.94	415.54	431.19	446.94
LESS: Accounts Payable	1,685.93	2,406.66	2,737.71	2,500.29	2,725.73	2,955.34	3,181.43	3,430.12	3,703.97	4,005.84	4,338.97	4,706.96	5,113.85
LESS: Other Current Liabilities	6,183.45	10,606.66	15,271.60	12,630.46	13,769.29	14,929.22	16,071.35	17,327.62	18,710.98	20,235.95	21,918.78	23,777.71	25,833.17
LESS: Income Tax Payable	134.59	343.32	336.50	340.85	363.51	395.93	427.92	463.17	501.98	544.95	592.57	645.36	703.90
<b>Operating Working Capital</b>	<b>5,899.51</b>	<b>3,278.51</b>	<b>3,054.36</b>	<b>5,130.61</b>	<b>5,578.04</b>	<b>6,024.22</b>	<b>6,464.57</b>	<b>6,946.17</b>	<b>7,473.82</b>	<b>8,052.59</b>	<b>8,688.36</b>	<b>9,387.72</b>	<b>10,158.03</b>
<b>PLUS: Net PPE</b>	<b>3,224.18</b>	<b>3,397.95</b>	<b>4,209.45</b>	<b>6,216.75</b>	<b>6,558.99</b>	<b>6,893.26</b>	<b>7,221.48</b>	<b>7,545.32</b>	<b>7,866.34</b>	<b>8,185.90</b>	<b>8,505.27</b>	<b>8,825.59</b>	<b>9,147.88</b>
Intangible Assets (non-goodwill)	1,283.38	1,082.73	899.05	759.75	626.84	499.79	379.45	263.26	147.07	30.88	(85.31)	(201.50)	(317.69)
Other Assets	985.08	1,087.28	789.55	736.31	658.37	590.75	532.01	481.66	438.80	402.65	372.54	347.91	328.27
<b>PLUS: Other Operating Assets</b>	<b>2,268.46</b>	<b>2,170.01</b>	<b>1,688.60</b>	<b>1,496.06</b>	<b>1,285.21</b>	<b>1,090.54</b>	<b>911.46</b>	<b>744.92</b>	<b>585.88</b>	<b>433.54</b>	<b>287.24</b>	<b>146.41</b>	<b>10.58</b>
Deferred Income	2,006.50	3,668.27	5,624.30	3,909.89	4,262.43	4,621.50	4,975.06	5,363.95	5,792.18	6,264.25	6,785.19	7,360.64	7,996.93
LESS: Other Operating Liabilities	2,006.50	3,668.27	5,624.30	3,909.89	4,262.43	4,621.50	4,975.06	5,363.95	5,792.18	6,264.25	6,785.19	7,360.64	7,996.93
<b>Invested Capital</b>	<b>9,385.66</b>	<b>5,178.20</b>	<b>3,328.12</b>	<b>8,933.52</b>	<b>9,159.80</b>	<b>9,386.53</b>	<b>9,622.45</b>	<b>9,872.47</b>	<b>10,133.85</b>	<b>10,407.77</b>	<b>10,695.68</b>	<b>10,999.08</b>	<b>11,319.57</b>
<b>Free Cash Flow (FCF):</b>													
NOPLAT	3,700.73	6,112.97	5,288.61	6,198.28	6,572.69	7,161.76	7,746.03	8,424.29	9,171.58	9,999.52	10,917.16	11,934.70	13,063.58
Change in IC	1,012.64	(4,207.46)	(1,850.08)	5,605.40	226.28	226.72	235.92	250.02	261.38	273.92	287.91	303.40	320.49
<b>FCF</b>	<b>2,688.08</b>	<b>10,320.43</b>	<b>7,138.69</b>	<b>592.88</b>	<b>6,346.41</b>	<b>6,935.04</b>	<b>7,510.11</b>	<b>8,174.27</b>	<b>8,910.20</b>	<b>9,725.59</b>	<b>10,629.25</b>	<b>11,631.30</b>	<b>12,743.09</b>
<b>Return on Invested Capital (ROIC):</b>													
NOPLAT	3,700.73	6,112.97	5,288.61	6,198.28	6,572.69	7,161.76	7,746.03	8,424.29	9,171.58	9,999.52	10,917.16	11,934.70	13,063.58
Beginning IC	8,373.01	9,385.66	5,178.20	3,328.12	8,933.52	9,159.80	9,386.53	9,622.45	9,872.47	10,133.85	10,407.77	10,695.68	10,999.08
<b>ROIC</b>	<b>44.20%</b>	<b>65.13%</b>	<b>102.13%</b>	<b>186.24%</b>	<b>73.57%</b>	<b>78.19%</b>	<b>82.52%</b>	<b>87.55%</b>	<b>92.90%</b>	<b>98.67%</b>	<b>104.89%</b>	<b>111.58%</b>	<b>118.77%</b>
<b>Economic Profit (EP):</b>													
Beginning IC	8,373.01	9,385.66	5,178.20	3,328.12	8,933.52	9,159.80	9,386.53	9,622.45	9,872.47	10,133.85	10,407.77	10,695.68	10,999.08
x (ROIC - WACC)	34.63%	55.56%	92.57%	176.67%	64.01%	68.62%	72.96%	77.98%	83.33%	89.11%	95.33%	102.02%	109.20%
<b>EP</b>	<b>2,899.66</b>	<b>5,215.02</b>	<b>4,793.20</b>	<b>5,879.88</b>	<b>5,718.00</b>	<b>6,285.43</b>	<b>6,848.00</b>	<b>7,503.69</b>	<b>8,227.06</b>	<b>9,029.99</b>	<b>9,921.42</b>	<b>10,911.42</b>	<b>12,011.27</b>

ASML Holding NV  
Key Management Ratios

<i>Fiscal Years Ending Dec. 31</i>	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
<b>Liquidity Ratios:</b>													
<i>Current Ratio - Current Assets/Current Liabilities</i>	2.41	1.48	1.28	1.19	1.21	1.24	1.50	1.75	1.99	2.22	2.44	2.65	2.85
<i>Quick Ratio - (Cash &amp; Equivalents + Marketable Securities+ AR)/Current Liabilities</i>	0.90	0.65	0.57	0.28	0.30	0.34	0.60	0.86	1.10	1.34	1.57	1.78	1.99
<i>Cash Ratio - Cash and Equivalents/Current Liabilities</i>	0.68	0.39	0.26	0.03	0.05	0.09	0.35	0.61	0.85	1.09	1.31	1.53	1.73
<b>Asset-Management Ratios:</b>													
<i>Asset Turnover Ratio - Revenue/Total Assets</i>	0.48	0.64	0.57	0.70	0.71	0.72	0.66	0.61	0.56	0.53	0.50	0.47	0.45
<i>Inventory Turnover Ratio - COGS/Inventory</i>	1.42	1.70	1.37	1.54	1.56	1.55	1.55	1.55	1.54	1.54	1.54	1.53	1.53
<i>Total Asset Turnover - Net Revenue/Average Total Assets</i>	0.54	0.65	0.61	0.66	0.74	0.75	0.71	0.65	0.60	0.56	0.53	0.50	0.48
<i>Fixed Asset Turnover - Net Revenue/Average Fixed Assets</i>	5.69	6.64	5.85	4.67	4.15	4.28	4.39	4.52	4.68	4.86	5.06	5.29	5.54
<b>Financial Leverage Ratios:</b>													
<i>Debt to Equity Ratio - Total Liabilities/Total Shareholder Equity</i>	0.97	1.98	3.12	2.70	2.87	2.92	2.07	1.61	1.32	1.13	0.99	0.88	0.80
<i>Debt to Capital - Total Liabilities/(Total Liabilities+Total Shareholder Equity)</i>	0.49	0.66	0.76	0.73	0.74	0.74	0.67	0.62	0.57	0.53	0.50	0.47	0.44
<i>Debt to EBITA Ratio - Total Liabilities/EBITA</i>	3.54	2.95	4.29	3.52	3.56	3.52	3.49	3.45	3.42	3.39	3.36	3.33	3.30
<b>Profitability Ratios:</b>													
<i>Return on Equity - NI/Beg TSE</i>	0.29	0.41	0.51	0.70	0.71	0.76	0.78	0.58	0.47	0.40	0.35	0.32	0.29
<i>Return on Assets - NI/Total Assets</i>	0.12	0.20	0.15	0.19	0.18	0.18	0.17	0.16	0.15	0.15	0.14	0.14	0.14
<i>Net Profit Margin - NI/Sales</i>	0.25	0.32	0.27	0.27	0.25	0.25	0.26	0.27	0.27	0.28	0.29	0.30	0.31
<b>Payout Policy Ratios:</b>													
<i>Dividend Payout Ratio - Dividend/EPS</i>	0.32	0.29	0.30	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
<i>Retention Ratio - Retained Earnings/NI</i>	25.36	21.27	24.83	28.45	32.95	39.68	67.80	106.01	157.33	225.70	316.14	435.08	590.74



## ASML Holding NV

### Weighted Average Cost of Capital (WACC) Estimation

#### Cost of Equity:

Risk-Free Rate	3.40%
Beta	1.23
Equity Risk Premium	5.10%
<b>Cost of Equity</b>	<b>9.67%</b>

#### ASSUMPTIONS:

10-year US Treasury Bond  
5Y Monthly Beta via Bloomberg  
Geometric Avg Premium 1928-2022

#### Cost of Debt:

Risk-Free Rate	3.40%
Implied Default Premium	1.38%
Pre-Tax Cost of Debt	4.78%
Marginal Tax Rate	15%
<b>After-Tax Cost of Debt</b>	<b>4.06%</b>

10-Year US Treasury Bond

Average of other Moody's A2 rated companies 10Y bonds

#### Market Value of Common Equity:

Total Shares Outstanding	394.59
Current Stock Price	\$654.66
<b>MV of Equity</b>	<b>258,321.90</b>

#### MV Weights

98.11%

#### Market Value of Debt:

Short-Term Debt & Current Portion of Long-Term Debt	847.18
Long-Term Debt	3,912.22
PV of Operating Leases	205.66
<b>MV of Total Debt</b>	<b>4,965.06</b>

1.89%

#### Market Value of the Firm

263,286.97

100.00%

Estimated WACC

9.57%

**ASML Holding NV**

Discounted Cash Flow (DCF) and Economic Profit (EP) Valuation Models

Key Inputs:

CV Growth of NOPLAT	5.00%
CV Year ROIC	118.77%
WACC	9.57%
Cost of Equity	9.67%

Fiscal Years Ending Dec. 31	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
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**DCF Model:**

Free Cash Flow (FCF)	592.9	6346.4	6935.0	7510.1	8174.3	8910.2	9725.6	10629.3	11631.3	12743.1
Continuing Value (CV)										273988.6
PV of FCF	541.1	5286.5	5272.4	5211.0	5176.6	5150.0	5130.4	5117.5	5111.0	120394.6

Value of Operating Assets: 162391.1

**Non-Operating Adjustments**

Plus: Excess Cash	587.1
Plus: ST Investments	2834.4
Plus: LT Investments	1374.6
Less: ESOP	(42.7)
Less: LT Debt	(3,912.2)
Less: PV of Operating Leases	(205.7)
Less: ST Debt & Current Portion of LT	(847.2)

Value of Equity 162179.4

Shares Outstanding 394.6

Intrinsic Value of Last FYE \$ 411.01

**Implied Price as of Today \$ 420.11**

**EP Model:**

Economic Profit (EP)	5879.9	5718.0	6285.4	6848.0	7503.7	8227.1	9030.0	9921.4	10911.4	12011.3
Continuing Value (CV)										262989.5
PV of EP	5366.5	4763.0	4778.5	4751.6	4752.0	4755.1	4763.5	4776.7	4794.6	115561.5

Total PV of EP 159063.0

Invested Capital (last FYE) 3328.1

Value of Operating Assets: 162391.1

**Non-Operating Adjustments**

Plus: Excess Cash	587.1
Plus: ST Investments	2834.4
Plus: LT Investments	1374.6
Less: ESOP	(42.7)
Less: LT Debt	(3,912.2)
Less: PV of Operating Leases	(205.7)
Less: ST Debt & Current Portion of LT	(847.2)

Value of Equity 162179.4

Shares Outstanding 394.6

Intrinsic Value of Last FYE \$ 411.01

**Implied Price as of Today \$ 420.11**

**ASML Holding NV***Dividend Discount Model (DDM) or Fundamental P/E Valuation Model*

<b>Fiscal Years Ending Dec. 31</b>	<b>2023E</b>	<b>2024E</b>	<b>2025E</b>	<b>2026E</b>	<b>2027E</b>	<b>2028E</b>	<b>2029E</b>	<b>2030E</b>	<b>2031E</b>	<b>2032E</b>
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EPS	\$ 16.73	\$ 17.41	\$ 19.29	\$ 21.10	\$ 23.54	\$ 26.24	\$ 29.24	\$ 32.57	\$ 36.26	\$ 40.36
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**Key Assumptions**

CV growth of EPS	6.00%
CV Year ROE	29.35%
Cost of Equity	9.67%

**Future Cash Flows**

P/E Multiple (CV Year)										21.66
EPS (CV Year)										\$ 40.36
Future Stock Price										\$ 874.16
Dividends Per Share	5.79	6.02	6.67	7.30	8.14	9.08	10.12	11.27	12.54	
Discounted Cash Flows	5.28	5.01	5.06	5.04	5.13	5.22	5.30	5.38	5.46	\$ 380.80

Intrinsic Value as of Last FYE	\$ 427.68
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<b>Implied Price as of Today</b>	<b>\$ 437.15</b>
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**ASML Holding NV***Relative Valuation Models*

Ticker	Company	Price	EPS		P/E 23	P/E 24
			2023E	2024E		
LRCX	Lam Research	\$497.07	\$30.08	\$30.95	16.52	16.06
KLAC	KLA Corp.	\$370.14	\$21.38	\$21.17	17.31	17.48
AMAT	Applied Materials	\$113.16	\$7.01	\$7.08	16.14	15.98
MKS	MKS Instruments	\$82.21	\$3.55	\$6.08	23.16	13.52
CDNS	Cadence Design Systems	\$212.18	\$4.98	\$5.64	42.61	37.62
Average					<b>23.15</b>	<b>20.13</b>

ASML	ASML Holding NV	\$654.66	16.73	17.41	39.1	37.6
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**Implied Relative Value:**

P/E (EPS23)	\$ 387.19
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P/E (EPS24)	\$ 350.54
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Ticker	Company	Price	EPS		P/E 23	P/E 24
			2023E	2024E		
LRCX	Lam Research	\$497.07	\$30.08	\$30.95	16.52	16.06
KLAC	KLA Corp.	\$370.14	\$21.38	\$21.17	17.31	17.48
AMAT	Applied Materials	\$113.16	\$7.01	\$7.08	16.14	15.98
MKS	MKS Instruments	\$82.21	\$3.55	\$6.08	23.16	13.52
CDNS	Cadence Design Systems	\$212.18	\$4.98	\$5.64	42.61	37.62
INTC	Intel Corporation	\$32.02	\$0.47	\$1.79	68.13	17.89
TSM	Taiwan Semiconductor Manufacturing Co.	\$86.87	\$5.50	\$6.74	15.79	12.89
AMD	Advanced Micro Devices Inc.	\$92.33	\$3.08	\$4.30	29.98	21.47
NXPI	NXP Semiconductors NV	\$170.22	\$12.58	\$14.16	13.53	12.02
Average					<b>27.02</b>	<b>18.33</b>

ASML	ASML Holding NV	\$654.66	16.73	17.41	39.1	37.6
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**Implied Relative Value:**

P/E (EPS23)	\$ 451.93
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P/E (EPS24)	\$ 319.07
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ASML Holding NV  
Sensitivity Tables

	DCF			Beta				
	420.11	1.08	1.13	1.18	1.23	1.28	1.33	1.38
Equity Risk Premium	4.80%	557.27	520.26	487.66	458.73	432.89	409.67	388.69
	4.90%	540.01	504.41	473.02	445.14	420.21	397.79	377.52
	5.00%	523.75	489.46	459.19	432.28	408.20	386.54	366.93
	5.10%	508.39	475.32	446.10	420.11	396.83	375.87	356.90
	5.20%	493.87	461.94	433.71	408.57	386.04	365.74	347.36
	5.30%	480.11	449.25	421.95	397.61	375.79	356.12	338.29
	5.40%	467.06	437.21	410.77	387.20	366.04	346.96	329.65

	DDM			CV Growth of EPS				
	437.15	5.25%	5.50%	5.75%	6.00%	6.25%	6.50%	6.75%
Cost of Equity	9.07%	454.60	478.49	505.98	537.95	575.58	620.53	675.17
	9.27%	427.87	448.81	472.73	500.31	532.46	570.40	615.88
	9.47%	403.73	422.19	443.13	467.09	494.77	527.11	565.40
	9.67%	381.84	398.19	416.62	437.57	461.58	489.37	521.92
	9.87%	361.91	376.45	392.75	411.16	432.11	456.18	484.09
	10.07%	343.69	356.67	371.15	387.41	405.80	426.77	450.89
	10.27%	326.97	338.60	351.52	365.95	382.17	400.55	421.53

	DCF			CV Growth of NOPLAT				
	420.11	4.25%	4.50%	4.75%	5.00%	5.25%	5.50%	5.75%
WACC	8.97%	430.60	447.71	466.84	488.39	512.83	540.80	573.11
	9.17%	411.50	426.93	444.10	463.33	485.01	509.65	537.89
	9.37%	393.92	407.87	423.34	440.58	459.91	481.73	506.58
	9.57%	377.67	390.34	404.32	419.83	437.14	456.58	478.55
	9.77%	362.61	374.14	386.83	400.84	416.40	433.79	453.33
	9.97%	348.62	359.15	370.69	383.39	397.43	413.05	430.51
	10.17%	335.59	345.22	355.75	367.30	380.02	394.10	409.77

	DCF			Cost of Equity				
	420.11	9.07%	9.27%	9.47%	9.67%	9.87%	10.07%	10.27%
Pre-Tax Cost of Debt	4.18%	488.45	464.06	441.87	421.61	403.03	385.94	370.16
	4.38%	487.93	463.58	441.43	421.20	402.66	385.59	369.84
	4.58%	487.41	463.11	441.00	420.80	402.28	385.24	369.51
	4.78%	486.90	462.63	440.56	420.40	401.91	384.90	369.19
	4.98%	486.38	462.16	440.13	420.00	401.54	384.55	368.86
	5.18%	485.86	461.69	439.69	419.60	401.17	384.20	368.54
	5.38%	485.35	461.22	439.26	419.19	400.79	383.86	368.22

	DCF			Avg. COGS % of Sales				
	420.11	46.38%	47.38%	48.38%	49.38%	50.38%	51.38%	52.38%
Avg. SG&A (Non-R&D) % of Sales	2.51%	488.78	473.53	458.27	443.01	427.76	412.50	397.25
	3.01%	481.16	465.90	450.64	435.39	420.13	404.87	389.62
	3.51%	473.53	458.27	443.01	427.76	412.50	397.25	381.99
	4.01%	465.90	450.64	435.39	420.13	404.87	389.62	374.36
	4.51%	458.27	443.01	427.76	412.50	397.25	381.99	366.73
	5.01%	450.64	435.39	420.13	404.87	389.62	374.36	359.10
	5.51%	443.01	427.76	412.50	397.25	381.99	366.73	351.48

	DCF			Depreciation Rate as a % of Net PPE				
	420.11	8.70%	9.70%	10.70%	11.70%	12.70%	13.70%	14.70%
Avg. R&D % of Sales	12.78%	443.61	443.31	443.10	442.96	442.90	442.89	442.93
	13.28%	435.99	435.68	435.47	435.33	435.27	435.26	435.30
	13.78%	428.36	428.05	427.84	427.71	427.64	427.63	427.67
	14.28%	420.73	420.43	420.21	420.08	420.01	420.00	420.04
	14.78%	413.10	412.80	412.58	412.45	412.38	412.37	412.41
	15.28%	405.47	405.17	404.96	404.82	404.75	404.75	404.79
	15.78%	397.84	397.54	397.33	397.19	397.13	397.12	397.16

**ASML Holding NV***Valuation of Options Granted under ESOP*

Current Stock Price	\$654.66
Risk Free Rate	3.40%
Current Dividend Yield	1.52%
Annualized St. Dev. of Stock Returns	38.02%

Range of Outstanding Options	Number of Shares	Average Exercise Price	Average Remaining Life (yrs)	B-S Option Price	Value of Options Granted
Range 1	32,138	92.84	2.09	\$ 547.72	\$ 17,602,699
Range 2	47,607	84.12	2.08	\$ 555.91	\$ 26,465,275
Total	79,745	\$ 87.63	2.08	\$ 573.02	<b>\$ 44,067,974</b>