INVESTORS SERVICE

CREDIT OPINION
2 May 2024

Update

Send Your Feedback

RATINGS

ASML Holding N.V.

Domicile	Veldhoven, Netherlands
Long Term Rating	A2
Type	Senior Unsecured - Dom Curr
Outlook	Positive

Please see the ratings section at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

Contacts

Svitlana Ukrayinets, CFA +49.69.70730.920
AVP-Analyst
svitlana.ukrayinets@moodys.com

Karen Berckmann, CFA +49.69.70730.930
Associate Managing Director
karen.berckmann@moodys.com

Djena Kern +49.69.70730.919
Sr Ratings Associate
djena.kern@moodys.com

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

ASML Holding N.V.

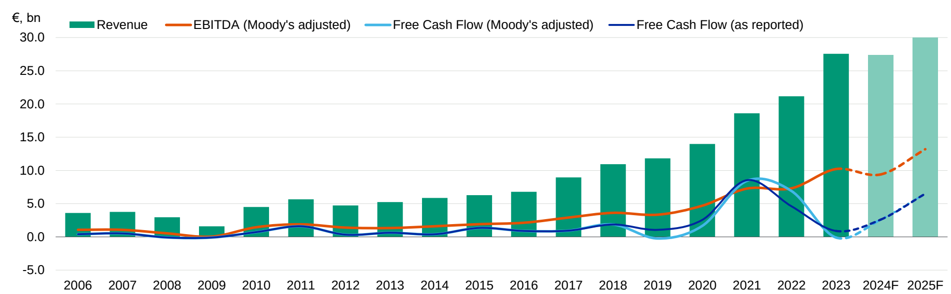
Update following change of outlook to positive

Summary

On 23 April, we affirmed ASML Holding N.V.'s (ASML) A2 senior unsecured rating and changed outlook to positive from stable to reflect its strong operating performance and our expectation that ASML will maintain its strong market position and financial discipline through the semiconductor industry cycles and will continue to benefit from structural growth drivers, leading to EBITDA and Free Cash Flow (FCF) growth in the next 18 to 24 months.

ASML's unique position in the semiconductor equipment industry, including its monopoly in extreme ultraviolet (EUV) lithography, a critical technology used for manufacturing complex chips used in various applications, including data centers, mobile devices, autonomous driving, and others; its strong track record of innovation, in close collaboration with customers and suppliers; the underlying growth fundamentals propelled by secular trends, leading to sustained high investment spending from semiconductor manufacturers; the growing number of installed systems that will drive growth in recurring installed base management revenues; its flexible cost structure, and a track record of prudent financial policies, all support its A2 rating.

Exhibit 1
We expect earnings and FCF growth in the next 18 to 24 months, supported by cyclical and structural trends
Evolution of revenue, EBITDA and FCF



All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. Moody's adjusted FCF is after dividend paid and includes adjustment for change in factoring balance. Moody's forecasts are Moody's opinion and do not represent the views of the issuer.
Source: Moody's Financial Metrics™ and Moody's Ratings forecasts

ASML's credit challenges include demand volatility, potential trade restrictions, technological risks, and operational, customer and product concentration risks. Global trade tensions, which increasingly focus on technology supply chains, pose a risk to ASML's ability to serve customers worldwide. However, given strong global demand, ASML has opportunity to ship equipment to customers in regions that are unaffected by trade restrictions. Technological risks exist with commercial adoption of its new generation tools, high numerical aperture (NA) EUV lithography, and there is a risk of potential competitors in the lithography market, though the barriers to entry are very high. ASML's high customer and supplier concentration, as well as concentration of production present additional risks. Despite these, ASML's financial flexibility with €5.4 billion of cash and liquid investments and low financial leverage (0.6x total debt to EBITDA, Moody's adjusted) as of March 2024 provides a buffer to mitigate these risks.

Credit strengths

» Unique position compared with that of other semiconductor equipment companies because of ASML's market dominance in lithography systems

» Strong track record of innovation

» Supportive underlying growth fundamentals, driven by secular trends

» Growing number of installed systems that will drive growth in recurring installed base management revenues

» Flexible operating cost structure

» Track record of prudent financial policies

Credit challenges

» Volatility in end-market demand

» Trade restrictions, leading to inability to sell some of its products in all markets

» Customer and supplier concentration, mitigated to some extent by ASML's long-standing relationships and closely aligned production plans

» Technological risks related to the next generation of EUV, high-NA EUV lithography technologies

» Risk of competitors entering the lithography market

» Ongoing need to expand capacity to deliver business growth

» Lumpiness of FCF generation due to working capital movements, but track record of maintaining strong liquidity buffer

Rating outlook

The rating is strongly positioned in the A2 rating category. The positive outlook reflects our expectation that strong underlying fundamental drivers, including robust spending on generative Artificial Intelligence (AI) infrastructure, will benefit ASML's earnings in the next 18 to 24 months. It also reflects our expectation that the company will maintain its strong market position, consistent product road map execution (including high NA) and financial discipline through industry cycles.

Factors that could lead to an upgrade

We could upgrade ASML's ratings if the company continues to demonstrate strong business execution with progress on its product roadmap, including its high NA EUV lithography. In addition, a higher rating would require further strengthening of company's financial profile, including improvement in its Moody's adjusted EBITDA margins and FCF growth, as well as continued commitment to its conservative financial policy including maintenance of a strong cash position and low debt levels.

Factors that could lead to a downgrade

Ratings could be lowered if ASML were to experience a sustained erosion of market share, which would indicate the loss of technological leadership and execution. Also, a departure from conservative fiscal practices, a materially weaker liquidity profile, or gross adjusted debt to EBITDA sustained above 2.25x could cause ratings pressure.

Key indicators

Exhibit 2

ASML Holding N.V.

(in $ millions)	2019	2020	2021	2022	2023	2024F	2025F
Revenue	13.2	16.0	22.0	22.3	29.8	29.6	37.2
EBITDA Margin %	28.3%	33.6%	39.1%	34.5%	37.1%	34.7%	39.2%
Debt / EBITDA	1.3x	1.5x	1.0x	0.6x	0.6x	0.6x	0.4x
FCF / Debt	-5.2%	24.0%	119.7%	154.9%	-1.6%	45.3%	116.0%
(FFO + Interest Expense) / Interest Expense	79.6x	89.9x	104.9x	86.2x	56.6x	49.3x	69.5x

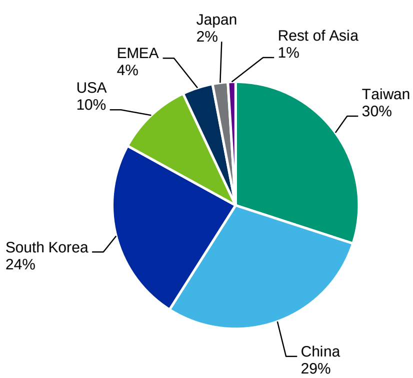
All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
Periods are financial year-end unless indicated. LTM = Last 12 months.
Moody's forecasts are Moody's opinion and do not represent the views of the issuer.
Source: Moody's Financial Metrics™ and Moody's Ratings forecasts

Profile

ASML Holding N.V. (ASML) is the world's leading provider of lithography systems used in the semiconductor industry in terms of revenue. The company manufactures complex machines that are not only critical to the leading-edge production of integrated circuits but also used for the production of the more matured nodes. Headquartered in Veldhoven, the Netherlands, ASML generated revenue of €26.1 billion in the 12 months that ended March 2024.

Exhibit 3

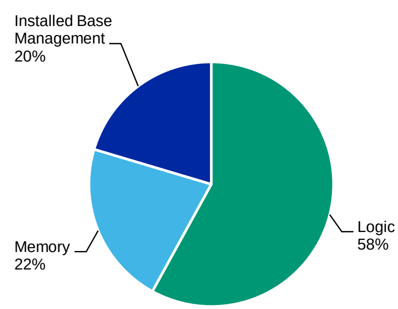
Regional net system sales breakdown (2023)



Source: Company information

Exhibit 4

Revenue breakdown by end use (2023)



Source: Company information

Detailed credit considerations

Dominant market position, strong track record of innovation

ASML dominates the global market for lithography equipment used in the semiconductor industry, with an overall market share of more than 80%. We expects its share, which has increased over the past few years, to remain high because of the company's leading-edge technology. ASML has progressively outpaced its sizeable competitors. Both Nikon Corporation and Canon Inc. lack the necessary revenue in lithography systems to invest in R&D as much as ASML does. ASML's market share is around 90% in the more technologically advanced ArF immersion business and 100% in EUV lithography.

ASML's ability to consistently innovate, update its existing product portfolio, improving the throughput/productivity of its tools, has a direct impact on its pricing power and gross margins. Currently, there are limited viable alternatives to ASML's high-end lithography solutions for high-volume manufacturing that are capable of providing similar shrink capabilities and yields. The company is the sole supplier of EUV lithography technology, which facilitates the production of more complex chips while reducing customers' unit production costs, reinforcing the continuation of Moore's law. The company has strong innovation track record and continues to make progress on its product roadmap, including its next generation of EUV lithography high numerical aperture (NA) EUV tool, which the company expects will enter into high volume manufacturing in 2025-2026. In addition, the company regularly upgrades its product portfolio with higher throughput rates and better energy efficiency.

In the past, ASML's key customers such as Taiwan Semiconductor Manufacturing Co Ltd (Aa3 stable), Samsung Electronics Co., Ltd. (Aa2 stable) and Intel Corporation (A3 stable), supported the company's R&D efforts to achieve EUV volume production via direct investments as well as equity stakes in the company. Following the achievement of this EUV volume production, the customers reduced their support. We do not expect any R&D cost-sharing agreements between ASML and its customers for technologies currently under development, such as high NA. Nevertheless, we expect a close collaboration between ASML and its customers regarding capacity allocation, especially in light of the ongoing trend towards a localised production footprint. This trend has driven demand for semiconductor equipment beyond the already strong demand for semiconductors.

ASML has made strategic acquisitions and participations key to successfully executing its product road map well beyond 2025 and further solidifying its market position. In 2017 ASML acquired a 24.9% minority stake, for €1.0 billion, in the optical lens maker Carl Zeiss SMT, ASML's sole supplier of lenses, mirrors, illuminators, collectors and other critical optical components. In addition, in 2016 ASML committed to support Carl Zeiss SMT R&D costs, capital expenditures and supply chain investments, in respect of EUV 0.55 NA (High NA) technology. This was an important strategic step that contributed to the development of the high-NA optical systems required for the next generation of EUV lithography.

Cyclical and structural trends to continue to support growth propelled by public initiatives

We expect market recovery from second half of 2024 onwards following semiconductor market inventory correction of 2023, in particular in memory end market. In 2024, we expect ASML sales to be similar to that achieved in 2023, flat on very strong base of 2023, with higher sales in the second half of 2024. We expect strong growth in 2025, and ASML is projecting sales between approximately €30 billion and €40 billion (€28 billion in 2023), including expectation of both cyclical recovery and structural trends.

The semiconductor equipment market, despite periodic fluctuations, is on a growth trajectory due to structural trends that we expect will support healthy, sustainable annual growth rates over the medium term, well above GDP growth rates. First, the digital transformation will continue to support demand for semiconductors and lead to increasing complexity of chip design. For example, we expect that AI innovations will spur demand for chips and other technologies for years to come. Consequently, new leading-edge technologies will drive demand for ASML's lithography systems. Second, the growing desire of certain governments for increased technological sovereignty is likely to drive investment spending on new fabs to advance the local production of chips. Several countries have announced support packages to foster a localisation of semiconductor supply chains. The support packages include significant public funds that aim to reduce the high investment costs, and the number of projects across the globe have been initiated.

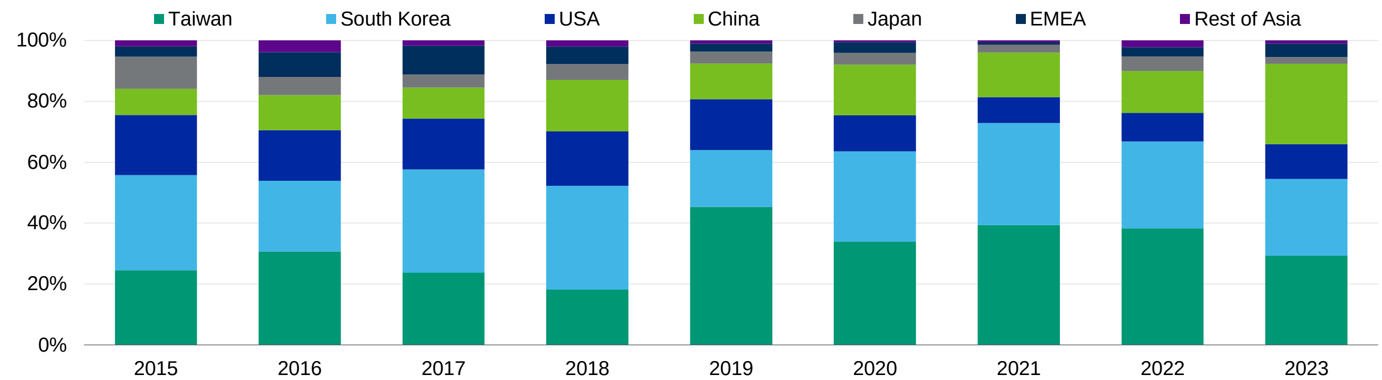
The high demand from ASML's customers propelled by secular trends and the company's progress on its product road map execution, including that of EUV technology, led to substantial growth in its revenues of 18% CAGR in 2013-2023 period. In 2023, ASML sold 53 EUV tools (up from 40 in 2022). Nevertheless, ASML's own production capacity is a constraint that could result in longer lead times for its customers.

Risk of trade restrictions, leading to inability to sell some of its products in all markets

Global trade tensions, which increasingly focus on technology supply chains, pose a risk to ASML's ability to serve customers worldwide. However, given strong global demand, ASML has opportunity to ship equipment to customers in regions that are unaffected by trade restrictions.

The majority of ASML sales to China today are to mature nodes (used for industrial, automotive applications). In 2023, ASML sales to China increased by 150% year-on-year, driven by strong demand from customers from China. In addition, ASML had capacity to serve this market in 2023, because of temporary slowdown of revenues from other regions due to inventory correction in the industry. ASML is banned form selling EUV machines to Chinese customers. The Dutch and the US export regulations also prohibit sales of most advanced DUV systems to China. The company assessed that the impact of the Dutch and the US export control regulations is moderate on its topline, accounting for around 10% to 15% of its China systems revenue. Over 2015-2023 period, ASML's total sales to China represented fluctuated between 10% - 26% of ASML total revenue, as shown in Exhibit below.

Exhibit 5
ASML total revenue split by geography (2015-2023)



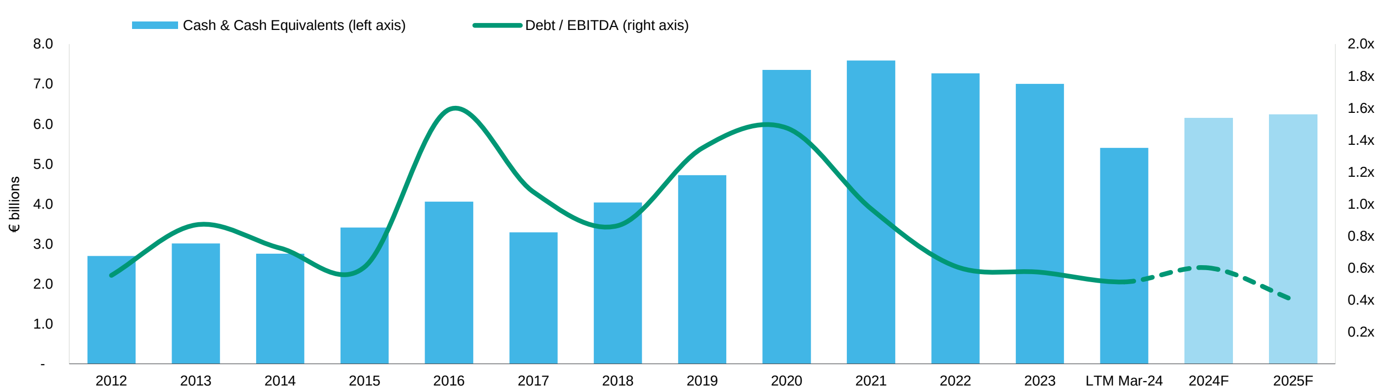
Source: ASML Annual reports

Track record of commitment to prudent financial policies, which is likely to continue to support strong credit metrics

We expect ASML to maintain excellent liquidity and low debt levels, and to fund share buybacks with its growing free cash flow. The company's conservative financial policy, demonstrated by maintaining ample liquidity for business growth and cash flow fluctuation buffers, supports this. Management reevaluates its liquidity buffer size yearly, considering factors like capital expenditure and working capital fluctuations.

ASML has consistently demonstrated its commitment to maintaining conservative financial policies, including gross leverage sustainably around 1.0x since 2010. The company had a net cash position as of the end of fiscal 2010, and even in 2009, when revenue shrank to €1.6 billion from a peak of €3.7 billion in 2007. However, the debt raised to finance a portion of the HMI acquisition and a 24.9% minority stake in Carl Zeiss SMT increased ASML's adjusted leverage to 1.6x as of December 2016 from adjusted debt/EBITDA of 0.6x as of December 2015. Nevertheless, the company promptly reduced its leverage to around 0.9x adjusted debt/EBITDA in 2018 because of strong business performance, and we expect ASML's leverage to remain well below 1.0x in 2024 and in 2025.

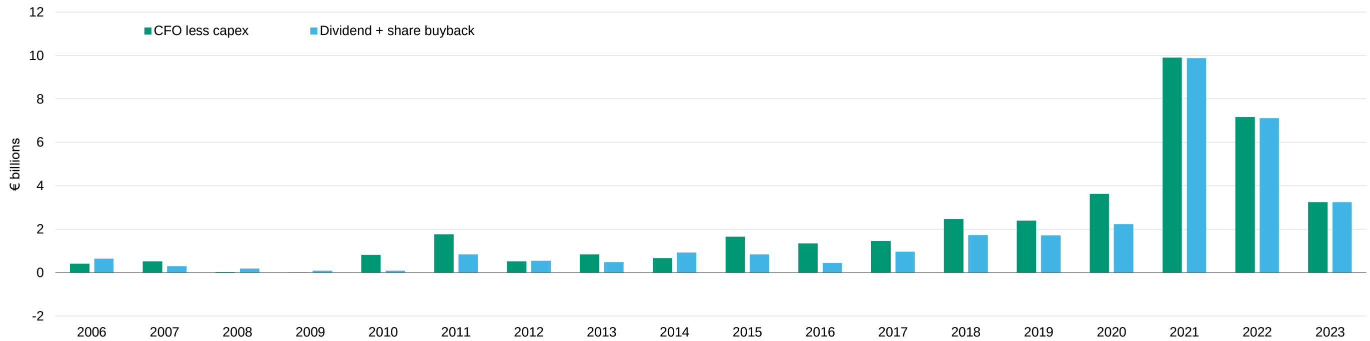
Exhibit 6
ASML's adjusted leverage, and cash and cash balances



All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
Periods are financial year-end unless indicated. LTM = Last 12 months.
Moody's forecasts are Moody's opinion and do not represent the views of the issuer.
Source: Moody's Financial Metrics™ and Moody's Ratings forecasts

We expect share buybacks and dividends to remain a key feature of ASML's financial strategy. However, we also expect the company to continue balancing shareholder returns with FCF, liquidity targets, and business outlook, as evidenced by past actions. This includes pausing its share buyback program during the acquisition of HMI and Carl Zeiss SMT investment in 2016, and in 2020 due to COVID-19 uncertainties. In July 2022, ASML revised its dividend policy to provide for dividend payments on a quarterly basis. The company has upsized its share buyback programme, with the recent one totaling up to €12.0 billion until end of 2025.

Exhibit 7
Historical shareholder returns have been balanced against operating cash flow and liquidity



All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
Periods are financial year-end unless indicated. LTM = Last 12 months.
Sources: Moody's Financial Metrics™

Volatility in demand for lithography equipment, somewhat mitigated by operational flexibility

ASML is exposed to capital equipment spending of semiconductor device manufacturers. These companies tend to postpone or cancel orders during the weaker phases of the semiconductor cycle, which affects semiconductor equipment manufacturers and their suppliers. However, given the long-term sustainable demand fundamentals of the semiconductor industry, we do not expect future declines in performance to be prolonged. We expect end customers to defer investment plans, rather than sustainably reduce capital spending. Additionally, the growing number of installed EUV systems will drive growth in recurring installed base management revenue, which represented about 20% - 27% of its total revenue in the past 5 years.

We also expect ASML's flexible cost structure to allow the company to absorb the impact of a pronounced setback in revenue on its operating performance. ASML outsources a substantial part of its cost of goods sold (about 80%) and R&D. The company also has flexible personnel schemes. In addition, ASML's strong relationships with its major suppliers, and the specialised nature of the company's requirements in terms of lasers and lenses allow it to share the burden of business volatility down the value chain.

In 2009, a sharp slowdown occurred in the semiconductor capital equipment industry, resulting in a sharp decline in ASML's revenue (which fell to around €1.6 billion in 2009 from it then peak of €5.2 billion in 2007) and adjusted EBITDA margin (which declined to around 3% in 2009 from around 28% in 2007), which, in turn, drove the increase in the company's financial leverage to the double-digit percentages in 2009. In 2010, revenue recovered as the industry resumed spending. With the sharp decline in ASML's revenue and margins in 2009, the company's FCF was marginally negative, around €90 million (including €86 million of dividend payments). However, its liquidity remained solid, with cash and cash equivalents amounting to €1.1 billion.

Technological risk related to the next generation of EUV and capacity constraints

Technological risks exist with commercial adoption of its new generation tools, high numerical aperture (NA) EUV lithography, and there is a risk of potential competitors in the lithography market, though the barriers to entry are very high.

The company is working on the new generation tool - the High NA EUV lithography, which represents an evolution of EUV lithography that could further strengthen the company's market position. The high-NA machines will be used to produce the most precise layers of advanced chips for the industry. The first chips using the EXE:5000 (high NA EUV tool) will be 2 nm node Logic chips. Memory chips at a similar transistor density will follow.

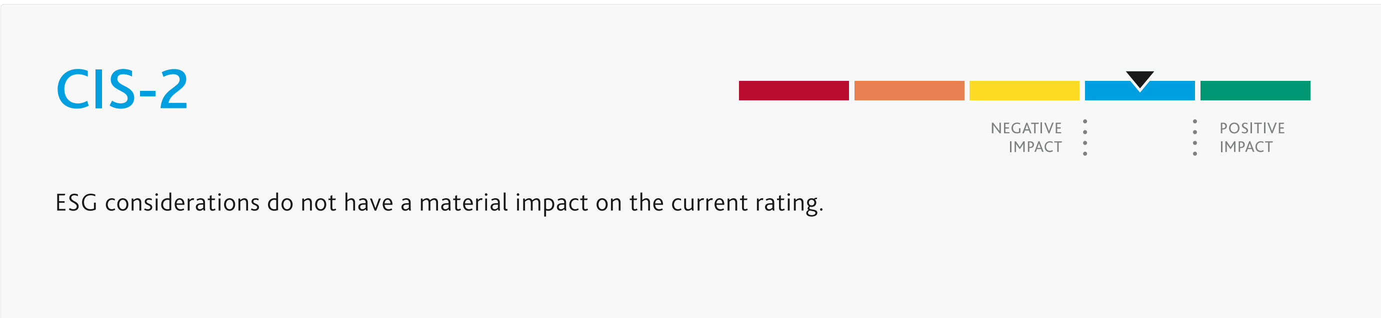
For high NA EUV technology to be used in high-volume manufacturing, ASML needs to achieve a number of technological milestones to meet the required performance targets, hence there is some risk that given technology complexity the performance requirements will not be met as soon as expected. That said, the company has a very strong track record of innovation and is working in close collaboration with is customer and suppliers to meet its technological milestones.

With the growing demand for its systems, ASML needs to increase own production capacities. ASML adapts to this by closely assessing the investment road maps of its customers. The company is currently building further capacity, which will dampen FCF generation in the coming years. However, we expect this expansionary capital spending to be adequately covered by operating cash flow.

ESG considerations

ASML Holding N.V.'s ESG credit impact score is CIS-2

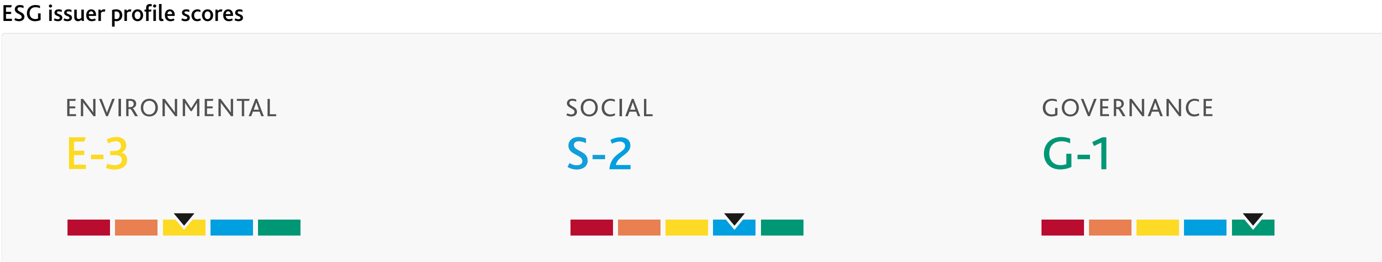
Exhibit 8
ESG credit impact score



Source: Moody's Ratings

The Credit Impact Score reflects that ESG considerations are not expected to have a material impact on ASML's credit profile. The company's prudent financial policies and robust secular trends counterbalance its long-term environmental risks related to the manufacturing footprint of its extended supply chain, and human capital risks due to reliance on highly skilled engineering talent.

Exhibit 9
ESG issuer profile scores



Source: Moody's Ratings

Environmental

ASML's manufacturing is largely outsourced, but the company has some exposure to its suppliers' longer-term environmental risks, including physical climate and carbon transition, waste and pollution risks as manufacturers. Supply chain partners' continuously make efforts to reduce the water consumption, increase the share of renewable energy and resources, and limit the creation of hazardous waste.

Social

ASML strongly benefits from secular trends toward digitization of economies and growing demand for computing capacity. These benefits are somewhat tempered by the company's dependence on highly skilled technical and engineering talent characteristic of the sector broadly.

Governance

ASML's conservative financial policies and management's strong track record of execution have strengthened its credit profile. The company pursues a prudent financial policy with consistently low leverage and adheres to policies and standards of a listed company, has a fully independent board and control structures.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moodys.com. In order to view the latest scores, please click here to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

Liquidity analysis

ASML's liquidity is excellent and is supported by the cash and liquid investments of €5.4 billion as of March end-2024, the €700 committed credit facility due 2026, with no financial covenants, and no near-term debt maturities. The high cash balance and our projection of annual funds from operations around €8 billion in 2024 and around €11 billion in 2025 are more than sufficient to accommodate its working capital, capital spending needs (around €1.7 billion), and dividends (around €2.5 billion). From time to time, the company enters into one-off factoring transactions.

Methodology and scorecard

The following table shows ASML's scorecard-indicated outcome using the Semiconductors Methodology, with data as of full-year 2023 and on a forward-looking basis. The assigned rating is one notch below the scorecard-indicated outcome in the forward view, indicating upward ratings pressure as reflected in positive outlook.

Exhibit 10
Rating factors
ASML Holding N.V.

Semiconductor Industry Scorecard	Current FY2023		Moody's 12-18 month forward view	
Factor 1 : Scale (20%)	**Measure**	**Score**	**Measure**	**Score**
a) Revenue ($ billions)	29.8	A	30 - 32	Aa
Factor 2 : Business Profile (25%)				
a) Business Profile	A	A	A	A
Factor 3 : Profitability and Efficiency (10%)				
a) EBITDA Margin	37.1%	A	35% - 37%	A
Factor 4 : Leverage and Coverage (25%)				
a) Debt / EBITDA	0.6x	Aa	0.5x - 0.6x	Aa
b) FCF / Debt	-1.6%	Ca	45% - 60%	Aa
c) (FFO + Interest Expense) / Interest Expense	56.7x	Aaa	50x - 60x	Aaa
Factor 5 : Financial Policy (20%)				
a) Financial Policy	A	A	A	A
Rating:				
a) Scorecard-Indicated Outcome		A2		A1
b) Actual Rating Assigned				A2

All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
Periods are financial year-end unless indicated. LTM = Last 12 months.
Moody's forecasts are Moody's opinion and do not represent the views of the issuer. Moody's adjusted FCF includes adjustment for change in factoring balance.
Sources: Moody's Financial Metrics™ and Moody's Ratings forecasts

Appendix

Exhibit 11

Moody's-adjusted debt reconciliation

ASML Holding N.V.

(in € millions)	2019	2020	2021	2022	2023
As reported debt	**3,108**	**4,678**	**4,584**	**4,260**	**4,632**
Leases	219	189	167	199	228
Securitization	1,300	2,200	2,300	0	993
Non-Standard Adjustments	(115)	(140)	0	0	0
Moody's-adjusted debt	**4,512**	**6,927**	**7,051**	**4,460**	**5,853**

All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
Source: Moody's Financial Metrics™

Exhibit 12

Moody's-adjusted EBITDA reconciliation

ASML Holding N.V.

(in € millions)	2019	2020	2021	2022	2023	LTM Mar-24
As reported EBITDA	**3,266**	**4,626**	**7,425**	**7,253**	**10,161**	**9,394**
Unusual Items - Income Statement	0	0	(214)	0	0	0
Leases	78	69	60	60	53	53
Moody's-adjusted EBITDA	**3,344**	**4,696**	**7,271**	**7,313**	**10,214**	**9,447**

All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
Source: Moody's Financial Metrics™

Exhibit 13

Overview on selected historical Moody's-adjusted financial data

ASML Holding N.V.

(in € millions)	2019	2020	2021	2022	2023
INCOME STATEMENT					
Revenue	11,820	13,979	18,611	21,173	27,559
EBITDA	3,344	4,696	7,271	7,313	10,214
BALANCE SHEET					
Cash & Cash Equivalents	4,718	7,352	7,590	7,268	7,005
Total Debt	4,512	6,927	7,051	4,460	5,853
(Cash + Marketable Securities) / Debt	104.6%	106.1%	107.6%	165.4%	119.8%
CASH FLOW					
Cash Flow From Operations (CFO)	2,050	3,793	10,802	10,836	4,491
Capital Expenditures	(959)	(1,066)	(997)	(1,369)	(2,237)
Dividends	1,326	1,066	1,368	2,560	2,348
Free Cash Flow (FCF)	(235)	1,660	8,437	6,908	(95)
FCF / Debt	-5.2%	24.0%	119.7%	154.9%	-1.6%
PROFITABILITY					
% Change in Sales (YoY)	8.0%	18.3%	33.1%	13.8%	30.2%
EBITDA margin %	28.3%	33.6%	39.1%	34.5%	37.1%
INTEREST COVERAGE					
EBIT / Interest Expense	68.7x	88.7x	116.7x	93.2x	57.4x
LEVERAGE					
Debt / EBITDA	1.3x	1.5x	1.0x	0.6x	0.6x

All figures and ratios are based on adjusted financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
Sources: Moody's Financial Metrics™

Ratings

Exhibit 14

Category	Moody's Rating
ASML HOLDING N.V.	
Outlook	Positive
Senior Unsecured -Dom Curr	A2

Source: Moody's Ratings

REPORT NUMBER 1406155

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

Moody's
INVESTORS SERVICE