

## ASML Holding N.V.

| Rating Type   | Rating | Outlook | Last Rating Action    |
|---------------|--------|---------|-----------------------|
| Long-Term IDR | A-     | Stable  | Upgrade 23 March 2018 |

[Click here for full list of ratings](#)

### Financial Summary

| (EURm)                        | Dec 2015 | Dec 2016 | Dec 2017 | Dec 2018F |
|-------------------------------|----------|----------|----------|-----------|
| Gross Revenue                 | 6,287    | 6,795    | 9,053    | 10,159    |
| Operating EBITDA Margin (%)   | 29.6     | 29.7     | 32.2     | 32.3      |
| FFO Margin (%)                | 31.9     | 28.9     | 30.5     | 29.5      |
| FFO Fixed Charge Coverage (x) | 23.5     | 19.7     | 21.2     | 26.8      |
| FFO Adjusted Net Leverage (x) | -0.9     | -0.2     | 0.0      | 0.0       |

Source: Fitch

The recent upgrade to ASML Holding N.V.'s rating to 'A-' from 'BBB+' reflects the company's vital role in the semiconductor sector, a revised view of growth prospects and an operating risk profile that has gradually but significantly improved over the past five to six years to warrant a lower emphasis in the rating to risks relating to product concentration and cyclicalities. These factors had previously constrained the rating at 'BBB+'.

The improvement has been driven by a combination of factors that include the fruition of EUV technology, strong growth prospects, change in revenue mix, increased market leadership, strengthened barriers to entry and greater diversification of end-market applications.

ASML has a strong cash generative capability, a large installed customer base, a flexible business model and a conservative financial policy that enables the company to protect its credit metrics in the event of cyclical downturns. ASML's sensitivities for a 'A-' rating are largely unchanged reflecting the improvement in its operational profile.

### Key Rating Drivers

**Product Leadership in a Vital Sector:** ASML has an over 80% revenue market share in the supply of lithography machines that are an essential part of the semiconductor manufacturing process. The market for the supply of lithography equipment has consolidated into three main suppliers with ASML leading in the high value segments. Its leadership position will extend further due to its development of EUV technology, for which ASML is the sole global supplier. The company's products and services are essential to driving shrink and innovation in the semiconductor sector, which had record global sales of over USD412 billion in 2017.

**Tacit Forms of Competitive Advantage:** ASML has built its technology leadership position over decades, following significant amounts of investment in R&D and successful innovation. The company's success has been driven by strong execution, at the heart of which are deep customer relationships and a global approach to seeking the best talent. The combination of technological knowledge and customer partnerships are tacit forms of competitive advantage that are difficult to duplicate in our opinion, which combined with high investment requirements raise barriers to entry.

**EUV to Drive Shrink:** ASML's development of EUV technology is now set to achieve industrial production quality and capacity requirements. The technology will enable semiconductor manufactures to reduce the unit cost of producing smaller and more powerful semiconductor chips in a process that is known as 'shrink'. In our opinion, EUV tools will become essential for leading edge semiconductor chips and driving innovation in new applications but also stimulating upgrades of existing products (mobile phones are a classic example of this).

ASML plans to ship 22 EUV systems in 2018 ramping to at least 30 systems in 2019, contributing to driving improvements in overall gross margins of around 4pp to 5pp.

**Strong Growth Opportunities:** Fitch revised its view of ASML's growth prospects last year (see 'ASML: Improving Visibility of Long-Term Value Drivers' dated 3 November 2017 at [www.fitchratings.com](http://www.fitchratings.com)) leading to increases in our medium-term base case forecasts. ASML has strong growth prospects as result of trends that include increasing semiconductor content in products, growth in end market applications (such as automotive, IoT, AI, big data and industrial automation) and strategic domestic investments by China.

**Virtuous Circle:** These trends result in a self-reinforcing cycle of data creation, transmission, storage and processing, all of which depend on semiconductor content that in turn drive demand for ASML's products and services.

**Product Concentration Risk Reduced:** ASML's sole focus on the supply of lithography systems while partly driving its leadership success in the sector, creates a product concentration risk that is in addition to the company's exposure to cycles in technology and macro-economics. These factors previously constrained the rating at 'BBB+'. We believe the risks to this focus, in conjunction with the company's financial policy are now lower due to a combination of factors.

Firstly, there has been a change in the company's revenue mix as Installed Base Management revenue has gradually increased to 30% of revenues in 2017 from 14% in 2010. Fitch assumes that around half of these revenues are recurring, more stable and driven by a growing installed customer base. Secondly, diversification of end-market applications reduce the industry's dependency on computer hardware and mobile phone sales and thirdly, the market for the supply of leading edge lithography equipment has consolidated to two. The consolidation is likely to improve demand planning across the semiconductor value chain and strengthen the company's own position with customers.

**Resilient Under Cyclical Pressure:** ASML has a flexible business model as a result of its design and systems integration approach to developing and producing lithography equipment. The approach enables the company to reduce costs when needed. ASML had a gross margin of 45% in 2017. Around 80% of cost of goods sold are flexible. Further flexibility exists at the staffing level where we estimate around 5pp of EBITDA margin costs could be reduced if needed. As a result of cost flexibility, a strongly counter-cyclical working capital cycle and greater stability in Installed Base Management revenues, ASML is likely to remain free cash flow positive during a severe down cycle.

**Scenario Analysis Supportive:** Our scenario analysis of a severe down cycle similar to that in 2008 and 2009 indicates that a decline in equipment revenues by 30% and 55% over 2019 and 2020 would reduce ASML's free cash flow margin to around 3% from around 10% (2018F). This reflects a proportionate decrease in gross margin and flexible labour costs, a small positive reversal in cash from working capital and continued growth in dividends and an ongoing share buyback programme of EUR500 million. Within this, the company will be able to maintain its core R&D programme.

**Retained Financial Flexibility and Discretion:** Fitch's base case forecasts indicate strong free cash flow generation with pre-dividend free cash flow margins between 16% and 23% over the next three years, an increase from 12% to 15% previously. Despite strong dividend growth, we expect ASML's dividend pay-out ratio to be in the region of 40% to 50% of pre-dividend free cash flow (41% 2017). Combined with a policy to maintain a cash liquidity buffer of between EUR2.0 billion and EUR2.5 billion, ASML retains significant financial flexibility to manage operational risks, invest in future growth projects and control its leverage profile.

## Rating Derivation Relative to Peers

| Rating Derivation versus Peers |   |
|--------------------------------|---|
| Peer Comparison                | ASML has one of the strongest cash generative capabilities in the technology sector, which is supported by a revenue market share in its niche segment in excess of 80%. The company's technology supports and drives the development and innovation of a much bigger, semiconductor manufacturing sector. Barriers to entry are driven by knowledge, technology expertise, capital investment requirements and customer partnerships. Exposure to cyclical and product concentration risks is well managed through conservative and flexible financial policies. These factors mean the company is strongly positioned compared with its semi-conductor equipment and process control peers such as KLA-Tencor Corp. (BBB+/Stable) and Applied Materials, Inc. (NR). |
| Parent/Subsidiary Linkage      | No parent/subsidiary linkage is applicable.   |
| Country Ceiling                | No Country Ceiling constraint was in effect for these ratings.  |
| Operating Environment          | No operating environment influence was in effect for these ratings.   |
| Other Factors                  | n.a.  |
| Source: Fitch                  |   |

## Rating Sensitivities

### Developments That May, Individually or Collectively, Lead to Positive Rating Action

- Positive rating action is unlikely in the near term. The unique nature of ASML's business, including the cyclicity in its customers' end-markets, technology migrations that drive the need for high R&D investment and the company's limited diversification, are a constraint on the ratings.

### Developments That May, Individually or Collectively, Lead to Negative Rating Action

- Operating margins materially below 10%-15% in downturns and below 25%-30% at the peak of upcycles. However, Fitch recognises that operating losses may be incurred during extreme cyclical contractions.
- Liquidity (defined as gross cash plus undrawn, committed RCF facilities beyond two years less any debt maturities occurring within two years) consistently below EUR1.5 billion. The company's public commitment is to a strong cash balance.
- Major loss of market share would signal a rapid shift in market position and one that would probably reflect a sustained negative trend.
- FFO adjusted net leverage remaining above 1.0x (equivalent to around 2.0x FFO gross adjusted leverage) on a sustained basis.

## Liquidity and Debt Structure

**Strong Liquidity:** ASML maintains a strong cash position, which covers all debt maturities for at least the next four years. The company targets a minimum cash buffer of EUR2 billion to EUR 2.5 billion. As of end-2017, ASML held EUR2,259 billion in cash and cash equivalents and EUR1,029 million in short-term investments. Additionally, ASML also has access to undrawn revolving credit facilities of EUR700 million maturing 2022.

## Debt Maturities and Liquidity at FYE17

| Liquidity Summary  | Original         |                  |
|--|------------------|------------------|
|  | 31 December 2016 | 31 December 2017 |
| (EURm)   |                  |                  |
| Total Cash & Cash Equivalents                                    | 2,907            | 2,259            |
| Short-Term Investments   | 1,150            | 1,029            |
| Less: Not Readily Available Cash and Cash Equivalents            | 0                | 0                |
| <b>Fitch-defined Readily Available Cash and Cash Equivalents</b> | <b>4,057</b>     | <b>3,288</b>     |
| Availability under Committed Lines of Credit                     | 700              | 700              |
| <b>Total Liquidity</b>   | <b>4,757</b>     | <b>3,988</b>     |
| Plus: Fitch Forecast 2018 FCF (post dividend)                    |                  | 1,094            |
| <b>Total Projected 2018 Liquidity</b>                            |                  | <b>5,082</b>     |
| <b>Liquidity Score</b>   |                  | Strong           |
| <b>LTM EBITDA</b>  | 2,015            | 2,914            |
| <b>LTM Pre-dividend Free Cash Flow</b>                           | 1,342            | 1,461            |
| Source: Fitch Ratings, Inc., Company filings                     |                  |                  |

| Scheduled Debt Maturities                    | Original     |
|--|--------------|
| (EURm)                                       | FY17         |
| 31 December 2018                             | 0            |
| 31 December 2019                             | 0            |
| 31 December 2020                             | 0            |
| 31 December 2021                             | 0            |
| 31 December 2022                             | 500          |
| Thereafter                                   | 2,500        |
| <b>Total Debt Maturities</b>                 | <b>3,000</b> |
| Source: Fitch Ratings, Inc., Company filings |              |

## Key Rating Issues

---

### Resilient Under Cyclical Pressure: Scenario Analysis

A core element supporting ASML's 'A-' rating is its very likely ability to generate positive free cash flows through periods of cyclical pressure. While no such event is expected in the foreseeable horizon, these events do happen as witnessed a decade ago in 2008 and 2009. We believe ASML is in a stronger position to manage downturns now than it was previously due to greater end-market applications, growth in Installed Base Management revenues and increased market leadership.

In this section we outline in more detail the principal drivers to ASML's cost flexibility and simulate the impact of revenue declines in 2019 and 2020 at levels that are similar to those experienced in 2008 and 2009. The scenario analysis indicates that a decline in equipment revenues by 30% and 55% over 2019 and 2020 would reduce ASML's free cash flow margin to around 3% from around 10% (2018F) in our base-case forecasts. The analysis also shows that the free cash-flow generation will be sufficiently strong enough for ASML to continue investing in R&D, increase dividends and maintain a share buyback programme.

It should be noted that the 2008 and 2009 recession was caused by a financial market crisis and that the effect was not typical of a technology sector cyclical downturn. As such, some of our scenario analysis assumptions might appear overly conservative, in particular, our assumption on the degree of working-capital reversal. However, the analysis is useful to understand the extent of flexibility in the company's business and the potential impact a severe and rapid decline would have on the company's credit metrics.

### Value Chain Position

Lithography involves an extremely complicated process involving several disciplines, such as, physical, mechanics, optics and control software. These disciplines combine in a seven-step process, each of which requires nanometer precision and repetition of often more than 50 times for leading edge devices. ASML enables the most critical step, exposure, within the manufacturing process.

Developing and supplying such a vast array of unique components requires niche, leading-edge technological expertise and significant financial resources. ASML focuses on design and systems integration, and partners with both customers and third-party suppliers whenever possible. The partnership with suppliers has two key advantages. Firstly it enables ASML's to tap into best-in-class global capabilities, and secondly it enables the company to maintain a flexible cost structure.

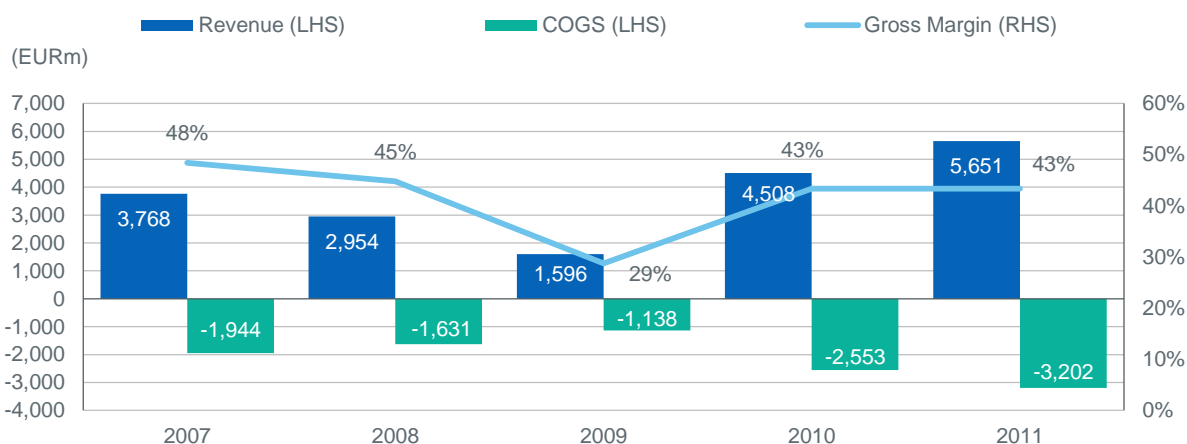
### Flexible Cost Structure

ASML has a gross margin of 45% (2017). Around 80% of costs of goods sold (COGS) are located in the supply chain, with further cost flexibility available at both the staffing, research and development levels. As orders for lithography equipment decline, margins can be supported through the ability to quickly cut a large percentage of externally sourced system components. Combined with a strongly counter-cyclical working-capital cycle and greater stability in Installed Base Management revenues, ASML is likely to remain free cash-flow positive during a severe down cycle.

### Impact of 2009 Recession

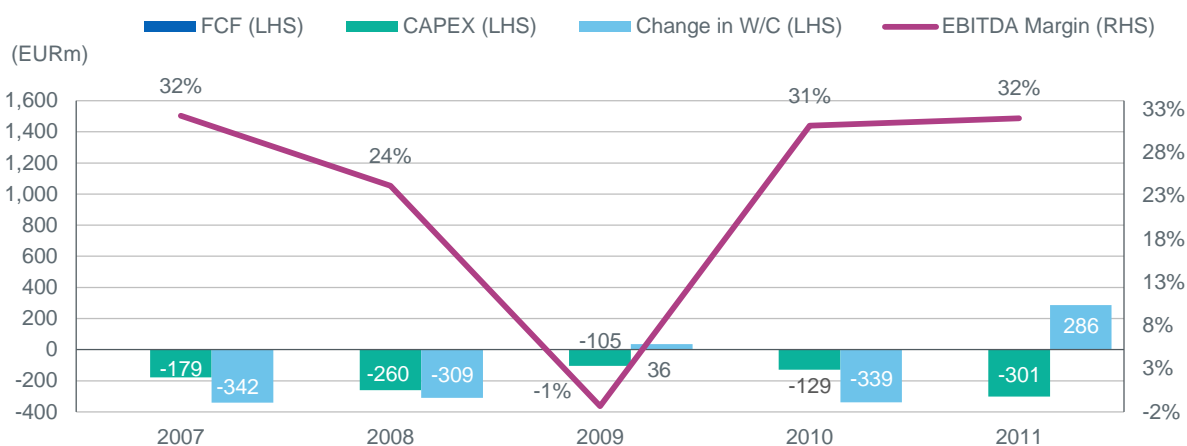
The use of the company's flexible cost base can be seen during the 2009 global recession. As orders declined, ASML's COGS fell by 42% between 2007 and 2009, stemming the reduction in gross margins. Similar action was taken in R&D, and selling, general and administration (SG&A), cut by 8% and 31% respectively.

### P&L Impact 2009 Recession



Source: Fitch, Company reports

### Cash Flow Impact 2009 Recession



Source: Fitch, Company reports

### Downturn Scenario Analysis Assumptions

We have modelled a stress scenario which mirrors the impact of the 2009 recession in an attempt to forecast how ASML's current operational structure could withstand such economic pressures. Assuming a two-year recession, starting in 2019, the following assumptions have been made:

- 2018 is a normal year, recession starts to hit in 2019 with full effect in 2020
- Recovery from 2021 broadly back to pre-crisis level of 2018
- **Revenue**  
Net system sales decline 30% in 2019 and 55% in 2020 (similar to 2008/09)  
Installed Base Management declines by 15% per year over 2019 and 2020
- **COGS**  
Cost of materials decline in line with revenues  
ASML's own costs remain flat
- **OPEX**  
Flexible labour and farm-out costs decline in line with revenues  
Own personnel costs remain flat through recession
- **R&D**  
Flexible labour costs decline in line with revenues  
ASML's own R&D personnel costs remain flat
- Effective cash tax rate of 14% of profit before tax

- Change in working capital in FCF of EUR151 million in 2019 and EUR219 million in 2020
- Capital expenditure to decline by around 50% to EUR197 million in 2020
- Dividend growth of 17% in 2018 followed by 14% thereafter
- Share buybacks of EUR1 billion in 2018, EUR500 million thereafter

Based on the above assumptions, the stress scenario includes revenue and EBITDA contractions similar to those experienced in 2009 but highlight that ASML's strong balance sheet and flexible cost structure provides operational strengths to better withstand the downturn when compared to 2009.

## ASML

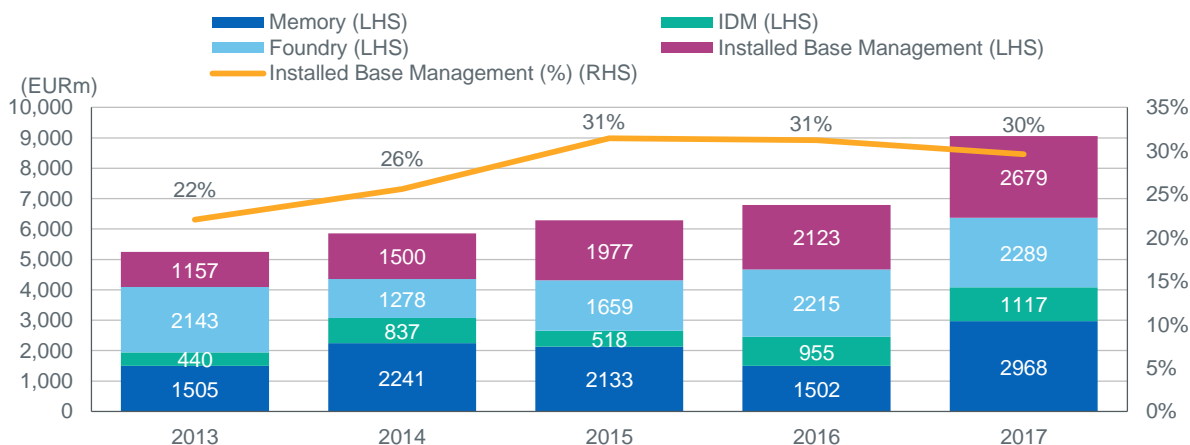
| (EURm)                            | Historicals  |              |              |               |               | Fitch Recession Scenario |              |               |              |               |
|-----------------------------------|--------------|--------------|--------------|---------------|---------------|--------------------------|--------------|---------------|--------------|---------------|
|                                   | 2007         | 2008         | 2009         | 2010          | 2011          | 2017a                    | 2018         | 2019          | 2020         | 2021          |
| <b>Revenue</b>                    | 3,768        | 2,954        | 1,596        | 4,508         | 5,651         | 9,053                    | 10,159       | 7,546         | 4,379        | 10,042        |
| Net System Sales                  | 3,351        | 2,517        | 1,175        | 3,895         | 4,884         | 6,374                    | 7,266        | 5,086         | 2,289        | 7,324         |
| Installed Base Management         | 417          | 437          | 421          | 613           | 767           | 2,679                    | 2,893        | 2,459         | 2,091        | 2,718         |
| <b>Net Systems Growth (%)</b>     |              | <b>-25</b>   | <b>-53</b>   | <b>231</b>    | <b>25</b>     | <b>39</b>                | <b>14</b>    | <b>-30</b>    | <b>-55</b>   | <b>220</b>    |
| <b>Installed Base Growth (%)</b>  |              | <b>5</b>     | <b>-4</b>    | <b>46</b>     | <b>25</b>     | <b>20</b>                | <b>8</b>     | <b>-15</b>    | <b>-15</b>   | <b>30</b>     |
| <b>Growth (%)</b>                 |              | <b>-22</b>   | <b>-46</b>   | <b>182</b>    | <b>25</b>     | <b>33</b>                | <b>12</b>    | <b>-26</b>    | <b>-42</b>   | <b>129</b>    |
| <b>Gross Margins (%)</b>          | <b>48.4</b>  | <b>44.8</b>  | <b>28.7</b>  | <b>43.4</b>   | <b>43.3</b>   | <b>45.0</b>              | <b>46.0</b>  | <b>44.4</b>   | <b>41.8</b>  | <b>47.8</b>   |
| <b>EBITDA</b>                     | <b>952</b>   | <b>406</b>   | <b>-25</b>   | <b>1,403</b>  | <b>1,806</b>  | <b>2,914</b>             | <b>3,282</b> | <b>2,102</b>  | <b>774</b>   | <b>3,294</b>  |
| Margin                            | 25.3         | 13.8         | -1.6         | 31.1          | 32.0          | 32.2                     | 32.3         | 27.9          | 17.7         | 32.8          |
| <b>Change in W/C</b>              | <b>-342</b>  | <b>-309</b>  | <b>36</b>    | <b>-339</b>   | <b>286</b>    | <b>-939</b>              | <b>-965</b>  | <b>151</b>    | <b>219</b>   | <b>-954</b>   |
| as a of sales                     | -9.1         | -10.5        | 2.3          | -7.5          | 5.1           | -10.4                    | -9.5         | 2.0           | 5.0          | -9.5          |
| <b>FCF</b>                        | <b>491</b>   | <b>-87</b>   | <b>-94</b>   | <b>724</b>    | <b>1,597</b>  | <b>944</b>               | <b>1,033</b> | <b>1,262</b>  | <b>123</b>   | <b>890</b>    |
| Margin (%)                        | 13.0         | -2.9         | -5.9         | 16.1          | 28.3          | 10.4                     | 10.2         | 16.7          | 2.8          | 8.9           |
| <b>Cash &amp; Cash equivalent</b> | <b>1,272</b> | <b>1,109</b> | <b>1,037</b> | <b>1,950</b>  | <b>2,732</b>  | <b>3,288</b>             | <b>3,296</b> | <b>4,058</b>  | <b>3,682</b> | <b>4,072</b>  |
| <b>Total Debt</b>                 | <b>603</b>   | <b>647</b>   | <b>663</b>   | <b>710</b>    | <b>737</b>    | <b>3,025</b>             | <b>3,000</b> | <b>3,000</b>  | <b>3,000</b> | <b>3,000</b>  |
| <b>Net Debt/(Cash)</b>            | <b>-668</b>  | <b>-462</b>  | <b>-374</b>  | <b>-1,240</b> | <b>-1,995</b> | <b>-263</b>              | <b>-296</b>  | <b>-1,058</b> | <b>-682</b>  | <b>-1,072</b> |
| <b>Net Debt/EBITDA</b>            | <b>-0.7</b>  | <b>-1.1</b>  | <b>15.1</b>  | <b>-0.9</b>   | <b>-1.1</b>   | <b>-0.1</b>              | <b>-0.1</b>  | <b>-0.5</b>   | <b>-0.8</b>  | <b>-0.3</b>   |
| <b>FFO Adjusted Leverage</b>      | <b>0.9</b>   | <b>1.5</b>   | <b>6.9</b>   | <b>-0.7</b>   | <b>0.6</b>    | <b>1.2</b>               | <b>1.1</b>   | <b>1.7</b>    | <b>3.8</b>   | <b>1.1</b>    |
| <b>FFO Adjusted Net Leverage</b>  | <b>-0.3</b>  | <b>-0.2</b>  | <b>-0.4</b>  | <b>-0.7</b>   | <b>-0.9</b>   | <b>0.0</b>               | <b>0.0</b>   | <b>-0.3</b>   | <b>-0.2</b>  | <b>-0.2</b>   |

Source: Fitch, Company report

### ASML's Improved Business Profile Withstands Downturn

In comparison to 2009, ASML's revenue and EBITDA are forecast to be roughly 3.0x larger in 2018. The company's increased scale and profitability better support cash-flow generation when navigating an economic downturn. In addition, revenues from Installed Base Management have increased from 11% of total revenue in 2007 to 30% in 2017, resulting in ASML's top line being more resilient to end-market cyclicality.

**Total Net Sales EURm by End-use**

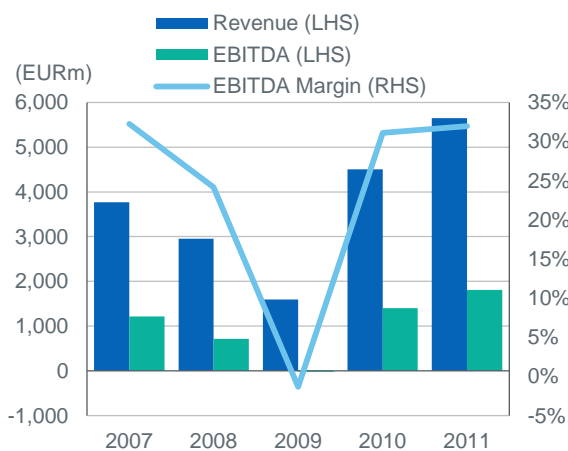


Source: Fitch, Company reports

Fitch assumes that approximately half of revenues from Installed Base Management are recurring in nature and more stable than equipment-related sales. Greater cashflow from the service helps support ASML credit profile through cyclical downturns.

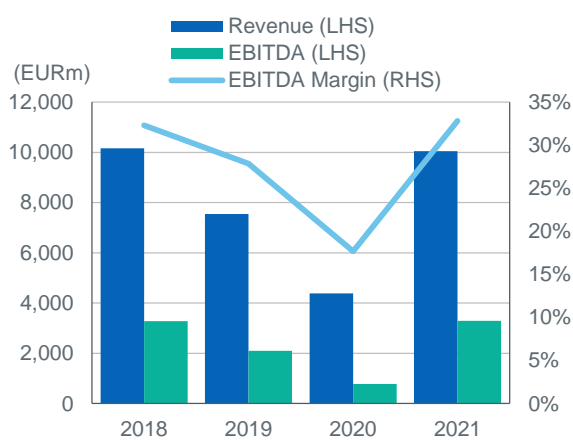
These improvements coupled with greater visibility on the fruition of EUV and the medium-term low threat of substitutes are key drivers in ASML's credit profile.

**2009 Recession**



Source: Fitch, Company reports

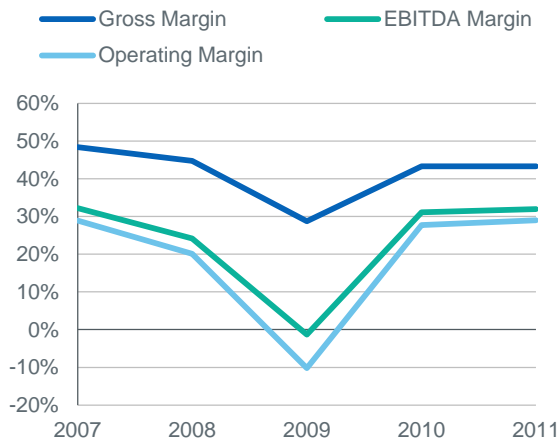
**2019 Fitch Recession Scenario**



Source: Fitch, Company reports

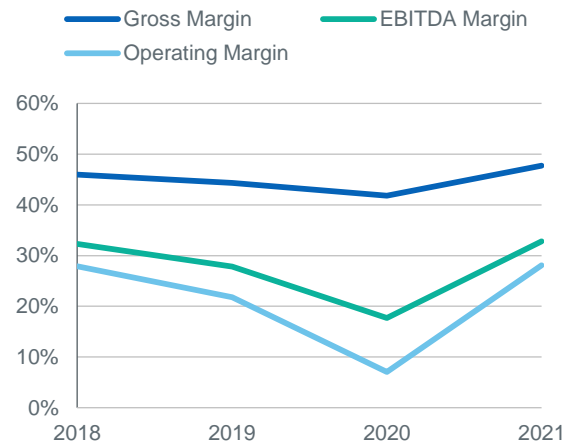


**2009 Recession**



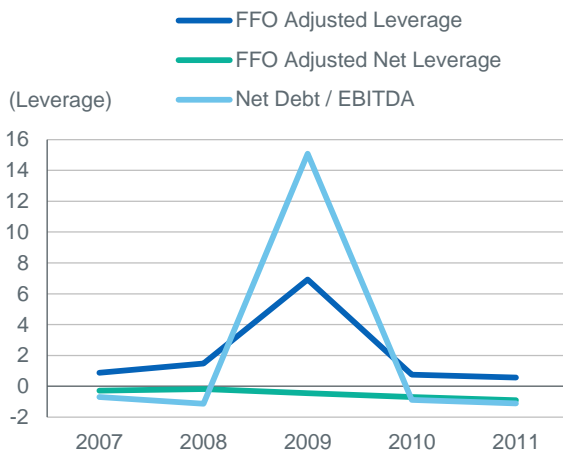
Source: Fitch, Company reports

**2019 Fitch Recession Scenario**



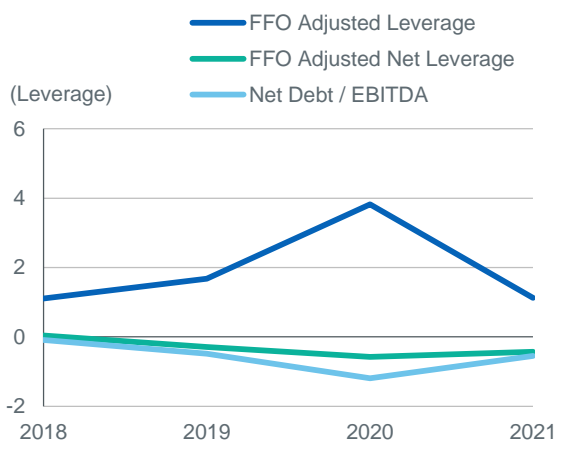
Source: Fitch, Company reports

**2009 Recession**



Source: Fitch, Company reports

**2019 Fitch Recession Scenario**



Source: Fitch, Company reports

## Key Assumptions

### Fitch's Key Assumptions Within Our Rating Case for the Issuer

- Revenue growth of 12% in 2018 gradually slowing to 6% by 2020.
- EBITDA margin of 32% in 2018, expanding to 36% by 2020.
- Capital expenditure of around 4% of sales.
- Cash dividend growth of 17% in 2017 and 15% per year thereafter.
- Share buyback programme totalling EUR1.0 billion in 2018 and EUR1.5 billion in 2019.

## Financial Data

| (EURm)  | Historical |          |          | Forecast  |           |           |
|---|------------|----------|----------|-----------|-----------|-----------|
|   | Dec 2015   | Dec 2016 | Dec 2017 | Dec 2018F | Dec 2019F | Dec 2020F |
| <b>SUMMARY INCOME STATEMENT</b>   |            |          |          |           |           |           |
| Gross Revenue   | 6,287      | 6,795    | 9,053    | 10,159    | 11,060    | 11,772    |
| Revenue Growth (%)  | 7.4        | 8.1      | 33.2     | 12.2      | 8.9       | 6.4       |
| Operating EBITDA (Before Income From Associates)                        | 1,862      | 2,015    | 2,914    | 3,282     | 3,738     | 4,250     |
| Operating EBITDA Margin (%)   | 29.6       | 29.7     | 32.2     | 32.3      | 33.8      | 36.1      |
| Operating EBITDAR   | 1,907      | 2,060    | 2,959    | 3,334     | 3,795     | 4,310     |
| Operating EBITDAR Margin (%)  | 30.3       | 30.3     | 32.7     | 32.8      | 34.3      | 36.6      |
| Operating EBIT  | 1,565      | 1,658    | 2,496    | 2,834     | 3,263     | 3,755     |
| Operating EBIT Margin (%)   | 24.9       | 24.4     | 27.6     | 27.9      | 29.5      | 31.9      |
| Gross Interest Expense  | -27        | -38      | -58      | -63       | -63       | -63       |
| Pretax Income (Including Associate Income/Loss)                         | 1,549      | 1,692    | 2,445    | 2,777     | 3,205     | 3,698     |
| <b>SUMMARY BALANCE SHEET</b>  |            |          |          |           |           |           |
| Readily Available Cash and Equivalents                                  | 3,409      | 4,057    | 3,288    | 3,296     | 3,289     | 4,168     |
| Total Debt With Equity Credit   | 1,130      | 3,320    | 3,025    | 3,000     | 3,000     | 3,000     |
| Total Adjusted Debt with Equity Credit                                  | 1,490      | 3,680    | 3,385    | 3,421     | 3,453     | 3,485     |
| Net Debt  | -2,279     | -737     | -263     | -296      | -289      | -1,168    |
| <b>SUMMARY CASH FLOW STATEMENT</b>                                      |            |          |          |           |           |           |
| Operating EBITDA  | 1,862      | 2,015    | 2,914    | 3,282     | 3,738     | 4,250     |
| Cash Interest Paid  | -44        | -56      | -91      | -63       | -63       | -63       |
| Cash Tax  | -127       | -116     | -475     | -385      | -445      | -514      |
| Dividends Received Less Dividends Paid to Minorities (Inflow/(Out)flow) | 0          | 0        | 20       | 80        | 80        | 80        |
| Other Items Before FFO  | 306        | 46       | 383      | 80        | 88        | 98        |
| Funds Flow From Operations  | 2,008      | 1,961    | 2,758    | 2,999     | 3,404     | 3,856     |
| Change in Working Capital   | 18         | -295     | -939     | -965      | -774      | -706      |
| Cash Flow From Operations (Fitch Defined)                               | 2,026      | 1,666    | 1,819    | 2,034     | 2,630     | 3,150     |
| Total Non-Operating/Non-Recurring Cash Flow                             | 0          | 0        | 0        |           |           |           |
| Capital Expenditure   | -373       | -324     | -358     |           |           |           |
| Capital Intensity (Capex/Revenue)                                       | 5.9        | 4.8      | 4.0      |           |           |           |
| Common Dividends  | -302       | -446     | -517     |           |           |           |
| Net Acquisitions and Divestitures                                       | 0          | -2,641   | 0        |           |           |           |

|   |       |        |      |        |        |        |
|---|-------|--------|------|--------|--------|--------|
| Other Investing and Financing Cash Flow Items             | -776  | -214   | -899 | 0      | 0      | 0      |
| Net Debt Proceeds   | -4    | 2,226  | -243 | -25    | 0      | 0      |
| Net Equity Proceeds                                       | -532  | 183    | -449 | -1,000 | -1,500 | -1,000 |
| Total Change in Cash                                      | 39    | 450    | -647 | 8      | -7     | 880    |
| <b>DETAIL CASH FLOW STATEMENT</b>                         |       |        |      |        |        |        |
| FFO Margin (%)  | 31.9  | 28.9   | 30.5 | 29.5   | 30.8   | 32.8   |
| <b>Calculations for Forecast Publication</b>              |       |        |      |        |        |        |
| Capex, Dividends, Acquisitions and Other Items Before FCF | -675  | -3,411 | -875 | -1,001 | -1,138 | -1,271 |
| Free Cash Flow After Acquisitions and Divestitures        | 1,350 | -1,745 | 944  | 1,033  | 1,493  | 1,880  |
| Free Cash Flow Margin (After Net Acquisitions) (%)        | 21.5  | -25.7  | 10.4 | 10.2   | 13.5   | 16.0   |
| <b>COVERAGE RATIOS</b>                                    |       |        |      |        |        |        |
| FFO Interest Coverage (x)                                 | 46.7  | 34.7   | 31.2 | 48.3   | 54.9   | 62.1   |
| FFO Fixed Charge Coverage (x)                             | 23.5  | 19.7   | 21.2 | 26.8   | 29.4   | 32.2   |
| Operating EBITDAR/Interest Paid + Rents (x)               | 21.5  | 20.4   | 21.9 | 29.5   | 32.4   | 35.5   |
| Operating EBITDA/Interest Paid (x)                        | 42.6  | 36.0   | 32.2 | 53.1   | 60.6   | 68.7   |
| <b>LEVERAGES RATIOS</b>                                   |       |        |      |        |        |        |
| Total Adjusted Debt/Operating EBITDAR (x)                 | 0.8   | 1.8    | 1.1  | 1.0    | 0.9    | 0.8    |
| Total Adjusted Net Debt/Operating EBITDAR (x)             | -1.0  | -0.2   | 0.0  | 0.0    | 0.0    | -0.2   |
| Total Debt with Equity Credit/Operating EBITDA (x)        | 0.6   | 1.6    | 1.0  | 0.9    | 0.8    | 0.7    |
| FFO Adjusted Leverage (x)                                 | 0.7   | 1.8    | 1.2  | 1.1    | 1.0    | 0.9    |
| FFO Adjusted Net Leverage (x)                             | -0.9  | -0.2   | 0.0  | 0.0    | 0.0    | -0.2   |
| Source: Fitch   |       |        |      |        |        |        |

**How to Interpret the Forecast Presented**

The forecast presented is based on the agency's internally produced, conservative rating case forecast. It does not represent the forecast of the rated issuer. The forecast set out above is only one component used by Fitch to assign a rating or determine a rating outlook, and the information in the forecast reflects material but not exhaustive elements of Fitch's rating assumptions for the issuer's financial performance. As such, it cannot be used to establish a rating, and it should not be relied on for that purpose. Fitch's forecasts are constructed using a proprietary internal forecasting tool, which employs Fitch's own assumptions on operating and financial performance that may not reflect the assumptions that you would make. Fitch's own definitions of financial terms such as EBITDA, debt or free cash flow may differ from your own such definitions. Fitch may be granted access, from time to time, to confidential information on certain elements of the issuer's forward planning. Certain elements of such information may be omitted from this forecast, even where they are included in Fitch's own internal deliberations, where Fitch, at its sole discretion, considers the data may be potentially sensitive in a commercial, legal or regulatory context. The forecast (as with the entirety of this report) is produced strictly subject to the disclaimers set out at the end of this report. Fitch may update the forecast in future reports but assumes no responsibility to do so.

Rating Navigator

# ASML Holding N.V.

## Corporates Ratings Navigator Technology

| Factor Levels | Sector Risk Profile | Operating Environment | Management and Corporate Governance | Business Profile             |              |                           |                 | Financial Profile |                     |                       | Issuer Default Rating |
|---------------|---------------------|-----------------------|-------------------------------------|------------------------------|--------------|---------------------------|-----------------|-------------------|---------------------|-----------------------|-----------------------|
|               |                     |                       |                                     | Sector Competitive Intensity | Sector Trend | Company's Market Position | Diversification | Profitability     | Financial Structure | Financial Flexibility |                       |
| aaa           |                     |                       |                                     |                              |              |                           |                 |                   |                     |                       | AAA                   |
| aa+           |                     |                       |                                     |                              |              |                           |                 |                   |                     |                       | AA+                   |
| aa            |                     |                       |                                     |                              |              |                           |                 |                   |                     |                       | AA                    |
| aa-           | █                   | █                     | █                                   | █                            |              | █                         |                 |                   | █                   |                       | AA-                   |
| a+            | █                   |                       | █                                   | █                            |              | █                         |                 | █                 | █                   | █                     | A+                    |
| a             | █                   |                       | █                                   | █                            | █            | █                         |                 | █                 | █                   | █                     | A                     |
| a-            | █                   |                       | █                                   | █                            | █            | █                         |                 | █                 | █                   | █                     | A- Stable             |
| bbb+          | █                   |                       |                                     |                              | █            |                           |                 | █                 |                     |                       | BBB+                  |
| bbb           | █                   |                       |                                     |                              | █            |                           | █               |                   |                     |                       | BBB                   |
| bbb-          | █                   |                       |                                     |                              | █            |                           | █               |                   |                     |                       | BBB-                  |
| bb+           | █                   |                       |                                     |                              |              |                           | █               |                   |                     |                       | BB+                   |
| bb            | █                   |                       |                                     |                              |              |                           | █               |                   |                     |                       | BB                    |
| bb-           | █                   |                       |                                     |                              |              |                           | █               |                   |                     |                       | BB-                   |
| b+            | █                   |                       |                                     |                              |              |                           |                 |                   |                     |                       | B+                    |
| b             | █                   |                       |                                     |                              |              |                           |                 |                   |                     |                       | B                     |
| b-            | █                   |                       |                                     |                              |              |                           |                 |                   |                     |                       | B-                    |
| ccc           |                     |                       |                                     |                              |              |                           |                 |                   |                     |                       | CCC                   |
| cc            |                     |                       |                                     |                              |              |                           |                 |                   |                     |                       | CC                    |
| c             |                     |                       |                                     |                              |              |                           |                 |                   |                     |                       | C                     |
| d or rd       |                     |                       |                                     |                              |              |                           |                 |                   |                     |                       | D or RD               |

Operating Environment

|     |                      |    |  |
|-----|----------------------|----|--|
| aa+ | Economic Environment | aa | Very strong combination of countries where economic value is created and where assets are located.                                       |
| aa  | Financial Access     | aa | Very strong combination of issuer specific funding characteristics and of the strength of the relevant local financial market.           |
| b-  | Systemic Governance  | aa | Systemic governance (eg rule of law, corruption, government effectiveness) of the issuer's country of incorporation consistent with 'aa' |
| ccc |                      |    |  |

Sector Competitive Intensity

|      |                                   |     |   |
|------|-----------------------------------|-----|---|
| aa-  | Industry Structure                | a   | Reduced number of competitors with clear leader.  |
| a+   | Barriers to Entry/Exit            | aa  | Very high barriers to entry. Emergence of significant new entrants in the rating horizon close to impossible. |
| a    | Relative Power in the Value Chain | bbb | Relative bargaining power balanced with suppliers and customers.  |
| a-   |                                   |     |   |
| bbb+ |                                   |     |   |

Company's Market Position

|      |                       |    |  |
|------|-----------------------|----|--|
| aa-  | Market Share          | aa | Market leader in most of its segments.                           |
| a+   | Competitive Advantage | a  | Strong competitive advantages but at some risk from competitors. |
| a    |                       |    |  |
| a-   |                       |    |  |
| bbb+ |                       |    |  |

Profitability

|      |                             |    |   |
|------|-----------------------------|----|---|
| a+   | FFO margin                  | aa | 30%   |
| a    | EBIT margin                 | aa | 30%   |
| a-   | FCF margin                  | aa | 14%   |
| bbb+ | Volatility of Profitability | bb | Higher volatility of profits than industry average. |
| bbb  |                             |    |   |

Financial Flexibility

|      |                        |     |   |
|------|------------------------|-----|---|
| aa-  | Financial Discipline   | aa  | Publicly announced conservative financial policy. Track record of strict compliance.          |
| a+   | Liquidity              | a   | Very comfortable liquidity. Staggered debt maturity schedule. Diversified sources of funding. |
| a    | FFO Fixed Charge Cover | aa  | 10.0x   |
| a-   | FX Exposure            | bbb | Some FX exposure on profitability and/or debt/cash flow match. Effective hedging in place.    |
| bbb+ |                        |     |   |

Management and Corporate Governance

|     |                        |     |  |
|-----|------------------------|-----|--|
| aa  | Management Strategy    | aa  | Coherent strategy and very strong track record in implementation.  |
| aa- | Governance Structure   | aa  | No record of governance failing. Experienced board exercising effective check and balance to management. No ownership concentration. |
| a+  | Group Structure        | a   | Group structure shows some complexity but mitigated by transparent reporting.  |
| a   | Financial Transparency | bbb | Good quality reporting without significant failing. Consistent with the average of listed companies in major exchanges.              |
| a-  |                        |     |  |

Sector Trend

|      |                            |     |   |
|------|----------------------------|-----|---|
| a    | Long-Term Growth Potential | bbb | Mature industry. Traditional markets may be under some pressure but opportunities arise in new markets. |
| a-   | Volatility of Demand       | bb  | Demand fluctuations exceed economic cycles  |
| bbb+ | Threat of Substitutes      | aa  | No medium-term risk from technological substitution.  |
| bbb  |                            |     |   |
| bbb- |                            |     |   |

Diversification

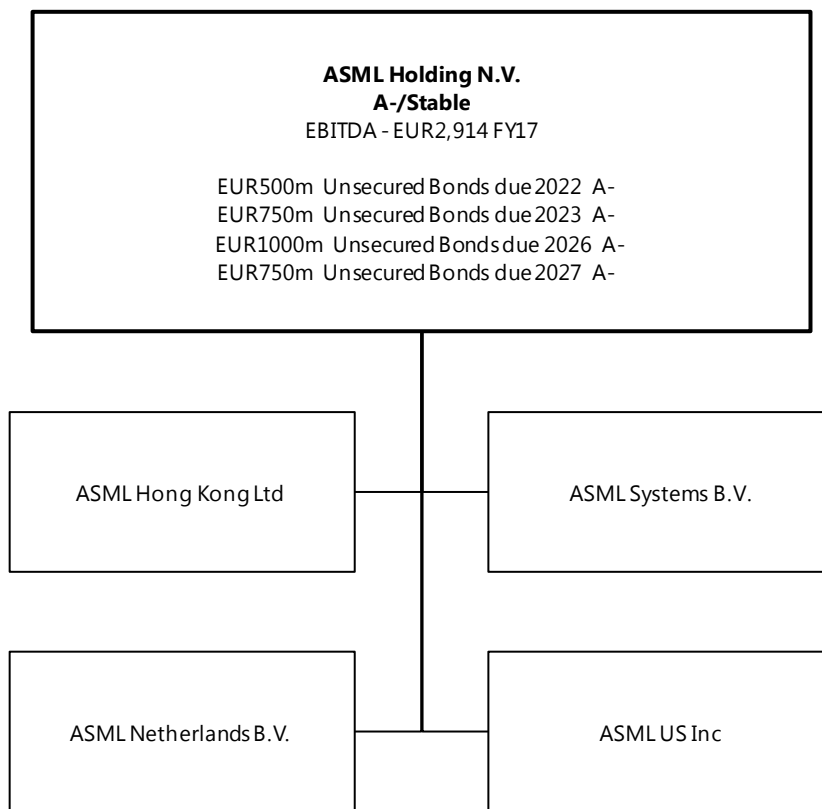
|      |                            |   |   |
|------|----------------------------|---|---|
| bbb+ | End-Market Diversification | a | Well balanced exposure to at least three business lines or markets with different sensitivity to the economic cycle |
| bbb  | Customer Concentration     | b | Significant customer concentration, including more than one customer representing 10% or more of total revenue.     |
| bbb- |                            |   |   |
| bb+  |                            |   |   |
| bb   |                            |   |   |

Financial Structure

|     |                                   |    |          |
|-----|-----------------------------------|----|----------|
| aa  | Lease Adjusted FFO Gross Leverage | aa | 1.0x     |
| aa- | Lease Adjusted FFO Net Leverage   | aa | 0.0x     |
| a+  | Net Debt/(CFO - Capex)            | aa | Net Cash |
| a   | Total Gross Debt/FCF              | a  | 3.0x     |
| a-  | Total Adjusted Debt/Operating     | aa | 1.0x     |

**How to Read This Page:** The left column shows the three-notch band assessment for the overall Factor, illustrated by a bar. The right column breaks down the Factor into Sub-Factors, with a description appropriate for each Sub-Factor and its corresponding category.

Simplified Group Structure Diagram



Source: Company, As at December 2017

## Peer Financial Summary

| Company                        | Date | Rating | Gross Revenue (EURm) | Operating EBITDA Margin (%) | FFO Margin (%) | FFO Fixed Charge Coverage (x) | FFO Adjusted Net Leverage (x) |
|--------------------------------|------|--------|----------------------|-----------------------------|----------------|-------------------------------|-------------------------------|
| ASML Holding N.V.              | 2017 | BBB+   | 9,053                | 32.2                        | 30.5           | 21.2                          | 0.0                           |
|                                | 2016 | BBB+   | 6,795                | 29.7                        | 28.9           | 19.7                          | -0.2                          |
|                                | 2015 | BBB+   | 6,287                | 29.6                        | 31.9           | 23.5                          | -0.9                          |
| Texas Instruments Incorporated | 2017 | A+     | 12,475               | 50.5                        | 36.7           | 36.2                          | 0.2                           |
|                                | 2016 | A+     | 12,684               | 47.2                        | 35.9           | 28.5                          | 0.3                           |
|                                | 2015 | A+     | 11,941               | 45.7                        | 32.9           | 22.7                          | 0.5                           |
| KLA-Tencor Corp.               | 2017 | BBB-   | 3,050                | 39.8                        | 30.1           | 8.9                           | 1.9                           |
|                                | 2016 | BBB-   | 2,688                | 37.1                        | 27.9           | 7.3                           | 2.5                           |
|                                | 2015 | BBB-   | 2,515                | 30.0                        | 24.7           | 7.7                           | 3.0                           |
| STMicroelectronics N.V.        | 2016 | BBB-   | 6,615                | 14.4                        | 11.9           | 13.0                          | 0.0                           |
|                                | 2015 | BBB-   | 6,335                | 13.2                        | 10.4           | 11.1                          | 0.1                           |
|                                | 2014 | BBB-   | 6,099                | 14.4                        | 10.6           | 11.2                          | 0.1                           |
| Intel Corporation              | 2017 | A+     | 52,331               | 44.6                        | 38.4           | 27.6                          | 1.0                           |
|                                | 2016 | A+     | 56,340               | 41.3                        | 38.8           | 24.7                          | 1.0                           |
|                                | 2015 | A+     | 50,567               | 44.0                        | 38.2           | 49.2                          | 0.4                           |

Source: Fitch

Note: ASML was upgraded to A-/Stable: 23 March 2018

## Reconciliation of Key Financial Metrics

| (EUR Millions)  |                   | 31 Dec 2017 |                |
|---|-------------------|-------------|----------------|
| <b>Debt &amp; Cash Summary</b>  |                   |             |                |
| Long-Term Finance Liabilities   | as reported       |             | 3,000          |
| Short-term Finance Liabilities  | as reported       |             | 25             |
| Interest bearing loans and borrowings                                     |                   |             | 3,025          |
| <b>Total debt with equity credit</b>                                      |                   |             | <b>3,025</b>   |
| Total off-balance sheet debt (8 x long-term lease expense)                | (f x 8)           |             | 389            |
| <b>Total lease-adjusted debt</b>  |                   |             | <b>3,414</b>   |
| <b>Cash and cash equivalents + short term investments</b>                 | as reported       |             | <b>(3,288)</b> |
| <b>Net debt with equity credit</b>  | (a)               |             | <b>-263</b>    |
| <b>Net lease-adjusted debt</b>  | (b)               |             | <b>126</b>     |
| <b>Revenue</b>  | as reported       |             | <b>9,053</b>   |
| <b>Operating Income</b>   | as reported       |             | <b>2,496</b>   |
| <b>Depreciation &amp; Amortisation</b>                                    | as reported       |             | <b>418</b>     |
| <b>EBITDA</b>   |                   |             | <b>2,914</b>   |
| <b>Operating EBITDA</b>   | as above          |             | <b>2,914</b>   |
| Gross interest paid   | as reported       | (c)         | (91)           |
| Interest received   | as reported       |             | 7              |
| Net interest paid   |                   | (d)         | (84)           |
| Cash tax paid   | as reported       |             | (475)          |
| Dividends to minorities net of dividends received                         | as reported       |             | 20             |
| Other items before FFO  | <b>Calculated</b> |             | 383            |
| <b>Funds flow from operations (FFO)</b>                                   | As below          | (e)         | <b>2,758</b>   |
| <b>Cash provided by operating activities</b>                              | as reported       |             | <b>1,799</b>   |
| Interest Paid   | as reported       |             | 0              |
| Interest Received   | as reported       |             | 0              |
| Tax Paid  | as reported       |             | 0              |
| Dividends received from associates and investments                        | as reported       |             | 0              |
| Non-Operating/Non-Recurring Cash Flow                                     | Fitch assumption  |             | 19.7           |
| <b>Cash flow from operations (Fitch)</b>                                  | <b>Calculated</b> |             | <b>1,818</b>   |
| Change in working capital   | as reported       |             | (939)          |
| <b>Funds flow from operations (FFO)</b>                                   | <b>Calculated</b> |             | <b>2,758</b>   |
| <b>Long-term (LT) lease expense</b>                                       | (f)               |             | 48.6           |
|   |                   |             | 0.5%           |
| <b>FFO Interest Coverage (x)</b>  |                   |             |                |
| (FFO + net interest paid) / gross interest paid                           | (e - d) / (-c)    |             | 31.1           |
| <b>FFO fixed charge cover (x)</b>   |                   |             |                |
| (FFO + net interest paid + LT leases) / (gross interest paid + LT leases) | (e-d+f) / (-c+f)  |             | 20.6           |
| <b>Net debt / EBITDA (x)</b>  |                   |             | <b>-0.1</b>    |
| <b>FFO adjusted net leverage (x)</b>                                      |                   |             |                |
| Net lease-adjusted debt / (FFO + net interest paid + LT leases)           | b / (e-d+f)       |             | 0.0            |

Source: Fitch



## Fitch Adjustment Reconciliation

|  | Reported<br>Values<br>31 Dec 17 | Sum of Fitch<br>Adjustments | Preferred<br>Dividends,<br>Associates and<br>Minorities Cash<br>Adjustments | Other Adjustment | Adjusted<br>Values |
|--|---------------------------------|-----------------------------|---|------------------|--------------------|
| <b>Income Statement Summary</b>                    |                                 |                             |   |                  |                    |
| Revenue  | 9,053                           | 0                           |   |                  | 9,053              |
| Operating EBITDAR                                  | 2,959                           | 0                           |   |                  | 2,959              |
| Operating EBITDAR after Associates and Minorities  | 2,959                           | 20                          | 20  |                  | 2,979              |
| Operating Lease Expense                            | 45                              | 0                           |   |                  | 45                 |
| Operating EBITDA                                   | 2,914                           | 0                           |   |                  | 2,914              |
| Operating EBITDA after Associates and Minorities   | 2,914                           | 20                          | 20  |                  | 2,934              |
| Operating EBIT                                     | 2,496                           | 0                           |   |                  | 2,496              |
| <b>Debt &amp; Cash Summary</b>                     |                                 |                             |   |                  |                    |
| Total Debt With Equity Credit                      | 3,025                           | 0                           |   |                  | 3,025              |
| Total Adjusted Debt With Equity Credit             | 3,025                           | 360                         |   | 360              | 3,385              |
| Lease-Equivalent Debt                              | 0                               | 360                         |   | 360              | 360                |
| Other Off-Balance Sheet Debt                       | 0                               | 0                           |   |                  | 0                  |
| Readily Available Cash & Equivalents               | 3,288                           | 0                           |   |                  | 3,288              |
| Not Readily Available Cash & Equivalents           | 0                               | 0                           |   |                  | 0                  |
| <b>Cash-Flow Summary</b>                           |                                 |                             |   |                  |                    |
| Preferred Dividends (Paid)                         | 0                               | 0                           |   |                  | 0                  |
| Interest Received                                  | 7                               | 0                           |   |                  | 7                  |
| Interest (Paid)                                    | -91                             | 0                           |   |                  | -91                |
| Funds From Operations [FFO]                        | 2,738                           | 20                          | 20  |                  | 2,758              |
| Change in Working Capital [Fitch-Defined]          | -939                            | 0                           |   |                  | -939               |
| Cash Flow from Operations [CFO]                    | 1,799                           | 20                          | 20  |                  | 1,819              |
| Non-Operating/Non-Recurring Cash Flow              | 0                               | 0                           |   |                  | 0                  |
| Capital (Expenditures)                             | -358                            | 0                           |   |                  | -358               |
| Common Dividends (Paid)                            | -517                            | 0                           |   |                  | -517               |
| Free Cash Flow [FCF]                               | 924                             | 20                          | 20  |                  | 944                |
| <b>Gross Leverage</b>                              |                                 |                             |   |                  |                    |
| Total Adjusted Debt / Op. EBITDAR* [x]             | 1.0                             |                             |   |                  | 1.1                |
| FFO Adjusted Leverage [x]                          | 1.1                             |                             |   |                  | 1.2                |
| Total Debt With Equity Credit / Op. EBITDA* [x]    | 1.0                             |                             |   |                  | 1.0                |
| <b>Net Leverage</b>                                |                                 |                             |   |                  |                    |
| Total Adjusted Net Debt / Op. EBITDAR* [x]         | -0.1                            |                             |   |                  | 0.0                |
| FFO Adjusted Net Leverage [x]                      | -0.1                            |                             |   |                  | 0.0                |
| Total Net Debt / (CFO - Capex) [x]                 | -0.2                            |                             |   |                  | -0.2               |
| <b>Coverage</b>                                    |                                 |                             |   |                  |                    |
| Op. EBITDAR / (Interest Paid + Lease Expense)* [x] | 21.8                            |                             |   |                  | 21.9               |
| Op. EBITDA / Interest Paid* [x]                    | 32.0                            |                             |   |                  | 32.2               |
| FFO Fixed Charge Coverage [x]                      | 21.1                            |                             |   |                  | 21.2               |
| FFO Interest Coverage [x]                          | 31.0                            |                             |   |                  | 31.2               |

\*EBITDA/R after Dividends to Associates and Minorities

Source: Fitch

## Full List of Ratings

|                          | Rating | Outlook | Last Rating Action    |
|--------------------------|--------|---------|-----------------------|
| <b>ASML Holding N.V.</b> |        |         |                       |
| Long-Term IDR            | A-     | Stable  | Upgrade 23 March 2018 |
| Senior unsecured rating  | A-     |         | Upgrade 23 March 2018 |

## Related Research & Criteria

|  |
|--|
| <a href="#">Corporate Rating Criteria (March 2018)</a> |
| <a href="#">Sector Navigators (March 2018)</a>         |

## Analysts

|  |
|--|
| <b>Tajesh Tailor</b><br>+44 20 3530 1726<br><a href="mailto:tajesh.tailor@fitchratings.com">tajesh.tailor@fitchratings.com</a> |
| <b>Joe Howes</b><br>+44 20 3530 1382<br><a href="mailto:joe.howes@fitchratings.com">joe.howes@fitchratings.com</a>             |

The ratings above were solicited and assigned or maintained at the request of the rated entity/issuer or a related third party. Any exceptions follow below.

ALL FITCH CREDIT RATINGS ARE SUBJECT TO CERTAIN LIMITATIONS AND DISCLAIMERS. PLEASE READ THESE LIMITATIONS AND DISCLAIMERS BY FOLLOWING THIS LINK: [HTTPS://FITCHRATINGS.COM/UNDERSTANDINGCREDITRATINGS](https://fitchratings.com/understandingcreditratings). IN ADDITION, RATING DEFINITIONS AND THE TERMS OF USE OF SUCH RATINGS ARE AVAILABLE ON THE AGENCY'S PUBLIC WEB SITE AT [WWW.FITCHRATINGS.COM](http://WWW.FITCHRATINGS.COM). PUBLISHED RATINGS, CRITERIA, AND METHODOLOGIES ARE AVAILABLE FROM THIS SITE AT ALL TIMES. FITCH'S CODE OF CONDUCT, CONFIDENTIALITY, CONFLICTS OF INTEREST, AFFILIATE FIREWALL, COMPLIANCE, AND OTHER RELEVANT POLICIES AND PROCEDURES ARE ALSO AVAILABLE FROM THE CODE OF CONDUCT SECTION OF THIS SITE. FITCH MAY HAVE PROVIDED ANOTHER PERMISSIBLE SERVICE TO THE RATED ENTITY OR ITS RELATED THIRD PARTIES. DETAILS OF THIS SERVICE FOR RATINGS FOR WHICH THE LEAD ANALYST IS BASED IN AN EU-REGISTERED ENTITY CAN BE FOUND ON THE ENTITY SUMMARY PAGE FOR THIS ISSUER ON THE FITCH WEBSITE.

Copyright © 2018 by Fitch, Inc., Fitch Ratings Ltd. and its subsidiaries. 33 Whitehall Street, New York, NY 10004. Telephone: 1-800-753-4824, (212) 908-0500. Fax: (212) 480-4435. Reproduction or retransmission in whole or in part is prohibited except by permission. All rights reserved. In issuing and maintaining its ratings and in making other reports (including forecast information), Fitch relies on factual information it receives from issuers and underwriters and from other sources Fitch believes to be credible. Fitch conducts a reasonable investigation of the factual information relied upon by it in accordance with its ratings methodology, and obtains reasonable verification of that information from independent sources, to the extent such sources are available for a given security or in a given jurisdiction. The manner of Fitch's factual investigation and the scope of the third-party verification it obtains will vary depending on the nature of the rated security and its issuer, the requirements and practices in the jurisdiction in which the rated security is offered and sold and/or the issuer is located, the availability and nature of relevant public information, access to the management of the issuer and its advisers, the availability of pre-existing third-party verifications such as audit reports, agreed-upon procedures letters, appraisals, actuarial reports, engineering reports, legal opinions and other reports provided by third parties, the availability of independent and competent third-party verification sources with respect to the particular security or in the particular jurisdiction of the issuer, and a variety of other factors. Users of Fitch's ratings and reports should understand that neither an enhanced factual investigation nor any third-party verification can ensure that all of the information Fitch relies on in connection with a rating or a report will be accurate and complete. Ultimately, the issuer and its advisers are responsible for the accuracy of the information they provide to Fitch and to the market in offering documents and other reports. In issuing its ratings and its reports, Fitch must rely on the work of experts, including independent auditors with respect to financial statements and attorneys with respect to legal and tax matters. Further, ratings and forecasts of financial and other information are inherently forward-looking and embody assumptions and predictions about future events that by their nature cannot be verified as facts. As a result, despite any verification of current facts, ratings and forecasts can be affected by future events or conditions that were not anticipated at the time a rating or forecast was issued or affirmed.

The information in this report is provided "as is" without any representation or warranty of any kind. A Fitch rating is an opinion as to the creditworthiness of a security. This opinion is based on established criteria and methodologies that Fitch is continuously evaluating and updating. Therefore, ratings are the collective work product of Fitch and no individual, or group of individuals, is solely responsible for a rating. The rating does not address the risk of loss due to risks other than credit risk, unless such risk is specifically mentioned. Fitch is not engaged in the offer or sale of any security. All Fitch reports have shared authorship. Individuals identified in a Fitch report were involved in, but are not solely responsible for, the opinions stated therein. The individuals are named for contact purposes only. A report providing a Fitch rating is neither a prospectus nor a substitute for the information assembled, verified and presented to investors by the issuer and its agents in connection with the sale of the securities. Ratings may be changed or withdrawn at anytime for any reason in the sole discretion of Fitch. Fitch does not provide investment advice of any sort. Ratings are not a recommendation to buy, sell, or hold any security. Ratings do not comment on the adequacy of market price, the suitability of any security for a particular investor, or the tax-exempt nature or taxability of payments made in respect to any security. Fitch receives fees from issuers, insurers, guarantors, other obligors, and underwriters for rating securities. Such fees generally vary from US\$1,000 to US\$750,000 (or the applicable currency equivalent) per issue. In certain cases, Fitch will rate all or a number of issues issued by a particular issuer, or insured or guaranteed by a particular insurer or guarantor, for a single annual fee. Such fees are expected to vary from US\$10,000 to US\$1,500,000 (or the applicable currency equivalent). The assignment, publication, or dissemination of a rating by Fitch shall not constitute a consent by Fitch to use its name as an expert in connection with any registration statement filed under the United States securities laws, the Financial Services and Markets Act 2000 of the United Kingdom, or the securities laws of any particular jurisdiction. Due to the relative efficiency of electronic publishing and distribution, Fitch research may be available to electronic subscribers up to three days earlier than to print subscribers.

For Australia, New Zealand, Taiwan and South Korea only: Fitch Australia Pty Ltd holds an Australian financial services license (AFS license no. 337123) which authorizes it to provide credit ratings to wholesale clients only. Credit ratings information published by Fitch is not intended to be used by persons who are retail clients within the meaning of the Corporations Act 2001.