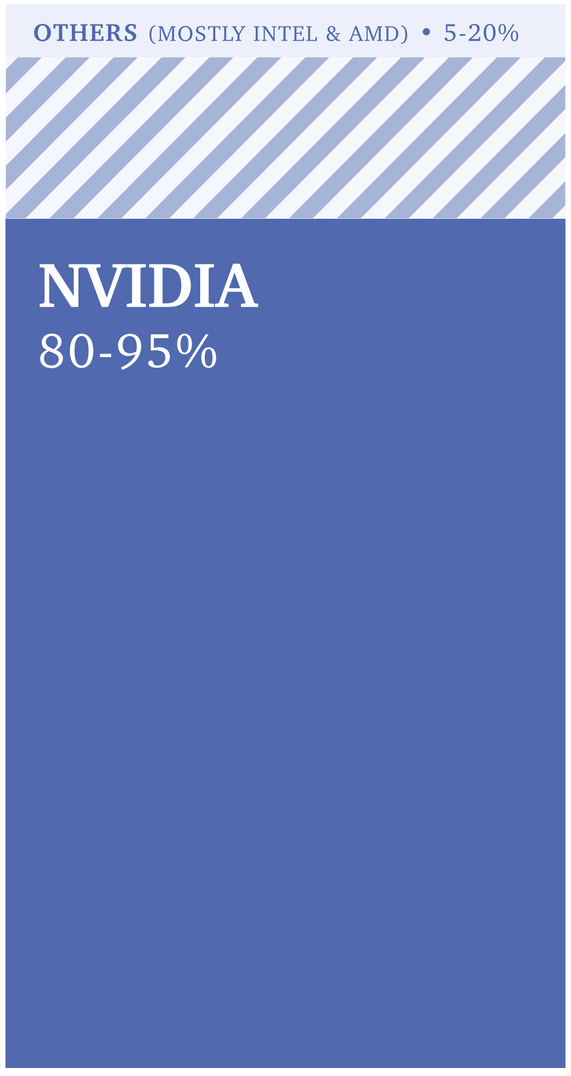
Concentration of the AI Chip Supply Chain

Expressed as percentage of total market share

Design of AI Chips

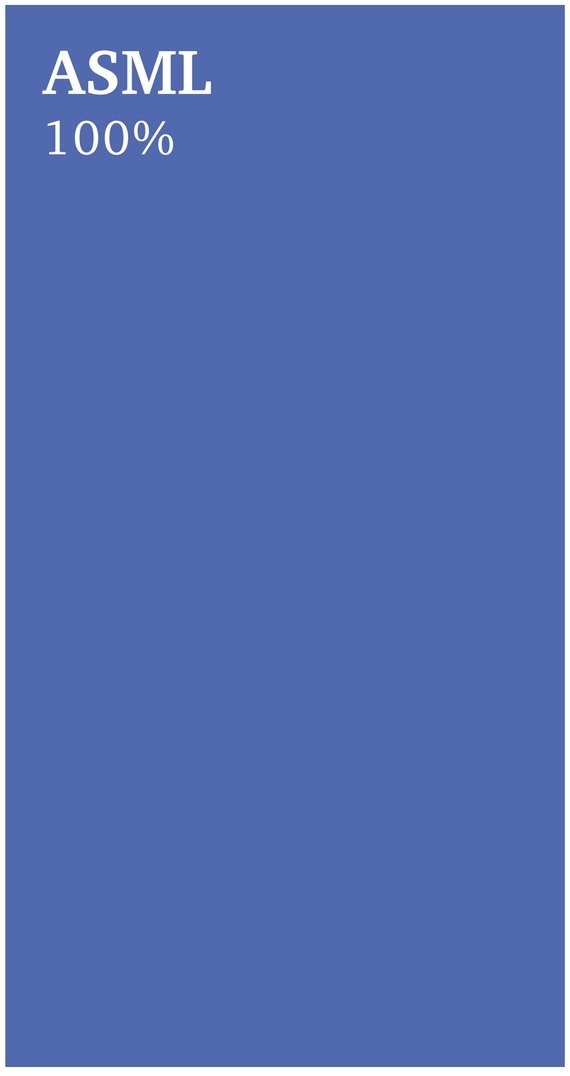
Data: 2023.



This excludes AI chips that are not available to purchase, for instance AI chips that are only available “to rent”, such as Google’s TPUs. Information on the production volume and revenue of such custom chips is limited. However, we estimate that Google’s TPUs could make up a significant minority of all AI chips.

Semiconductor Manufacturing Equipment

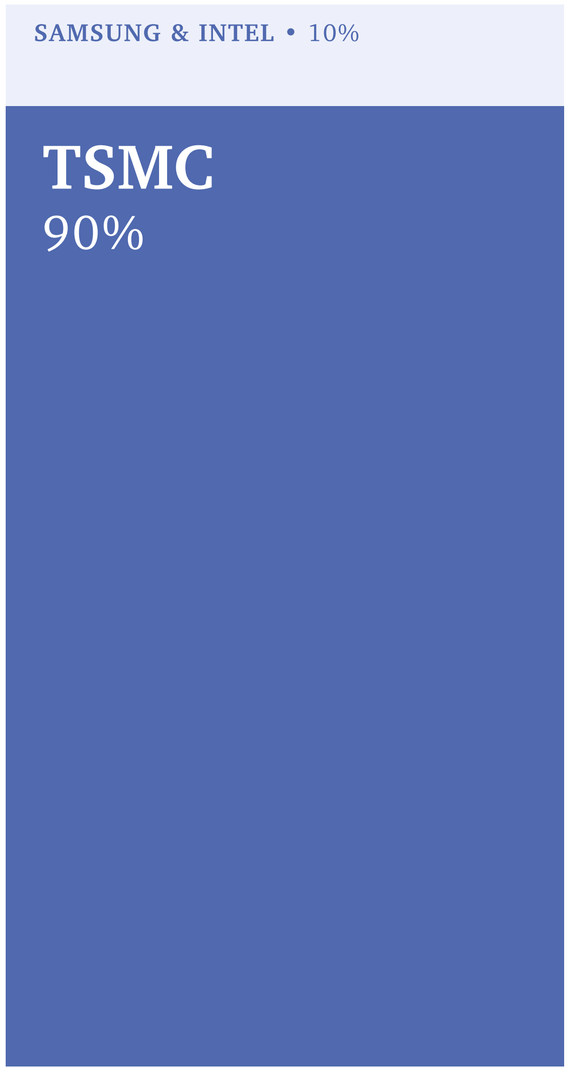
An input to fabrication. Data: 2023. Extreme Ultraviolet Lithography (EUV).



ASML is the only company capable of producing EUV machines. These machines are critical to produce <5 nm chips and to produce 5 nm chips economically (Grunewald, 2023). In 2023, they were also used to produce almost all 7 nm chips, with the exception of Chinese manufacturer SMIC who in 2023 began producing 7nm chips with inferior DUV equipment due to export restrictions on EUV (Schleich and Reinsch, 2023).

Fabrication

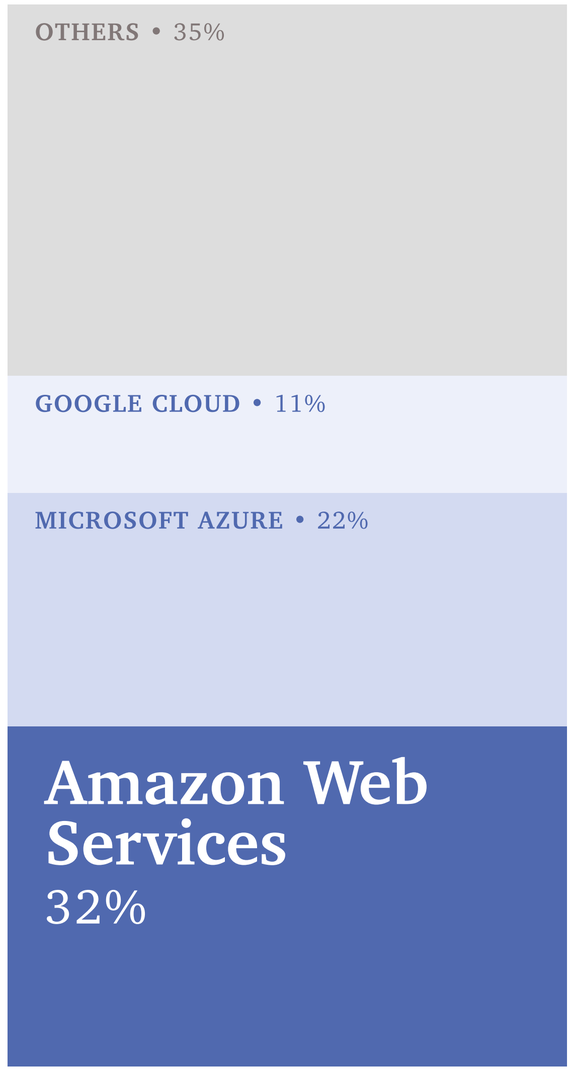
Data: 2022. Logic chips ≤7nm.



It is ambiguous whether market share figures exclusively cover the pure-play foundry market, i.e., manufacturing capacity dedicated to serving external customers, or if it also includes capacity for chips that are used for their own products. However, even when accounting for this, TSMC would likely still dominate the market by a large margin, and the production is still limited to a small number of actors.

Compute Provision

Data: 2023.



This covers the entire cloud market and is not specific to AI compute. However, we expect that these three companies have a similar, or even bigger, market share in the AI cloud compute sector.

“Computing Power and the Governance of Artificial Intelligence”
Sastry, Heim, Belfield, Anderljung, Brundage, Hazell, O'Keefe, Hadfield et al., 2024