Supply Chain Explorer

By the Emerging Technology Observatory

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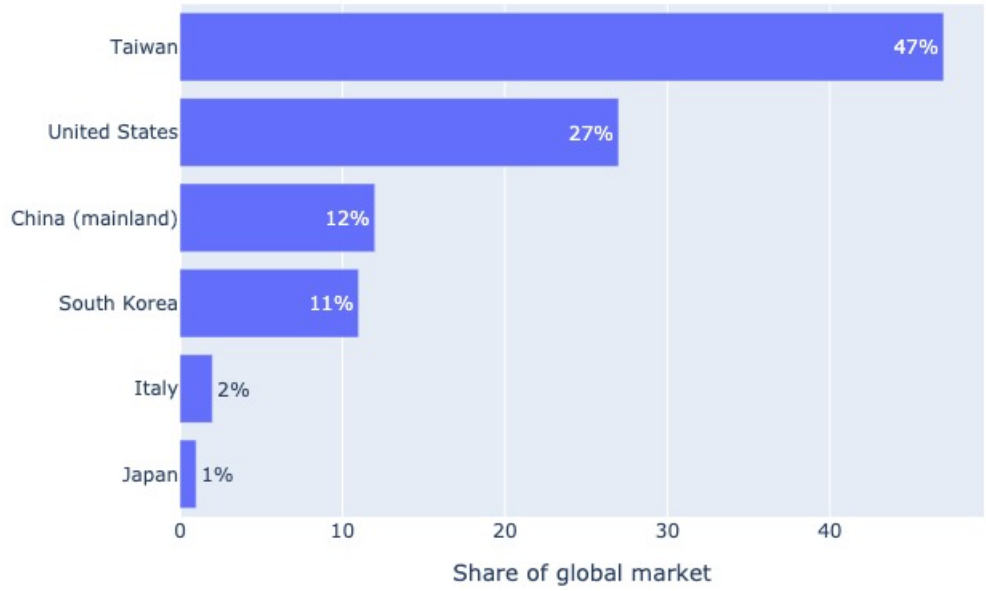
Fabrication

Fabrication turns designs into chips. Semiconductor fabrication facilities (“fabs”) make chips in these wafers in two steps: forming transistors and other electrical devices in material layers within silicon wafers; and forming metal interconnects between the electrical devices in insulating layers above the silicon.

There are two business models for fabs: (1) fabs owned by integrated device manufacturers ("IDMs"), which manufacture chips based on their own designs; and (2) foundries, i.e., fabs operating independently and manufacturing chips for third-party customers. Firms headquartered in the United States, Taiwan, South Korea, Japan, and China control the vast majority of the world’s fab market share and fab capacity—most of which is also physically located in these countries. Three firms – headquartered in the United States (Intel), Taiwan (TSMC), and South Korea (Samsung) – control virtually all of the world’s advanced logic fab capacity, with the most cutting-edge fabs concentrated in Taiwan and South Korea.

Country provision



Notable supplier companies

- GlobalFoundries - United States
- Hua Hong - China (mainland)
- Intel - United States
- Kioxia - Japan
- Microchip - United States
- NXP - Netherlands
- Powerchip - Taiwan
- Renesas (negligible market share) - Japan
- SMIC - China (mainland)
- STMicroelectronics - Switzerland
- Samsung - South Korea
- TSMC - Taiwan
- UMC - Taiwan