

# Global Chip Shortage to Ease in 2H22, Improvement Will Not Be Linear

Fitch Ratings-Chicago-07 February 2022: Global semiconductor supply shortages could begin to ease in 2H22, despite pockets of near record low inventories throughout the supply chain, due to increased capacity and the potential for demand to moderate from currently high levels, says Fitch Ratings. However, pandemic-driven government intervention, particularly in countries that maintain a zero-covid policy, will exacerbate supply volatility and could push out supply chain normalization.

Supply constraints were exacerbated by event-driven production issues in 2021, including Winter Storm Uri, the Renesas Electronics' (BBB-/Stable) plant fire in Japan and water stress caused by a drought in Taiwan. Currently, production at foundries in China, Hong Kong and Taiwan are at risk of government-mandated lockdowns in some cities due to zero-covid policies. Many of the world's largest chipmakers, including leading edge foundries, Taiwan Semiconductor (TSMC) and Samsung Electronics (AA-/Stable), produce a significant amount of chips in these countries.

Chip foundries have been aggressively adding capacity since 2021, despite this uncertainty, and, in some cases, are planning large multi-year investments in manufacturing and back-end capabilities. Some expansion is occurring outside of Asia, with manufacturers partnering with the US government, which supports building domestic capacity to reduce supply chain risk, as the majority of chips are currently produced in Taiwan and South Korea.

Intel (A+/Stable) will spend \$25 billion to \$28 billion on capex in 2022, up from more than \$18 billion in 2021, with new production facilities planned in the US and Europe. TSMC will spend \$40 billion to \$44 billion in 2022, up from \$30 billion in 2021, and is building a new fab in Arizona. Samsung plans to up spending and build a new fab in Texas.

The addition of trailing edge capacity that began construction in 1H21 will help alleviate supply constraints for cyclical end markets, including automotive and

industrial, in 2H22, while companies in these industries refined supply chains after being more acutely affected by the chip shortage. General Motors (BBB-/Stable) recently indicated it expects 2022 results will be strong, due in part to an improving outlook for semiconductors in the US and China.

The acquisition and validation of tools to produce chips historically can take as long as a year but increasingly complex leading-edge chips used for cutting-edge technology, such as 5G, internet of things (IoT) and artificial intelligence (AI), could take longer. Most of the new capacity being added in the US is for advanced chips. Intel, which is building leading-edge capacity to improve its competitiveness, indicated that strong demand could extend the chip shortage into 2023.

The robust demand, as economies recovered from intervention-induced downturns, may not be sustainable. However, the risk of excess industry supply, should end-market demand slow as capacity aggressively increases, is low in the near term, given ongoing semiconductor component shortages and record low inventories. Concerns are heightened over the intermediate term but should be mitigated by better demand visibility, given stronger partnerships with customers that changed buying patterns due to the protracted shortage of chips, and the secular growth drivers of semiconductor demand.

We expect sector revenue growth in the mid- to high-single digit range in 2022, after growth in the high-single to low-double digit range in 2021, for our universe of coverage as supply increases amid still solid demand and pricing. Revenue growth is projected to be flat in 2023 but this is unlikely to drive negative rating actions, given leverage headroom, relative to negative sensitivities, for most issuers in Fitch's US technology portfolio.