Bulletin:

TSMC's Overseas Expansion Can Reduce Asset Concentration Risk

August 10, 2023

Taiwan Semiconductor Manufacturing Co. Ltd.'s (TSMC) commitment to long-term overseas expansion will help the company cut its asset concentration risk. However, it could take several years for such expansion to produce meaningful improvement.

Taiwan-based TSMC (twAAA/Stable/twA-1+) recently announced plans to build a wafer fabrication (fab) unit in Dresden, Germany for about 10 billion euro. The fab will be TSMC's first in Europe and will focus on 28/22 nanometer (nm) and 16/12nm process technology with monthly production capacity of 40 thousand wafers once fully operational.

The project is a joint venture between TSMC, Robert Bosch GmbH (A/Stable/A-1), Infineon Technologies AG (BBB/Positive/--), and NXP Semiconductors N.V. (BBB+/Stable/--) with TSMC holding a 70% stake and the three other partners each holding 10%. We believe the new fab will focus more on chips for auto-related applications, given the investor mix and demand from automotive businesses in Europe. TSMC expects to commission the new fab in late 2027.

We believe this investment is in line with TSMC's long-term strategy to increase its global footprint, partly in response to major client concerns over geopolitical tension. This is despite Europe, Middle East and Africa accounted for just 5% of TSMC's sales in 2022. The joint venture is likely to take advantage of the eurozone's 43 billion euro subsidy program which aims to cultivate the local semiconductor supply chain.

We anticipate TSMC will focus most of its investments in new advanced technologies in Taiwan over the next few years. This includes fabs using the most advanced 3nm and 2nm process technology. Therefore, TSMC's overseas expansion plans for the U.S., Japan, Europe, and China are unlikely to materially lower the company's geographic concentration risk over the next two years. TSMC intends to shift 20% of its capacity using 28nm and below technologies to outside Taiwan over the next few years. We estimate that as of the end of 2022, roughly 90% of TSMC's overall wafer capacity is in Taiwan.

In our view, the overseas expansion will also carry a significant risk of cost hikes and margin dilution for TSMC. That's because manufacturing in developed countries involves higher costs from construction, labor, materials, energy, and back-end services, and reduced economies of scale. However, we believe strong pricing power and subsidies from host governments could help TSMC manage the impact on its profitability, given the strong desire of its clients and related governments to lower supply-chain risk. In addition, TSMC's overseas expansion will help the company to better manage the increasingly tight supply of water, green power, and talent in Taiwan.

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We forecast the German fab will have a low financial impact on TSMC's debt leverage in 2023-2024, given that the major spending for equipment move-in will follow two to three years later. We assume annual capital expenditure of US$32 billion-US$36 billion for TSMC in 2023 and 2024, which is less the US$36 billion recorded in 2022 amid weakening demand. This reduced spending should help strengthen the financial buffer in TSMC's minimal financial risk profile. We now expect TSMC to generate positive free cash flow of new Taiwan dollar (NT$) 100 billion-NT$150 billion in 2023, despite weaker profitability and a moderate increase in the company's cash dividends.

This report does not constitute a rating action.