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Semiconductors Practice

The semiconductor decade: A trillion-dollar industry

The global semiconductor industry is poised for a decade of growth and is projected to become a trillion-dollar industry by 2030.

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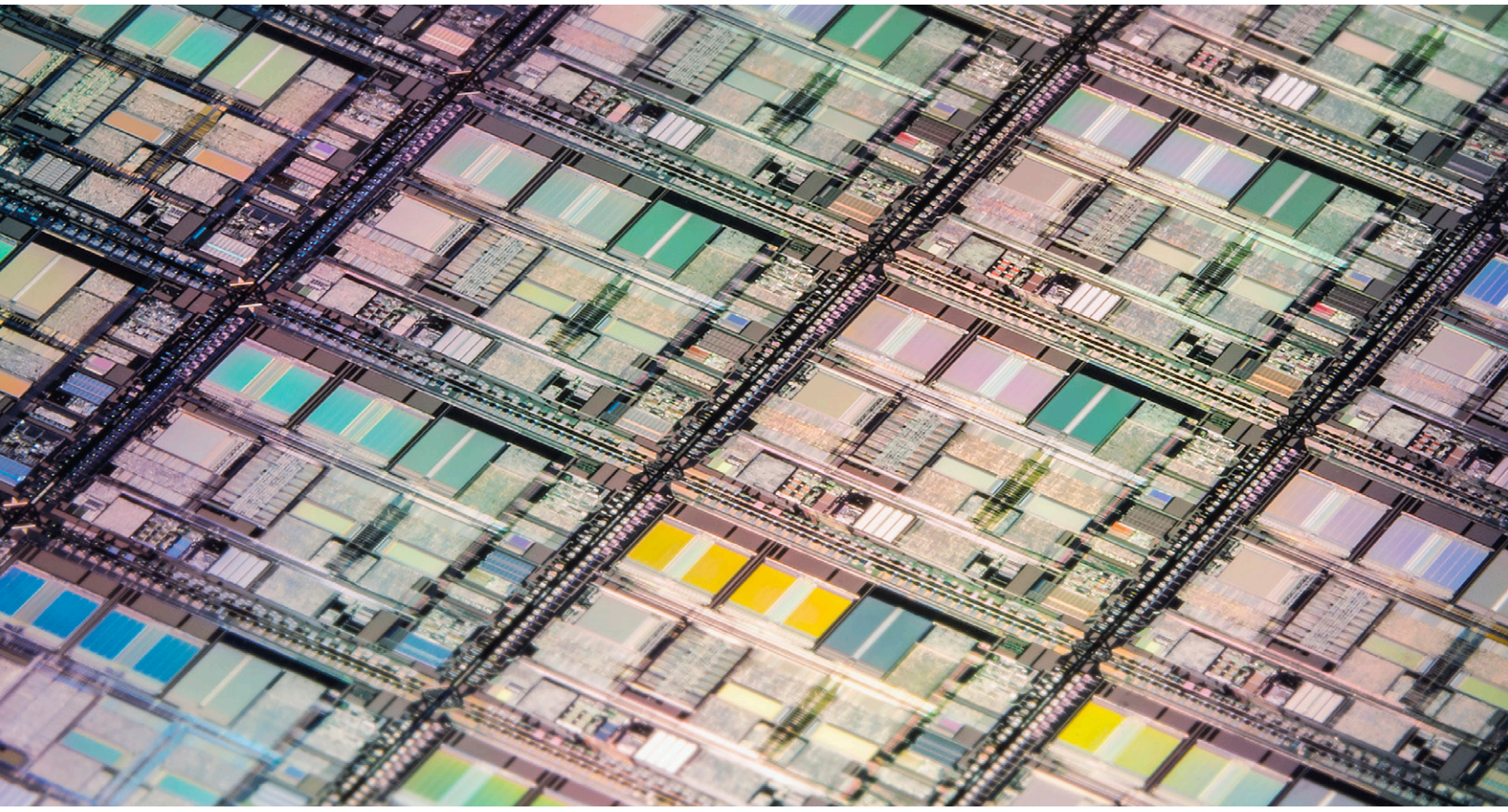

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The semiconductor industry, which makes vital components for the technologies we all depend on, hit the headlines over the past year. And it wasn't all good news. Supply shortages led to bottlenecks in the production of everything from cars to computers and highlighted how tiny chips are critical to the smooth functioning of the global economy. In many ways, our world is "built" on semiconductors. With chip demand set to rise over the coming decade, semiconductor manufacturing and design companies would benefit now from a deep analysis of where the market is headed and what will drive demand over the long term.

As the impact of digital on lives and businesses has accelerated, semiconductor markets have boomed, with sales growing by more than 20 percent to about $600 billion in 2021. McKinsey analysis based on a range of macroeconomic assumptions suggests the industry's aggregate annual growth could average from 6 to 8 percent a year up to 2030.

The result? A $1 trillion dollar industry by the end of the decade, assuming average price increases of about 2 percent a year and a return to balanced supply and demand after current volatility.

Amid megatrends that include remote working, the growth of AI, and soaring demand for electric vehicles, manufacturers and designers should now take stock and ensure they are best placed to reap the rewards.

Assuming EBITA margins of 25 to 30 percent, current equity valuations support average revenue growth of 6 to 10 percent up to 2030 across the industry, analysis of 48 listed companies shows. Still, some companies are better placed than others, and growth in individual subsegments could range from as little as 5 percent to as much as 15 percent (exhibit).

Drilling down into individual subsegments, about 70 percent of growth is predicted to be driven by just three industries: automotive, computation and data storage, and wireless.

The strongest-growing segment is likely to be automotive, where we could see a tripling of demand, fueled by applications such as autonomous driving and e-mobility. The 2030 cost of semiconductor content in a Society of Automotive Engineers (SAE) Level 4 car with an electric drivetrain could be about $4,000 compared with $500 for an SAE Level 1 car powered by an internal-combustion engine. Accounting for just 8 percent of semiconductor demand in 2021, the automotive industry could represent from 13 to 15 percent of demand by the end of the decade. On that basis, the segment

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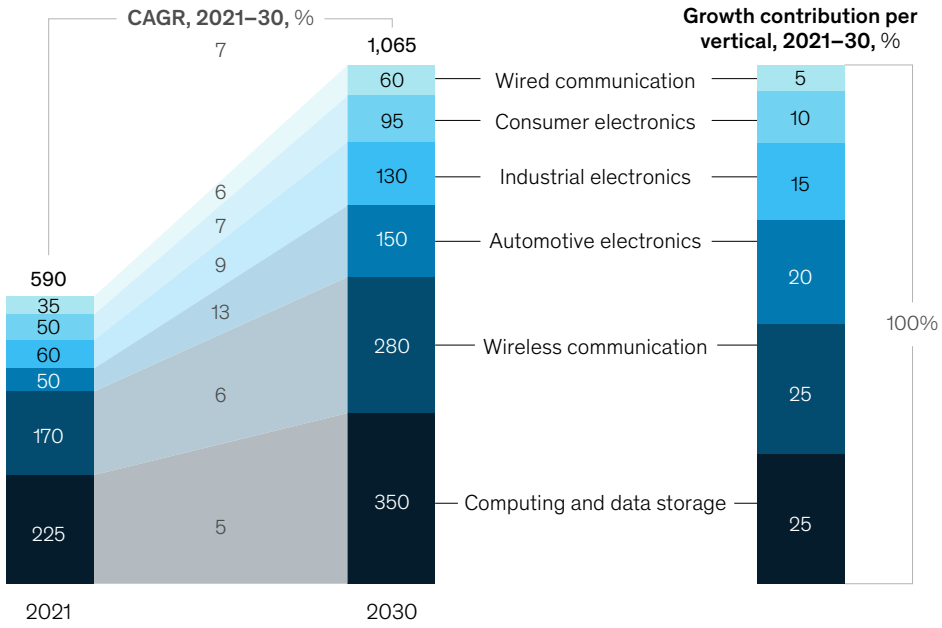
Exhibit 1

The overall growth in the global semiconductor market is driven by the automotive, data storage, and wireless industries.

Global semiconductor market value by vertical, indicative, $ billion



Note: Figures are approximate.

would be responsible for as much as 20 percent of industry expansion over the coming years.

Growth of 4 to 6 percent in the computation and data-storage market could be fueled by demand for servers to support applications such as AI and cloud computing, the analysis shows. In the wireless segment, meanwhile, smartphones could account for the majority of expansion, amid a shift from lower-tier to mid-tier segments in emerging markets and backed by growth in 5G.

What do these lessons mean for decision makers? Certainly, the outlook for the semiconductor industry looks bright, notwithstanding potential short-term volatility due to supply–demand mismatches, as well as a changing global economic and geopolitical outlook. With growth set to continue in the longer term, the task for industry leaders will be to focus strategically on R&D, factories, and sourcing, and to apply the lessons of the modeling to unlock areas of opportunity.

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