

THE GLOBAL MICROCHIP SHORTAGE AND WHAT IT MEANS FOR INVESTORS

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By: Greg Zdzienicki, Client Portfolio Manager, and Ryan Diamant, Equities Associate, Client Portfolio Management



Supply chain bottlenecks dominated news headlines in 2021. Disruption to the semiconductor industry received perhaps the most publicity because the computer chip has such wide-ranging applications. In this paper, we take a look at the global microchip shortage and its potential impact on investors into 2022. We conclude by recommending selective exposure to a few high-quality companies within the semiconductor industry or areas that have benefitted, historically, from long-term structural growth trends and advancements in technology.

What are semiconductors?

Semiconductors enable the systems and products that we use every day to work, communicate, travel, entertain and educate. They are an essential component in most of today's electronic devices and are used in almost every industry to process information and provide computational capabilities. They power everything from laundry machines to cars, entertainment systems, computers and smartphones, among many other useful devices. These chips are integral to technological advancement in industry sectors as diverse as telecommunications, energy, aerospace, automotive, information technology, 5G infrastructure, datacenters, and electronics.

Why are we experiencing a chip shortage?

Surging demand in certain semiconductor end markets, combined with rebounding demand in traditional chip applications, has led to significant bottlenecks within the industry. At the beginning of the pandemic, many large end users, such as automotive manufacturers, cut or cancelled chip orders in 2020/21 due to a sudden drop in demand. As a result, chip manufacturers retooled their manufacturing plants based on where they forecast greatest demand. Their focus shifted to consumer electronics and computer equipment, which were experiencing a sharp increase in demand as more people began working from home. For example, personal computers, which had seen a steady decline in demand after peaking in 2011, suddenly experienced a massive surge in 2020.

Market research firm IDC reported that PC shipments reached 302 million units worldwide in 2020, an increase of 13.1% year over year.¹ As a result of this surge, consumer electronics and communication technology markets accounted for approximately 75% of semiconductor end demand in 2020 and into 2021.

As stay-at-home orders were gradually lifted globally, a microchip supply shortage emerged. Looking again to the automotive industry as an example, there was a massive rebound in demand throughout 2021. Auto demand, which had declined from 92mm units in 2019 to 78mm units in 2020, once again exceeded 90mm units in 2021.² Today, the automotive manufacturing industry is able to supply only around 80-82mm vehicles because of semiconductor shortages.³ Similar bottlenecks are occurring in other industries such as communication technology, which has seen the strongest demand in over a decade, offset by worsening supply chain conditions. Lead times for semiconductors can now be more than a year for certain chips.

Solutions to the shortage

Opinions vary, but many analysts expect the microchip shortage to continue throughout 2022 and perhaps into 2023. Demand in some segments is likely to wane in the second half of 2021, leading to a greater supply of chips for other segments. Despite expected delays, there are many encouraging developments. Increased investment by governments around the world have accelerated as many countries designate semiconductor production a national security imperative. For example, the U.S. Senate in June 2021 passed legislation intended to ease the semiconductor shortage by calling for US\$50 billion investment in domestic semiconductor production to avoid future supply interruptions and lower the country's dependence on foreign-made microchips. The three largest semiconductor manufacturers, Intel, Samsung and TSMC, now have plans to build new facilities in Arizona. Europe, China, and Japan have also stepped up investment in semiconductor production for their own domestic markets. Additionally, automakers are working on creative ways to work around the shortage. Tesla and other manufacturers, for example, have been changing or removing certain software features that require specific chips in order to build more vehicles.

¹"The PC market just had its first big growth in 10 years," by Tom Warren, in The Verge (Jan. 11, 2021). <https://www.theverge.com/2021/1/11/22225356/pc-sales-shipments-2020-growth-idc-canalis-remote-work>

²Bloomberg, as at December 2, 2021.

³<https://www.semiconductors.org/wp-content/uploads/2021/09/2021-SIA-State-of-the-Industry-Report.pdf>

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How could this impact investors?

Within CIBC Asset Management, we have selective exposure in our global strategies to a few high-quality companies in the semiconductor industry or areas that could benefit from long-term structural growth trends and advances in technology. Specifically, we have exposure to semiconductor manufacturers (foundries), and also to companies that can capitalize on increased datacenter investment, as well as to semicaps, which are companies that supply the equipment used to manufacture semiconductors. Companies such as Nvidia, Taiwan Semiconductor, ASML are all examples of businesses with strong competitive advantages. We believe these companies could benefit from the ramp-up in semiconductor manufacturing, increased government investment, and the elimination of supply chain bottlenecks. For investors seeking exposure to the semiconductor sector in high-quality bottom-up portfolios, the Renaissance Global Science & Technology Fund or CIBC Global Equity Fund could be considered as they offer exposure to high-conviction companies within these industries.

