



The World Is in a Chip Arms Race: Where's Canada?

Description

Semiconductors — a term used for the memory chips that power our computers and phones — were in short supply in 2021. The world was just beginning to get over the economic damage caused by COVID-19, and supply chains (e.g., shipping companies, factories) were not ready for the jump in demand. As a result, a global chip shortage rocked the markets and gave windfall profits to the biggest chip companies.

Today, it's a slightly different story. While not completely over, the chip shortage is easing, with prices of many chip components [coming down](#). That sounds good on the surface, but we now have another chip crisis on our hands: a chip arms race.

The U.S. and China are increasingly at odds over chips. In 2019, the U.S. banned the export of key chip components to China. Since then, China has started saying that it wants to take over Taiwan, the country that manufactures the world's high-end chips. It's a tense situation. Even more alarming, Canada is caught in the middle.

Signs that there's an arms race

The best evidence that there's a chip arms race between China and the U.S. is the fact that each country is trying to undermine the other in the space. The U.S. refuses to sell chips to China, and China is racing to build its own chip industry, so it doesn't have to rely on U.S. allies. Just recently, the U.S. tried to get **ASML** (a European company) to stop selling chip equipment to China.

The fact that they would pressure a *foreign* company to stop doing business with China shows the severity of the situation. U.S. companies like **Micron** and **NVIDIA** are huge players in the global tech industry. If China comes out with alternatives to their products, then the U.S.'s tech edge weakens.

The Taiwan situation

One country that's particularly exposed to the chip arms race is Taiwan. Geographically close to China

but allied with the U.S., it's a key chip manufacturer. **Taiwan Semiconductor Manufacturing** supplies 90% of the world's high-end chips. **Apple**, NVIDIA, and others depend heavily on them. China has seriously hinted that it wants to take over Taiwan; if it does, then it will gain control over all that valuable semi manufacturing capability.

Canada's need for chips

The chip arms race doesn't just affect China and the United States. Canada is involved too. **Shopify** ([TSX:SHOP](#))([NYSE:SHOP](#)) depends heavily on access to chips. Shopify is best known as an e-commerce company, but it's really a cloud company. It doesn't "sell" the goods hosted on its site; vendors do. Instead, Shopify maintains large numbers of servers that host its back-end website and payment infrastructure. This cloud hosting is vital to helping Shopify empower businesses. And it all depends on chips. Servers are really just computers: a data centre is a huge network of computers all together in one room, serving content to end users. Shopify, like most tech companies, needs them in order to function.

Like all computers, servers require chips to store data. Unfortunately, Canada doesn't have much capacity to build chips in-house. Like the U.S., most of our high-end chips ultimately come from Taiwan. We do have [some chip companies](#), like **POET Technologies**, but no industry heavyweights that can compete with NVIDIA, TSM or Micron's capabilities. For that, companies like Shopify are still depending on an open global marketplace. Let's hope that one remains in place for the foreseeable future.

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