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[A chip in the armour: How semiconductors are disrupting global trade](#)

By Professor Nayef Al-Rodhan

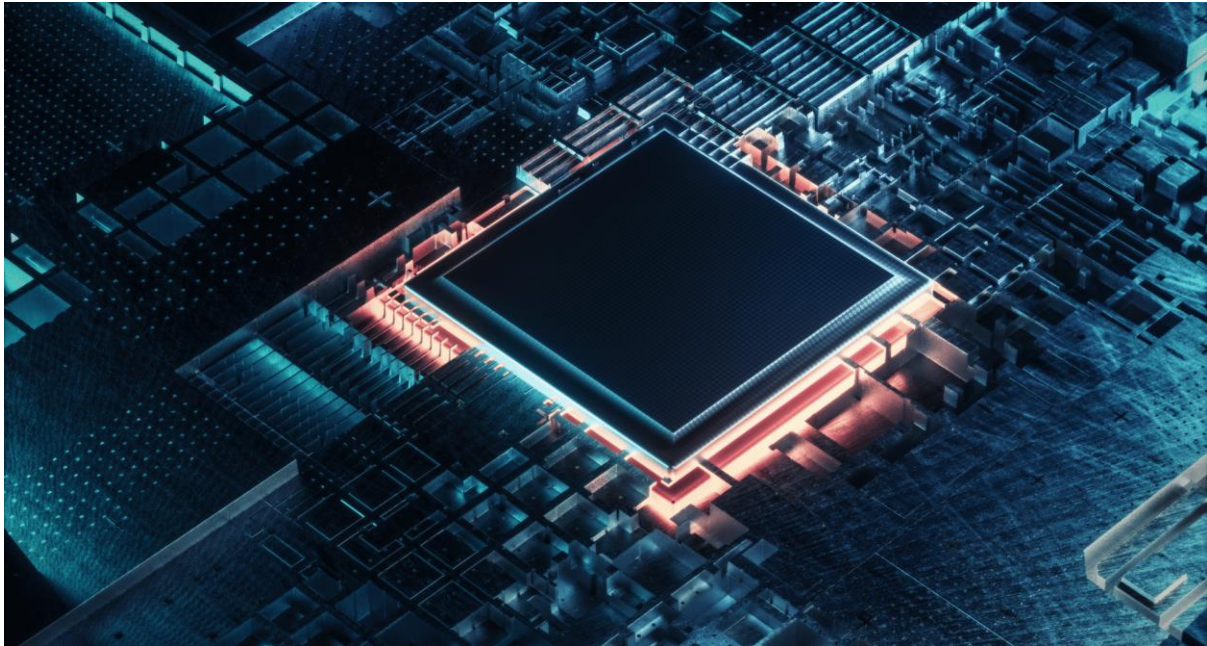


Photo: Getty Images

The UK is nearing the end of the coronavirus pandemic, with infection rates declining and restrictions finally being eased. But for many UK industries, their problems are far from over. While Covid vaccines have been rolled out across the world, a global [shortage of semiconductor chips](#) has wreaked havoc with supply chains, leading carmakers Renault and Mercedes to [pause production](#), and [Jaguar Land Rover](#) to close two factories. As demand for chips continues to outstrip supply, it won't be just car makers feeling the pinch. Just last week, the head of [US tech firm IBM warned](#) that the effects could be with us for at least another two years, suggesting manufacturers and consumers alike need to brace themselves for a rocky post-pandemic transition.

Semiconductor chips are in everything we use, from our phones and TVs, our fridges and air conditioning, to our cars and the public transport we rely on every day. We have become reliant on them to function, largely due to the rise in smartphone and computer usage. As more and more household objects have become accessible via smartphone, the demand for semiconductor chips has grown, and over the last ten years sales have reached almost \$500bn in revenue worldwide.

These chips don't merely have applications in consumer electronics. The Center for Strategic and International Studies hit the nail on the head when it said that the chips constitute the backbone of economic and military performance in the digital age. This was highlighted during the Trump Administration, when China and the US came to [loggerheads](#) over US access to semiconductor

manufacturing. The disruption to the production of these chips has far reaching security risks and economic consequences.

The pandemic has posed a unique issue for global supply chains in the 21st century. While regions and countries have all experienced disruption on a local level, the scale of the pandemic has meant that this is the first time in a long time that every country has been affected by a single event, destabilising the global economy and neutralizing the benefits of international supply chains. We see this clearly in the response to the semiconductor shortage, where companies have [pushed forward plans](#) to develop their own domestic supply of chips, and, in the case of the US, [invested public money](#) to limit dependence on overseas suppliers. Similar disruptions have also hit agriculture, the delivery of international consumer goods, and even shipping containers themselves, which during global lockdowns saw many container ships [stranded in ports](#), effectively making containers themselves a valuable commodity.

While the UK is seeing the light at the end of the tunnel, globally the pandemic is far from over. Last year the UK announced an increase in investment in semiconductor development. The fruits of these efforts may ease some restrictions on the supply, but they cannot be a long-term solution as the UK cannot match the production levels of suppliers in the US and Asia, especially as demand for these chips will increase. Instead, what the UK and its allies need to do is work to safeguard the semiconductor supply chain from future disruptions, whether that be by a further pandemic, a cyber-attack, or some other frontier risk.

Efforts to protect access to semiconductors could all too readily fall into a supply competition, but as with the pandemic, greater international co-operation will be a far more effective pathway at securing the protection of critical infrastructure. The UK should look to the UN and its trading partners to apply safeguards and identify alternative capacity, rather than simply relying on its own production levels. These checks are not simply sensible economic steps but could well be crucial to its own security. If we think of the level of damage caused by disruptions to semiconductors today, what would a similar level scale of chaos look like in ten or twenty years' time?

The pandemic shows us that risks which appear far off, or unlikely, can quite suddenly disrupt our lives in ways we never thought possible. It is crucial that we learn from events like this, not only should we [prepare better for frontier risks](#), but we also need to recognize which parts of our economy are vulnerable to disruption and begin the process of protecting them from future shocks. Just as there were smaller pandemics in the lead up to Covid, there have been a range of other smaller crises in the past few decades that we have not considered on a large scale. If we remain passive, we open ourselves to untold risk. The UK and other global partners must be better prepared.

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