

Superpowers and technology

Chip wars: China, America and silicon supremacy

America cannot afford to ignore China's semiconductor ambitions. It cannot simply tame them, either



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THE TRADE disputes President Donald Trump relishes have an old-fashioned feel. Tariffs are the principal weapons. Old-economy markets, from cars to steel, are the main battlefields. Farmers and factories preoccupy the president. And his personal chemistry with other powerful men can make or break deals. Hence the focus on the meeting between Mr Trump and Xi Jinping at this week's G20

summit, which takes place in Buenos Aires after *The Economist* has gone to press.

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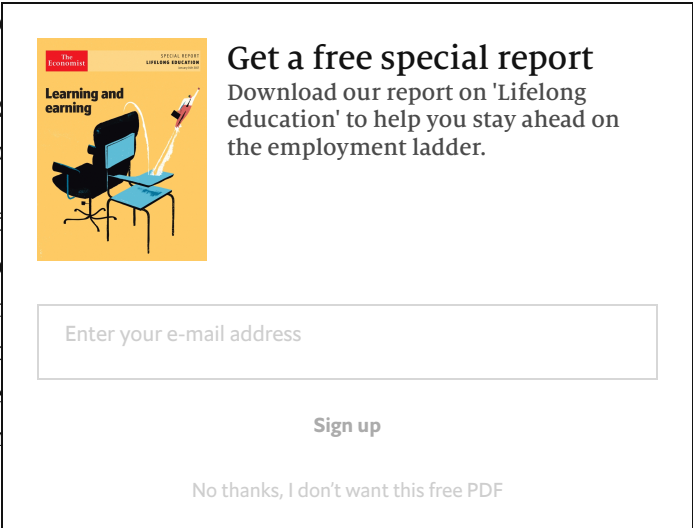
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Yet the trade conflict that matters most between America and China is a 21st-

Well before Mr Trump arrived on the scene, the government in Beijing set up. In 2014 the government in Beijing announced a 100-billion yuan fund to improve its domestic industry. In 2015 it unveiled “Made in China 2025”, a national development plan.

China’s ambitions to create a cutting-edge industry have a long predecessor. Barack Obama blocked Intel’s bid to acquire China in 2015, and stymied the acquisition of a Chinese firm in 2016. A White House report before the election was against Chinese subsidies and forced technology firms to be alarmed, too. Taiwan and South Korea have also been hit by chip firms by Chinese ones and to damage their own.



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Although the chip battle may have pre-dated Mr Trump, his presidency has intensified it. He has made a national champion of Qualcomm, blocking a bid for it from a Singaporean firm for fear of Chinese competition. Earlier this year an export ban on selling American chips and software to ZTE, a Chinese telecoms firm in breach of sanctions, brought it to the brink of bankruptcy within days. Startled by the looming harm, and (he says) swayed by appeals from Mr Xi, Mr Trump swiftly backtracked.

Two things have changed. First, America has realised that its edge in technology gives it power over China. It has imposed export controls that affect on Fujian Jinhua, another Chinese firm accused of stealing secrets, and the White House is mulling broader bans on emerging technologies. Second, China’s incentives to become self-reliant in semiconductors have rocketed. After ZTE, Mr Xi talked up core technologies. Its tech giants are on board: Alibaba, Baidu and Huawei are ploughing money into making chips. And China has showed that it can hinder American firms. Earlier this year Qualcomm abandoned a bid for NXP, a Dutch firm, after foot-dragging by Chinese regulators.

Neither country’s interests are about to change. America has legitimate concerns about the national-security implications of being dependent on Chinese chips and vulnerable to Chinese hacking. China’s pretensions to being a superpower will look hollow as long as America can throttle its firms at will. China is destined to try to catch up; America is determined to stay ahead.

The hard question is over the lengths to which America should go. Protectionists in the White House would doubtless like to move the semiconductor supply chain to America. Good luck with that. The industry is a hymn to globalisation. One American firm has 16,000 suppliers, over half of them abroad. China is a huge market for many firms. Qualcomm makes two-thirds of its sales there. Trying to cleave the industry into two would hurt producers and consumers in America. And it would be a bluntly antagonistic act, which would make no distinction between unfair and genuine competition.

In the long run it may be futile, too. Today America has the edge over China in

designing and making high-end chips. It can undoubtedly slow its rival. But China's progress will be hard to stop. Just as Silicon Valley's rise rested on the support of the American government, so China blends state and corporate resources in pursuit of its goals. It has incentive programmes to attract engineering talent from elsewhere, notably Taiwan. Firms like Huawei have a proven ability to innovate; blocking the flow of Intel chips in 2015 only spurred China on to develop its domestic supercomputing industry.

Moreover, China's bid to become a global semiconductor powerhouse is propitiously timed. For decades the chip industry has been driven forward by Moore's law, under which the capabilities of a chip of a given size double every two years. But Moore's law is reaching its physical limits. As everyone jumps to new technologies, from quantum computing to specialised AI chips, China has a rare chance to catch up.

The right approach for America, therefore, has three strands. The first is to work with its allies in Europe and Asia to keep pushing back against unfair Chinese practices (such as forced tech transfer and intellectual-property theft) at the World Trade Organisation, and to screen out inward Chinese investments when security justifies it. The second is to foster domestic innovation. More government funding is already going into chip research; greater openness to talent is needed. And the third is to prepare for a world in which Chinese chips are more powerful and pervasive. That means, among other things, developing proper testing procedures to ensure the security of Chinese-made products; and tightening up on data-handling standards so that information is not being sprayed about so carelessly. Measures such as these will not make the headlines at the G20. But they will do more to shape the world in the years ahead.

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