

The Big Read **Apple Inc**

## What it would take for Apple to disentangle itself from China

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The tech giant increasingly finds itself beholden to America's biggest geopolitical rival. But is diversification even possible?

Patrick McGee in San Francisco 18 January 2023

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When Tim Cook visited Capitol Hill to meet privately with senior lawmakers in early December, his company's relationship with China was high on the agenda.

In the prior month, Beijing's strict Covid policies had led thousands of workers to flee the Zhengzhou megafactory known as "iPhone City" run by Foxconn, Apple's manufacturing ally for a quarter of a century. When those trapped at the factory protested, police responded with violence in riot gear.

But when a Fox News reporter put him on the spot in Washington, he declined to answer. "Do you support the Chinese people's right to protest? Do you have any reaction to the factory workers that were beaten and detained for protesting Covid lockdowns?" asked Hillary Vaughn, as Cook walked through the building. "Do you think it's problematic to do business with the Communist Chinese party when they suppress human rights?"

Cook ignored Vaughn, eyes cast downward as he changed direction to avoid her. The clip was played repeatedly on US cable news, and the Wall Street Journal highlighted it in an oped entitled, “Tim Cook’s Bad Day on China.” One supply chain executive, who declined to speak on record, characterised the confrontation as “the worst 45 seconds of Cook’s career.”



Tim Cook at Capitol Hill last month, when he met privately with senior lawmakers © Bill Clark/CQ-Roll Call, Inc/Getty Images

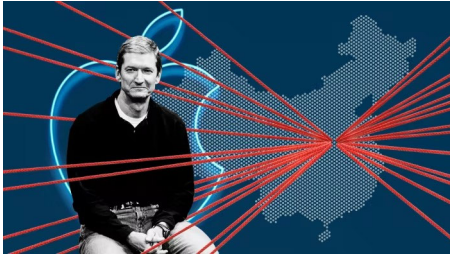
To be fair, few CEOs would respond to reporters doorstepping them on live TV — least of all Cook, whose media appearances are typically choreographed carefully with senior broadcasters.

But it was a striking example of the political spotlight that Cook is now facing. He and Apple said little throughout the widespread demonstrations against Beijing’s “zero Covid” policies, beyond a short statement on November 23 to say it was “working closely with Foxconn to ensure their employees’ concerns are addressed.” The company declined to comment on this article.

Apple also conceded the unrest had created “significant” supply chain disruptions. Analysts now predict the lucrative holiday period saw around 78mn iPhone units shipped, a shortage of 6mn or more units.

But far more significant than the short-term risk is how the protests reminded the world that America's most valuable brand increasingly finds itself beholden to America's biggest geopolitical rival.

## Apple and China



Read the first of this two-part series: The FT looks at how the tech giant [built its supply chain](#) of unprecedented sophistication

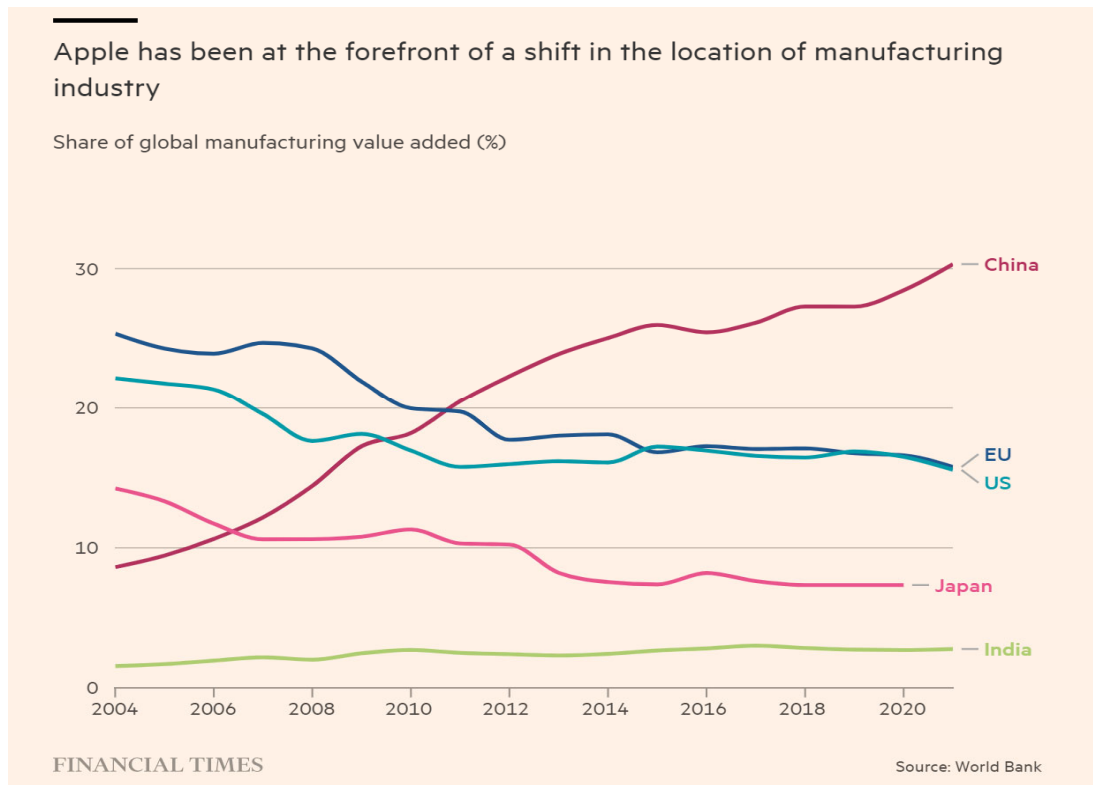
Apple did not just fail to support protesters; as it emerged Chinese citizens were using AirDrop to share information, the company limited use of the file-sharing tool, in a move seen as acquiescing to Beijing's demands. It was tantamount to "doing . . . the bidding" of the Chinese Communist party, said Democrat Mark Warner, chair of the Senate Intelligence Committee.

The company has high-profile critics in both parties. Republican Senator Josh Hawley accused Apple of being so dependent on China that it can no longer express basic

American values. "When the communists in Beijing tell Apple to jump, it asks, 'How high?'" Hawley says. "Apple's relationship with China is untenable, both economically and morally."

Apple is facing political, strategic and investor pressure to dramatically cut its manufacturing reliance on China. The threat of tariffs loomed large during the Trump administration, and President Biden has only hardened Washington's stance against Beijing by choking off more Chinese companies' access to cutting edge US technology including semiconductors.

## Apple has been at the forefront of a shift in the location of manufacturing industry



But if the relationship is untenable, it is also near-unbreakable. The operations that Apple orchestrates are so complex and massive — including factory hubs the size of western cities in China — that it is not at all clear the world’s biggest company has any viable options to overhaul the way it rolls out \$316bn worth of iGadgets each year.

“Nobody comprehends the scale of Foxconn’s manufacturing efforts, until you see it with your own eyes,” says Brian Blair, a former tech analyst who has repeatedly toured the key Apple supplier’s facilities in China. “It’s like trying to describe New York City to a villager.”

Apple’s dilemma on China is over two decades in the making, going to the foundation of its global success. For Cook, it’s personal. The operations guru was the architect of Apple’s China-oriented supply chain strategy, earning a reputation for obsessing over details that transformed its end-to-end management into the envy of the tech world.

But Apple's reliance on the country for its annual cadence of product refreshes is now arguably its biggest vulnerability.

"Apple can't diversify," says one former Apple engineer who had been tasked with finding ways to automate production to overcome rising labour costs. This person says the iPhone maker has been striving to move its operations outside China since at least 2014, but with little progress to show for it. "China is going to dominate labour and tech production for another 20 years."

## The diversification challenge

No other Big Tech company shares Apple's level of exposure to China. Meta and Alphabet depend on digital advertising for the bulk of their business. Amazon has no real presence in the region and Microsoft's share of revenues from hardware is roughly 6 per cent.

Even Korean giant Samsung, the only company that sells more phones than Apple, is much less exposed. Samsung closed its Chinese plants in 2019, after its local market share collapsed to less than 1 per cent from nearly 20 per cent in 2013, as homegrown rivals Huawei, Xiaomi and Oppo thrived.



Samsung now builds more than three-quarters of its handsets in six countries from Argentina to Vietnam, and less than one-quarter are outsourced to contract manufacturers in China, according to Counterpoint Research.

By contrast, virtually all of Apple's hardware is made in China. The company directly employs only 14,000 people in the country, but it monitors the weekly hours of 1.5mn workers in its global supply chain, the vast majority in China.

These enormous operations underpin Apple's ascent to being the world's largest company — one that ships up to a quarter of a billion iPhones a year.

The candidate in the best position to become a rival to China as a new hub of manufacturing is India, which is expected to surpass it as the world's most populous country this year.

## Samsung's disappearing market share in China



India, a democracy with English as a second official language, offers fewer geopolitical risks than China and, with its rising middle class, could become a huge market in the coming decades. At present, the iPhone's market share in the country is just 5 per cent, according to Counterpoint.



Thanks largely to efforts from Samsung, Chinese smartphone groups and multiple suppliers including Apple partners Foxconn and Pegatron, India already accounted for 16 per cent of global smartphone production in 2022 — about 200mn units — up from 2 per cent in 2014, says Counterpoint.

Samsung is said to be showing the way: in recent years its operations in Noida, near New Delhi, have doubled capacity to build 120mn phones a year.

Apple has been producing lower-end iPhones in India since 2017 and began building flagship devices there last autumn. JPMorgan estimates that India could account for a quarter of iPhone assembly by 2025, up from less than 5 per cent today.

Long-term, India wants to have the entire value chain in its borders, according to Prabhu Ram, head of industry intelligence group at CyberMedia Research.



He points out that in recent months Indian conglomerate Tata has made plans to hire tens of thousands of workers in Tamil Nadu, in an attempt to serve as a local “anchor” to bring in more suppliers for iPhone production. He predicts more Indian companies will establish operations, with incentives from New Delhi.

“This isn’t just about Tim Cook’s legacy — this is about Prime Minister Narendra Modi’s legacy,” Ram says.

# No rivals to China

But some supply chain experts argue that the growth numbers in iPhone “manufacturing” in India are more hype than reality.

Most operations that suppliers have set up for Apple in India are known as FATP — Final Assembly, Test and Pack — a labour-intensive process performed with components largely flown in from China and then assembled mostly by Taiwanese companies.

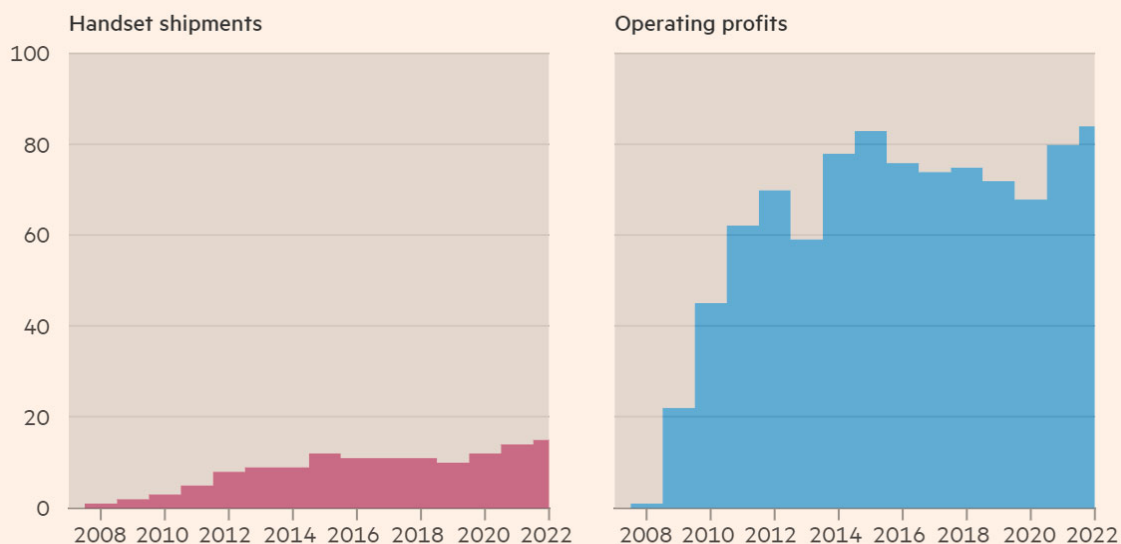
Pegatron and Foxconn may be moving there, says Steven Tseng, tech analyst at Bloomberg Intelligence, but their suppliers are not. “There is no supply chain in India,” he says. “They have to import pretty much everything from China.”

And although 200mn phones were made in India last year, they are not in the same league as Apple’s products. The most popular models typically sell for \$250 or less, while average iPhones cost nearly \$1,000 and require more sophisticated automation and labour intensity.

“It’s like comparing a Kia Sorento with a Ferrari,” says a former Microsoft executive. “It’s a way more technically advanced device, a more finessed product.”

iPhones account for a small amount of market share in **unit sales** but take most of the **profits**

Smartphone share, worldwide (%)





Experts worry the country lacks the same skill sets, migrant labour pools, infrastructure or supportive government that makes China so attractive to Apple.

“The infrastructure in India is obviously not as well established,” Tseng says. “The transportation, utilities, communication can all be issues. And the labour quality in India — whether it can be the same as in China — is a big question mark.”

Vietnam seems like an attractive alternative, especially as average wages today are less than half that of China’s. JPMorgan estimates that Vietnam will by 2025 account for a majority of AirPods production, 20 per cent of iPads and Apple Watches and 5 per cent of MacBooks.

But other companies have stumbled there. After the Finnish telecoms company Nokia was acquired by Microsoft in 2013, its China factories were closed and production was consolidated to Vietnam, in the hopes of cutting costs and boosting efficiency.

But Nokia quickly ran into problems with organised crime, inadequate transportation and unpredictable weather that would shut down trading ports.

“It was incredibly challenging in terms of ramp up, set up, and getting that working the way it was working in China,” the former Microsoft executive says. “The infrastructure was either very new and hadn’t been proven — or it didn’t exist.”

The executive says Vietnam is still “years and years” away from building competitive operations for technical manufacturing, while the broader logistics challenge is probably even greater.

“We had challenges with sourcing components, because all of our tier-two, tier-three sourcing was still all in China,” this person adds. “So we ended up shipping a lot of semi-finished goods from China to Vietnam for final assembly.”

Even if Vietnam does improve the quality of its operations, experts point out that the south-east Asian nation is just too small to actually rival Apple’s current set-up.

**It’s repetitive work and you are just rendered as a robot — a tiny cog in a huge machine**

China, according to some estimates, has more factory workers than Vietnam has people. The number of rural migrant workers in the country was 293mn in 2021, according to China’s National Bureau of Statistics, versus an entire population of 100mn in Vietnam.

Jenny Chan, co-author of *Dying for an iPhone*, which details the lives of Foxconn workers who assemble Apple products, points out that China's labour infrastructure is uniquely supported by the state. At times it is all but mandatory, she says, with villagers and students bussed in to lend hands.

“This is really important, because you will not get [much] interest to assemble an iPad or iPhone,” she says. “It's repetitive work and you are just rendered as a robot — a tiny cog in a huge machine.”

## The ‘red supply chain’

Even as Apple is attempting to diversify its supply chain internationally, its ties to China are simultaneously becoming stronger.

For years, the tech giant has been establishing closer ties with mainland Chinese companies in exchange for concessions to operate more freely.

Cook even personally forged a five-year agreement in 2016 to spend more than \$275bn to help advance China's economy and workforce, according to specialist tech publication The Information.

Apple has since given lucrative orders to Chinese contract manufacturers Luxshare, Goertek and Wingtech, helping to establish a so-called “[red supply chain](#)” at the expense of Taiwanese suppliers Foxconn, Wistron and Pegatron.

JPMorgan now forecasts Chinese companies' share of iPhone manufacturing will rise from 7 per cent last year to 24 per cent by 2025.

Luxshare, run by billionaire chairwoman Grace Wang, has been the biggest beneficiary. Since winning an order to produce AirPods in 2017, its revenues have soared from less than \$2bn in 2016 to more than \$31bn, and it now assembles Apple Watches and iPhones.

In 2017, Cook agreed to be photographed at a production line at Luxshare — helping its shares soar. There, he lauded the labourers' skills and provided comfort when asked if Apple would shift its supply chain to India and south-east Asia.



“We’re not doing that,” Cook replied. “Manufacturing our products requires deep engineering skills, flexible supply chain management, and exceptional quality standards. We won’t be shifting production for the sake of lowering costs.”

However, Apple risks losing some control over its production process innovations with the “red supply chain.” One reason is it no longer owns as much production machinery at its suppliers’ plants — a strategy that gave the company unprecedented control over how its products were made.

The value of Apple’s “long-lived assets” in China peaked in 2018, at \$13.3bn, and in the years since has nearly halved to \$7.3bn. Former Apple engineers that spent time in China say that after iPhone sales peaked in 2015 the company was happy to be more reliant on suppliers’ machinery to save costs.

A second loss of control was the result of Covid-19. Blair says “a huge, huge part of [Apple’s] secret sauce” is how frequently its top talent from California would travel to China and spend months at its suppliers’ plants. Pre-pandemic, such trips had become so common that the company was booking “50 business class seats daily” from San Francisco to Shanghai, according to an accidental leak from United Airlines.

But since 2020, Apple has been unable to send troops of engineers to China.



The mobile phone plant of Rising Stars Mobile India Private, a unit of Foxconn, in Sriperumbudur, Tamil Nadu, India © Karen Dias/Bloomberg

Two former Apple manufacturing engineers say the company's Chinese engineers really stepped up and proved themselves. "Apple provided a training ground for Chinese manufacturing engineering that was second to none," one person says. Apple, in turn, raised their pay and has been able to retain most of the team despite frequent recruiting efforts from rivals.

However, two people familiar with Apple's operations say that giving up control risks slowing innovation and leaking intellectual property. "The Cupertino guys stood back and let the Chinese take the lead," says one. "The Chinese guys completely control the product now."

Apple alluded to this risk in its recent annual filing to the Securities and Exchange Commission, saying that "stringent employee travel restrictions" had "adversely affected" its supply chain and caused "delays in production ramps of new products."



## Back to the status quo

Some experts now believe that the expertise China has developed is so difficult to replace that Apple has no real choice but to keep the bulk of its manufacturing in place and suffer the economic and political costs.

But those are not set in stone. In the medium term, the abrupt reopening of China's economy is likely to ease pressures on global supply chains. Even if US-China relations remain strained for now, there are differing views on the prospect of the two economies "decoupling" completely and setting off on rival, parallel paths.



Workers in China protest last November at Apple's factory known as 'iPhone City' during Covid controls © EyePress/Reuters

Such a thing might not even be possible, says Bindiya Vakil, chief executive of Resilinc, a California-based supply chain mapping group. It would take “many years, indeed decades — if we ever really manage to decouple at all.”

Although many companies are, like Apple, attempting to diversify from China, she says, they are typically “China+1” strategies rather than full exits, as no other place has the same combination of quality and scale.

**Look at the smartphone manufacturing hubs that China has created. I don't know where that can be replicated**

“Today, every component has a supply chain dependency in China,” she says. “Either it is directly manufactured in China, or has at least several parts that go into it that are made in China.”

“Look back a few tiers and we get down to smelters, which are mostly based in China. These cleaned and processed metals, minerals and derivatives make their way into products worldwide — and there are no back-up sources.”

Woo-Jin Ho, hardware analyst at Bloomberg Intelligence, projects that Apple will shift just 10 per cent of iPhone production outside of China by 2030, or at most 20 per cent if it moves aggressively.

“Look at the smartphone manufacturing hubs that China has created,” he says. “I don't know where that can be replicated.”

Chan, the Foxconn labour researcher, predicts that as media attention dies down Apple will quietly increase its investments in the country. “China has so many advantages,” she says. “From the moderately educated and skilled workers to the really high level engineers and PhDs — those providing expertise in cutting-edge knowledge.”

Chan adds: “Apple would have too many difficulties to find the human resources and infrastructure that is parallel — or even close — to the scale provided in China.”

*Data visualisation by Chris Campbell and Keith Fray*

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