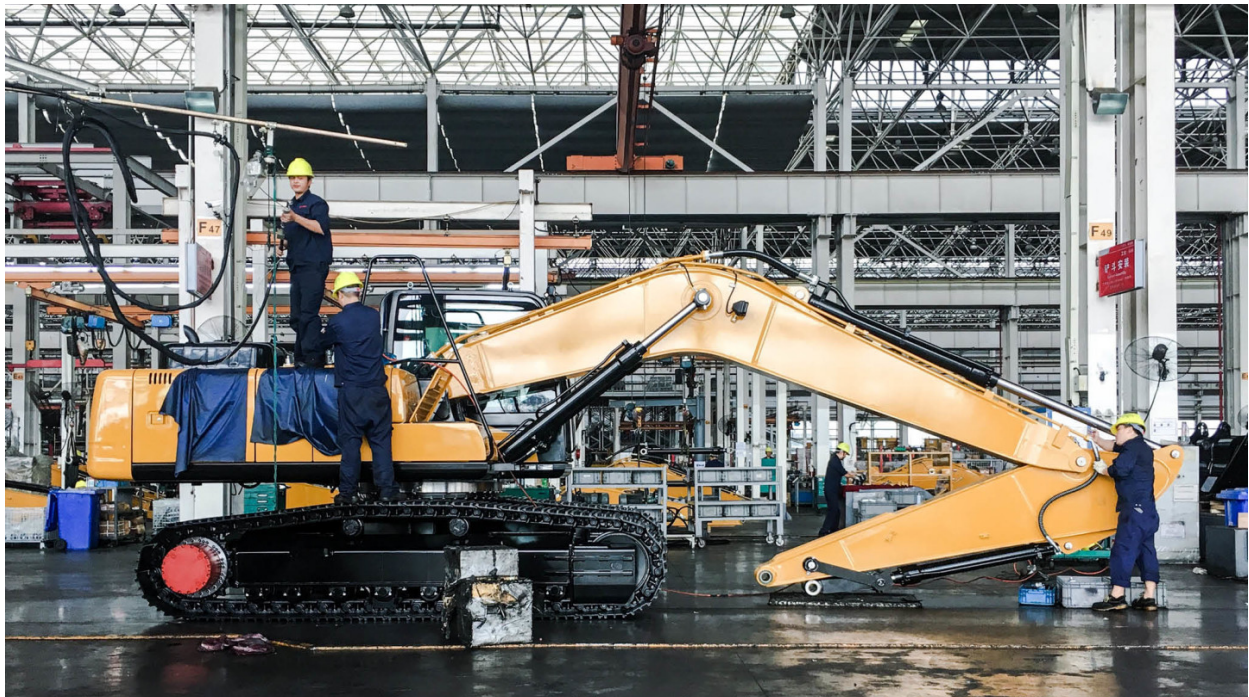


China's relentless export machine moves up the value chain

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The country's move into mid-range manufacturing stands it in good stead as the trade war with the US intensifies



Tom Hancock in Shanghai

At Sany Group's factory on the outskirts of Shanghai, there is little sign of a trade war involving the world's two biggest economies.

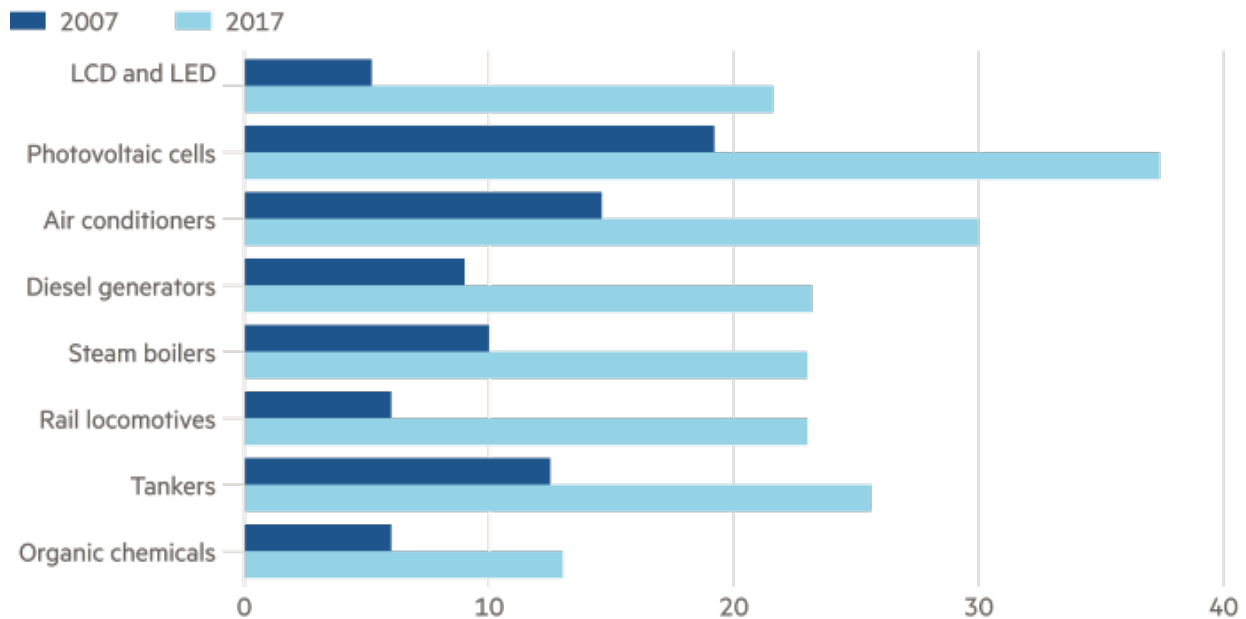
With 500 workers and 200 robots welding and screwing steel parts into place, the facility can produce up to 50 excavators every day, each weighing 20 tonnes. Outside 200 yellow diggers wait to be transported to a port 30 minutes' drive away, their hydraulic arms covered in blue fabric sleeves to prevent rusting in the salty sea air.

One of China's biggest manufacturers of heavy equipment, Sany exports more than 40 per cent of the factory's production — worth a total of \$1.2bn last year, mainly to emerging markets in Asia and Latin America. The group shows no signs of slowing down: Sany aims to increase international sales by 30 per cent this year.

The success of companies such as Sany is part of the relentless march of China's export sector, even as tariffs and counter-tariffs between the US and China cast a shadow over the global trading system.

China gains share in technology exports

China's share of global exports (%)



*Liquid crystal devices and light-emitting diodes

Sources: UN Comtrade, International Trade Centre, FT analysis

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In the decade since the financial crisis, China's export sector has proved remarkably resilient. After overtaking Germany as the world's top exporter of goods in 2009, Chinese exports have grown at an average of 5 per cent a year, compared with annual global export growth below 2 per cent.

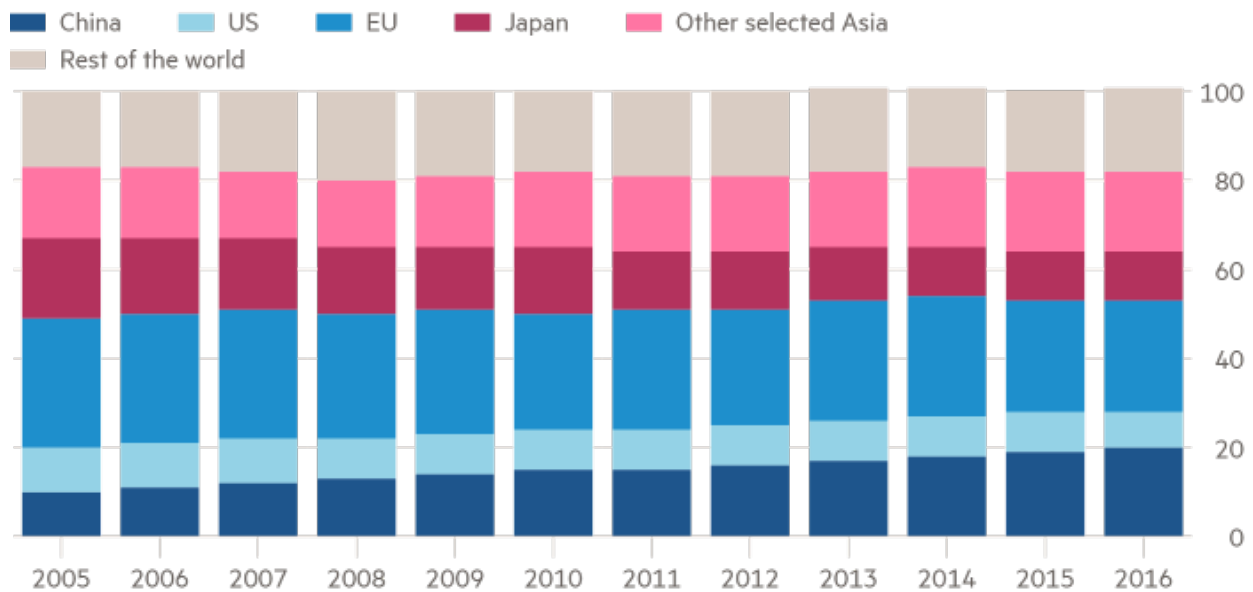
China's share of manufacturing exports expanded from 12 to 18 per cent during the past decade — adding to gains made after China's 2001 entry to the WTO which accelerated the decline of manufacturing employment in developed countries. One study from the [US National Bureau of Economic Research](#) blamed Chinese imports for 2m-2.4m US job losses in the decade to 2012.

Sany's booming sales also reveal something important about the trade war and the competition between the US and China. Officials in President Donald Trump's administration have focused on Chinese advances in [high-tech areas such as artificial intelligence](#) and robotics to justify their use of tariffs.

Yet in the short term, the bigger threat to industry in the US and other developed economies comes from the rapid increase in Chinese exports of medium-level technology, such as vehicles and their parts, electrical machinery and the sort of construction machinery that Sany produces. It is in products such as these — rather than high-tech goods — that Chinese companies are swiftly winning market share.

China has increased its share of medium hi-tech exports

% of global medium hi-tech exports



China includes Hong Kong. Other selected Asia = Indonesia, Malaysia, Philippines, Singapore, South Korea, Taiwan, Thailand, Vietnam. US exports to Canada and Mexico and intra-EU exports excluded

Source: National Science Board, IHS Global Insight

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“Chinese companies are abandoning low-end goods to move to middle-range goods, it's actually a very fast change,” says Xu Bin, a professor at the China Europe International Business School. “I estimate the net effect of US tariffs will be such that it speeds up the upgrading. Chinese companies may be forced to upgrade their product line in order to offset the negative effects.”

China is the now dominant producer in medium high-tech industries, with its global share nearly tripling in the past decade to 32 per cent, according to the US National Science Board, surpassing the US in the late 2000s and the EU this decade.

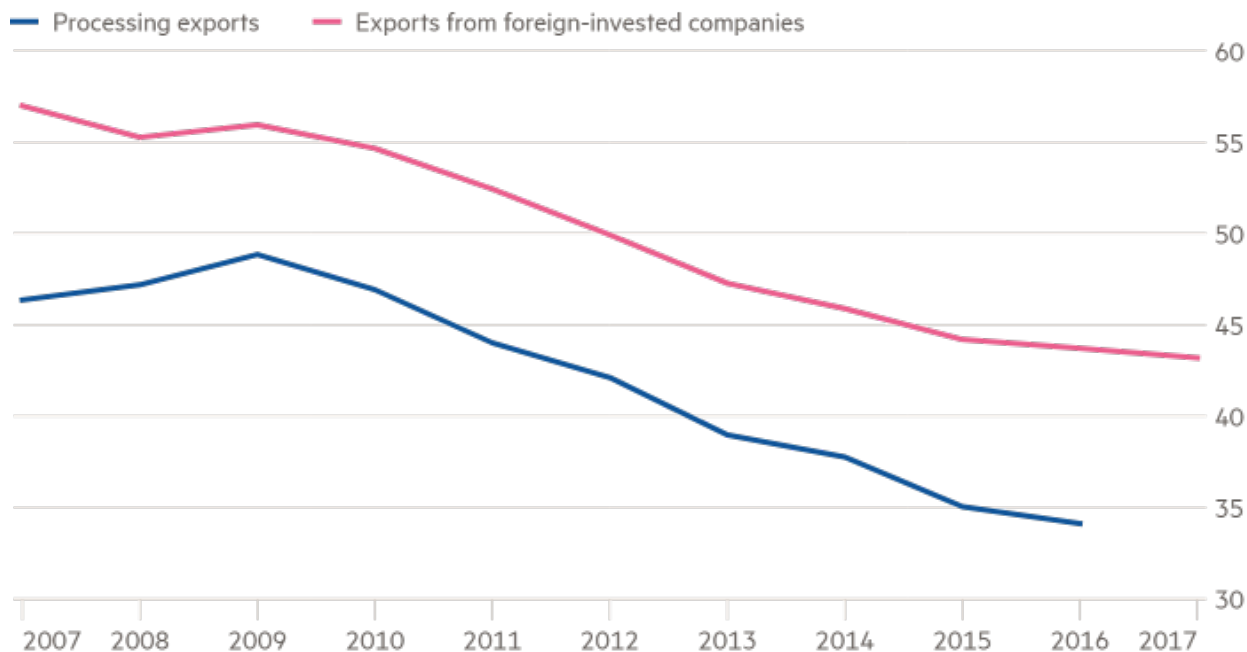
Most of that growth has come from privately owned Chinese companies such as Sany. China's share of global bulldozer exports has grown to nearly 10 per cent from just 2 per cent a decade ago, and the company is taking on Japan's Komatsu in global markets.

“Sany's product quality and performance has reached Japan's, and our service is even better than theirs, so we are very competitive in south-east Asian countries,” says Zhou Wanchun, head of overseas sales. “The price of excavators is higher than Korean products, so we are not just competing on price.”

Its fortunes highlight another trend — the share of Chinese exports going to countries outside the OECD club of developed economies has risen from 43 to 48 per cent over the past decade.

Processing and foreign-invested company exports decline

% of total exports



Source: China customs

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Sany also reflects that much of China's move up the value chain has been in capital goods — goods used to make other goods — and components, rather than consumer products. Its share of global exports in electrical transformers and their components, which are crucial to power grids, has doubled to 20 per cent in the past decade.

JDMachine in the eastern city of Ningbo exports machines used to make air-conditioning units for cars to auto parts makers in Europe and the US, generating more than \$100m in foreign sales last year. It entered the market a decade ago after taking on the staff of a British company that had gone bust.

The industry began moving to China after the financial crisis, says Mark Forster, an executive at JDMachine. "Technologically, the machines are better than those we used to make in the UK," he adds.

A TCL factory in Huizhou, Guangdong province. Chinese white goods producers have increased their market share overseas and exported a combined \$15bn-worth of consumer electronics in 2016 © Bloomberg

The shift by Chinese companies into more sophisticated capital goods has altered trade between China and developed countries. Over the past decade, telecommunications and transportation equipment and auto parts have grown as a proportion of China's exports to the US, while the share of textiles and footwear has shrunk. China's share of the global capital goods market rose from about 5 per cent to 20 per cent between 2007 and 2016, according to the World Bank.

Consumer goods have played a role, too. Chinese white goods producers such as Midea, TCL and Hisense have increased their market share overseas and exported a combined \$15bn-worth of consumer electronics in 2016, according to Chinese customs.

Some economists see the rise up the value chain as a near inevitable result of competition. “Once an economy gets to produce electric generators, say, or motor vehicles, labour productivity in that industry is placed on an automatic upward trajectory,” according to Harvard economist Dani Rodrik. The trick is to get a toehold in these automatic convergence industries and to expand domestic employment in them.”

Average wages in China’s manufacturing sector have more than tripled in the past decade, putting them above Brazil and Mexico and forcing companies to increase productivity.

Rather than groundbreaking innovations, Chinese companies have become adept at incremental improvements. According to Dan Breznitz, an innovation researcher at the University of Toronto, they are good at making “new versions, often simpler, cheaper and more efficient, of technologies and products . . . after they are invented and marketed elsewhere.”

China’s investment boom after the financial crisis enabled producers of industrial goods to hugely expand domestic production, increasing economies of scale. Manufacturers have upgraded through acquisitions of foreign technology. Sany acquired German concrete pumpmaker Putzmeister for €360m in 2012. Multibillion-dollar deals for western manufacturers include Midea’s €4.5bn deal for German robot-maker Kuka the same year.

There has also been technology transfer by developed-world companies — and technology theft. About 20 per cent of US companies say they have been asked to transfer technology to China — often when they set up joint ventures in the country, according to a US-China business council survey last year. Several of China’s top exporters have faced lawsuits over patent violations.

Multinationals have also played a big role in the growing sophistication of China’s exports. About 43 per cent of China’s exports came from foreign-invested companies last year, according to official statistics. The figures are higher for high-tech products such as laptops and smartphones, and for large companies. Thirteen of China’s top 20 exporting companies are foreign-owned, according to Chinese customs.

Much of China’s export upgrade has come from multinationals deepening supply chains in China. Companies such as General Electric, chemicals maker BASF and US conglomerate Honeywell have opened more sophisticated plants in China in the past decade, sometimes at the expense of jobs in the US.

The companies were often motivated by China’s domestic market, which has been the fastest-growing for chemicals and heavy equipment over the past decade. But such plants often turned into export bases. “Any large US conglomerate will have a substantial

presence in China . . . and if you have a Chinese machine, why not export it,” says Jonathan Woetzel, director of the McKinsey Global Institute.

In the past, one of the consolations of China’s export machine was the huge volume of components made in developed economies that it required. China was a final-assembly point for components made elsewhere, known as the “processing” trade.

However, that trade has fallen as a share of Chinese exports, from about 46 per cent a decade ago to 35 per cent today. The domestic content of China’s exports has risen from about 60 per cent a decade ago to about 80 per cent, according to Chinese estimates. Panels for flatscreen TVs, largely imported a decade ago, are now made in China.

Apple is an example. Its China-based suppliers have more than doubled over the past five years to 19 companies in 2017, up from only seven in 2012. If Hong Kong-based suppliers are added, the total rises to 28. They include Goertek, a company which began to supply audio parts for the iPhone in 2014 and has increased its share at the expense of US company Knowles.

As China makes more advanced products, it often needs to import the components and the capital goods to make them — China’s imports from Germany nearly doubled in the past decade.

Yet the effect could fade. “If China is adding new, import-intensive sectors at a rapid rate, this could keep the import ratio high for a number of years; but it could then fall quickly once Chinese firms master the component techniques,” note Arthur Kroeber and Dan Wang at Gavekal, a consultancy.

Moving up the chain

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43%

Chinese exports which came from foreign-invested companies last year, according to official statistics

20%

China’s share of exports in electrical transformers and their components, a doubling in the past decade

48%

Share of Chinese exports going to countries outside the OECD club of developed economies, up 5 per cent over the past decade

Probably the most threatened by China’s move into mid-tech sectors are China’s east Asian neighbours. In the decade up to the financial crisis, a triangular trade arose, with Japan, South Korea and Taiwan running large surpluses exporting components to China,

But China's trade deficit with those countries began to shrink in 2013, as China produced more of what it used to import. "It's a big question facing the region. South Korea is the one which feels the most threatened," says Yukon Huang of the Carnegie Endowment for International Peace.

Even Germany, which has a much smaller deficit than the US with China because of its strong machinery exports, is feeling the pressure. Hermann Simon, a consultant specialising in "hidden champions" who dominate niche sectors. "I see the Chinese as the most serious competitors of the German hidden champions," he says. "The competition is mostly in machinery, household appliances or metalworking products".

Despite its growing prominence in medium-level tech goods, the one relief for western countries is that China remains far from the forefront in high-tech manufacturing. Indeed, it is barely a presence in export markets for computer chips, diesel engines and passenger vehicles. Where it does compete, Chinese exports still often challenge on price but at slightly lower quality.

"Chinese companies are upgrading into mid-range goods but still rely on a price advantage to provide products which are welcome in developing economies," says Prof Xu. "It's a lower-end version of German and Japanese goods."

Additional reporting by Wang Xueqiao

The end of flying geese? Why the low-value factory base keeps ticking over

Workers sew clothes for Adidas at the Shengyuan clothing factory in Suzhou, Jiangsu province © EPA

China's development model has often been compared to its east Asian neighbours. As exporters in those countries moved to higher technology sectors and wages rose, they shed labour-intensive exports such as clothing, passing them on to neighbouring countries.

This trade pattern, named "flying geese" by Japanese economists, has to some degree held true for China. The share of textiles in its overall exports has stayed steady for the past decade, but the mix has changed from more labour-intensive apparel to capital-intensive cloth, exported largely to garment makers in south-east Asia.

Pou Chen, the world's top contract footwear maker, made 17 per cent of its 325m pairs of footwear in China last year, down from 29 per cent in 2014, while 46 per cent of its production is now in Vietnam. Vietnam now accounts for 44 per cent of Adidas footwear last year, compared with 19 per cent in China.

But while China's share of the global apparel trade peaked in 2015, it is still the biggest apparel exporter with 33 per cent. It also still has large shares in labour-intensive toys and

furniture.

China's ability to retain low-end exports — contrasting with its east Asian peers — may reflect “its larger labour pool, greater economies of scale and stickier supply-chain clusters,” says Mr Kroeber and Mr Wang at Gavekal.

“It is remarkable that China has remained competitive in labour-intensive production for so long,” said a 2016 IMF report. “It may be that the extreme efficiencies, network effects and other factors associated with exporting from China's coastal provinces have caused the “geese” to stop flying”.