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Opinion

What the Foxconn exodus in Zhengzhou means for China's supply chains

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Last week, images and short videos flooded China's social media of an exodus of hundreds of workers from the Foxconn compound in Zhengzhou, the factory that produces nearly half of Apple's iPhones, making their bumpy journey home on foot. The speculation is that those who left the compound, and a well-paid job, were fearful of being infected with the COVID-19, which had been detected within the walled campus, and worried about being locked down in isolation between their dormitories and the assembly lines.

In a sense, Foxconn's manufacturing compound in Zhengzhou is like a city, except that its residents live in extremely high density and must obey strict rules in their daily routines. At peak time, nearly 350,000 people work and live on a pocket of land of 10 square kilometres (the size of about 1,400 standard football fields).

Behind those workers are perhaps millions of family members who seemed ready to prioritize the health and freedom of their loved ones over a secure income for the family. While the media expressed concerns about the workers' safety and well-being, the exodus also raises a longer-term question: Is this the end of China's dominance of the supply chains in the global production network?

Capital markets showed their pessimism. Upon the news of the exodus, Foxconn's share price dropped 1.4 percent on the Taiwan Stock Exchange and Apple's by 1 percent on the Nasdaq. If COVID-19 spreads more widely within the compound or into the interdependent supply chains for Foxconn's production, Apple will have difficulties delivering its iPhones, iPads, and other gadgets to customers around the world in time for Christmas.

From the 'world's factory' to the 'world's workshop'

Foxconn, an outsourcing manufacturing contractor for many brands of electrical and electronic devices, operates the world's largest, and most efficient and flexible, factories. It is one of the world's earliest users of advanced robotics, precision automation equipment, artificial intelligence, and other advanced digital technologies in manufacturing.

However, behind those advanced technologies, Foxconn's most valuable assets are its skilled workforce, who are more than just assembly line workers who follow instructions and screw different components together. Mass production with engineering precision is a complex process. Each year, after Apple releases its new designs of iPhones, iPads, MacBooks, and iWatches, the factories of Foxconn start an experiment-driven process, through which skilled engineers and experienced workers facilitate iterations between R&D and design teams at Apple and the suppliers of components and modules to achieve the production of the new products with scale, speed, precision, and cost efficiency.

In this process, experimentation in production and process innovation is key. This type of innovation involves tacit knowledge-based skills and craftsmanship at a mass scale. It takes years, even decades, to reach the level required to translate complex designs into mass production with engineering precision and at a competitive cost. In fact, Foxconn manifests the transformation of China from being the 'world's factory' to the 'world's workshop.'

An efficient and resilient supply chain network works fine – until it doesn't

Behind Foxconn's success in China lies China's mega supply chain network in the electrical and electronic sector. Over the past three decades, with the advancement of digital technologies in manufacturing, traditional vertically-integrated production dominated by multinational companies has gradually given way to module-based production in which small manufacturers in China are included in the global production network based on their specialties along the various stages in the global value chain of production. The division of labour in manufacturing is thus by stages of production rather than by final products. This new arrangement of production has changed global trade from final goods to intermediate goods.

The global value chain, based on competitive and comparative advantages between different countries, provides efficiency; however, it can be vulnerable in conditions of external stress, such as natural disasters, pandemics, war, and economic downturns. The more complex a product is, the longer its supply chain, and the more vulnerable it will be to external shocks. In other words, there is an intrinsic paradox: A competitive production network, by its very efficiency, often carries endogenous vulnerability because of its widely distributed, complex, interdependent networks of global suppliers.

Over the past decade or so, China has built an extensive supply chain network, which is the fortress of its manufacturing power. Built upon the advantages of scale and scope – meaning that it has a large enough number of suppliers for each item and also covers a wide enough range of items – this supply chain network has, under normal circumstances, achieved both efficiency and resilience.

For example, Foxconn has a network of over 300 electrical and electronic suppliers, clustered in Foxconn's Zhengzhou Science Park, which has also attracted other smart phone manufacturers such as ZTE, Skyworth, Tianyu, and OPPO. This ecosystem of manufacturing is efficient and resilient as it has both scope and scale advantages. Zhengzhou has thus become the world's largest production base for electrical and electronic devices, contributing one quarter of the GDP of Henan, China's third-most populous province

Back in 2010 when Shenzhen – where Foxconn had operated for over two decades – started to transform into an innovation centre, Foxconn decided to move its manufacturing facilities inland to benefit from the lower costs of labour and land. A deal was secured between Foxconn and the Zhengzhou government, the latter promising attractive tax, land, and labour policies to support Foxconn's move.

After 10 years, Foxconn in Zhengzhou became China's largest exporter, contributing 80 percent of Zhengzhou's and 60 percent of Henan's total trade volumes. It is also the province's largest employer. Apple manufactured 90 percent of its products in China, and the largest proportion of those in Zhengzhou.

Unfortunately, China's advantages mean vulnerability for other countries – especially the United States. What if China's supply chains come to a sudden halt? It is for this reason that diversifying supply chains away from China – a bid to prioritize resilience over efficiency – has become a national priority for the United States.

Foxconn was part of that diversification effort. In 2018, Foxconn constructed an assembly line for Apple's smartphones in India; after four years, production there accounts for about 5 percent of total iPhone production. In 2021, Apple established a factory in Vietnam to produce its laptops and tablets. Their production, however, still relies on China's supply chains.

It will take a long time and cost a lot of money for India and Vietnam to build their own supply chains. They won't have the economic incentive to do so unless China's supply chains stop working. According to Apple's official supplier list, nearly half of Apple's 190 suppliers are Chinese companies, and nearly 160 of them (Chinese based and foreign) produced their components onshore in China.

How to contain COVID-19 while maintaining production?

Let's return to the recent exodus of workers from Foxconn in Zhengzhou. While the government claimed that it has contained the virus, there will inevitably be other outbreaks. The way a supply chain works is that one plus one will be larger than two; however, when one becomes zero, the sum will be zero, too.

China is now facing an internal conundrum: how to contain COVID-19 while stimulating economic growth.

A large unvaccinated vulnerable population and an inadequate public health system, especially in less developed areas and the vast countryside, make China's zero-COVID policy necessary. However, the economic costs of this policy, especially the long-term ones, need to be recalculated. Restoring manufacturing is not like switching on a tap when more water is needed or driving on a highway where the driver can pick up speed by accelerating. It is more like the journey of an airplane – after a hard landing, taking off again requires the right runway (supply chains) and momentum (trained workforce), which take time and money to build.

Foxconn and Zhengzhou have drawn a lot of attention because of their contribution to the economy; however, there are many more factories, restaurants, and compounds, even Disney resorts, around the country that have had to abruptly enter a mode of '*jing mo*' – staying still in silence. People are losing their faith about the future in a context in which they don't know whether they will have freedom tomorrow. The ripple effects can be catastrophic: without a level of certainty about the future, people reduce their consumption, which is the key to China's economic growth.

In manufacturing, specifically, once the supply chain is broken, other countries, such as India and Vietnam, will have incentives to fill the void. Once the workers and the suppliers are gone, they are gone.

Solving China's conundrum of containing COVID-19 and maintaining economic growth requires political and economic wisdom. Time and tide waits for no one – nor any country.

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