

Who's afraid of the big bad dragon?

How Chinese trade boosts European innovation

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Chinese exports are often blamed for job losses and firm closures in developed economies. This column tracks the performance of more than half a million manufacturing firms in 12 European countries over the past decade. It finds that competition with Chinese exports is directly responsible for around 15% of technical change and an annual benefit of almost €10 billion in these countries – the wider productivity effects may well be larger.

Twin spectres are haunting Europe and the US – the growing economic power of China and fears about where the West's own growth will come from after the crisis. This has been driven by the tremendous growth of imports from China, as shown in Figure 1 (see also [Keller et. al 2010](#)). Some economist even argue for trade sanctions if China does not allow its currency to appreciate (see for example [Gros 2010](#)).

Our recent research ([Bloom et al. 2011](#)), by contrast, suggests that the dramatic rise in Chinese imports into Europe and the US is actually good news for our economic prospects, encouraging the best firms in the developed world to get even better, powering the innovations that provide future growth.

Figure 1. Share of all imports in the EU and US from China and all low-wage countries



Notes: Low-wage countries are defined as countries <5% GDP per capita relative to the US 1972-2001.

Innovate or die?

Take footwear, a classic low-tech sector that conventional wisdom says should have all been offshored to China. Many Western shoe manufacturers have disappeared, but some are innovating in designs that serve parts of the market where China is less able to compete.

For example, Massai Barefoot Technology (MBT), which makes posture-correcting shoes, began when Karl Muller, a Swiss engineer with a bad back, relieved his condition by walking barefoot on Korean grass. He patented a design to emulate the effect, which has gone on to great success and now attracts many imitators.

Companies that can find a niche for high-end style or technology can prosper in the face of stiff competition. Vermont-based Burton is a leading snowboard manufacturer but also successfully designs and produces sportswear clothing. Last year, Burton offshored the production of snowboards – not to low-wage China, but to high-wage Innsbruck in Austria.

Firms like MBT and Burton have responded to the threat of China by investing in new technology, human capital, and by innovating in highly customised designs. So why were so few firms not already doing this innovation? The answer is simple – enjoying the “easy life” producing old goods is more attractive than coming up with new ones. But a big shock like trade integration with China lowers the opportunity costs of innovation as it deters firms from coasting along with business as usual.

A policy experiment: Chinese accession to the WTO

A big part of the shock hit when China joined the WTO in 2001 and quotas on most Chinese goods were eliminated. This led to a huge surge in imports and a battle between retailers and manufacturers as the latter succeeded in getting some quotas reinstated. Former EU trade commissioner Peter Mandelson was in the thick of these “bra wars” in 2005, as Chinese-made clothing – notably women’s underwear – piled up in European ports.

These events provide natural experiments for examining the effect of Chinese competition, an opportunity we exploit in our research. In the largest ever study of the impact of China on Western technological change we track the performance of more than half a million manufacturing firms in 12 European countries over the past decade.

We look in detail at firm investments in information technology (IT), patenting, research and development expenditure (R&D) and productivity growth across all sectors. And we then use detailed information on European textile, clothing and footwear import quotas to quantify the “natural experiment” offered by WTO accession.

The China effect of technology and jobs

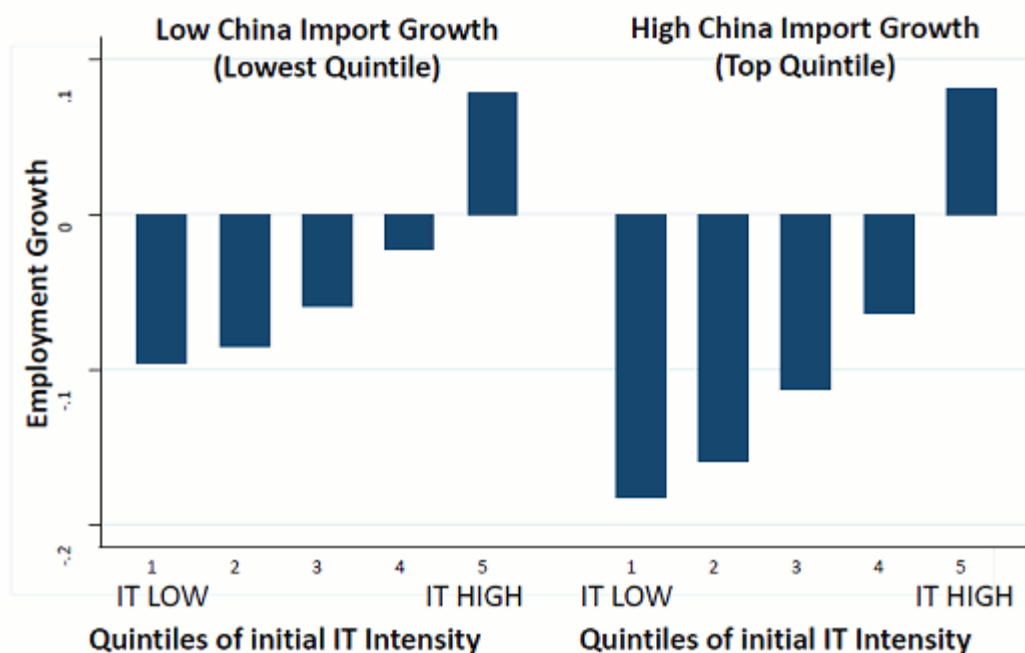
A startling finding is that around 15% of technical change in Europe can be attributed directly to competition from Chinese imports, an annual benefit of almost €10 billion to European countries. Firms have responded to the threat of Chinese imports by increasing their productivity through adopting better information technology, higher spending on R&D, and increased patenting. Unsurprisingly these lead to major increases in productivity.

Overall, our findings are consistent with a “trapped factor” explanation of how trade from China drives innovation in exposed firms (see [Bloom et al. 2010](#)). The intuition behind this model is that some factors of production are costly to move between firms because of adjustment costs and sunk investment (e.g. firm-specific skills). Chinese imports reduce the relative profitability of making low-tech products but since firms cannot easily dispose of their “trapped” labour and capital, the shadow cost of innovating and producing a new good has fallen. Hence, by reducing the profitability of current low-tech products and freeing up inputs to innovate and produce new products, Chinese trade reduces the opportunity cost of innovation.

But not all firms have seized the opportunity to innovate. Many inefficient low-tech firms have been much more likely to shed jobs and disappear. This in itself raises productivity through the brutal force of natural selection as economic activity is reallocated away from inefficient enterprises to their more nimble-footed competitors. About one-third of the overall effect of Chinese competition occurs in the form of this “creative destruction”. Practically, we find that investing in technology can do much to shield firms from the negative impacts of Chinese competition.

Figure 2 illustrates creative destruction in action. The left hand panel is for plants in industries where there was relatively slow growth of Chinese imports (the bottom quintile including sectors like pharmaceuticals and medical devices). Unsurprisingly high tech firms grew faster than low tech firms (we show this for IT intensity, but the same is true using patents or productivity). The right hand side panel compares job growth with the industries where Chinese import growth was going the roof (sectors like furniture, apparel and textiles). Job growth in high tech plants was around 10% in both sectors. But the establishments who really were suffering were the low-tech plants (the bottom 20% of IT intensive firms). Their employment shrank by around 20% compared to only 10% in industries less subject to Chinese import competition. And this underestimates the effect as these are survivors. We also found that China increased exit rates of low tech firms, but not high tech firms.

Figure 2. Employment growth by initial IT intensity



Notes: This is job growth 2005-2000 in 21,000 plants in 12 European countries. The left hand side panel contains industries where Chinese import growth 2000-2005 was in the bottom 20% (e.g. pharmaceuticals) and the right hand side panel contains industries where Chinese import growth 2000-2005 was in the top 20% (e.g. apparel). "IT Low" (=1) are plants in the bottom 20% of computers per worker in 2000 and "IT high" (=5) are plants in the top 20% of computers per worker in 2000. Other quintiles are plant IT intensity are in ascending order (second lowest quintile =2, etc.).

Takeaway: Low tech plants were shrinking everywhere, but they shrank much more in industries worse hit by the China shock (20% job loss vs. 10% job loss). By contrast high tech plants grew by about 10% in all sectors – they were shielded from the China syndrome.

What policies are needed?

The job losses for some firms explain the political resistance to trade and why pressure is mounting to "do something". But doling out export subsidies, threatening to label China a "currency manipulator" or erecting trade barriers (such as President Obama's 35% tariffs on tyres in 2009) to protect the business and labour lobbies that are losing out are precisely the wrong way to go. Such measures will merely delay restructuring, driving up domestic prices and encouraging industries to invest more in lobbying than innovation.

Openness improves overall prosperity, but the worry is that the burden of adjustment falls more heavily on the poor than the rich. Standard economic theory puts this down to increased pressure on the wages and jobs of unskilled workers who are now competing with workers in Beijing rather than just Baltimore and Birmingham. Our data show that there will be a fall in demand for the less educated because of a China-induced acceleration of technical change. The appropriate policy response is to increase human capital through education and training, and easing the transition of displaced workers across jobs.

There are additional benefits of Chinese trade to those that increase the innovation rate of Western firms. For example, consumers have enjoyed lower prices. Bigger export markets have spurred investment. And offshoring has enabled devices such as the iPod – produced in China but designed in Silicon Valley – to be created, because without the availability of cheap manufacturing many of these devices would never have been developed.

Conclusions: We shouldn't be afraid

China's rise is undoubtedly a political challenge. But trying to keep China down by freezing it out of the world trading system would surely have been more politically dangerous than keeping China engaged and thus aligning its economic incentives with those of the developed world.

The Chinese have a saying about haunting spectres: "If you believe it, there will be, but if you don't, there will not". If Europe and the US continue to encourage belief in the danger of Chinese trade to their

own economies and try to weaken China through trade barriers, the spectre of China will not disappear. On the contrary, the West's own growth would be enfeebled – and that would be unwelcome even in good times.

References

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