

Louis Gave

lgave@gavekal.com

Capitalism is a fundamentally deflationary system driven by the urge to make more with less

Automation arises from the inherent incentives within the capitalist system

Automation may explain why corporate profits have stayed so firm despite the lackluster economic environment

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Viva La Robolution

While inspecting shiny new assembly line machinery in the early 1950s Henry Ford II is famously said to have asked Walter Reuther “How will you get union dues from them?”, only for the United Automobile Workers chief to reply: “How will you get them to buy your cars?”. The tension between labor and automation systems is nothing new. Back in the early industrial revolution, the artisan Luddites raged against mass mechanization of the textile industry and even at the turn of the 20th century a major concern in the likes of Britain, France, the US, and Australia was the labor market consequences from the rapid industrialization of agriculture.

Massive gains in productivity, itself a direct result of the mechanization of agriculture (along with improvements in seeds, fertilizers, overall farming knowledge, etc) had many beneficial effects, not least of which was the ability to work a lot fewer hours to feed one’s family. In 1895, twelve oranges cost two hours of work in the US. By 1997, the cost of these same oranges was down to six minutes. Similarly a bicycle bought from the now defunct US retailer Montgomery Ward cost the equivalent of 260 hours of work in 1895, but had fallen to just 7.2 hours a century later.

If nothing else, this illustrates the profoundly deflationary nature of capitalism. Fundamentally, market capitalism is about making more with less. And if possible, much more with much less. Which brings us back to the suggestions made last week in [The Yellen Thud](#).

- The unique thing about the current US economic cycle is that long-term unemployment remains stubbornly high, even as short-term unemployment has fallen to normal levels.
- This may be because the “long-term” unemployed are actually now unemployable—i.e., they have dropped out of the effective labor force.
- This in turn could explain why wages are rising even as official unemployment remains high: the market for people with useful skills is getting tighter, but a big chunk of the population lacks those skills and so becomes unemployable.

If these ideas are right, then the current high unemployment rate is a structural, not a cyclical phenomenon. We can also see an explanation for why corporate margins have stayed high despite a lackluster economic environment. The ultimate cause is automation: companies’ ever-increasing ability to replace low-value added workers with machinery or software means that corporate margins and wages for skilled workers stay strong, even as a whole segment of the Western-world workforce finds it more challenging to obtain gainful employment at all.

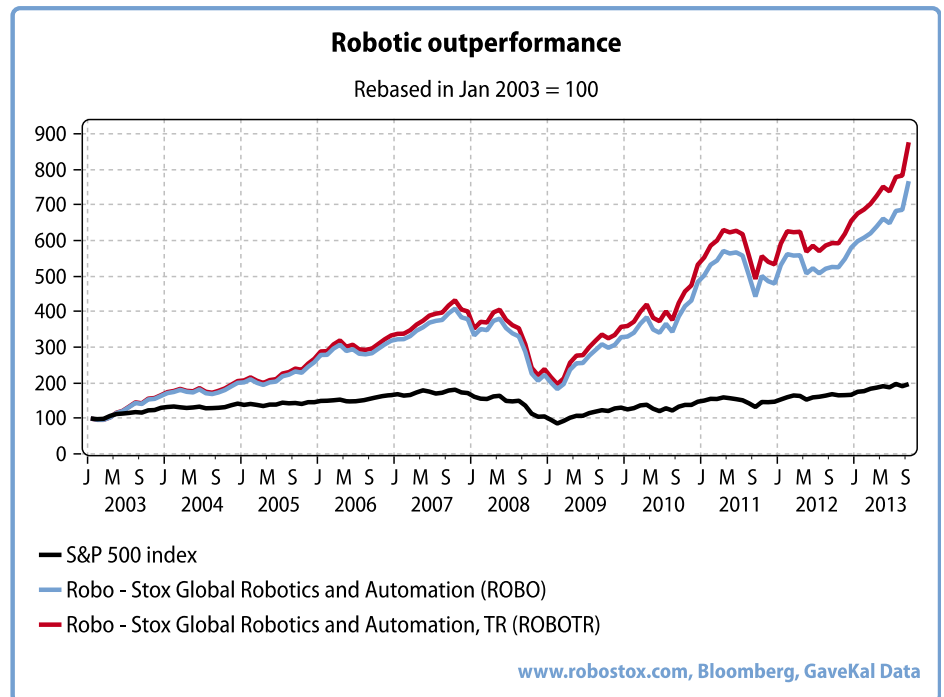
The growing importance of robotics is a long-standing GaveKal theme, even if it remains a somewhat fuzzy concept, bringing together change effects from machines, processes and industries. Nonetheless, over the past few years, we have endeavored to build our own “robotics index (see

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The dramatic outperformance of robotic stocks over the last decade shows the market has taken notice

What makes the performance of robotics stocks so impressive is that it happened despite weak capital spending in developed economies

Robots at a Tipping Point or **Robots Ignore the Business Cycle**) only to see others do a more thorough job (see www.robostox.com or Bloomberg ticker ROBO and ROBOTR). Now, of course, any index built retroactively is going to benefit from a serious survivorship bias, but even with that in mind, the performance of robotics in the past five years has been nothing short of impressive:



This performance is all the more noteworthy since, over the past five years, global capital spending has been mostly lackluster. In turn, this begs the question of whether robotics is approaching the 'demand take-off' point that typifies the structural growth trend of successful technologies.

Indeed, any new technology typically goes through an initial phase where price points are so high that only a few 'early adopters' can afford the new revolutionary product. This was the case for autos, air conditioning units, televisions, cell phones and personal computers... And until now, it has been the case for most high-end manufacturing robots. **However, the question investors should ask is whether we have now reached a tipping point?** And it's not just about the US\$10,000 robots that electronics assembly giant Foxconn claims it will be producing by next year. Nor is it Bill Gates' recent forecast that new generation robots may become as ubiquitous and have as transformative an effect on our economies and our lifestyles as the personal computer. Instead, it's about everything we see about us: from Paris' driver-less metro trains, to Panasonic's fully automated plasma screen plants in Osaka. Everywhere we care to look it is hard to avoid the conclusion that an increasing number of jobs are being replaced by machines and smart software. Even the rabbi's matchmaking duties are now being replaced by Match.com's algorithms (or, in the rabbi's case, www.jdate.com).

But as with the PC revolution of the 1990s, it's not all about price. Indeed, the first generation of industrial robots did relatively simple yet repetitive tasks on production lines where labor was expensive and fault-tolerance

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Mass adoption of automation systems may be about to fundamentally change the competitive dynamics of entire industries

was low. Such machines brought precision to Japanese car factories and Taiwanese wafer fabrication plants, allowing lean production with minimum wastage. What they did not do was fundamentally change the nature of industrial automation which over the last 200 years has grown increasingly capital intensive and sophisticated. Until now, that is. Indeed, to even the most casual of observers, the obvious conclusion has to be that robots are becoming sufficiently smart and affordable to change the way manual tasks are undertaken in both developed and developing economies. New generation robots can be programmed to undertake complex tasks that allow easy replacement of physical labor; and can then be reprogrammed to do different tasks.

In a move reminiscent of General Motor's purchase of the Los Angeles, San Diego and Baltimore tramways in the 1950s, Amazon spent US\$775mn in 2012 on Kiva Systems, a supply chain robot maker. Clearly, Amazon's goal was to not only move one step above the competition in terms of supply-chain efficiency, but also ensure that the competition stayed one step behind. Or take Foxconn, with over 1mn employees, the company is on record as wanting to effectively replace 300,000 workers with robots over the next three years. Already, the company's highly secretive new Chongqing plant in China is reportedly experimenting with robot-run production lines.

Very soon, large-scale robotic adoption and production by firms such as Amazon or Foxconn will fundamentally change the competitive dynamics of their entire industries. But just as IBM and Cisco dominated the first phase of the computing and internet cycle, the early winners of the robotic revolution will likely be the makers of core infrastructure. Which probably explains why the performance of the robotics index above is so strong, even in the face of fairly mediocre global capital spending.