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PUTTING THE RISE OF AI AND ROBOTS INTO PERSPECTIVE

Berenberg Macro Flash

The following is taken from my introductory remarks at The University of York's annual Festival of Ideas panel 'the future of work' - the implications of AI and robots for the world of work (16 June 2018).

Throughout history there have been several great waves of technological change. The First Industrial Revolution during the 18th century produced major advances in manufacturing and energy. Cartwright's 1785 power loom and Watt's 1775 steam engine are noteworthy examples. The Second Industrial Revolution (c1870 – WW1) led to even greater and more widespread technological advances across much of Europe and North America in steel, rail travel, petroleum, chemicals and electricity. Some people consider the computer age - that began in the late 20th century - the third such revolution.

The next big wave could come from robots and artificial intelligence. Robots are becoming cheaper and more human-like in the way they can interpret and interact with the world. Because this technology has the ability to enhance productivity, it is likely to become widespread eventually, much like the key technologies during past revolutions.

We are right to expect change. There is no ambiguity about the historical record: each industrial revolution has changed the world irreversibly. We will not be as we were. The robots are coming.

With each new wave of technological change comes a new wave of anxieties too. Economists split the production side of the economy into four parts; ideas, land, labour and capital. For the most part, humans have enjoyed a monopoly on ideas and labour. Robots are different. They can mimic labour, and soon they will be able to think and solve problems much like us. These facts strengthen our anxieties.

To understand how robots will affect the nature of work, we must ask two questions: 1) Will robotisation change total demand for labour? And 2) what will be the impact on the composition of the labour market?

To the first question: As long as the central problem in economics is scarcity, that our demands exceed what we can supply, there will always be demand for the contribution from human labour. Automation anxiety - the idea that machines will one day replace so many workers so fast they will cause mass unemployment - has existed since the First Industrial Revolution.

Such predictions surface as each and every new wave of labour saving technology comes along. However, these calls are always proved wrong. Any 'technological unemployment' created is re-absorbed elsewhere in existing and new industries. Such unemployment may pose a short-term challenge but it will most likely prove to be just a temporary period of maladjustment.

The reason that our demand for goods and services is always one step ahead of what we can produce is simple. As we produce more, we raise our incomes. Because of higher incomes, we demand more. And so goes on this never ending cycle.

In the UK in the 1850s, around three million workers in agriculture produced about a quarter of total economic output (GDP). Today just 390,000 people work in agriculture in the UK – the sector is four times



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bigger than in the 1850s. Meanwhile, the economy is more than 25 times bigger. The unemployment rate in the 1850s was around 4%, today it is 4.2%. Total employment today is around 32 million. In 1850 it was 12 million. This exercise can be repeated over and over again with the other industries where machines have replaced large numbers of workers. All across the advanced world the picture is much the same.

The scarcity problem ensures a clear positive trend between capital and labour in a growing economy. It is the reason that the most advanced capital-rich economies also tend to have high employment. The lesson of history would predict that, with more robots, demand for labour would not fall, but instead rise as the economy expands and our living standards improve. By removing the need for workers to do menial and mundane work, robots could increase opportunities for more human-to-human interaction in other areas of the economy.

To the second question: How robotisation will affect different types of labour is likely to depend on whether robots are a substitute for, or a complement to, existing labour. This implies winners and losers. A potential trend is already emerging.

Robots tend to complement workers in highly skilled disciplines that include a uniquely human component. Judgement, opinion, common sense, and non-linear reasoning are difficult to substitute with technology. Middle-skilled workers can be more easily substituted. While some of these displaced workers will find employment in new industries that emerge as a result of the robot-driven shifts in the composition of the economy, many workers could be forced to shift down the skill ladder to find new employment.

Still, a key point is worth outlining: in much of the developed world today, even those unfortunate to be close to the bottom still enjoy a standard of living that would have been unattainable for even the wealthiest just a few generations ago. While robotisation may reduce the job satisfaction some workers get from some types of low-skilled work, all workers are likely to benefit from the improved quality and diversity of the goods and services that will be available from the robot-driven productivity improvements.

Whether this hollowing out of the middle-skill tier of the labour market is a temporary or permanent trend is not clear. The shift towards robotisation is still in its infancy. Critically, this side-effect could compound the other challenges that some workers already face – linked to globalisation and the legacy effects of the financial crisis. As the success of populists on both sides of the Atlantic shows, our political infrastructure is already straining under these challenges. Robotisation may aggravate these existing negative trends.

The critical question is therefore how to respond. Although we have come across this species of problem before – how to adjust to technological change – the nature of the beast is different. Change is not only happening faster than before, but in the age of widespread information our awareness is heightened. Because the species of the problem is similar, we might be tempted to throw old solutions at it. Mass training and education may have partly helped ease the transition to the digital age, but as the mounting student debt in some advanced countries shows – this has been an expensive endeavour.

Because we are moving from a generic product economy to one in which goods are more bespoke and specialised, generic mass re-training could end up being a costly failure. The problem needs a more dynamic response. We ought to think about the ways in which individuals can have more freedom to adapt and to become more entrepreneurial to create new markets. Policymakers can help smooth the adjustment to the new economy by taking a light-touch approach to regulation so that new products can be enjoyed sooner



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rather than later. This could be in addition to providing more opportunity and incentives for displaced workers to up-skill to take advantage of new opportunities.

Our response to the new reality must not be reflexive and guided by our worst fears based on the pages of science fiction. Instead, we should be guided by the lesson of history and sound theory. Those who argue, for example, that jobs can be saved by taxing robots miss the key point. They seek to eliminate the concentrated costs by dis-incentivising investment in the thing that creates benefits. If taxation should be used at all to finance compensation for workers facing hardship, it would be better to tax the profits that the productivity gains generate.

Invariably, reality always proves far more complicated than any single theory or study would have us believe. But if we get it right, we could be on the cusp of potentially very large and widespread benefits. It is important that policymakers and regulators remain on the side of the innovators.

One of the key economic problems in the advanced world is that of weak productivity growth amid rising demands on public services from ageing populations. Public deficits and debt levels are likely to rise dramatically over the next few decades unless we renege on our promises to retirees, increase taxes dramatically, or cut spending on other public services that support the productivity of the working age population, such as healthcare or infrastructure. None of these options are ideal. Wouldn't an army of robot workers be extremely helpful in tackling this problem?

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