Dialogue and Events

Forum for Economic Dialogue

Forum for Economic Dialogue on "The rise of the machines"

Whether you call it the third or the fourth industrial revolution, all the speakers at this year's "UBS Center Forum for Economic Dialogue – The Rise of the Machines" agreed we are entering an era of unprecedented economic, technological and social change. But what are the forces driving this change and will humanity benefit or suffer as a result?

A matter of survival

Jeremy Rifkin kicked off this year's forum with a tour de force taking the title from his best-selling book, *The Zero Marginal Cost Society*. The first and second industrial revolutions have taken us from a largely agrarian society to a highly sophisticated urban and industrialized world. But this progress has not eliminated poverty or inequality. In fact, the world's 62 richest individuals now hold more wealth than half the world's population, i.e. 3.5 billion people. The global fall in productivity and slowing growth of recent decades are inevitable consequences of the failure to extract further growth from aging technologies as they reach the physical limits of thermodynamic laws, argues Rifkin.

More ominously, climate change resulting from our continued dependence on first and second industrial revolution technologies and energy, in particular fossil fuels, threatens humanity with an existential crisis.

"We are facing an extinction event. You can have as many reforms as you like, as long as your businesses are still plugged into a second industrial revolution infrastructure with centralized communications, fossil-fuel-nuclear power, and internal combustion transport, it won't make any difference."

Smart technology, smart economy

In Rifkin's vision of the future the traditional model of buying and selling goods, driven by industrial-age technology and energy, will be replaced by a digitalized Internet of Things. In this new economic model, products and goods are produced at zero marginal cost using 3-D printing and shared via a transport network of GPS-automated driverless vehicles, propelled by clean engines. This new economy will be fuelled by unlimited and renewable energy sources supplied by smart grids that are largely self-sustaining, producing limitless energy from clean sources, all at zero marginal cost.

Jeremy Rifkin, economist, best-selling author, political advisor

The great challenge for the current and last generations of the industrial age will be to build the infrastructure of this new economy that will require the labor of millions over at least two generations. Businesses and banks will plan, build and finance the construction of this new global infrastructure. Once it's completed, they will manage and maintain the infrastructure as service providers. IBM is one company that has already shifted from manufacturing and selling hardware to building and managing networks and services for clients, says Rifkin. Energy and technology giants like EON and ABB are also moving toward new business models based on the construction, management and optimization of smart-energy networks using renewable energy.

Revolution or evolution?

Rifkin's bold vision of a zero marginal cost digital future posed as many questions as it answered and was the subject of heated debate in the ensuing panel discussions. The first panel "The Rise of the Machines – Revolution or Evolution?" explored the age-old discussion of man vs. machine and concluded that it was unlikely machines would ever reach a level of human consciousness or intelligence. Machines will become indispensable aids to people in performing tasks of increasing complexity that demand an ever-greater

capacity to manage, store, filter and interpret data. But these machines will still require humans to provide input and ask the questions that demand answers.

Prof. Roland Siegwart, director Autonomous Systems Lab, ETH Zurich; Prof. Joel Mokyr, Northwestern University; Prof. Nick Bostrom, Oxford University, founding director of the Future of Humanity Institute (Chair); Dr. Alessandro Curioni, IBM Fellow, Vice President Europe and Director IBM Research Zurich Lab (from left).

Hey robot, where's my job?

The afternoon panel discussions revolved around the subject of how humans will adapt to a machine-driven economy and whether large segments of the working-age population would find themselves redundant and out of work. The afternoon session looked at "Policies for the Machine Age." It concluded that government and business-led training programs will be urgently needed to fill the skills gap especially in information and communications technology (ICT) that will be essential to help millions transition to the machine age.

John Martin, consultant and former OECD director for Employment, Labour and Social Affairs; Prof. Jeremy Greenwood, University of Pennsylvania; Prof. Nick Bostrom, Oxford University, founding director of the Future of Humanity Institute (from left).

At the same time, closing borders and shutting out immigration to protect unqualified native workers would be counterproductive and most likely stall progress toward a digital future.

The final session was a disputation on "The Rise of Machines – Boon or Bane for Workers?" It noted the contradiction that each wave of technological progress, while destroying existing industries, always succeeded in creating many more new jobs in new ones. There are more jobs and more people in work in the US than ever before, but pointed out the irony that a transformative technology product like Apple's iPhone could not be manufactured in the US for regulatory reasons.

According to Joel Mokyr, Northwestern University, the bottom line on the future of technological progress and innovation is very simple: You ain't seen nothin' yet.

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Zurich Lecture of Economics in Society

The challenge of automation

The future-of-work theme was picked up in the concluding Zurich Lecture of Economics in Society: "Why Are There Still So Many Jobs? The Past and Future of Workplace Automation," by Professor David Autor from the Massachusetts Institute of Technology (MIT).

Professor David Autor elaborated on the numerous challenges produced by employment polarization.

David Autor closed the day by addressing the contradiction that there are now more bank tellers in the US than ever before, despite the invention of the automatic cash dispenser (ATM) 40 years ago. Labor participation in the US and the developed world has risen steadily over the last 125 years. The US has added 14 million new jobs since 2010 alone. His explanation is that new technology always expands the possibilities and creates new ideas for products and services and these require people to develop, refine and sell them, which drives further consumption. Modern bank tellers don't just dispense cash or hand out forms, but also provide advice and assistance to customers bewildered by the growing numbers of products and services available.

All eyes on David Autor in the Kaufleuten Zurich.

However, automation and technology is polarizing the workforce with growing numbers of poorly paid, low-skilled jobs on one side, and highly paid, high-skilled work on the other, while middle income, medium-skilled work disappears. This creates major challenges not least in perpetuating inequality and poverty and restricting equality of opportunity. These are not problems that can be solved by the market, says Autor, but by governments and social institutions.

"Technological change presents new challenges to each generation, but with the right policies in place, we can control and solve them."

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