



Robots Are Coming. Review of “John Hudson, The Robot Revolution: Understanding the Social and Economic Impact”

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This book is a timely and important study of the implications to the economy and society in general of the rise of robots in industry and increasingly in every-day life. It has been developed gradually over recent years as a result of John Hudson’s extensive research into robotics. Although completed just before the authors death in 2018 and published in 2019, the origins of this book stem from 2005 when John Hudson organised a forum in Barcelona on ‘Robots and automation’ for the Institute of Electrical and Electronics Engineers. (IEEE). This interest was enhanced between 2009 and 2012 when acting as the Vice President of the European Academy for Standardization.

Although the book’s main aim is to analyse the effects of robots on employment, welfare and attitudes, it also has an interesting discussion of the history and science of robots, albeit from a non-technical perspective. The main market for the book in my opinion will be researchers specialising in robots and the economy, but it could equally be used as the main text book for a n undergraduate or postgraduate course on the economics of robots. John Hudson approaches the economic implications of robots predominantly from a macroeconomic perspective, reflecting his own Keynesian approach to the subject. The central theme running throughout the book concerns the effects of the rise of robots on society, with a balanced discussion on the extent to which the increased use of

robots offers opportunities and benefits in terms of wealth and productivity but also produces potential problems.

This book begins by analysing the origins of robots and ends with some analysis of the possible future effects they are likely to have. For instance the book explains the term robot originates from a play by Karel Capek called 'Rossum's Universal Robots', with the word coming from the Czech word 'robota' meaning 'serf labour'. This was in fact in 1921, then by the 1950s Isaac Asimov came up with the three laws of robots, which can be summarised by; A robot may not injure a human being, a robot must obey an order given by a human and a robot must protect its own existence. Much of the current debate surrounding the ethics of robots still centres around these three laws.

The book is a balanced analysis in terms of a review of the previous literature on robots as well as original empirical analysis on robots and economic performance. The first empirically based chapter poses the question on whether robots affect unemployment and prosperity and in which direction? Using regional NUTS2 data available from Eurostat, the author uses a probit and ordered probit regression analysis with the numbers of robots in the region as the explanatory variable and finds that robotisation has reduced unemployment and increased prosperity. Regarding the marginal effects, for a 45-year old man in Ireland, with average education and skills, they would see that the probability of being unemployed would drop from 15% to 12.5%, as regional robotisation increased from 5 to 15%.

In subsequent chapters there is an extensive analysis of people's attitudes to working with robots and using robots in the home. Again, using the NUTS3 regional database and probit models the main results are that on balance people have a favourable attitude to robots. However, it depends on what they are used for. Overall the old, people from rural areas and the less educated tend to be more sceptical towards the rise of robotisation. Those in manual occupations also tend to oppose robots. The study finds there is a bi-modal distribution to attitudes, with people tending to be either very supportive or totally opposed to them. In addition the young tend on balance to be more comfortable with the rise in usage, which may be surprising as it is the young who will have first-hand experience of their increased use over coming years, whereas the older respondents are more likely to be retired before they experience them as competition in the work place. There is a further section which assesses attitudes across individual countries in the EU, in nearly all cases there is

evidence that opposition to robots increases with age, although this is less evident in Germany.

Overall this book deals in an informative way about some important topics that will affect us all in the near future. For instance it debates whether innovation is always beneficial. It comprehensively discusses and debates at length the two opposing viewpoints on robots from varying perspectives, including the welfare and equality within countries. At its most extreme this could lead to the robot owners becoming rich and powerful, whilst the rest become increasingly poor. How society reacts to this dilemma is an important theme.

Although I share the concerns that John Hudson has had with the rise in the use of robots, I am a bit more optimistic about their effects on employment and society. The more pessimistic viewpoint partially shared by the author concerns the consequences of robots replacing humans in the workforce, especially the low-skilled jobs, meaning that the low skilled workers are likely to be unemployed and poorer. As the book discusses this would require extensive intervention by the authorities to mitigate against the potential negative effects of this robot revolution.

However, one area that the rise in the use of robots could become important, is in increasing levels of productivity, something which is a serious concern in the UK among other developed countries. Another problem that many developed nations are currently facing is that of an ageing population, where the elderly require increasing levels of care. This is an area highlighted in the book as being an important application of robots, which could be developed to act as carers for the elderly and enable them to live more independently. As discussed in some of the case studies included in the book, previous industrial revolutions have proven to be less problematic than was initially thought to be the case. I believe this latest industrial revolution with robots will prove to be more beneficial than problematic.

John Hudson died in July 2018. This book reflects his experiences across many different disciplines, from political science to technological standardisation. He published his research across a variety of areas including bankruptcy, economic development, citation indexes, institutional trust and, latterly, robots. He published over 80 academic papers and a number of books and policy documents. This book represents his wide breadth of research interests and collaborations across the world, especially in Slovakia. I am very happy to recommend it to anyone with an interest in contemporary economics and society, it has been written in

such a way as to be accessible to all from the first year scholar to the seasoned researcher.