Science, Technology and Humanity: Opportunities and Risks
Job market and inequality

Martin Takáč, Tomáš Gál

http://dai.fmph.uniba.sk/courses/STH/
What advantages can digital employees have?
What advantages can digital employees have?

• Reliability

• Flexibility (easier update)
  • Can also be a disadvantage – errors propagate on global scale

• Never tired or sick
Positive vision

• “Digital Athens” (Brynjolfsson):
  • democracy, art, games
  • Work done by “slaves” (robots)

• GDP rising, more people can afford more things
Positive vision

• The pie seems to be growing...

GDP per capita in England and the United Kingdom since 1270
Adjusted for inflation and measured in British Pounds in 2013 prices

Data source: Broadberry et al. and Bank of England
Note: Data refers to England until 1700 and the UK from then onwards.
Positive vision

• The pie seems to be growing...
Inequality by country

• ... but not everyone will benefit
Rich vs. poor

• In 2013, the combined wealth of the bottom half of the world population (3.6 mld people) is the same as that of the world’s eight richest people

• Top 1% of people by wealth got 82% of globally produced wealth in 2017, while the bottom half got nothing

• (Source: Oxfam report on global wealth inequality 2017)
GDP vs. median income

Figure 3.3: Real GDP per capita has grown significantly faster than real median household income. Source: Bureau of Labor Statistics.
Wages by education

Figure 3.5: Wages have increased for those with the most education, while falling for those with the least. Source: Acemoglu and Autor analysis of the Current Population Survey for 1963-2008.
Can automation make this better or worse?
Job market

- Many factors with opposing effects, total effect inconclusive
- Source: S. Russell: Human compatible
Which jobs will be replaced?
Which jobs will be replaced?

- Management, Business, and Financial
- Computer, Engineering, and Science
- Education, Legal, Community Service, Arts, and Media
- Healthcare Practitioners and Technical
- Service
- Sales and Related
- Office and Administrative Support
- Farming, Fishing, and Forestry
- Construction and Extraction
- Installation, Maintenance, and Repair
- Production
- Transportation and Material Moving

- Low: 33% Employment
- Medium: 19% Employment
- High: 47% Employment
Which jobs will be replaced?

Figure IV. Wage and education level as a function of the probability of computerisation; note that both plots share a legend.

Source
Unemployability
Unemployability

• Salary derives from the equilibrium price at the intersection of Supply and Demand curves:
Unemployability

• Salary derives from the equilibrium price at the intersection of Supply and Demand curves:
  • Cheaper production increases supply for the same price
Unemployability

• Salary derives from the equilibrium price at the intersection of Supply and Demand curves:
  • This in turn pushes the price and salaries down
Unemployability

• Salary derives from the equilibrium price at the intersection of Supply and Demand curves:
  • This in turn pushes the price and salaries down
  • Automation can cause dropping salaries below the cost of living
Job market

• Most of human automatable jobs will disappear
• New jobs will appear...
  • ... more demanding on education and creativity
  • Not everyone is able to requalify for high-skill jobs
  • We don’t need as many of them (“Data science is a very tiny lifeboat for a giant job cruise ship”. S. Russell)
• These factors will hit vulnerable social groups and inequality will grow
Job market

• Three factors why technologies increase economical inequality (Brynjolfsson & McAfee):
  • Qualified vs unqualified
  • Globalization of competition – superstars take all
  • Capital vs income
Task for policy-makers

Possible solutions

• Universal basic income
Discussion

• Do you think UBI is a good idea? Why?
• What would you do if you didn’t have to work for money?
• What do you think would be the effect of UBI on people?
Possible solutions

• Universal basic income
• Redistribution of profit from AI technologies (digital & robot tax) to mitigate the effects on most vulnerable
• Reduction of costs of living by providing free or subsidized infrastructure (health care, education, kids & senior care, internet, roads, services)
  • Also provides jobs
  • Some services are already free as a result of tech progress even without governmental intervention (online courses, encyclopaedias, videoconferencing, etc.)
• Subsidising occupations where we want to keep humans (care & community services), e.g. by lower wage taxes
Purpose without jobs

• Unemployment tends to have negative effects on well-being, retirement has mixed effects (Luhmann et al., 2012)

• Sources of well-being:
  • a social network of friends and colleagues
  • a healthy and virtuous lifestyle
  • respect, self-esteem, self-efficacy and a pleasurable sense of “flow” stemming from doing something one is good at
  • a sense of being needed and making a difference
  • a sense of meaning from being part of and serving something larger than oneself
Purpose without jobs

• Purpose and self-esteem
  • Is often connected to work, but can be satiated from different sources too
  • Angry “useless” people vote for populists and extremists
  • Threat for democracy

• Research on happiness needed
How to be human

• Caring professions
• Relation-oriented work and community work
• Art of life – capacity to inspire others
  • Creativity, arts, gardening etc.
  • That may be western-centric view (digital Athens) – don’t forget about problems in the rest of the world
• Education for the future
Happiness-based economy

• GDP
• GNH (Gross national happiness) – Bhutan
• GPI (Genuine progress indicator)
• Wellbeing budget strategy in New Zealand and kaitiakitanga (guardianship)
  • 5 priorities:
    • Nature conservation
    • Mental health support
    • Fighting child poverty and domestic violence
    • Better living standard of indigenous people
    • Digitalisation and Innovation
Genuine progress indicator
Education for the future

• “Change is the only constant”
• Not more information for pupils (there’s more than enough)
  • ability to make sense of information
  • to tell the difference between what is important and what is unimportant
  • combine many bits of information into a broad picture of the world.
Education for the future

• Not even teaching skills (since we can’t predict what will be needed)

• Emphasize general-purpose skills, such as the four Cs:
  • critical thinking
  • communication
  • collaboration
  • creativity
Education for the future

• ability to deal with change
• to learn new things
• to preserve your mental balance in unfamiliar situations.
• need not merely to invent new ideas and products – need to reinvent yourself again and again
Resources

- Federico Pistono: Robots will steal your job but that’s OK: How to survive the economic collapse and be happy. 2012. E-book.