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# WORKING, EARNING, LEARNING IN THE AGE OF INTELLIGENT TOOLS

The Berkeley WITS Project

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November 29, 2017-December 1, 2017

UC Berkeley, Berkeley CA

Session T2

## Employment, Labor Markets, and Social Policy

### Stefano Scarpetta, OECD

- We are back to a level of employment from pre-crash
  - US problem: Decline in participation among prime-age men
- Job polarization in rich countries: hollowing of the middle? What IS the middle?
  - Jobs declining in mid-skill jobs
  - In Italy, increasing employment has been among low skill jobs not high skill jobs; but great variation across countries
- Changes by industry: manufacturing and services. Deindustrialization in OECD.
- Much of the polarization is taking place within sectors, not changing structure of the economy
- Can look at polarization from an employment point of view or a wage point of view – polarization taking place in terms of employment, not in terms of wages
- Task-based technological changes are driving polarization
- Labor demand is going towards high-skilled jobs
- Look at process of de-industrialization in OECD countries
  - If you unpack trade penetration, stronger increase of China's role in global trade did take part in de-industrialization in OECD world
    - Not a broad trend – one country, one particular impact
- How big is the risk of automation?
  - Apocalyptic views are not helpful
    - O+F: took 70 occupations, presented tasks to AI experts, asked them, “which of these occupations *could* be automated in around 20 years?”
    - Used these 70 judgments to train a model that they applied to ~630 other jobs
  - OECD study
    - Maps substitutability to specific jobs, not entire occupations
    - Relatively few jobs will be fully automated
    - But a large proportion of jobs will have ½ to most of their jobs automated
  - Focus more on, how do we retrain affected workers
  - Why are jobs more or less automatable?
    - Doesn't depend much on the industrial structure of each country
    - More about tasks performed in individual occupations

- Risk is highest for low-skilled low-paid workers
    - Less equipped to adapt to new skills, new challenges, new tasks
  - Young people are more at risk
    - Paradox, because they are best educated people in the labor market
    - But they are in entry-level jobs
    - We are facing more inequality in the labor market. Skills and location mismatch
  - Workers in low-risk jobs use more IT
- Mobility is not increasing in the labor market
  - Job stability has increased; mobility has decreased
  - Fewer people are moving from one job to another across OECD countries
- What happens to middle-skilled workers?
  - Income data, 2000-2015: no change. But,
  - Opinion polls show people self-identifying as part of the middle class is declining – 65-48% in the US
- Quality of job-to-job flows is declining; people more often are moving from higher-skill jobs to lower-skill jobs
  - Re-skilling \$15 / hour workers who've lost good jobs is hard
- Underemployment
  - Many working poor working fewer hours than they want
- Does policy need a paradigm shift?
  - Skills: there's a huge agenda about building the right skills, helping them choose the right field of study, gaining soft skills, digital skills
    - What do we do with large fraction of workers who have very limited digital skills? – 45% of workers in the workforce with very low problem solving skills in rich digital environments
    - People who can play with their iPhones but not much beyond that
    - High-skilled workers get 3x as much training as people in low-skilled jobs
    - Our systems of formal and informal training for adults is hugely polarizing
    - Cannot be public programs, needs to be through employers
  - Regulation
  - Social protection
    - In 17 OECD countries, if you lose your job if you're an independent worker, you don't get unemployment
    - In Europe, 48% of women in independent work don't have access to maternity leave
    - We need to re-think social protection
    - There are no portable benefits
    - Need new forms of social protection
  - Social dialogue – rebuilding or reinventing?
- Skills, regulation, social protection, social dialogue (collective bargaining? What does this mean in new economy? How do we give voice to the affected workers? Employers and unions. Adapt to the future). Lifelong learning is not working!

### **Susan Lund, McKinsey**

- Adoption rates are not changing even as AI breakthroughs have taken place; not accelerating yet
  - Success comes from re-envisioning and re-designing company

- Rapid advances might actually be slowing down adoption because companies would rather wait if it's going to be better/cheaper in a year
- Jobs will change – very few occupations can be fully automated; but 60% of jobs can have 30% of their tasks be automated by 2030 – fairly consistent with OECD research
  - Manual activities in a predictable environment
  - Collecting and processing data
  - But people are good at interactive skills
  - So education shouldn't just be STEM, but also emphasizing social and interactive skills
- Modeled choices: if the US decided to invest the crumbling infrastructure, it would have positive affects on the economy and directly create a lot of jobs
- Huge shifts: 375m people globally might have to completely shift occupational groupings, IE going from being a cashier to a medical tech, mid-career
  - Going back to school for 2-4 years out of the question
  - In the US depending on how fast this happens 15-32% of workforce might need to shift occupations
- Need institutional shift: today's institutions are not designed to handle this especially at scale

### John Zysman

- The variation in the distribution across countries raises the question: why? What would have been choices that could have changed the character of the task or job distribution? Hanne Shapiro always makes the point that much of this depends on the underlying organization of work.  
We should not take any of these outcomes as inevitable
- We understate the question about skills.  
It is not just emotional and social skills. An enormous part of this in a situation to identify what we think (.....).  
Links to game theory: my decision of my next move depends on how I see the game. We need this analysis
- How we identify problems depends on user interfaces.  
What kinds of links need to be built so we can use these tools?  
The kind of tools we build also shape the skills required. We need to think about the alternative trajectory

### Giovanni Dosi

- We are at a true bifurcation
- Either, medieval techno-imperialism “Blade Runner” scenario where most people are “employed” but tiny elite
- Or, awesome scenario: work 2-3 days per week, spend the rest of the time with music, or poetry
- This is the time that we can affect the choice between the two, but pessimistic about the trends
  - Deindustrialization, stagnant wages in US and widening global wage-productivity gap since the 90's! Widening between labor productivity and wage growth!
  - Widening wedge between labor productivity and wage growth
  - Fall in real wages since 1973; got worse during the last crash
  - Decline in manufacturing shares in all western countries
  - Decline in share of labor compensation in income
    - Surge in profits, especially financial profit

- Declining unionization, which negatively impacts on hourly pay
    - Institutional causes
    - Declining job creation rate
- Jobless recovery- longer and longer time between the start of recession and when employment starts recovering
- How will these trends be affected by intelligent tools?
- Taylorism + Robotics
  - Working conditions that are comparable to Dickens' era
  - "Being your own boss" and having that be awesome is a mythology
  - People controlling themselves and being controlled remotely by an algorithm
- Need mission-oriented programs
- Income and working hours redistributions

### **Brad DeLong**

- Three big points
  - The value of the human
  - Inadequacy of our social scientific framing of the problem
  - Our need for a metaphor to guide our thoughts
- Humans will not be replaced anytime soon
  - Quantum Computing book
  - If we wrote one page of code for each human neuron, the program would be bigger than the size of the earth
  - Product of billions of years of evolution to be greater than anything possible at being a hunter-gatherer
    - Facial recognition. Mood estimating.
    - Human skills: Face recognition, maintaining the ability to recognition objects and think about which is likely to poison us and which is not
  - Our bias is to over-estimate the intelligence of everything we're dealing with
    - We have human beings that are willing to ascribe very human characteristics to things like thunder (Thor)
  - Voice-interface database search is a huge difference from Artificial General Intelligence
  - Unskilled workers are uninteresting because they are just raw labour without human capital, semi-skilled workers have half a brain of human capital, and high skilled have a full brain of human capital– so we can do a lot of valuable things because we have formal education and substantial experience in cognitively difficult.
  - unskilled jobs are those within the hunter-gather toolkit of the human brain
  - Semi-skilled jobs are unskilled but important you have some market power and rent sharing ability because you have to be where there are rents to share
  - High skilled jobs: formal education + practice in occupation with high scarcity value because it is a thing that is rather difficult for human brain but it may or may not be easily computerized
- But, tasks vanish
  - People at Oxford used to have to develop a fine chancery hand to be able to prepare documents
  - Occupations are doing to change in all kinds of ways, but in ways that are only tenuously connected to what they require in terms of education, learning, difficulty, etc

- Post feminization of office work, secretaries plummet in status
  - Cashiers used to be the only people you would trust with the cash; but after cash registers, gets feminized, wealth and status collapses
- What to do?
  - Other rent extractors: not so much a skill vs unskilled thing, so much as power accrues to platforms
  - We need metaphor to think about this. We used to think of jobs as small-scale production. Then Smith came
  - Industrialization gave use the assembly line – the goal is having highly productive value chains providing technology in power
    - We need a similar dominant metaphor for thinking about what the typical job of the future is going to be
    - One he suggests: depends on whether we have a social democratic society vs. a plutocratic society
    - In plutocratic society, typical job will be serving the elite
- In social democratic society, everyone will need a life coach, a personal shopper, a personal trainer

### Laura Tyson

- Nobody in this room thinks technological unemployment of the Keynesian variety is the problem
- Job loss due to automation is not the main issue. Main issue is not the number of jobs at the end of the day. We believe we will get to jobs (S&D). issue is distributional effects, incomes adequate relative to social norms?
- Question is about distributional effects of the changes
- Whether income will be adequate
  - According to social norms – each society has a different idea bout these things
- You can project policy to create more jobs in the future, but as McKinsey shows, the gap in skill and educational requirements from old jobs to new jobs are huge
  - Start with soft skills; then through the lifetime of the worker, keep them gaining specific skills
    - Those are costly things. There are costs. **Who is going to pay those costs?**
    - Right now, we're putting upside and productivity gains on owners of capital; their incentive is to move things along because they stand to benefit
    - And we're putting the cost on workers. That is a big problem.
    - Majority of Americans would like to slow the pace of automation, and they are right to worry about it – in current system the risk fall on families, local community colleges, the individual worker
    - If we believe that sooner or later, we're going to see these productivity effects (we're not seeing them yet), there will be incentive to invest in them, but distribution of costs and returns needs to be more equally spread.
    - We're not on some cliff; we've been going through these transitions for quite some time. There is a long record of technological change that is skill-biased, productivity enhancing, reducing the labor share of income. They are going to continue to happen, maybe at an accelerated pace.
- Companies are going to invest; they don't care about the employment effects. What are the incentives for the companies, if we're going to give them more responsibility?

- What is wrong with a tax system that incentivizes tangible, physical capital? That puts a lot of incentives on investing in software and not any on investing in people?
  - They outsource their janitors, they don't train their janitors.
- Really important to look at differences between companies and societies in terms of the choices they make and the policies they create
  - American corporate thinking is different from German corporate thinking; different social norms, different incentives
  - Comparisons within sectors, as well