

# Addressing the Challenge of Globalization and Technological Change

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March 2, 2018



# Widening Inequality and Job Polarization

- Data from the Congressional Budget Office for the United States show widening income inequality over time
  - Incomes at the top have increased by more than 200% since 1979, relative to 50% for those in the middle and bottom
- How much of this can be attributed to globalization and technological change?
- While globalization and technological change have largely benefited those with education and skills, they have threatened middle skill and lower skill jobs.
- A recent study by Melissa Kearney and Katharine Abraham suggests that trade and technology have significantly affected employment-to-population ratios of workers and are responsible

# Loss of Middle Skill Jobs

- One consequence of globalization has been job polarization
- Studies find that between 1981 and 2011, the share of routine middle-skill employment has declined from 58 percent to 44 percent, while the shares of high-skill and low-skill jobs have increased over that period.
- The loss of these middle-skill jobs requires that workers either upgrade their skills so that they can apply for high-skill jobs, or they are left to work at low-skill jobs.

# Impact of Trade

- There was a sharp decline in manufacturing employment from 17.3 million in 1999 to 12.3 million in 2016.
- A number of recent papers have linked the decline in manufacturing sector employment to international trade pressures.
- In an analysis that looks at the period from 1999 through 2007, Autor, Dorn, and Hanson (2013) document that growth in imports from China led to higher unemployment, lower labor force participation, and reduced wages in local labor markets that had a larger share of their initial employment in import-competing manufacturing industries and thus were more exposed to import competition

# Impact of Trade

- Over the 1992 to 2007 period, individuals who worked in 1991 in manufacturing industries where the exposure to growth in imports from China was larger experienced lower cumulative earnings, were more likely to obtain disability benefits.
- Acemoglu et al. (2016) quantify how much of the reduction in manufacturing employment between 2000 and 2007 is attributable to rising import competition from China and also trace out that competition's broader effects. They find that the surge in import competition from China after the year 2000 was a driving force behind reductions in U.S. manufacturing employment, and more generally, for weak overall job growth, owing to input-output linkages

# Automation and Technological Change

- The development of automation, enabled by technologies including robotics and artificial intelligence, has allowed for higher productivity and possibly earnings for certain workers. However, it has also posed a larger challenge about the broader impact on jobs, skills, wages, and the nature of work itself.
- Some recent studies suggest that about 45 to 47 percent of jobs in the U.S. are susceptible to automation. The impact of this on jobs and wages is likely negative. In a new paper, authors suggest that industrial robots that replace manual labor like welding, painting, assembling or packaging have increased four-fold between 1993 and 2007 and are likely to continue to increase significantly over the next decade

# Impact of Technology

- In 2007, there was an estimated stock of 160,632 robots installed in the United States. One study estimates that each robot displaces about 5.6 workers, implying a deficit of 899,529 workers in 2007. In 2016, there was an estimated stock of 250,475 robots; applying their estimate of 5.6 displaced workers per robot translates into 1,402,660 displaced workers.
- Adding these workers to the 2016 workforce would raise the employment-to-population ratio by 0.55 percentage points.

# Policy Response

- Important to recognize that jobs have not disappeared completely from the United States
- In manufacturing, there are still 322,000 job vacancies and employers complain of an inability to find skilled workers to match to these jobs
- The larger problem is that jobs have become more high skilled globally, requiring technical, computing and mathematical skills and training. Very different from earlier “factory jobs.”
- The issue, according to a recent study in the Journal of Economic Perspectives, is that manufacturing in general has moved away from low-skill to high skill jobs.
- Even if jobs come back they will not be unskilled jobs

# Skills Gap

- According to a study on the Skills Gap by the Manufacturing Institute and Deloitte, over the next decade nearly three and a half million manufacturing jobs will need to be filled, and 2 million of these will remain unfilled due to the skills gap.
- In surveys, manufacturing executives reported that six out of ten manufacturing positions remain unfilled due to the talent shortage. Eighty percent of executives reported that this was despite their willingness to pay more than the market rates in areas with larger gaps.
- The types of skills that employers report lacking in the workforce are technology, computer and technical training skills. This is followed by a lack of basic problem solving and

# Paid Apprenticeship Programs

- For younger workers, paid apprenticeship programs are key. Experience in states like South Carolina suggests that these types of programs are beneficial by allowing both employers and workers to invest in the type of training that is needed. The advantage of apprenticeship programs is that they ease the transition from school to work and follow an earn-while-you-learn model.
- For the U.S., a [survey](#) by the Department of Labor of the Registered Apprenticeship program found that participants in the program had substantially higher earnings than similar non-participants. Further, economists David Neumark and Donna Rothstein [find](#) that internship and apprenticeship programs could

# Basic Skills

- Equally important are investments in basic math and reading. As reported in Hulten and Ramey, the 2013 National Assessment of Educational Progress (NAEP), a “report card” on the math and reading skills of some 92,000 American 12th graders, found that only 26% scored in the proficient or advanced range in math, and only 37% in reading. Further, 35% of 12th graders scored in the lowest proficiency category, “below basic”, in the math assessment and 25% in reading.
- This is troubling when thinking about the preparation necessary for success in the emerging knowledge-based economy.

# Soft Skills

- Soft skills, such as the ability to interact patiently with people and work collaboratively, self-discipline, perseverance, and employability skills such as showing up to work on time, are an equally important part of the process of skill upgradation.
- These cannot be automated away and will become more important as the availability of certain types of jobs, particularly in healthcare, grows over time.

# Gig Economy

- Technology has also been and will continue to be a boon in some aspects of the labor market. Job-matching sites such as LinkedIn and Monster are changing and expanding the ways individuals look for work and companies identify and recruit talent. Independent workers are increasingly choosing to offer their services on digital platforms such as Upwork, Uber, and Etsy. Many workers are in contingent work or digital platforms.
- A recent survey by McKinsey suggests that these platform jobs are helping workers supplement incomes, gain more flexibility and feel like their own boss. It seems likely that this type of contractual or alternative work arrangement will grow over time.
- No need to worry about the quality of jobs and benefits

# Incarcerated Workers

- Finally, we need to engage in skills training and re-entry programs for the 650,000 men and women who leave prison and return home every year but have little by way of resources to help them cope with life outside prison. Their history of incarceration precludes them from applying for jobs in many cases or actually obtaining one. They are excluded from Pell Grants which prevents them from getting federal funds for returning to school. Finally, many types of assistance programs are also unavailable to these individuals which impedes their assimilation back into society. As a result, by some estimates, 50 percent to 70 percent of these individuals are back in prison five years after their release

# Women's Labor Force Participation

- Other policies likely to help workers are the adoption of a paid family leave policy that allows workers, especially mothers, to take time off at the birth of a child or for own illness or caregiving. Research suggests that the lack of these types of family-friendly policies explains one-third of the gap between the US and the OECD in women's labor force participation.
- Under the current system, only 15 percent of workers have access to paid leave through their employers and the most disadvantaged workers are the least likely to get access to paid leave.
- Child care costs

# Conclusion

- Multi-faceted approach to challenges facing the labor market
- Skill upgradation is key to that
- Apprenticeship programs, retraining on the job are key to making these transitions
- Recognize that alternative work platforms will continue to increase
- Address issues related to women's LFP and incarcerated workers
- A focus on economic mobility and its drivers is key