Cornell University
ILR School
Institute for Compensation Studies

Technology and Employment Sustainability Initiative:

2014 European Commission Roundtable on Information Technologies and Labour Market Disruptions: A Cross-Atlantic Dialogue

The Dialogue

Over the past several decades, the number of tasks previously done by human workers but now being completed by machine has increased dramatically. Technological innovations have contributed to significant labor market disruptions, for better or worse, worldwide. For two days, economists, business professionals, journalists and government officials from North America and Europe convened at a roundtable discussion in New York City to consider these labor market disruptions. What is technology's past, present and future impact on labor markets? What new information is needed to ease the transition from a human-based service economy to technology-based service economy? And, how does the U.S. experience compare to that of Europe? Central themes in the discussion included: comparative disruptions that accompanied past industrial revolutions, what the existing statistics do and do not tell us, which jobs and skills could be most valuable in the future, how the nature of start-ups (and mergers and acquisitions) is changing, employers' perceptions of skills gap, and the relative abilities that employers, governments and individuals have to respond to the changing market-value of specific skills. While the majority of scholars present was more U.S.-focused, expertise on Europe was well represented and cross-Atlantic perspectives provided valuable comparative insights. Following is a brief summary of the highlights of this two-day conversation.

The *2014 European Commission Roundtable on Information Technologies and Labour Market Disruptions: A Cross-Atlantic Dialogue* was organized by the DG Enterprise and Industry and the DG Connect of the European Commission in cooperation with The Conference Board and Cornell University's Institute for Compensation Studies in the ILR School. The Roundtable was designed to be interdisciplinary and cross-sector and was conducted under the Chatham House Rule ("...participants are free to use the information received, but neither the identity nor the affiliation of...[any] participant, may be revealed" *www.chathamhouse.org/about-us/chathamhouserule*). The views expressed at the Roundtable and in this summary are those of individual participants and do not necessarily represent the views of the European Commission, The Conference Board, or Cornell University.

Framing the context

The U.S. labor market is arguably in its weakest state since WWII. The average duration of unemployment is currently over 35 weeks (from the time tracking began in 1948 until the Great Recession, average duration of unemployment had not exceeded 22 weeks). Currently, a staggering 37% of unemployed workers have been seeking work for 27 weeks or more. Labor force participation rates for both men and women are declining. Moreover, real median household income has been falling since 2000, and the share of GDP accounted for by employee earnings is at a post-WWII low of 42.3%. Additionally, since 1994, the number of jobs created by the average new U.S. business (less than a year old) has decreased by 35%, down to approximately five new positions. Total U.S. employment has not yet surpassed its pre-Great Recession level. At the same time, the share of GDP accounted for by corporate profits is at a post-WWII all-time high of 10.9%, and the American economy overall has surpassed it pre-Great Recession level of output. In sum, the U.S. is producing more with fewer workers and the median worker is reaping a smaller share of the economic gains. This is the context in which the Cross-Atlantic Dialogue roundtable took place.

Is this another industrial revolution?

The point was raised in discussion that the current technology revolution can be characterized as a new industrial revolution. For example, the invention and mass production of cars largely eliminated the demand for horse buggies. The skills required to produce and drive horse buggies became largely obsolete, and instead the skills necessary to produce and drive automobiles and trucks became more valuable. Today's leveraging of microchip technologies – from personal computers to communications technologies to robotics – have similarly been making many skills obsolete, and reducing the numbers employed in various occupations – typesetters, toll booth operators, assembly line workers, to name a few. With the piloting of the self-driving car, how long will it be until taxi and truck drivers have gone the way of the buggy driver?

The general consensus was that today's new technologies could be viewed as launching a new industrial revolution, and that the economy's transformation will be painful. All acknowledged that changing the "rules of the game" in previous industrial revolutions, such as eliminating child labor and making monopolies illegal, were important to ultimately getting societal gains to surpass losses. The point was raised repeatedly as to what or whether there are rule changes that need to accompany this technological revolution in order to do the same.

As to the severity of the disruptions from this technological revolution, opinion was not in agreement that this revolution is different (worse) from previous ones, though argument was put forth on both sides. U.S. labor force statistics highlight the inability of its labor market to recover fully from the Great Recession, which was officially declared ended in 2009. However, statistics like the labor force participation rate and average number of weeks unemployed were not collected on a monthly basis during past industrial revolutions, so it is hard to know in a comparable way what the labor force looked like before, during and after previous times of economic transformation. Yes, some felt that young workers will have a hard time getting jobs for a bit, and unemployed older workers will have an even harder time finding new jobs. But, the end results of the past agricultural and industrial revolutions were beneficial for the economy and living standards overall, and so it will be with this one. Countering opinions expressed that, this time around, the hollowing out of the middle consumer base may cause the U.S. consumer-based economy to implode, if current trends continue.

Some Roundtable participants were hesitant to point to technology as either the driving force behind today's labor market's woes or the cause of large numbers of workers being displaced, saying other forces, such as macroeconomic fiscal and tax policy, are also significant contributing factors.

The Productivity-Compensation Gap

Over the past several decades, macroeconomic statistics indicate that while productivity in the United States is increasing, the growth rate of productivity has been decreasing. Western European economic indicators point to similar trends there. Two key issues came out of the participants' discussion of this statistic. First, on a company level, it is hard if not impossible to see slowing productivity growth, as company after company appears to be doing more and more with fewer employees. So, why the disconnect between the macroeconomic statistics and perceptions from the economy's front-line? Second, while productivity is increasing overall, employee compensation as a share of GDP has been decreasing (in the U.S., down from 49.3% in 1947 to 42.3% in 2013). The gap between the added value of labor and compensation for labor has been growing. Regarding both the macro-micro disconnect over productivity growth and the growing productivity-compensation gap, the Roundtable discussion revolved first, and most intensely, around issues of measurement.

New forms of work and compensation have evolved out of this technological revolution with which economic statistics have not kept up. More individuals are producing "things" while not being compensated for their economic contribution in a traditional economic sense, meaning in

the U.S., an employer paying employees a wage or salary for which they are issued a W2 tax form. For instance, coders employed by no one may develop a smartphone app. This app is made available to consumers for free. The app can be downloaded from a website where the coder is receives payment from advertisers who post their ads there. What is the added value of the worker's time? What is their compensation? How much of this economic exchange is captured versus missed in GDP measures and/or personal income calculations?

Another example of a new mode of economic production and compensation is the "hackathon." A hackathon is an event where computer programmers, working as individuals or teams, may spend a day or two creating useable software for the event's host company. Generally, participants submit all of their work to the company so that a winner can be determined. The winner or winning team is usually rewarded with a monetary prize. The market value for the winner is easily determined, but what about the work done by the other participants. How can the value of their labor be captured? These are new issues that economists and statisticians will have to address to fully measure productivity, especially as these untraditional forms of productive use of labor become more common.

The discussion of the gap between labor productivity and compensation also spurred conversation over how serious a problem is the current labor market slackness. All agreed that the current looseness of the labor market has weakened workers ability to capture more of the technology-created economic rents. Strong differences of opinion, however, surfaced over whether legislative or institutional changes to labor laws (particularly in the U.S.) have severely damaged workers' bargaining power and whether the reversal of such could be a solution for mitigating technology-created labour market disruptions. More than one participant expressed the opinion that there is simply too much technology-induced unemployment to give employees any bargaining power in the current labor market and that this trend would only worsen as employers adopted more new technologies and eliminated more jobs. One participant did advance his contrarian belief that this was only a short-run problem as the retirement of the entire Baby Boomer cohort over the coming 15 years will tighten the labor market to the point of creating a labor market shortage.

The Skills Gap

The nature of work has rapidly changed over the past two decades. Several participants discussed the anxiety workers feel in trying to keep up with the skills most in demand and predict what will keep them secure in employment down the road. This anxiety, it was pointed out, can create underinvestment by individuals in their own skill base at precisely the time

when such investment is needed. According to the U.S. National Center of Education Statistics, the unemployment rate for new college graduates who earn a degree in a Science, Technology, Engineering, or Math (STEM) field was around 6% in 2009. The unemployment rates for individuals who majored the social sciences and humanities were, on average, twice as high with the rates being 12% and 13%[2], respectively.

Participants expressed varied opinions over the value of liberal arts education versus STEM training. Proponents of the liberal arts education argued that it teaches students how to be problem solvers and encourages lifelong learning – necessary when job demands are changing rapidly, whereas computer science and information technology are learned skills that depreciate at much higher rate. But, others countered, how many theater majors does the world need if they can't code or understand mathematics? Clearly the challenge is not in choosing one over the other, but in striking the right balance.

Employers' role in skill development also drew a range of opinion from Roundtable participants. It was pointed out that many employers complain that they cannot find enough employees who know how to operate and repair the high-tech robots in their manufacturing facilities or have sufficient software development skills. Several participants felt that employers' complaints over the skills gap may be disingenuous. One attendee noted that he has yet to find an employer who actually admits they could not deliver on an order or take on a new job because of a position they "couldn't fill." Many agreed that more wage inflation should be observed if there was truly a skills shortage. Employers say there is a shortage of skilled workers, but "what they mean is at the salary they want to pay. ...If they doubled the salary, they would find the candidates." But, the surplus of labor means workers don't have the bargaining power to bid for more on-the-job or employer-provided training. Employers can still more cheaply replace workers who do not have the necessary skills to do the job with someone new who does, rather than train up existing workers.

A fairly robust conversation took place over more public investment in education and loosening immigration to close the skills gap. Are these policy changes really just a subsidy to businesses who could be investing more in retraining the employees they are laying off? Or, is such skill development a traditional public good that, if left to the market, will suffer underinvestment? The majority seemed to feel more government involvement would be useful, but several different forms were suggested for the shape that involvement could take; among them: more partnerships with community colleges, reducing the cost of college and technical training to

[2] U.S. Department of Education, March 2014. See http://nces.ed.gov/pubs2014/2014003.pdf, Figure 5.

individuals, and reshaping rules so that the social externalities of layoffs were internalized more by employers.

Several examples of innovative approaches to address the skills gap in European were raised in the Roundtable discussion. For instance, the United Kingdom's public education system is going to start teaching elementary age children how to code. Finland is considering adopting a similar program to make children more interested in engineering and computer science. The STEM skills gap, however, is just one of many other issues are affecting the European economy. For instance, there is less mobility in the European labor market and it is much more difficult to fire workers there. Employment regulations in Europe, it was noted, both make companies more hesitant to hire new workers than in the United States, and provide more incentive to invest in continual- or re-training of existing workers. Unlike students in the U.S., Europeans pick a field of studying prior to starting at the university level. As a result, one participant noted, it is possible that Europeans do not sort as efficiently into fields that best suit their skills. On the other hand, it was acknowledged that this difference also produces superior vocational training in some European countries like Germany. The very nature of the European labor market being so different than that of the United States means solutions to issues in the United States may not be effective in Europe, and vice-a-versa.

The Role of Start-Ups

Even though start-ups are in the headlines every day, the U.S. is experiencing a 16-year low in terms of the number of new businesses started each year. In 1994, there were 4.1 million new businesses (less than 1 year old) that employed on average 7.5 workers. In 2010, there were 2.5 million new businesses (less than 1 year old) that employed on average 4.86 workers.[3] Over a 16 year time period, the number of new businesses decreased by 39% and average number of jobs created per new business decreased by 35%. Understanding more about the reasons behind this was highlighted by Roundtable participants as an important area of research that should be further examined.

One participant postulated that a reason for the decline in new business starts in the U.S. could be the increasing amount of student loan debt carried by recent college graduates. (Increasingly burdensome student loan debt, it was pointed out, can also discourage young and older workers from investing in education through which they will gain high-in-demand new skills.) And, the connection between declining business start ups and the recent real estate bubble and housing crisis as another form of debt should be considered as well.

[3] U.S. Bureau of Labor Statistics. See http://www.bls.gov/bdm/entrepreneurship/entrepreneurship.htm

Another participant acknowledged that some of the most successful and recent startups, like Facebook, Dropbox and Twitter, are continuing to grow which may suggest a changing dynamic in new businesses that is not due to financial reasons. All agreed that this is an important area of research and statistical measurement.

Should We Examine Occupations, Skills, or Both?

Governments, Central Banks, international organizations and companies collect massive amounts of data that are analyzed to help the government, academics and businesses make policy and investment decisions. Conversation across the two days of the Roundtable repeatedly surfaced issues where more or different data were needed. In particular, the occupational projections by the U.S. Bureau of Labor Statistics (BLS) were highlighted as a database that falls short of today's needs. Greater focus on changing demand for skills, rather than occupations, would align better with today dynamic economy. More and more of work is being deconstructed from "a job" to "tasks". Employers outsource by thinking more about tasks and less about jobs. Individuals are doing more project work for primary or secondary income. Perhaps more than any other topic at the Roundtable, there was consensus on this – the framework for measuring, researching, and decision-making about the labour market has to be built more around tasks and skills than jobs and occupations.

Moving Ahead

Events like the 2014 European Commission Roundtable on Information Technologies and Labour Market Disruptions: A Cross-Atlantic Dialogue will continue to advance informed and open-minded, cross-sector conversation about the forces driving the high adoption rate of productivity-enhancing technologies and the subsequent implications for employment, long-and short-term unemployment, and the future of work.

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