Technology and Unemployment: The Future of the Labor Market and Jobs

“We are being afflicted with a new disease of which some readers may not yet have heard the name, but of which they will hear a great deal in the years to come—namely, technological unemployment. This means unemployment due to our discovery of means of economising the use of labour outrunning the pace at which we can find new uses for labour.”

“Modern methods of production have given us the possibility of ease and security for all; we have chosen, instead, to have overwork for some and starvation for others. Hitherto we have continued to be as energetic as we were before there were machines; in this we have been foolish, but there is no reason to go on being foolish forever.”

We usually hear the narrative that all we have to do in this swiftly globalizing world is to get a good education, receive the adequate training to adjust ourselves to the current realities of the job market where ever more jobs require ever more skills, and we will be able to forge successful careers. For many Penn students this may very well be the case. Corporations in the financial sector are still willing to hire Wharton graduates in large parts thanks to the reputation of the business school. Nurses and doctors usually find suitable employment in many hospitals of the country, and most ideally at the University of Pennsylvania Hospital. Engineers have very good job opportunities if they graduate from Penn. But exceptions generally prove the rule. In this article, I will make it clear that technology does have a depressing impact on future employment, and that we, therefore, need to consider a dramatic shortening of work hours in order to prevent social crises of unemployment, inequality, poverty and social discontent.

The essential challenge, which most developed countries have to grapple with, is that the rapid technological advancement will displace millions of workers from their current jobs without any guarantees for many new jobs to be created. Companies have been investing in many labor-saving technologies, in many cases due to rising labor costs, in other cases, because machines are simply cheaper than human labor. And this point is crucial. Political commentators and economists usually frame technology as an opportunity for new jobs. It is all about celebrating Joseph Schumpeter's insight of creative destruction. Yes, new technology may lay waste to some industries. Only very few people want to remain farmers in today's society. But technology will also enable people who are inherently creative to take on many new jobs, and we can explain the rise of the middle class and shared prosperity in terms of the many new jobs that have grown out of the manufacturing industry and today in the service industry.

On the other hand, some economic theorists understood very well that new machinery will not automatically yield an increase in jobs. While it may be possible to incorporate some workers to the high-skilled profession, there is no guarantee that most low-skilled workers who lose their jobs will find suitable employment at comparable wage levels elsewhere. David Ricardo argued that the point of implementing technology is to reduce labor costs and jobs, which would generally benefit company owners and shareholders (in his time, landlords also played a major role), while “the substitution of human labor with machinery for human labor is often very injurious to the interests of the class of
laborers.’’ Ricardo assumed that the overall demand for products remains constant, or will increase less than the number of workers that are sent into unemployment. Unemployment may cause all sorts of social problems like crime, and so Ricardo was perfectly content with the idea of hiring unemployed laborers into the army to fight wars or as menial servants for rich people to, in some cases, do useless tasks. Karl Marx, who took many ideas from Ricardo, also argued that the point of machinery was to reduce the labor portion of a product, which would raise the short-term profitability of companies, while creating many unemployed people who would have a hard time finding a job, and therefore have to bid for lower wages. This is a very regular occurrence during economic recessions, when workers collectively are willing to settle for lower wages in the absence of sufficient labor demand. The salience of the Marxian analysis is that if machinery continues to become better, then the conditions of most middle and working class people will become harsher, and it will be harder for them to find a job.  

To some extent we already see the evidence for this. The economist, Jeremy Rifkin, has argued that, with the computer revolution taking over businesses, fewer jobs will be required in the economy. More recently, MIT economists Erik Brynjolfsson and Andrew McAfee document enormous innovations in law, financial services, education and medicine, which are increasingly making more workers redundant. A report by Oxford researchers finds that 45% of America's occupations will be automated within the next 20 years. The most vulnerable jobs appear to be in transportation/logistics, production labor, retail, sales, services, construction and administrative support. A second wave of automation will likely follow in management, science, arts and engineering if the development of artificial intelligence becomes more sophisticated.  

As a result of introducing technology, productivity in the US is soaring, while employment has failed to pick up at least since 2000. While the use of computers and technological innovation is continuing apace, median wages have largely remained stagnant, while declining in the recession. Standard economic theory assumes that as the economy recovers and businesses make profits, they will hire more workers, but hiring has been astoundingly lackluster. Where we do see employment growth is in the low-wage sector where automation is not occurring yet (perhaps because labor there is still cheap). A report by the National Employment Law Project finds that 60% of the jobs that were lost between 2008 and 2010 were mid-level wage jobs, while new jobs that were created between 2010 and 2011 were mostly in the low-wage sector (+3.2%) compared to mid-wage jobs (+1.2%). Employers have 

---

2. Marx had also argued that more technology and less labor means a decline in the value of commodities and a decline in profits, which will lead to a breakdown in the capitalist system. He also conceded, on the other hand, that there are counter-acting tendency to a falling rate of profit, but I won't elaborate this point in this essay. Read Karl Marx. Capital Volume 3, Part III, Chapter 14 (1894): [http://www.marxists.org/archive/marx/works/1894-c3/ch14.htm](http://www.marxists.org/archive/marx/works/1894-c3/ch14.htm).
hired an average of 148,000 people per month from June to September of 2013, but 44,000 of those new jobs came from the low-paying retail industry, including clothing stores, grocery shops, and electronic outlets. The hospitality industry, including hotels, restaurants and bars, has added 27,000 workers. As workers become more desperate in a slack labor market, their hours have been reduced, and many workers that do find jobs are hired as temporary workers with insufficient benefits and poverty-level wages.\(^8\) \(^9\) 52% of the fast food workers rely on public assistance to get by.\(^9\) 47 million Americans are currently living on food stamps.\(^9\) Employers have also increased the credential requirements for workers, expecting a bachelor's degree, where a high school diploma had previously been enough.\(^10\) The fact that wages and benefits for college graduates fell between 2000 and 2007 belies the claim that a college degree is the major determinant for getting good jobs.\(^11\) This argument does not imply that going to college is not worth it. Due to increasing degree requirements, it continues to be a prudent investment in one’s future. But the value of it has declined, because of the poor situation in the labor market.

The media has celebrated a revival of manufacturing reshoring, partly due to the fact that stagnant US wages make US workers more attractive for companies. The US has created 500,000 jobs in the manufacturing sector since 2010. On the other hand, many of those factories will actually hire a smaller proportion of the population than it used to employ in the heydays during the first half of the 20\(^{th}\) century. James Manyika, director at McKinsey Global Institute, says, “We're going to see new jobs, but nowhere near the number that some people expect, especially in the short term.”\(^11\) And since car manufacturing companies like GM slashed their entry-level wages in half from $28 to $14 an hour (entry-level wages were recently raised to $16 per hour\(^11\) ) following the government bailout and restructuring in 2009, these manufacturing jobs are nowhere near as attractive as a field of employment as they used to be. Some economists argue that the rapid decline in manufacturing employment in the 2000s, largely caused by various free trade agreements, particularly with China, has contributed to a contraction in total employment.\(^13\)

Eventually, there will not even be a guarantee that the ubiquitous retail jobs will be safe. The invention of 3D printing is affecting consumer behavior by allowing consumers to purchase their products in

---

8. Mail.com (op.cit.).
11. This education credentialing is further explored in Randall Collins. “Credential Inflation and the Future of Universities”, in The Future of the City of Intellect: The Changing American University, ed. Steven Brint (Stanford University Press), pp. 23-46. [http://home.earthlink.net/~fheapblog/id32.html](http://home.earthlink.net/~fheapblog/id32.html)
online catalogues using 3D design shops. Online retailers like Amazon seem to be winning out with every employee contributing $600,000 in value to the company, which is three times the average for store-based retailers.\textsuperscript{16} Since the 2008 crisis, J.C. Penney has closed many stores and laid off 43,000 workers in 2012.\textsuperscript{17} It announced another round of 20,000 layoffs. Other retail companies have been struggling too. Circuit City shut down, Borders closed, Barnes and Noble and Best Buy are closing stores. Kmart has closed 40% of its stores in the past decade, and Sears, which used to be in the Dow 30 back in 1998, has by now been removed from the S&P 500. Walmart has become the largest retail employer in the country with 1.4 million employees in the US, though it has contributed to a disappearance of 1.4 other retail workers for every Walmart worker that enters the community. But even Walmart is cutting corners wherever it can, reducing its workforce by 20,000 between 2008 and 2013. Automatic check out machines, which are visible in different stores, do not require any cashiers. Retailers also increased their online presence to shift their focus away from the physical retail stores.\textsuperscript{18}

Arguments that the US labor market is improving are justified by the reference to the falling unemployment rate, which is 7.3% as of September 2013. But another relevant labor market measure is glossed over: the labor participation rate, which reached its peak in early 2000 (about 67.3%), has decreased to 63.2% in September 2013 (cf. Figure 1). The men's labor participation rate has declined to below 70%, which is the lowest rate since 1948.\textsuperscript{19} Some of the labor participation trends may have something to do with the retirement of baby boomers, but this accounts for only a small part of the employment reduction. Another major reason is that many workers have simply given up looking for work, because they could not find anything. The government does not count people who are out of work and have not sought a job in the last four weeks as unemployed. Young people have increasingly decide to enroll in college rather than face the grim job market.\textsuperscript{20} A record 21.6 million Americans aged 18 to 31 have moved back in with their parents, citing fewer job opportunities, preference for schooling, and not getting married as the main reason for their choice.\textsuperscript{21} The bad prospects for the young generation do have consequences for the consumer-driven society. Americans aged 21 to 34 bought 27% of new vehicles in 2010 compared to 38% for the same group in 1985.\textsuperscript{22} Finally, the number of Americans living on disability benefits has doubled since 1995, which may also reflect a deteriorating job market rather than a sicker population.\textsuperscript{23}

\begin{itemize}
  \item \textsuperscript{17} Naomi Spencer. “U.S. Retailer J.C. Penney Cut 43,000 Jobs Last Year.” World Socialist Web Site, March 23, 2013.
  \item \textsuperscript{18} Thomson (op.cit.).
  \item \textsuperscript{19} Mail.com (op.cit.).
  \item \textsuperscript{21} Jessica Hartogs. “Study: Record Number of Young Adults Living with Their Parents.” CBS News, August 1.\textsuperscript{\texttt{http://www.cbsnews.com/8301-201_162-57596612/}}
  \item \textsuperscript{23} Plumer (op.cit.)
\end{itemize}
From a comparative perspective, the US labor market still looks better than the labor market in many other countries. In many developed and developing countries the number of youth that are unemployed has continuously increased. Among the 34 OECD countries, 26 million youth between the age of 15 and 24 were neither at work, training or education. The World Bank estimates that the comparable figure for the developing countries is 262 million. The International Labor Organization has reported an increase in global unemployment of 4 million people in 2012. In Spain, which has been hard hit by an economic crisis and austerity policies, the unemployment rate is 26%, while the youth unemployment rate is about 54%. The equivalent values for Greece are 27.6% and 55%. Unemployment has been associated with a lot of social discontent and protests. While it is true that the current unemployment crisis has a lot to do with current public policy and the bad economic environment in Europe generally rather than advances in technology, it can certainly be argued that any future revival of jobs in Europe is aggravated by global trends toward automation of work. Even China, currently the world's largest economic powerhouse, which has been able to concentrate domestic and

---

foreign investments in its territory due to its seemingly endless supply of cheap labor from the countryside, is increasingly facing more automation given the rising labor costs and the strengthening Chinese currency. The ratio of machine tools using numerical controls, which is a good measure for the level of automation, increased from 19% in 2008 to 27% in 2012.\textsuperscript{28} In response to the scathing international criticisms with regard to the suicides of 20 Foxconn workers (Foxconn manufactures hardware, including Apple I-phones), who had complained about horrendous working conditions at their plant, Foxconn executives have laid out a plan to install one million robots in the expectation of replacing thousands of workers. The company officials calculate that this measure will reduce labor strife and production costs, while the Chinese press has celebrated this announcement, because robots “can free employees from repetitive and boring work”.\textsuperscript{29}

With all these processes of technological innovation and automation of work clearly in place, I will now turn to the reasons why we should care about a possible unemployment/underemployment crisis through automation. Contemplating serious alternatives is relevant insofar as the current situation is becoming increasingly untenable. It is rather clear by now that if current trends continue, employers, as legal owners of the technology, will continue to be able to profit at the expense of their workers, and economic inequality between the rich and everybody else is likely continuing to increase. While most working people are struggling to find employment and restore the wage losses of the last few years, the billionaire investor, Warren Buffett, has profited $10 billion in the last five years after making successful investments in highly profitable companies.\textsuperscript{30} many of which have benefited from processes like a reduction in taxes, outsourcing of labor, and automation of work. Recently, it was announced that Facebook founder, Mark Zuckerberg, was awarded $2.2 billion in executive compensation for 2012, becoming the most well remunerated CEO in the country. (Facebook itself is a major technology company that many young people use.) For America's publicly traded companies in general compensation increased by 8.5% in 2012, while the Fortune 500 executives saw a 19.7% increase.\textsuperscript{31} In the meantime, median wages for US workers hover at $52,100, which is 4.4% less than in June 2009.\textsuperscript{32} It is difficult to imagine a narrowing of this socioeconomic gap unless there are alternative policies in place that regulate taxes, work and corporate governance differently.

Another trouble with automation is that as more of it happens and fewer people have jobs, overall demand for goods and services will also shrink, as many people will not be able to afford even the most essential goods and services. Most Americans are already living from paycheck to paycheck, and carry some form of debt (student loans being the most salient issue), which has been the major reason why they are still able to consume a lot of commodities. But as the debts accumulate and the creditworthiness of most Americans declines, the ability for many people to consume more goods will

\begin{itemize}
  \item \textsuperscript{30} Anupreeta Das. “Buffett's Crisis-Lending Haul Reaches $10 Billion.” Wall Street Journal, October 6, 2013. \url{http://online.wsj.com/news/articles/SB10001424052702304441404579119742104942198} Buffett also benefited from the fact that the government made bailout guarantees to financial companies like Goldman Sachs or JP Morgan, in which Buffett was heavily invested.
  \item \textsuperscript{31} ND TV. “Facebook Founder Mark Zuckerberg Paid Record $2.2 Billion Dollars as Salary: Report.” October 24, 2013. \url{http://www.ndtv.com/article/world/facebook-founder-mark-zuckerberg-paid-record-2-2-billion-dollars-as-salary-report-436613}
  \item \textsuperscript{32} Robert Pear. “Median Income Rises, But Is Still 6% Below level at Start of Recession in '07.” New York Times, August 21, 2013. \url{http://www.nytimes.com/2013/08/22/us/politics/us-median-income-rises-but-is-still-6-below-its-2007-peak.html?_r=0} \end{itemize}
also decline. Some people will argue that American businesses can circumvent this problem of effective demand by increasing their exports. The problem with that reasoning is that if the automation hypothesis holds, then even the countries with the cheapest labor in Asia and Africa will eventually have to turn toward automation, which will simply replicate the effective demand problem on a global scale. As effective demand becomes limited, many businesses will have to merge (as they already are), and/or slash the prices for goods, in many cases below the cost price. That will drive them to further innovate and drive down the cost of production. They will lay off more workers while depressing more demand, and the vicious cycle will likely exacerbate.  

Solutions

I will now turn to discussing potential solutions to the automation trend. The challenge of technology certainly produces resentment among workers, who understand that their jobs are threatened. Some workers in unionized plants, such as the dock workers of the East Coast Longshore union, have been able to work out automation agreements with their employer. In such agreements, automation will still occur, but workers will be assigned to different jobs in the same company. This comes in response to the implementation of a semi-automated container terminal in Norfolk, Virginia back in 2007, requiring fewer workers than before. Similar developments are already underway in Bayonne, New Jersey, and in Jacksonville, Florida. But these automation agreements are few and far in between, because there are only very few workers that are protected by a union that is sufficiently strong to grant them those kinds of agreements, though it is hoped that there will be more to come in the future.

Another solution usually involves the creation of new jobs and the establishment of new industries. This idea comes from Schumpeter's idea of “creative destruction”, which I had mentioned earlier. While much of our economic history has plenty of examples of new industries that came into being as a result of technological innovation automating certain labor processes, it is questionable where the significant sources for new job creation are supposed to be today. The media reports about the exploration of gas drilling, which can potentially create thousands of jobs. Besides the damage that it might inflict on the environment, I very much doubt that such an industry will significantly increase employment, and especially not employment in all areas. Health care and education are usually the areas where most policy-makers pin their hopes on. While I would say that it is generally true that much of job creation has been focused in these two sectors, I would also point to some notes of caution. The health care sector employs millions of people, but many of them work in the insurance or pharmaceutical industry, doing much of the paper work and bureaucracy that makes the US health care system the most expensive system in the world. These enormous cost pressures for the overall population will likely lead to needed cost reduction (as implied by Obamacare), which will threaten these health industry jobs. Another threat to the nursing staff more directly comes from the takeover of hospitals by private equity firms, who tend to cut costs and increase the workload of the remaining nurses to raise the hospital’s bottom line. More directly to my topic, automation will also hit the

---


35 For example, Cerberus Capital, a private-equity firm had bought up the troubled Catholic hospital system Caritas in 2010, and ever since then challenged the nurses' pension plans, closed down units, laid off nurses (especially with the most seniority), and threatened hospital closures. A Congressional oversight committee says that the private equity takeover of the hospital system “led to a precipitous drop in support personnel.” Read Mark Brenner, and Mischa Gaus. “Nurses Say Private Equity Firm Starving Massachusetts Hospitals.” Labor Notes, December 20, 2011. [http://www.labornotes.org/2011/12/nurses-say-private-equity-firm-starving-massachusetts-hospitals](http://www.labornotes.org/2011/12/nurses-say-private-equity-firm-starving-massachusetts-hospitals)
administrative personnel of those insurance, pharmaceutical companies and hospitals. As health care companies become forced to implement cost reductions, they will try to reduce administrative labor. The insurance industry has already reduced administrative overhead costs by $350 million between 2010 and 2011.\(^{36}\)

The education sector can be roughly divided in two categories: the K-12 system and the higher education system. For the K-12 system, austerity, school closures and staff layoffs have become the rule in the poorer school districts (e.g. Philadelphia), while a few wealthier school districts are still doing okay, which implies that the level of job creation will be fairly limited in the overall K-12 system. The higher education system is still on a different level playing field, because much of the funding source comes from student tuition (not from state funding\(^{37}\), where severe cuts had been the rule for the last 20 years), which is pretty much the highest in the industrialized world, even for public colleges. As a result, many universities and colleges have created jobs in their communities (Penn is the second-largest private sector employer in Pennsylvania\(^{38}\)). This college tuition inflation, which is beneficial to the colleges and has been double the rate of normal inflation, has been largely supported by the federal government's student loan programs. College tuition inflation is also driven by the fact that people are forced to go to college in order to just qualify for entry-level positions at many companies. Obviously, the positive hiring trend of many colleges really depends on the continuation of the student loan bubble. But any bubble has to burst, because many more students will have to default, even though students are not supposed to be able to default by law.\(^{39}\) And, finally, the implementation of mass open online courses (MOOC), which are being pioneered by colleges such as Penn, will likely have a depressing impact on future college employment by favor star professors over the mass of teaching personnel.\(^{40}\)

Needless to say many building administrators, security guards, janitors, food service workers etc. will also be made redundant in a virtual class room. Creating a new industry that could accommodate the mass of workers, who will lose their jobs due to automation, would be the ideal solution, but I do not foresee any major industry that could absorb all those workers.

A third solution would be to acknowledge the reduced need for workers and tax the remaining workers to pay welfare for the maintenance of the growing under class. The remaining workers (usually certain professionals and managers, who are most resistant to automation due to the difficulty of replacing them, such as doctors or engineers) toil away as usual, but will have to pay more taxes in order to keep the mass of unemployed people from becoming very angry and discontent. Technically, this solution is not difficult to consider, because the few workers that remain will in real terms be significantly more productive than they currently are. This implies that the workers' living standard might not change at all or might even continue to improve, even as taxes are going up. This solution may be difficult to contemplate in America, though we see some hints of that with the doubling of eligible food stamp recipients over just the last five years. The Europeans had been much more forceful on this question.


\(^{37}\) State funding has been cut continuously for the last 20 years.


As many competitive industries moved more toward automation and outsourcing in the 1990s and 2000s, many European governments granted huge severance packages to the laid off workers, and sent many of them into early retirement. The objective, of course, was to reduce the labor supply, which would supposedly retain enough jobs for the younger generation. I would say that the European solution worked, but with enormous costs. European employers have become very resentful of the high labor costs and taxes they have to fork over to the government to pay for these early retirements. Many European governments are, in addition, struggling from a sluggish economy, growing unemployment, rising welfare payments, and rising debt levels, which may put that policy into question for now (the trend in Europe points to a rising retirement age). While I see the benefits of the welfare approach, I object to it for two reasons: first, I do think that the remaining workers might become resentful, and since they will likely have some influence in the government, they will lobby to end these welfare payments, as it has occurred in America. Second, it is simply unfair to distribute work so unequally if capable people have to spend their time in idleness. Normatively speaking, as long as there is some work that has to be done in society's interest, it has to be shared broadly. In Keynes' words, “[W]e shall endeavour to spread the bread thin on the butter-to make what work there is still to be done to be as widely shared as possible. Three-hour shifts or a fifteen-hour week may put off the problem for a great while.”

This leaves me with the fourth and, in my opinion, only really viable solution. Over the long term, policy-makers, businessmen and workers have to seriously consider shortening the work week in order to accommodate the many workers who are made redundant in the automation process. It has the advantage over the previously discussed solution in that it aims at equally distributing the necessary labor that has to be carried out in order for the society to function. Shortening the work week used to be the major rallying cry of the various working class movements that grew out of the 19th century class struggles. Workers realized that as new technology was implanted in the workplace, the value of work that they contributed to their employer increased because for the same amount of work hours, the workers were increasing their output. Labor unions demanded that this increase in output should be shared between the workers and their employers by granting the workers more wage increases, more vacation, more health/retirement benefits, and fewer work hours. It was, above all, the reduction of work hours, which initially mattered the most to workers, because long work hours could stretch from 10-16 hours per day and were very excruciating and painful to many workers. Workers organized strikes and were able to attain shorter work weeks. In 1905, many industries were lowering work hours to 8 per day. Ford Motor Company cut its workers' work hours to 8 and doubled their pay, resulting in growing productivity and profits. The Fair Labor Standards Act of 1937 passed by Congress provided the legal framework for standardizing the 40-hour work week and regulations for overtime work.

While these reforms to attain a 40-hour work week have largely been a success, it is a real shame that no more reforms of this sort have been implemented ever since. It is as if 40 hours a week would generally be acceptable to most working people, because it left them enough time to recuperate from a day of work. It also gave most workers two days in the weekend to pursue recreational activities or spend time with their families. However, there will be no political entity that will push for a further

41 Usually in the mid-50s instead of the legal retirement age of 65.
reduction in work hours, even as technological progress makes it possible and socially necessary, because workers are content with 40 hours and employers generally want to extract more labor from their workers. This cultural fixation on a 40-hour work week is increasingly becoming a detriment to the US workforce. Many Americans still work 40 hours a week, and they would be even glad to pick up on overtime, in many cases so they can pay their bills (and that is also the case for upper middle class people).

But to be empirical, there does appear to have been a reduction in work hours in most OECD countries. French workers have seen their average annual work hours reduced from 1,523 in 2000 to 1,479 in 2012. France had implemented a 35-hour work week by law.\(^45\) German workers have reduced their work hours from 1,471 hours to 1,397 hours in the same time period. During the recession, the Germans practiced a short-work policy, which impelled companies to reduce the hours of their workers during an economic downturn rather than simply fire them (which is the preferred option in US companies).\(^46\) It will be interesting to observe that model prevail, when structural forces of technological unemployment will create a need to more permanently reduce work hours. Remarkably, even the US workers, who are usually above OECD average in work hours, saw on average a decrease of work hours from 1,836 hours to 1,790 hours in the last twelve years.\(^47\) The International Labour Organization, on the other hand, is taking a more longer term perspective and reported an increase of work hours of US workers of 10% between 1973 and 2010 (cf. Figure 2).\(^48\) In the US, the unions are generally weaker than in Europe, and so are left-wing political parties, which had given employers more power to push more hours on their workers. The threat of outsourcing or automating jobs also works as a viable threat against employees to have their work hours remain constant, and in some cases, when employers can get away with more overtime for employees, increase. The campaign for a shorter work week, therefore, is becoming more salient in the US than ever before.


Average Yearly Work Hours per Employed Worker. *Until 1990 West Germany; ** all workers

Even from a purely economic view point, it makes no sense to keep workers so long at their workplace, because the per-hour productivity of workers usually decline with more work hours (cf. Figure 3). Employers have generally been opposed to the the reduction in the work week, because they fear that it will make the US labor force less competitive, and falling profits resulting from a shortening of the work week may deter investments. Both arguments are not accurate. There are countries like France and Germany, where workers work even fewer hours, and there have been few complaints thus far about the ability of those firms to compete globally. Admittedly, some European firms do make complaints about the short work hours, but there is no indication that they become less profitable as a result of those shorter work hours. The second business objection about falling investments is even less credible because investment is a function of consumer demand, not vice versa. As demand goes up, so do investments. If a reduction in the overall work hours coupled with sustainable wage increases is introduced, then demand for consumer goods will likely increase, and only ideologically-driven businessmen would not seize the opportunity to order an increase in output and risk losing customers and money.
Another practical objection to shorter work hours is that only the most skilled workers would be capable of seeing their work hours shortened due to their relatively high productivity, but not the less skilled workers, whose productivity is significantly lower. So a highly skilled machinist will be producing $60 an hour in value, and at his current wage of $20 a reduction of work hours in half would imply a doubling of the hourly wage to $40 in order to maintain the same standard of living.\footnote{I am picking these numbers for simpler calculation purposes. It will, of course, be difficult to immediately cut current work hours in half.} The employer share falls from $40 to $20 per hour worked, but assuming that this is a national trend, the employer will continue to make a profit. Even though his profit will only be half as much as previously, he will continue to stay in business. On the other hand we have a pizza shop worker, whose labor is considered unskilled. He can only produce pizza at the value of $15 an hour, but his wage is $8 an hour. At the current rate, the employer receives $7 an hour from his worker, but we implement the same reduction of work hours in half and a doubling in wages. Now the pizza shop employee will earn $16 an hour, and if the price of the pizza does not change, then the employer will operate at a loss of $1 per hour of labor. This scenario is, of course, unrealistic, and the employer will have to hike prices dramatically. This trend might be replicated across the economy. A wage-inflation spiral will naturally not be beneficial for any party, and therefore this question can not easily be addressed at the firm-level. In this case, the society as a whole has to make a decision how to allocate resources across the society.

If the society thinks that pizza shops are equally as important as factories that churn out machines (which most people will agree upon), then the government should be entitled to transfer resources from high-surplus producing workers (i.e. very productive workers) to the low-surplus producing workers (i.e. less productive workers). This may take the form of direct government subsidies or the tax system. In a sense, this proposal is not entirely utopian. Under the Rehn-Meidner model, a macro-economic policy framework, which was articulated by two Swedish economists, Sweden implemented sector-level collective bargaining during the post WW II era. The objective was to create labor agreements that would ensure a transfer process from highly productive workers to less productive workers, and it worked well for a few decades until it was dismantled by a change in the global macro-economic
situation.\textsuperscript{50} In the US, this model may be more difficult to implement, and the existence of strong labor unions are presupposed. Currently, only 11.3\% of the US workforce is in a labor union\textsuperscript{51}, and the challenge will be to find ways how to reinvigorate them. On the other hand, the redistribution of incomes via the government is a very common tool, though not as systematic as the collective bargaining approach. The government programs include enormous agricultural or military subsidies, which are two main staples of the US economy. The question will be how to bring a stymied Congress to support any substantial legislation at this point, even legislation that is much less ambitious than a shortening of work hours.

But there is another challenge, which is particularly irritating in the American context: as I see it, there is a two-part division of the American workforce. On the one hand, we have many clerical, managerial and white-collar middle-class employees, who are mostly working the 40 hours. In many instances, these employees even take on overtime as well, especially as many companies have been downsizing widely. Downsizing in firms creates a demand for labor, which is then filled by the remaining employees. On the other hand, we have a large segment of the workforce, which is precariously employed, especially in low-paid service occupations -- such as in hospitality, retail and restaurants -- where employers are not giving their workers enough hours (not to speak of enough hourly wages) to live on. So these workers usually resort to taking on multiple jobs if they can handle it. A combination of multiple odd jobs usually guarantees that they work more than 40 hours a week, while having to find arrangements for taking care of their children and completing their household tasks.

The enormous advances in technology could very clearly help out workers in both the middle-class and the lower-class category, though the employers seem to be currently cleverly using them against the workers. Rather than allowing a reduction of the overall work burden, the technology is used to slacken the labor market so that more workers have to compete for ever fewer jobs, which tends to bid down wages and keep the work hours stable. On the other hand, the irony is that the Obamacare reform may have a reducing impact on work hours. In that reform many employers that have previously not provided health insurance to their workers now have to provide it if they work above 30 hours a week or pay a fine in 2015. The irony is that some employers had shifted their employment scheme by cutting work hours to less than 30 hours so they can forgo paying insurance for their workers. So far, though, part-time employment had remained relatively stable at about 20\% of the workforce since 2010.\textsuperscript{52} If the law holds, it might mean that many workers will see their work hours shortened, though in this context, in my opinion, the ramifications for the workers will largely be negative. A proper shortening of the work week assumes that workers' living standard will remain the same, which will mean that either prices for goods have to sharply decrease (very unlikely) or that workers will have to be paid more per hour. This is not an outlandish claim, assuming that worker productivity continues to increase with new machinery, as it currently does. Profits for many companies will likely drop somewhat, though given the high profitability of many large companies, it can easily be argued that these large surpluses for wage increases do exist. The problem with Obamacare is that if workers will have fewer hours, then they won't get paid more, and the demands for more social program or the likelihood of social unrest will increase. On the other hand, this might imply that the labor market will tighten up somewhat as more employees are needed if current workers do work less, which might bid


up wages. It is unclear what the likely outcome of Obamacare is going to be, though I veer more to the negative side. This will still not address the major, long-term challenge of automation, which will continue to advance and reduce the demand for workers.

The final point I want to address is what it might take to implement a dramatic shortening of the work week. Some people believe that the main battleground will remain at the workplace, because after all, this issue is taking place in the workplace. Workers have to strengthen their organizational ties, and it is the old wisdom of the Trotskyists that if every worker would carry out a general strike at the same time, it could overthrow the current regime and allow the workers to dictate their conditions for policy-making. Historically, there were not many successful precedents for a general strike happening, though it is true that some countries have more militant workers than others (e.g. France) and they do get some proposals passed politically even with opposition from businesses. The problem with that approach is mainly that it is unrealistic to accomplish. I think that there is a more pragmatic solution. This involves an alliance of workers, labor unions and the broader community. The broader community may involve small businessmen (who feel threatened from big business), churches, religious institutions, non-profit organizations, civic groups, the unemployed, and maybe even some wealthy people (who are more farsighted). These enumerated groups also feel the pressure of an economic system that does not work for them, and they have to collectively formulate policy ideas, and pressure political leaders to take up this question of a shortening of the work week. Creating this pressure will be no easy task, but history usually tells us that if the political and economic system has become so blatantly harmful for too many people, there is a strong push back from the public in the form of mass protests. Franklin Roosevelt was significantly more confident in pushing for his New Deal reform when an alliance of unemployed people, workers, and labor organizations were out on the street supporting him and demanding it.\textsuperscript{53} The same principle applied to Lyndon Johnson’s support of the Civil and Voting Rights Act, which happened under pressure from the civil rights movement.\textsuperscript{54} The expectation is that we will need a systemic strategy to push for shorter work hours today.

In order to prevent a future of wide-scale unemployment and misery amid technological progress and wealth inequality, we have to seriously consider a shorter work week. While Keynes had warned about the gloomy prospects of technological unemployment, he did acknowledge the greater possibility of pursuing leisure and non-material interests. He wrote, “Thus for the first time since his creation man will be faced with his real, his permanent problem-how to use his freedom from pressing economic cares, how to occupy the leisure, which science and compound interest will have won for him, to live wisely and agreeably and well.”\textsuperscript{55}

\textsuperscript{55} Keynes (op.cit.).