

Inequality and Work in the Second Machine Age

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ABSTRACT

The digital revolution associated with the Second Machine Age is likely to create major public policy challenges. Inequality in particular, already back at record levels, will be further increased by technological progress and unemployment is likely to rise at least in the transitional period as digital agents become more and more capable. Against this backdrop, policy-makers should think about measures to reduce inequality, incentives to re-allocate the remaining work and ways to safeguard meaningful employment with a public job guarantee.

THE CHANGING PERCEPTION OF INEQUALITY

The title for the Intellectual Publication of the Year 2014 should probably go to Thomas Piketty for his seminal book, *Capital in the 21st Century*, and the way it changed how we discuss inequality. There is much speculation about the underlying reasons for the extraordinary, and unexpected, success of the volume. Fortunate timing is certainly one reason. Along with the fact that the ground was rather well prepared by the likes of Joseph Stiglitz, Emmanuel Saez, Tony Atkinson, Robert Reich, Richard Wilkinson and Kate Pickett to name just a few. However the really important point is that Piketty's book has brought inequality into the political mainstream and started a discussion about fairness.

Piketty's core argument, that the return on capital is structurally greater than economic growth leading to ever increasing inequality, has triggered an important shift in perception. The general view of inequality used to be that its existence is the norm, even necessary, as the result of a meritocratic society. Not everybody can perform at the same level so inequality is the fair reflection of performance differences. Additionally, one must not redistribute income and wealth within society as this would lead to disincentives for high performers and, as a result, society as a whole would suffer.

The simple and convincing argument about the structural nature of inequality in capitalist systems has shaken this view to the core. Most people are now open to the suggestion that inequality is not the fair outcome of different levels of performance but, moreover, the result of a distributive system that is fundamentally flawed and designed to favour a few people at the top. From this new point of view the empiric evidence is also seen in a rather different light.

Take executive pay for instance. According to the AFL-CIO, the CEO to worker pay ratio in the US rose from 46 to 331 between 1983 and 2013. There is simply no credible case to make that

this astonishing increase is a reflection of average CEO productivity growing more than seven times faster than that of workers over the last thirty years.

Then take a look at global inequality. The *Credit Suisse Global Wealth Report 2014* states that "taken together, the bottom half of the global population own less than 1% of total wealth. In sharp contrast, the richest decile hold 87% of the world's wealth, and the top percentile alone account for 48.2% of global assets". The authors of the study also worry about future growth as these levels of inequality "have always signalled recessions in the past". This is due to the circumstance that the economy needs supply and demand and that aggregate demand is suppressed if more and more income and wealth moves towards the top. The propensity to spend is much higher at the lower end of the income scale and the auxiliary mechanism of substituting income with debt to support aggregate demand also seems to have run its course.

Even though inequality is back at an all-time high and its perception has changed, we have yet to see a major political reaction on either side of the Atlantic. But the more empiric evidence becomes available the more entrenched the perception of unfairness is likely to become. The genie is out of the bottle and it will be difficult to put it back. Therefore, the major contribution of Thomas Piketty to the political debate is not just that $r > g$ but also that inequality = unfairness.

THE DAWN OF THE DIGITAL REVOLUTION

Another ground-breaking book published in 2014 was *The Second Machine Age: Work, Progress, and Prosperity in a Time of brilliant Technologies* by Erik Brynjolfsson and Andrew McAfee of the Massachusetts Institute of Technology (MIT). Following the First Machine Age, which was the industrial revolution that made much manual work obsolete through the introduction

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of new machinery, we are now at the beginning of the Second Machine Age. In this new age, the maturing of digital technologies will allow for the automation of many cognitive tasks leading to similar social and economic impacts as those during the industrial revolution. The authors' analysis is based on years of research and a wide variety of real-life evidence showing how new technologies are penetrating our economic and social lives. Following these arguments it is not hard to believe that we are, indeed, at the brink of a period of accelerated innovation responsible for fundamentally changing the social and economic fabric of our society.

They key problem is that these technology-driven developments are certain to further increase existing inequalities and create new ones at a time when, as Piketty has shown, we are already back at unsustainable levels. What Brynjolfsson and McAfee's analysis suggests is that even though the first impacts of the digital revolution have already become visible over recent years, we have by far not seen the worst yet. New developments likely to accelerate social polarisation are just about to kick in with full force as the economic and social impact of digital technologies accelerates.

Talking at the headquarters of Google, Erik Brynjolfsson argued that: “There's kind of a dirty secret in economics that not many people recognize (...). While technology can grow the economic pie (...) there is no economic law that says that everyone's going to benefit from those technological gains. (...) It could be 50% or more of people who don't share in those benefits, and the data suggests that in the past 10 to 15 years, that has been the pattern that has been emerging. Technology has been making the pie bigger, but most of those benefits have been accruing to a relatively small group.”

Labour markets in particular look exposed to the forces of progress. Many 'middle class' jobs will be vulnerable as a result of technological change, either through the possibility that white-collar jobs themselves can be automated, or that employers are at the losing end of global competition as markets become more polarised. As Brynjolfsson and McAfee wrote: “Digitization creates winner-take-all markets because (...) with digital goods capacity constraints become increasingly irrelevant. A single producer with a website can, in principle, fill the demand from millions or even billions of customers. (...) Every digital app developer, no matter how humble its offices or how small its staff, almost automatically becomes a micro-multinational (...)”

If you look at the problem of inequality through the combined lenses of Piketty – who exposed deep-seated structural problems in the primary distribution system – and Brynjolfsson & McAfee – who showed that the increasing impact of digital technology will reinforce these problems and even create new ones – you discover a major political problem. When large parts of the middle classes are threatened with unemployment through no fault of their own, the level of political pressure will rise. At times in which the political process is more and more focussed on the short term, it is dangerous that long-term policy thinking is widely neglected.

My argument here is that these circumstances will force new policy thinking to ensure that the

undoubtedly great benefits of the digital revolution are spread evenly throughout society and its detrimental effects minimised. It is much better being in a position to shape the process than being exposed to unmitigated forces of change. So what could the parameters of this new policy thinking be?

THE ECONOMICS OF WORK IN THE SECOND MACHINE AGE

A significant number of tasks embedded in white-collar jobs can and will be automated in the years ahead. Whether you think about secretarial work, text analysis, or even more complex work such as the processing of new research data – what IBM’s Watson supercomputer already does – there are significant changes appearing on the horizon. Studying the structure of work in the US, Carl Benedikt Frey and Michael A. Osborne of Oxford University came to the conclusion that about 47 per cent of total US employment is at risk. Even though there is a debate about the long-term consequences of the digital revolution, there is little disagreement that there will be significant disruption in the short term.

The Pew Research Centre canvassed almost two thousand experts about their expectations for the coming decade, until 2025, and even though predictions about the end state vary, there seems to be little disagreement about the way of getting there: “Half of these experts (48%) envision a future in which robots and digital agents have displaced significant numbers of both blue- and white-collar workers – with many expressing concern that this will lead to vast increases in income inequality, masses of people who are effectively unemployable, and breakdowns in the social order. The other half of the experts who responded to this survey (52%) expect that technology will not displace more jobs than it creates by 2025. To be sure, this group anticipates that many jobs currently performed by humans will be substantially taken over by robots or digital

agents by 2025. But they have faith that human ingenuity will create new jobs, industries, and ways to make a living, just as it has been doing since the dawn of the Industrial Revolution.”

The variation in responses is not due to disagreements about the short-term effects of the digital revolution on economies and workers. It is rooted in the question of whether economies can repeat historic patterns and eventually create more jobs than are being destroyed by technological change. However, even if this positive scenario becomes reality, there is the danger of the creation of swathes of transitional unemployment and a significant role for public policy to shape the process so the sombre scenario of social breakdown does not become a reality.

When jobs are replaced or job descriptions change beyond recognition, let alone the task of creating completely new work, a proactive educational policy is essential. This is common sense and should lead to an immediate rethinking of what, today, passes as suitable educational policy. Yet there are some more challenging public policy questions that are not currently addressed. Two areas in particular need attention: the allocation of existing work, and guaranteeing new work.

THE ALLOCATION OF WORK AND A NEW JOB GUARANTEE

In a sense we are back in 1930, at a time when John Maynard Keynes wrote about *The Economic Possibilities of Our Grandchildren*. In his seminal essay, he predicted that economic progress would mean that for the first time, future generations would be freed from taking care of pressing economic needs. He was certainly correct about the degree of economic development, but wrong about the 15-hour working week that he predicted. Keynes believed that given most economic needs would be fulfilled, people would opt for more leisure time rather than more income which is subject to diminishing marginal returns.

This voluntary reduction of working time has not happened for several reasons, but two particularly seem to be related to inequality, as Larry Elliot of *The Guardian* explained. Robert Frank, in an essay revisiting Keynesian ideas, suggested that Keynes failed to understand context as people take as a reference point not their absolute needs but their relative position to their peers. So one argument is about “keeping up with the Joneses”. If my neighbour buys a new car I tend to want one as well and hence am likely to work more to be able to afford it. As a result, widening inequality induces people to work harder in order to keep up with their peers.

The second argument is that our extraordinary levels of inequality mean that many people at the lower end of the income distribution are simply not in a position to take care of their basic economic needs and are therefore forced to work long hours. Elliott succinctly summed these two arguments up when he wrote: “Keynes’s big failure was to recognise that distribution matters. The economic problem will not be solved while a quarter of the world lives in abject poverty, nor

while a good slice of those living in developed countries are not sharing in economic prosperity or feel they need to spend longer and longer on the treadmill just to make ends meet.” So, in effect, reducing inequality would help creating incentives for people to work fewer hours.

Reducing inequality should be the backdrop for more focussed actions to directly address unemployment issues. One policy should be incentivising the re-allocation of work among more people. The co-founder of Google, Larry Page, seems to think along the same lines when he recently suggested, during a fireside chat with venture capitalist, Vinod Khosla, that we should all work less or split jobs among people. Given that our material happiness is now quite easy to achieve (in theory), Page stated that there is a social problem that is not recognised. So, setting new policy incentives for companies to re-allocate work while at the same time increasing individual incentives to work less by reducing inequality is a policy direction that should be seriously considered.

But what about people who cannot benefit from a re-allocation of work and still find themselves unemployed? Brynjolfsson and McAfee, in line with the Credite Suisse report, also warn about defective aggregate demand in the economy. They stop short of making a direct policy recommendation but suggest that the idea of a basic income should be revisited, while acknowledging the fact that work also has important social purposes beyond just earning a living.

Without going into the details of the discussion about the basic income, there are at least two major drawbacks. The first, also acknowledged by Brynjolfsson and McAfee, is that work does not just generate income but is also a source of fulfilment, self-esteem and an important part of our daily social interactions. This important function cannot be replaced by just handing out money so people can remain consumers. The second aspect is that a basic income is paid to everybody, including the winners in the brave new digital world, and

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therefore represents an inefficient use of scarce public resources.

A much more focused way of addressing unemployment would be to take the basic idea of the European Union's "Youth Guarantee" and apply its principles to the general labour market. The Youth Guarantee makes a concrete offer for a job, apprenticeship or traineeship to unemployed youths across the EU, and thus seeks to eradicate stubbornly high youth unemployment. There is no apparent reason why the principle and the various implementation lessons currently being learned across Europe – good and bad – cannot be transferred to the wider labour market.

There could be a public job guarantee paying a salary at least at the basic income level so that everyone looking for a job could find one. This would also concentrate public resources onto the people most in need. In addition, a job guarantee would make sure that the social functions of work remain intact and that people are not just being protected from economic poverty but also from socially poorer lives.

There would also be another public policy benefit. Given that governments would guarantee employment, they could set incentives in a way that thus far underserved areas receive

the labour capacity they require. Against the backdrop of ageing societies, the whole area of old age and health care is likely to require more labour in the future. A public job guarantee could make sure that the supply of workers keeps up with rising demand in this area. There is also the added benefit that care and other personal services are areas that are less likely to be significantly affected by the digital revolution. Of course, one can imagine robots performing certain aspects of care, but at its heart care is a service that relies on emotional human interaction. This will be one of the areas where human labour will remain important.

Another area of additional employment could develop in the non-profit sector, which is usually nurtured by governments. Jeremy Rifkin, in his book *The Zero Marginal Cost Society*, asserts that "while fewer human beings will be required to produce goods and services in the market economy, machine surrogates will play a smaller role on the Commons for the evident reason that deep social engagement and the amassing of social capital is an inherently human enterprise. The very idea that machines might someday create social capital is not entertained by even the most ardent technophiles." In essence, activities that rely on human interaction and social capital will remain areas of employment. Incentivising and supporting job creation in these sectors is an important task of public policy, while at the same time the capacity for tackling pressing social issues can be increased.

The idea of a public job guarantee is not new. The Buffer Stock Employment Model and rethinking the government as an "Employer of Last Resort" are well established. A job guarantee could be an effective counterbalance to employment shocks as Randy Wray suggested: "the guaranteed public service job would be a counter-cyclical influence, automatically increasing government employment and spending as jobs were lost in the private sector, and decreasing government jobs and spending as the private sector expanded. It would therefore remain a

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permanent feature of our economy. In effect, it would act as a buffer stock to put a floor under unemployment”. Of course, the implementation of such a model would create its own problems, but the general thrust goes in the right direction.

Incentivising the re-allocation of work combined with a public job guarantee could be a solution against new (and old) unemployment, especially when additional steps to reduce inequality are taken at the same time. These are policy areas that need to be seriously reconsidered.

WORK, COLLABORATIVE COMMONS AND LEISURE TIME

What also requires new policy thinking is that time will no longer be split simply between work and leisure. Enabled by technology, we have witnessed the breakdown of traditional patterns of production and consumption and the rise of new activities. The labels “sharing” or “peer-to-peer” economy and “open source” describe new ways of creating and distributing value that does not fit easily into the traditional economic model. The emergence of these activities is a key driver for the blurring of the traditional boundary of work and private life that many people experience on a daily basis. Economically speaking, work used to be the trading of leisure time for paid labour in order to earn a living. This distinction is becoming much less meaningful.

However, rather than representing the eclipse of the existing capitalist economic system, as Jeremy Rifkin argued, these new activities are more likely to sit – and also bridge the gap – between work and leisure. Peer-to-peer or share economy business models exist with the intention of using the approximation of production and consumption through the internet and nascent internet of things for the purposes of profit. The open source movement on the other side of the spectrum gives its goods away for free for the benefit of everybody. Often there are complementary business areas that develop –

for instance the bespoke customization of open source software – but at the heart of the open source idea is that people create products of value in their spare time and make them available for free.

These two examples show how the creation of economic value is evolving and how the profit maximisation aim is no longer the dominant motivation in all areas of economic life. These new sectors are gaining in importance and economic dynamics are shifting. What this suggests is that not only must technological progress and its impact on work and inequality be rethought, but we also need to re-envisage what we actually mean when talking about the economy and private life, as well as the boundaries that separate the two. It is important to maintain limits. However, these boundaries are not the traditional ones, and public policy must develop answers for the new questions the digital revolution raises.

CONCLUSION

We are only at the beginning of the Second Machine Age and the full implications of the digital revolution will only unfold in the years to come. It is, however, important to look at the changes likely to happen from the situation we are currently experiencing. The prospect of new and rapidly-increasing inequalities becomes particularly worrying when combined with the fact that we are not starting from a low level, but instead from the highest levels of inequality in living memory. Our current situation is already widely perceived as unfair and we are already witnessing detrimental economic effects. Nobody can accurately predict how things will unfold, but if only a small part of the well-founded predictions become reality, we will be faced with major political and social problems.

It is therefore imperative to think about sustainable policy solutions in order to be prepared to minimise the adverse effects and take full

advantage of the extraordinary opportunities of the digital revolution. This paper presented a first attempt to analyse the interplay between inequality, work and technological change. I have also suggested some broad ideas for how to think about the policy challenges ahead.

None of this is set in stone and the political debate has only just begun. It is important though to start somewhere and bring these issues into mainstream policy discussions. What all too often passes as a governmental “digital agenda” seems woefully inadequate in light of the major challenges that lie ahead. As Martin Wolf accurately observed in the *Financial Times*, the way in which the digital revolution will unfold is ultimately a question of political decisions:

“The rise of intelligent machines is a moment in history. It will change many things, including our economy. But their potential is clear: they will make it possible for human beings to live far better lives. Whether they end up doing so depends on how the gains are produced and distributed. It is possible that the ultimate result will be a tiny minority of huge winners and a vast number of losers. But such an outcome would be a choice not a destiny. A form of techno-feudalism is unnecessary. Above all, technology itself does not dictate the outcomes. Economic and political institutions do. If the ones we have do not give the results we want, we must change them.”

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