DELPHI ECONOMIC FORUM

CENTER FOR THE FUTURE OF WORK

FUTURE OF WORK SPECIAL ISSUE, #1

"VISIONS FOR AN INCLUSIVE FUTURE OF WORK"

INSIGHTS BY INTERNATIONAL EXPERTS

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I hope you enjoy reading the Special Issue and please stay tuned in order to learn more about future inititives of the Center for the Future of Work.

Yiannis Thomatos

The decision to found the "Center for the Future of Work" in 2021 has so far put us on an incredible journey filled with challenges and the genuine excitement which comes with a step in the unknown. At the same time, it always felt as a very natural continuation to the work and mission of the Delphi Economic Forum.

Since the beginning, we have envisaged the Delphi Economic Forum as a platform from which to embark on addressing the greatest policy questions and emerging trends of our time. More than a gathering of bright minds once a year, we like to think of the Delphi Economic Forum as a permanent resource for out of the box thinking in a complex and often frustrating world.

And indeed, this is a time where centuries-long certainties subside and substituted by ambiguity and anxiety. One of the most all-encompassing issues, affecting literally everyone, is the issue of work and how it is organized, in order to maximize happiness, economic growth and ultimately, a balanced and healthy society. Sparked by the pandemic, but really underlying for years, this great human debate is just starting. And we sincerely hope that the Center can, in the years to come, contribute in a meaningful and essential manner in helping to achieve the right balance.

In working for this Special Issue we had the great fortune to be partnering with Bruegel in Brussels and international experts from the Graduate Institute of International and Development Studies in Geneva, as well as other European universities and policy centres. It is a source of real pride to have the opportunity to work together with institutions of such high calibre. It also serves as a testament of our ambition and our commitment to excellence. I would like to congratulate all of the contributors who helped put together such an astute, comprehensive and wide-ranging Special Issue.

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2030: ANCHORING THE 'D-WORD' IN OUR POST-WORK FUTURES

Marily Mexi

The year is 2030—an important milestone in prevailing policy narratives and futurist imaginaries. We live in a different world of work: artificial intelligence becomes pervasive in complementing and augmenting human capabilities. States, societies, and labour markets are becoming increasingly integrated with a global system of interactions and webs as the intensity of capital, people and trade flows via digital global supply chains increases. Due to increased digital connectivity, the line between work, home and leisure is becoming increasingly blurred, making new forms of ''workleisure'' more hybrid and virtual, more globalized, and placeless. Large numbers of employees in the analogue economy or "crowdworkers" in the digital platform economy now sit in far-flung locales, such as Bangalore, Lima, or Johannesburg, and work for companies in London, San Francisco, or Beijing to service customers in still other locales.

By 2030, the emergence of 'labour-linking' technologies enabled by digital platforms, together with the advance of 'labour-saving' technologies in robotics, will have fundamentally reshaped the global jobs landscape. On the positive side, labour linking technologies are reinforcing a global mobility of virtual labour, by enabling job seekers from low- and middle-income countries to enter new labour markets, often in wealthier economies, previously out of reach due to migration barriers and, in principle, achieve a higher material standard of living.[1] On the negative side, new forms of digitally-enabled work and labour-saving technologies will continue to generate inequities across developed and developing countries, industries and workforce groups, resulting in a global yet fragmented world.[2] And while remote employment is not limited by geography, it tends to reproduce the spatial inequities of traditional labour markets. The most profitable jobs will be drawn to the thriving technology-wise metropolis, with rural communities lagging behind.[3]

The evolving landscape of jobs and employment opportunities will give rise to new problems—while history will repeat itself if we do not learn from it. Global inequality scholars have vividly demonstrated that the biggest losers of recent waves of globalization have been working people in rich countries, while the biggest winners have been the "global plutocrats" (the top one percent in rich countries) and emerging "global middle class," people with much less wealth, primarily in China.[4]

[1] Higgins, N.O. and Pinedo Caro, L. (2021), ''Crowdwork for Young People: Risks and Opportunities.'' International Labour Organization Working Papers.

[2] Grimshaw, D. (2020), ''International Organisations and the Future of Work: How New Technologies and Inequality Shaped the Narratives in 2019'', Journal of Industrial Relations, 62, 3: 477-507

[3] Braesemann, F., Stephanya, F., Teutloffa, O., Kässi,O., Graham, M., and Lehdonvirta, V. (2021) , ''The Polarisation of Remote Work'', Center for Open Science, Charlottesville, Virginia, https://doi.org/10.31235/osf.io/q8a96

[4] Milanovic, B. (2016), Global inequality: A New Approach for the Age of Globalization. Harvard University Press.

Between the mid-2000s and early 2010s, we saw how falling earnings of low-income workers in the United States and Western Europe escalated political grievances into conflict and political discontent, leading in several cases to the rapid rise of populist parties in power. The significant changes we are presently seeing, as well as those that lie ahead, have the potential to unsettle liberal democracies once more. The degree of tolerance vis-a-vis evolving inequalities in a globalized digital world will be critical.

Albert Hirschman uses the analogy of a traffic jam in a two-lane tunnel to explain how people respond to inequality: people stuck in the left-lane will feel better once they see that a car in the right lane starts to move. This initial gratification is known as the "tunnel effect". Yet, such gratification will fade rapidly if it becomes apparent that only the cars in the right lane are moving. According to Hirschman, those left out in the process of economic growth may better tolerate increasing inequality if they anticipate that their lot is likely to improve soon. Otherwise, their frustration may breed social unrest. Hirschman's analogy provides valuable insights for understanding what may happen in our digital economies the day after, once the tunnel effect is over. If inequalities are not addressed, populists are likely to benefit from the frustration generated by the unequal future of work. A new brand of populism, ''Populism 4.0'',[5] would thrive on the persistent failure to address the vulnerabilities created by the Fourth Industrial Revolution and the added economic inequity generated by the Covid-19 crisis.

Possible scenarios for the future development of our economies and societies up to 2030 are undeniably challenging to make. But one thing is certain: Only a fairer future for work can make our societies less fragmented and democracies more resilient. And by 2030 we could see a 'post-work' world in which work is profoundly changed—or even vanishes as such.

Post-work visions of work are not new. The promise of a society devoid of work has often been highlighted in emancipatory visions of the future. In the 1840s, Karl Marx envisioned a communist society beyond work, in which workers would "hunt in the morning, fish in the afternoon, grow cattle in the evening, and critique after supper," rather than being bound by the monotony of a single depleting job. By the early twenty-first century, economist John Maynard Keynes predicted, technological advancements will usher in an "age of leisure and wealth," with his grandkids working just 15 hours per week. And change is already taking shape. In Western countries, the average working week declined from over 80 to around 60 hours between 1800 and 1900. Between 1900 and the 1970s, it shrank even further, reaching roughly 40 hours. In countries such as Spain, Japan and New Zealand, there have been recent experiments with a four-day working week.[6]

By 2030, the issues of reduced working time will be in full gear, blurring the lines between the traditional employment contract and self-employment. Working-time patterns will have been redefined, fluctuating through technological innovation (with project-oriented freelance work), trade union pressure and shifts in mindsets towards a healthy work-life balance—a transformation younger generations will demand. Work values will have changed, transforming human experience. Generations Y, also called Millennials, and Z will make up by far the largest part of the working population, with about 40 per cent.[7]

[5] Mexi, M. (2020), ''Populism 4.0 and Decent Digiwok'', Global Challenges, Special Issue No.1, Graduate Institute of International and Development Studies – Geneva.

[6] Refer to : https://www.shrm.org/resourcesandtools/hr-topics/global-hr/pages/countries-experiment-with-four-day-workweek.aspx

[7] Cushman and Wakefield (2020). ''Demographic Shifts: The World in 2030''. Report. Chicago, IL: Cushman and Wakefield.

They will advocate for a new way of working and living, working less hours, and being more mobile and autonomous.The journey toward a new foundation for work eventually reaches a point of acknowledging the invisible domestic labour of caregivers - mostly women - and recognizing these efforts.

Post-work labour visions of work will thus give feminist ideas a new vigour. Yet, survival will continue to be at issue for the vast majority across the world. The pandemic has brought more than 250 million to the brink of hunger, shattering hopes of ending extreme poverty by 2030[8] and leaving populations in the Global South worse off. In the Global North, there will be more zero-hours or 'gig' contracts, more self-employed with unpredictable incomes and more precarity,[9] especially among young people—yet no effective offsetting public programmes, due to declining social resources and shifting demographics which favour age-related worklessness. In 2030, coping with intergenerational and distributional conflicts will become a pressing concern, while questions of who deserves what becomes the source of political resentment.

An Oxford University survey found 53 per cent of young Europeans (aged 16-29) doubted democracy's capacity to deliver on climate change, placing greater trust in authoritarian states—an alarming finding. Other research not only finds a link from youth dissatisfaction to the rise of populism but also reveals that, throughout the world, younger generations are becoming increasingly unhappy with democracy in absolute numbers, as well as compared with prior cohorts at comparable stages of life. With youth exclusion from jobs —because of automation—on the rise and amid chronic precarity, the complex dynamics of demography, technology and populism unfolding in the post-pandemic era will prove critical for the future of our democracies.

Looking ahead, it is impossible to reshape the future of work without also considering its existential underpinnings. Work is such a basic human need, not only because it ensures our economic existence, but because it contributes greatly to the meaning of a dignified existence.[10] Therefore, in post-work futures we need to address more than just the economic and technological disruptions that the digital transition will bring. We need a robust dialogue about the normative foundations of ''work'' - reasoning together about the right ways of embedding ''post-work'' visions in the digital age - distilling what principles governing work we want to protect rather than let perish.

[8] United Nations (2021), The Sustainable Development Goals Report 2021.

[9] Standing, G. (2021), ''Rescuing the Concept of Precarity'', Social Europe, https://social-europe.eu/rescuing-the-concept-of-precarity

[10] Nikolova, M. and Cnossen, F. (2020), ''What Makes a Job Meaningful?'', Brookings. https://brook.gs/35VYScO

Shaping an inclusive and democratic vision of post-work would necessitate policies to strengthen 'decent digiwork'[11] for all. This is a vision of full participation in a digital-work future, which affords self-respect and dignity, security and equal opportunity, representation and voice. At the core of this vision is the design of post-work policies to strengthen workplace democracy and organizational performance, as well as fundamentally reimagining the relationship between labour, work, and business along more dignified, socially meaningful, and environmentally sustainable models.[12] It is ultimately about the development of suitable structures and institutions for inclusive workplaces and labour markets in the digital era, which are critical to making our democracies more resilient in the face of emerging deep divides between "digital losers" and "digitally enabled value creators", with their potential to reinforce populist threats.

Renewing the dignity of work in the digital age requires that we reflect upon the moral, political and civic questions underlying our economic arrangements. Rather than allowing the future of work to become part of the 2030s populist playbook and its emerging versions, we need reforms—now. Anchoring the 'D-word' (Democracy) in our work futures is a vital step in this direction.

This special issue on the future of work, which I had the pleasure of editing, seeks to contribute to such an endeavour. It brings together international experts from various disciplines and perspectives to investigate the decade's major challenges, with an emphasis on three key themes: (i) Shaping work models and transitions in a post-pandemic world; (ii) Tackling the challenges that will make or break the gig economy, and (iii). Harnessing Algorithms and Artificial Intelligence in a Changing World of Work.

I wish you inspiring reading and look forward to your feedback.

Dr Marily Mexi

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[11] Mexi, M. (2019), "Social Dialogue and the Governance of the Platform Economy: Challenges and Opportunities", Geneva: International Labour Organization (ILO). Background Paper for discussion at the ILO-AICESIS - CES Romania International Conference: The governance of the digital economy: the critical role of social dialogue through ESC-SIs. Bucharest, Romania – 10-11 October 2019. See also: Mexi, M (2022), 'Post-work' visions for 2030, Social Europe, https://socialeurope.eu/post-work-visions-for-2030

[12] This approach is behind the expanding as the so-called fourth sector (see the websites www.fourthsector.net and www.fourthsector.org).

A VISION FOR SHAPING THE FUTURE OF WORK

Laura Nurski

As we slowly ease out of the first pandemic years and gradually return to the office, we find ourselves wondering what the future of work will look like. From a 9-to-5 office presence towards a hybrid combination of on-site and telework. From traditional employment relationships towards freelance or online-mediated work. Automation and offshoring changing the distribution of work among people and machines.

As this digital transformation unfolds before our eyes, policy makers try to understand the consequences for workers and the challenges for businesses. Fears of massive unemployment do not seem to materialise, as they have not in past technological revolutions either. In fact, current labour shortages call for increasing labour market participation. Even though the long run appears to hold plenty of work, transitional and distributional challenges are large in the short and medium run.

Job polarisation and the vanishing of middle-skill jobs contributes to increasing inequality. Growing skill gaps leave businesses struggling in the war for talent and point to substantial training needs. But reskilling and career transitions takes time, so safety nets must support the most vulnerable during the transition. These concerns are widely shared, and initiatives are launched to future-proof the European workforce.

So we direct our attention to transforming the labour supply, but let's not lose sight of the labour demand. What sort of jobs are offered as the digital transformation progresses? Is the digital future bringing us to jobs that can sustain a healthy workforce and a flourishing society? Jobs that grow companies but also grow their people. Jobs that put people in the driver seat of their working life. Jobs that build connections and weave the fabric of a vibrant society. Meaningful, healthy, inclusive, and sustainable jobs?

About half of European workers have those types of jobs – the 'high flying' or 'smooth running' jobs. But the warehouses, call centres and delivery platforms paint a different picture. One in three Europeans are in 'under pressure' or downright 'poor quality' jobs, jobs that score bad across the board.[13] Jobs that lead to poor physical, cognitive, emotional, and economic wellbeing and ultimately destroy human capital and undermine the labour market.

As the 'burn-out epidemic' shows us, upholding job quality to secure a flourishing and healthy workforce is a serious challenge for the coming decade. Current policy initiatives aimed at safeguarding the working conditions of platform work and telework are only scratching the surface. Quality jobs are more than minimum wages and a right-to-disconnect. As technology moves tasks from humans to machines, pushes jobs from the organisational core to the platform crowd and puts algorithms in charge of managing people, work is changing beyond just working conditions. Crucial elements of job quality, like its cognitive and social aspects, deserve more attention in the discourse on Future of Work.

Luckily this technological transformation of work is not set in stone. History is not made by machines, but by people. Thus, instead of asking what the future of work will look like, why don't we ask ourselves what we want it to look like? It is up to us to shape the digital transition instead of letting technology shape us. But in order to do that, we need to come together and create a vision. A vision for the future of work that will be the outcome of this digital transformation. A vision that emphasizes the quality of work just as much as the quantity of work, and the labour demand just as much as the labour supply. A vision that comes with goals, targets, actions, and support measures. A vision that lets us to be proactive and not just reactive to technological change. I hope this joint publication of the Delphi Economic Forum, Bruegel, and the Graduate Institute Geneva inspires you to do just that.

[13] Eurofound (2017), Sixth European Working Conditions Survey – Overview report (2017 update), Publications Office of the European Union, Luxembourg.

To share your views, connect with stakeholders and build a shared vision for the future of work. When you do, please reach back out to us, we would love to hear what you come up with.

Dr Laura Nurski

Bruegel – Fellow and lead on Future of Work & Inclusive Growth

SELF-EMPLOYMENT, COVID19, AND THE FUTURE OF WORK FOR KNOWLEDGE WORKERS[14]

The experiences of the self-employed could give a glimpse into the future of work for knowledge workers in a post-pandemic world

by Milena Nikolova

Milena Nikolova is non-resident fellow at Bruegel and a Rosalind Franklin assistant professor at the University of Groningen.

COVID-19 and the resulting lockdowns and work-from-home orders have forced businesses and employees to rethink existing working modes. Advances in information and communications technologies have allowed many knowledge workers to switch to home-based teleworking overnight, especially in the developed world. In Europe, the percentage of teleworkers increased from 5% in 2019 to 40% in 2020.[15] Although many countries are now vaccinating against COVID-19, the world is unlikely to return to normal quickly (Demertzis, 2020). As such, teleworking for many middle- and high-skilled workers will likely persist as part of the future's hybrid work mode (Ro, 2020).

In many ways, increased teleworking because of COVID-19 has made the working conditions of knowledge workers (those predominantly working at a computer) similar to those of the self-employed. A better understanding of how the traditional self-employed—business owners with or without other employees—organise their work and harness the benefits of autonomy and flexibility while managing their job demands can offer insights to policymakers, employers and employees on the changing work domain more generally and the labour market consequences of COVID-19 more specifically.

[14] This blog was produced within the project "Future of Work and Inclusive Growth (https://www.bruegel.org/blog-post/self-employment-covid-19-and-future-work-knowledge-workers) in Europe", with the financial support of the Mastercard Center for Inclusive Growth.

[15] Refer to: https://ec.europa.eu/jrc/sites/jrcsh/files/jrc120945_policy_brief_-_covid_and_telework_final.pdf

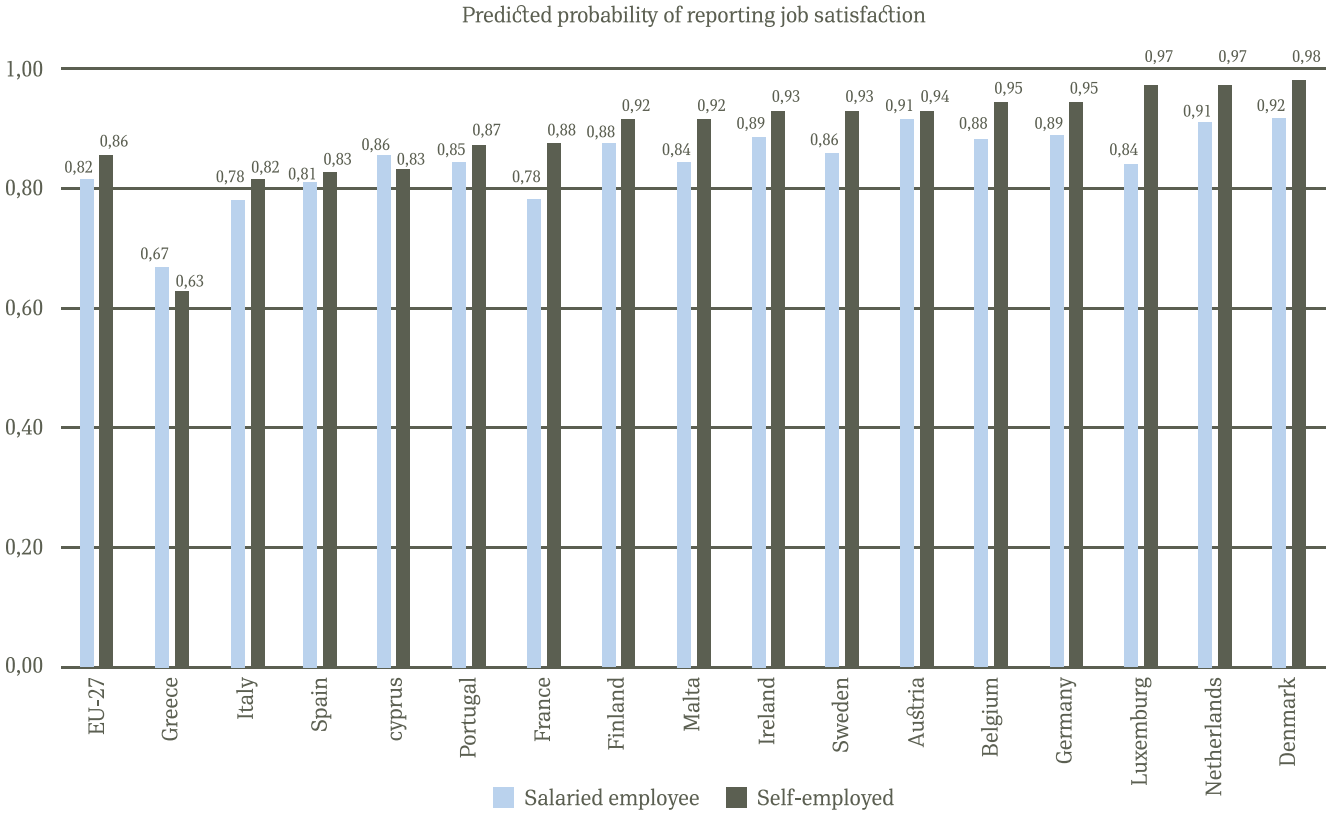
The self-employed have higher job satisfaction levels (Binder and Blankenberg, 2021) than salaried employees, even after accounting for differences (ibid), such as age, gender, working hours and salary (Figure 1). The self-employed in the European Union are about 4 percentage points more satisfied with their overall working conditions than employees. However, the pattern is not uniform, and in several countries, there is no job satisfaction difference between the two groups.

Of course, the self-employed and salaried workers might differ in their characteristics, such as motivation, ability or entrepreneurial aptitude. But even when these factors are taken into account, switching from a salaried job to self-employment (ibid) leads to significant short-run gains in job satisfaction (Figure 2), which may persist five years after switching (van der Zwan, et al, 2018).

Yet, having your own business brings many challenges. The self-employed have non-standard career paths, conflicting job demands, work longer hours and, in the lower parts of the wage distribution, earn less than comparable salaried workers.[16] They also face time pressure, uncertainty, role ambiguity, and loneliness, which can lead to stress (Cardon and Patel, 2013). How do they have this job satisfaction advantage then and what might it imply for teleworkers and the future of work?

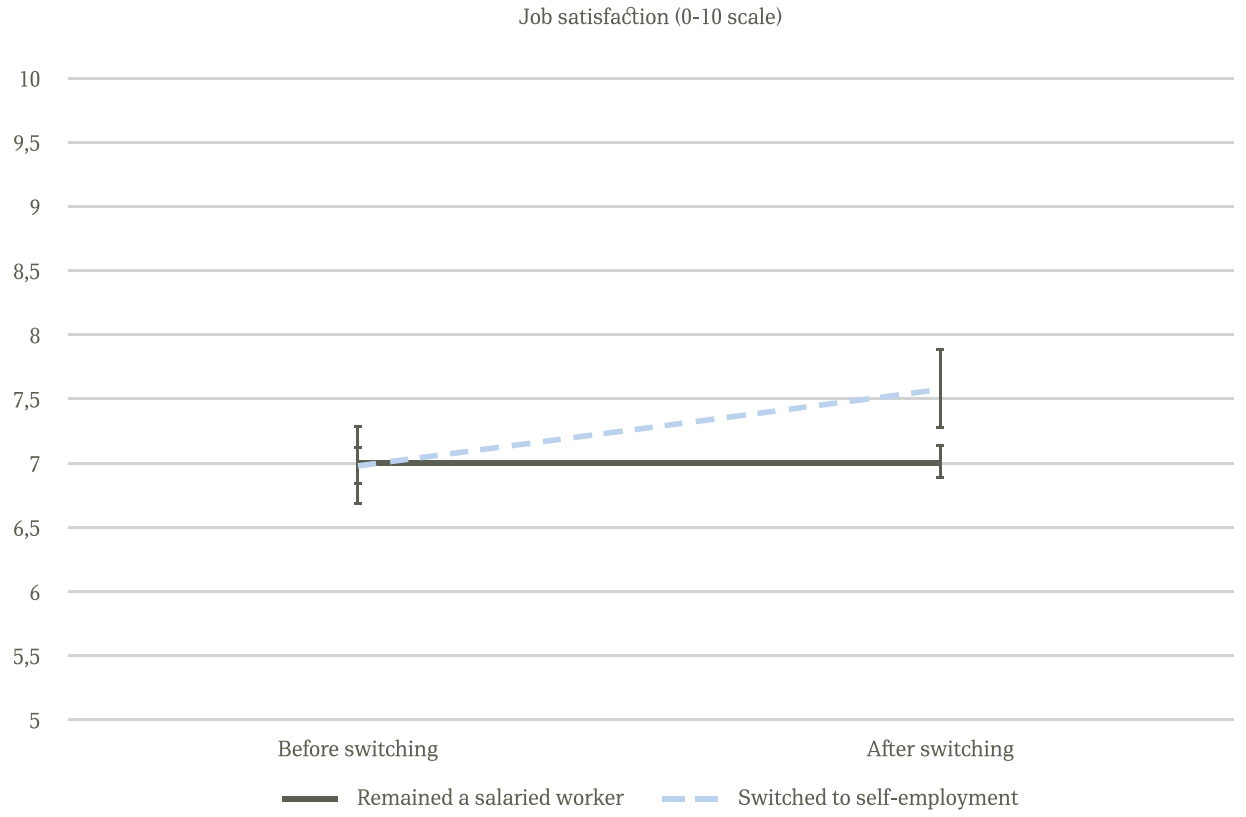
[16] See https://login.proxy-ub.rug.nl/login?qurl=https://link.springer.com%2farticle%2f10.1007%2fs11187-020-00423-y

Figure 1: Predicted probability of reporting job satisfaction, by self-employment status and country



Source: Bruegel based on the European Working Conditions Surveys (EWCS) 2005, 2010, and 2015. Notes: The figure depicts the predicted probability of reporting satisfaction with working conditions (very satisfied or satisfied), by self-employment and country of interview for the 2005-2015 period. The results are calculated after probit regressions whereby the dependent variable is job satisfaction, the key independent variable is self-employment, coded as 1 for those who are self-employed and 0 for salaried employees in the private or public sectors. The control variables are age, gender, education level, household size, marital status, presence of children, log monthly income (PPP-adjusted), log weekly working hours, number of workdays, occupation and industry. All regressions include year fixed effects. The first regression is for the EU27 (N= 51,974), and also has country fixed effects. The country-specific predicted probabilities of reporting job satisfaction for the self-employed and salaried workers are based on individual-level regressions for each of the EU countries depicted. The whiskers represent 95% confidence intervals. There is no job satisfaction difference between the self-employed and non-self-employed in several countries, including Austria, Cyprus, Finland, Greece, Italy, Portugal,

Figure 2: Job satisfaction consequences of switching from salaried employment to self-employment vs. remaining salaried employed in Germany, 1991-2017



Source: Bruegel based on data from the German Socio-Economic Panel v.34 using the methodology described in Nikolova (2019). Notes: Job satisfaction is measured on a scale of 0 (not at all satisfied) to 10 (very satisfied). The whiskers denote 95% confidence intervals.

Despite the high job demands, business owners also have high job control and autonomy over their tasks. This independent way of working gives rise to "procedural utility" (Frey and Benz, 2006), i.e, the enjoyment of the process as well as the outcome of working while avoiding hierarchy and subordination. This unique combination of high job demands but also high job control gives rise to "active jobs," (Karasek, 1979) a state when work leads to self-actualisation, mastery, new skill development and ultimately greater well-being. In fact, job control completely cushions the stress aspects of self-employment (Hessels et al, 2015).

Like self-employment, teleworking comes with many challenges and job demands (Eurofound, 2020). It may result in longer working hours[17] and increased responsibilities, more distractions (Dunn, 2020), conflicting priorities, and loneliness because of less socialisation with colleagues. The relationships individuals have at work are not only crucial for the flow of information but are also essential for workers' well-being (Nikolova and Cnossen, 2020).

Yet, teleworking also provides freedoms and self-organisation (Gerten and Beckmann, 2020), which may help create "active jobs" for knowledge workers working for an employer. For example, those who work from home can often flexibly decide their working hours or take breaks to accommodate household chores or other obligations. This increased freedom and autonomy, may boost productivity.[18]

[17] Refer to https://www.economist.com/graphic-detail/2020/11/24/people-are-working-longer-hours-during-the-pandemic

[18] Refer to https://www.economist.com/briefing/2020/09/12/covid-19-has-forced-a-radical-shift-in-working-habits

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Also, given that commuting is the least enjoyable part of people's day (Gino et al, 2017), the reduced need to travel to work may increase happiness, which in turn can make workers more productive (Oswald et al 2015). Unsurprisingly, salaried workers value working from home (Mas and Pallais, 2017). In the United States, they are even willing to take an 8% salary cut (ibid) in exchange for this opportunity and the flexibility it brings. Like with the self-employed, the autonomy and freedom due to teleworking can outweigh the stress associated with it and ultimately durably shape preferences for teleworking. In Europe, about four in five respondents indicated that they would like to work from home, even after the pandemic is over (Eurofound, 2020). While only 13% wanted to telework daily, about a third said they would like to use their home office several times a week. Moreover, the more workers used their "home office," the more likely they were to prefer to work from home, implying overall positive experiences with teleworking (ibid).

Against this backdrop, employers may need to make additional provisions to support teleworkers in a post-pandemic world. First, firms may need to invest in additional ICT resources or training to accommodate their employee's changing needs. In some European countries, more than half of current teleworkers are in this role for the first time[19], implying that they may be lacking the necessary equipment or skills required for working from home. Second, employers may have to specify the options and conditions for voluntary teleworking in the future, including the tasks they would like to be done remotely, and the opportunities of coming to the office and socialising with co-workers. Finally, managers may have to tailor their approach to the needs of individual workers[20], for example, by initiating more direct personal contact via phone or video-chat and monitoring subordinates' well-being (Whyte, 2021).

Governments can play an important role, too. The continuous supply of childcare services and educational activities can support working parents, especially women, with balancing work and caregiving or home-schooling duties. In some cases, free childcare or additional paid leave for parents (El Tayeb, 2020) when schools or kindergarten are closed may be an option. In addition, policymakers can focus on modifying labour laws (Eurofound, 2020) to outline the conditions for requesting to telework or hybrid working and ensure equal pay for teleworkers and office workers.

[19] Refer to https://ec.europa.eu/jrc/sites/jrcsh/files/jrc120945_policy_brief_-_covid_and_telework_final.pdf

[20] Refer to https://www.economist.com/business/2020/12/03/how-the-pandemic-is-forcing-managers-to-work-harder

These policies will help harness the benefits of autonomy, flexibility and self-organisation that come with teleworking or hybrid working modes and mitigate the stress, burnout, isolation, or unfair treatment that may accompany working from home.

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DESIGNING A HYBRID WORK ORGANISATION[21]

Laura Nurski is research fellow at Bruegel leading the Future of Work and Inclusive Growth project.

Post-pandemic hybrid work models should be carefully planned, taking into account individual and organisational needs

by Laura Nurski

With the end of the pandemic in sight, organisations are rethinking when and where their employees will work. Over half of office workers want to keep working remotely for three or more weekdays[22] and while employer enthusiasm is somewhat lower, this does seem feasible for 20%-25% of the workforces in advanced economies (Lund et al, 2021). Many companies will likely adopt a hybrid combination (Ro, 2020) of on-site and remote work, with work from home estimated to be optimal at one to three days a week (Bloom, 2020).

While this hybrid future creates opportunities for geographic mobility and for tackling regional inequalities, employers will need to find well-functioning models of organisational flexibility for their workforces. An update to the European Union's 2002 Framework Agreement on Telework (Grzegorczyk et al, 2021) could facilitate the implementation of flexible working conditions in a way that ensures minimum protection for on-site and hybrid workers, while fostering harmonised standards within the EU single market.

Hybrid work comes with organisational challenges that are often grouped into three categories: bricks, bytes and behaviour (de Kok, 2016), i.e. the spaces, tools and culture of remote work. What is missing is a fourth B, a blueprint for the allocation and coordination of tasks across time and space. While traditional organisational design deals with the question 'who does what task?' the hybrid model must additionally ask 'who does what task when and where?'

Flexible work arrangements: when and where?

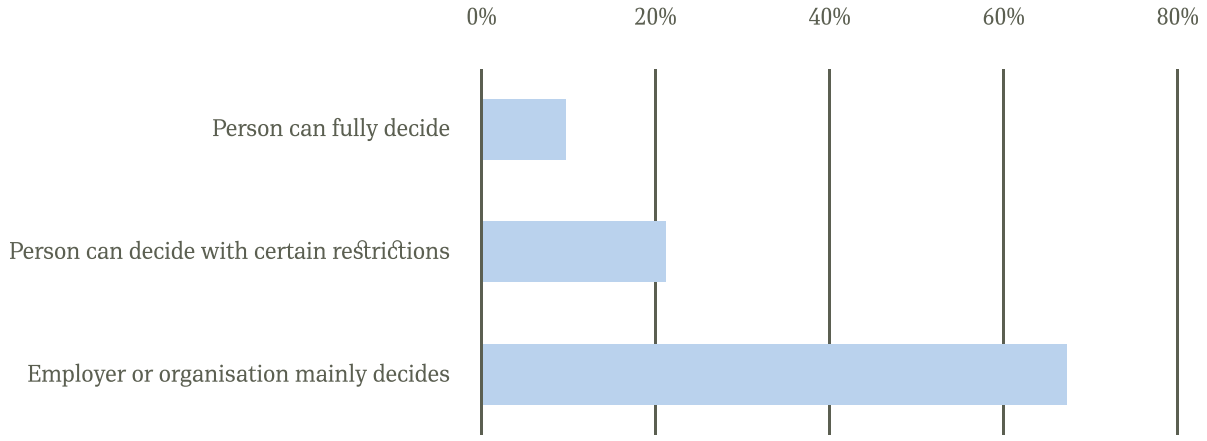
Flexible work arrangements have existed for over 50 years and cover both time and space dimensions. While in 2013 more than 65% of EU28 establishments[23] offered some form of flexitime, only 30% of employees in the EU27 reported in 2019 having a say in the start and end times of their work day, and of those only a third could decide their hours without restrictions (Figure 1).

[21] This blog was produced within the project "Future of Work and Inclusive Growth in Europe", with the financial support of the Mastercard Center for Inclusive Growth. (https://www.bruegel.org/blog-post/designing-hybrid-work-organisation)

[22] See https://www.pwc.com/us/en/library/covid-19/us-remote-work-survey.html

[23] Refer to European Company Survey 2013, https://www.eurofound.europa.eu/surveys/european-company-surveys/european-company-survey-2013

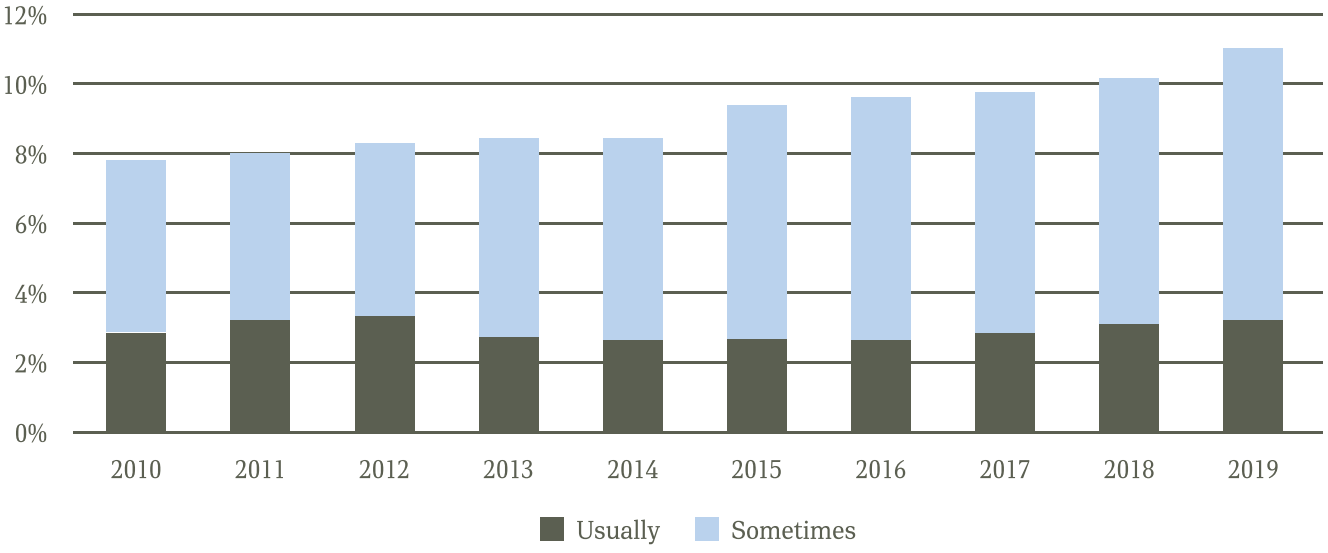
Figure 1: 30% of EU27 employees had some flexibility in start and end of working time in 2019



Source: Eurostat, LFSO_19FXWT02 (EU27, 2019).

Flexibility in terms of the choice of working from home or another location was less prevalent than flexitime before the pandemic, at just above 11% in 2019, up from 8% in 2010 (Figure 2), with most telework taken up only occasionally.

Figure 2: Only 11% of EU27 employees (occasionally) worked from home in 2019



Source: Eurostat, LFSA_EHOMP (EU27).

When rethinking flexible work arrangements, companies have to consider whether (1) to align employees' working time (synchronous or asynchronous), and (2) whether to have employees work in the same space or be dispersed geographically. The traditional model of work is synchronous, co-located work, while flexitime and telework provide flexibility in terms only of when or where work is done. The combined freedom in terms of place and time of work is known as an anyplace, anytime policy (Table 1).

Table 1: Flexibility in space and time

			Space	
			Aligned	Unaligned
			Co-located	Geographic Dispersion
Time	Aligned	Synchronous	Traditional model	Remote work/telework
	Unaligned	Asynchronous	Flexitime	Anyplace, anytime policies

Source: Adapted from how to do Hybrid Right by Lunda Gratton on HBR May - June 2021

Challenge 1: Assessing the potential for individual flexibility

In reality not all jobs are equally suited for flexible working, but flexibility arrangements may vary. Designing a flexible work arrangement should start from the feasibility of hybrid work at the level of individual employees and work up to a more aggregate level, taking into account the externalities on co-workers. At the level of a single employee, organisations may want to consider at least three different aspects: roles, tasks and personal preferences.

Role-based flexibility can only go so far

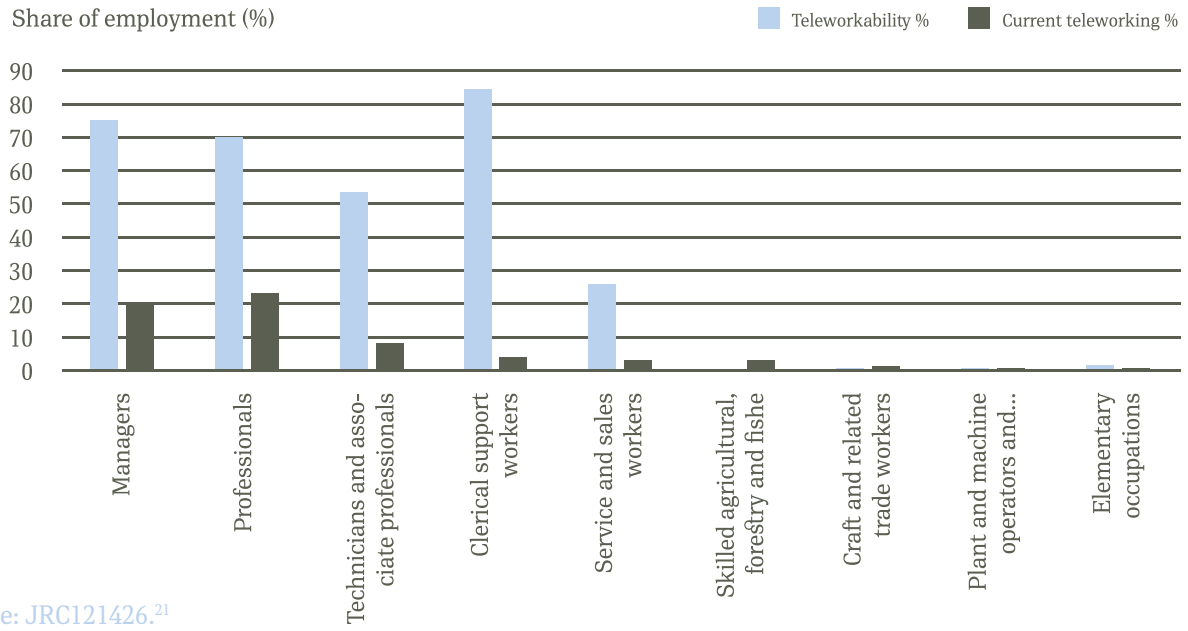
Flexibility arrangements are often based on formal roles and their need for on-site or synchronous presence. Roles considered unsuited for flexible work arrangements typically require physical interaction with equipment (for example, machine operators, logistics workers and laboratory technicians) and with humans (for example, nurses and care workers). These physical interactions usually present a hard constraint on remote or asynchronous work. Social interactions (either cognitive or emotional) are a softer constraint that should at the least be synchronised in time and could benefit from physical co-location with colleagues or clients (such as managers, sales people, teachers and psychologists).

Pre-pandemic, flexibility was mostly enjoyed by high-skilled roles[24], including knowledge workers, professionals and managers working in ICT, legal, business, administration and science. But beware the hierarchy effect: figures comparing technical teleworkability with actual uptake of telework suggest that pre-pandemic telework was driven more by organisational hierarchy and status[25] than by technical feasibility (Figure 3).

[24] See "Telework in the EU Before and After the COVID-19: Where We Were, Where We Head To". Available at: https://bit.ly/3KKfsuP

[25] See "Who Can Telework Today? The Teleworkability of Occupations in the EU". Available at: https://bit.ly/3CHXczz

Figure 3 : Prevalence of telework by occupation, EU-27



Source: JRC121426.[21]

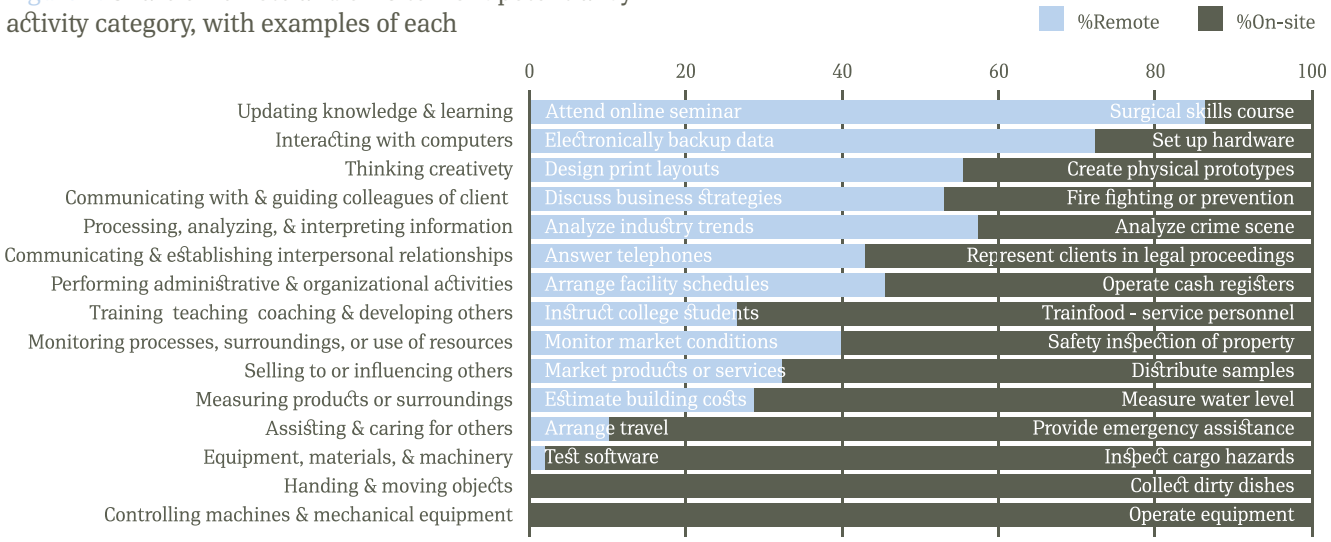
Task-based flexibility will get you further

Measures that classify entire roles as non-teleworkable underestimate the full potential of hybrid working. A teleworkability index developed by JRC/Eurofound (Sostero et al, 2020), for example, uses task-level variables to determine teleworkability[26], and classify jobs as "non-teleworkable whenever any of these indicators is above a certain threshold, and as technically teleworkable otherwise."

A focus on the task composition of each role and what share of those can be performed remotely or asynchronously will enable firms to offer flexibility to a greater number of employees. An analysis (Lund et al, 2020) of 2,000 tasks across 800 jobs found that 'updating knowledge and learning' has the most potential for remote work with an estimated 87% percent of time that can be spent remotely, while 'assisting and caring for others' can only be done remotely 10% of the time (making travel arrangements can be done remotely, for example, but providing emergency assistance cannot) (Figure 4). 'Handling and moving objects' and 'controlling machines and mechanical equipment' were found to be impossible to do remotely (with a score of 0) but innovation will likely change that as drones and other remote technologies become more widely used in factories.

[26] Refer to https://ec.europa.eu/jrc/sites/jrcsh/files/policy_brief_-_who_can_telework_today_-_the_teleworkability_of_occupations_in_the_eu_final.pdf

Figure 4: Share of remote and on-site work potential by activity category, with examples of each



Source: Bruegel based on McKinsey Global Institute (2020).[23] Note: Bars contain examples of tasks than can (cyan) and cannot (gray) be done remotely.

Preference-based flexibility for greater engagement

Whenever structural aspects allow for flexible working, employers can boost employee engagement insofar as it meets workers needs' and preferences, by taking into account personal wishes or ambitions (such as coaching for junior staff), personal circumstances (such as chronic illness, commuting time or care work) and personal characteristics (like personality, tenure and age, see Gurchiek, 2021). Teams could even redistribute tasks across people according to their flexibility preferences.

[23] Refer to https://www.mckinsey.com/featured-insights/future-of-work/whats-next-for-remote-work-an-analysis-of-2000-tasks-800-jobs-and-nine-countries

Challenge 2: Designing an optimal configuration of flexibility at the collective level

Once the potential for flexibility is known at individual and task level, companies face the challenge of finding an optimal level of flexibility for the organisation as a whole. In a context of interdependent tasks, insights into the externalities arising from individual flexibility can steer coordination efforts within teams and departments.

Two tasks are interdependent (Raveendran et al, 2020) when the value of performing one task depends on the way another task is performed. Assembly-line work is obviously highly interdependent: when one task in the line is not performed correctly or on time, all subsequent tasks suffer. But knowledge work can also be highly interdependent: when research assistants miscalculate data, professors may draw unfounded conclusions in their papers. Interdependence is the foundational concept for determining the boundary and composition of teams and departments (Schwarz, 2017). Therefore, in well-designed teams, tasks of team members are highly interdependent.

Coordinating tasks to ensure productive hybrid teams

Research shows that teleworking increases coordination costs (Gibbs et al, 2021): less opportunity for informal coordination (in terms of networking, coaching and one-on-ones) increases the need for formal coordination (more time spent on meetings, calls, or answering e-mails). This increased coordination cost reflects the presence of task interdependence which, in a hybrid context, needs to be investigated through two additional lenses: spatial and temporal.

A journalist writing an article and a copy editor reviewing the text are examples of two purely temporally interdependent tasks. The tasks can be performed remotely without loss of value but as time passes, the news story becomes less relevant and the combined value of the tasks decreases. In this case, the two workers should synchronise their working time.

However, two engineers producing parts of a physical prototype work on spatially interdependent tasks. While they can work at different times, their work needs to take place in same location to ensure proper fitting of the parts.

This need to coordinate work on-site or in time can be facilitated by team or organisational guidelines. The highest level of interdependence can be found within teams making them a good place to start discussions on aligning flexibility. Most predictions[27] settle on a 60/40 or 40/60 division of remote/onsite work. Depending on their specific needs, teams can spatial and temporal needs by agreeing on fixed (weekly) office days and minimum availability during regular office hours.

[27] See https://www.businessinsider.com/harvard-professor-predicts-rise-of-3-2-2-work-week-2020-12?r=US&IR=T

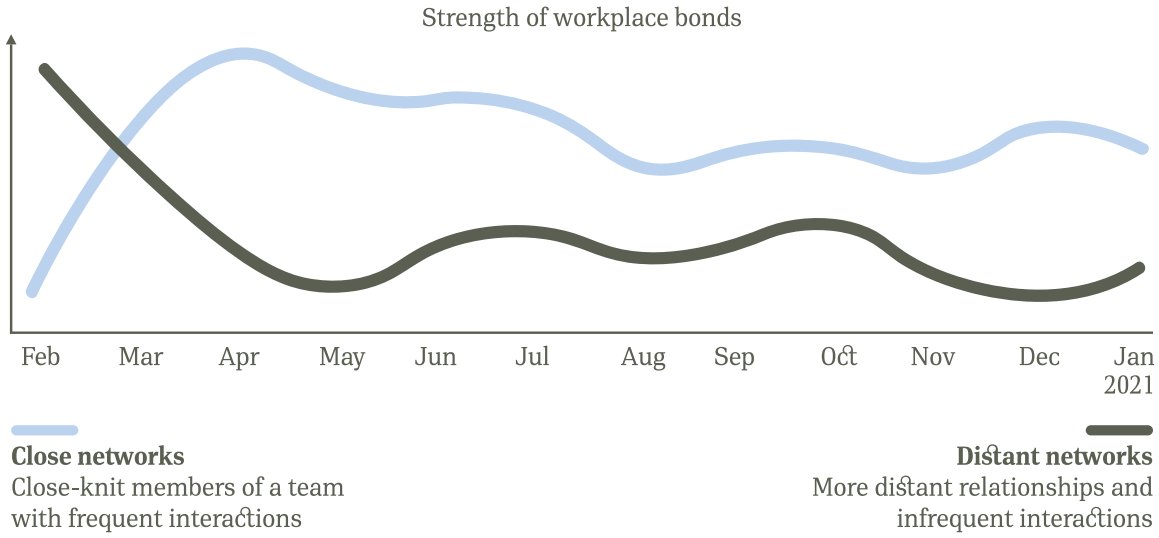
Preventing the breakdown of distant networks to sustain innovation

Given the high level of task interdependence within teams, it is unsurprising that team interactions moved online when in-person meetings were no longer possible. An analysis of 124 billion emails and video calls[28] showed an increase in online interactions within close networks or teams (Figure 5). However, interactions across teams took a nosedive, leading researchers to conclude that "teams are more siloed in a digital work world".

[28] See https://www.microsoft.com/en-us/worklab/work-trend-index/hybrid-work

[29] Refer to https://www.microsoft.com/en-us/worklab/work-trend-index/hybrid-work

Figure 5: Interactions increased in close networks, but decreased in distant networks



Source: Microsoft Work Trend Index.[29]

This decrease in communication across distant networks is especially concerning for innovation. The creativity benefits flowing from networks of weak ties (interpersonal connections between sporadically interacting people) (Harper, 2016) have been documented extensively following Granovetter's (1973) strength-of-weak-ties theory (see for example Baer 2010). While employees with weak ties are probably not very task interdependent, they often are knowledge interdependent (Raveendran et al, 2020) meaning "the value they could generate from combining their knowledge differs from the value they could obtain from applying their knowledge separately". It is not uncommon to hear that the best ideas arise over coffee and that the watercooler is the best place to informally exchange information. (Table 2)

Table 2: Type of interdependence at different organisational levels

Organisational level	Type of ties	Outcome impacted	Relevant type of interdependence	Definition
Within team	Strong ties	Productivity	Task interdependence	Two tasks are interdependent if the value generated from performing each is diffenet when the other task is performed versus when it is not.
Cross team	Weak ties	Innovation	Knowledge interdependence	Two agents are knowledge interdependent if the value they could generate from combining their knowledge differs from the value they could obtain from applying their knowledge separately.

Source: Own complilation, definitions based on Raveendran et al (2020)

To ensure that innovation isn't hindered by hybrid working, companies must prevent the breakdown of weak ties and support spontaneous interactions across teams. Just like fixed weekly office days for teams, departments could have fixed monthly office days. At minimum, organisations should avoid accidentally preventing cross-team exchanges by assigning different office days to different teams. Structurally, companies could instate cross-team guilds (Smite et al, 2020) or rotate people across project teams to grow weak-tie networks. Finally, organisations could support spontaneous cross-team interactions by moving them online (using applications like RandomCoffee[30]) or by making the office an attractive place for meeting and socialising. Such initiatives can help steer organisations towards well-functioning hybrid models.

[30] See https://www.random-coffee.com/

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WORK IN TRANSITION(S): NEW SOCIAL CONTRACT AND DEMOCRACY

"Work" is not playing as it did and as it should its inclusionary and redistributive function, and the promise of social upward mobility within and across generations

by Azita Berar Awad

Azita Berar Awad is former director of the International Labour Organization Employment Policy Department, chair of the board of the United Nations Research Institute for Social Development (UNRISD), and director of policy at the Global Labour Organization

Work transitions, social contracts and democracy raise complex set of questions that interact in multiple ways. In this brief contribution, I certainly will not be able to do justice to the array of conceptual and analytic issues implied, nor to give many examples of the diversity of realities lived in different parts of the world and by different groups of people.

Multiple transitions

I will highlight instead, a more macro and global picture of Work Transition(s). And make two points.

First, while digital technologies are so pervasively transforming our patterns of work and life, I wish to emphasize that there are multiple other transitions that have been at work over the last decades that shape the labour market outcomes we see today, the meaning of work and the way humanity and society organize and share the fruits of work.

Second, I wish to point out to the importance of the moment and the juncture[31], we live through, and how the nature of conversation has shifted, not least because of the COVID-19 Pandemic.

[31] The present contribution draws on a keynote speech delivered by Azita Berar Awad at the Albert Hirschman Center on Democracy – Geneva Graduate Institute within the framework of the workshop: "Work in transition: Digital economy and its implications for democracy", that took place in Geneva, October 2021.

These are no ordinary times, a lot of certainties are being eroded, anxiety about the future, future of work, future of the planet, is running high. More significantly, there are not many alternative narratives or even utopian models, that galvanize hope, energy and trust and replace fear with dreams for the future.

Disappointment from work - including scarcity of opportunities to access meaningful, stable and decent work, insecurity of returns and incomes, and inadequate conditions of work, for large swathes of populations in the Global North and Global South - plays a large part in this overall picture of uncertainty, socioeconomic insecurity and mistrust in policies and institutions.

We all know too well, how these grievances are impacting the political systems, weakening democracies, and are instrumentalized by populist movements and demagogic discourse.

Before the COVID-19 Pandemic became the planetary concern, debate on Future of Work (FoW), among academia, policy actors, and media, focused primarily on the potential job destruction and replacement effects of robotics and artificial intelligence (AI).

This technology-centered FoW debate neglected or underplayed, what in my view are key dimensions: the policies, institutions and governance frameworks, as well as the context in which these technologies are introduced. Policies and frameworks, which determine the pace of their adoption and ultimately their exclusionary or inclusionary impact.

The rapid growth of digital labour platforms involving "crowd work", online "web-based" and "location-based" platforms, such as Uber or food delivery services, is generating a host of problematic issues.

Big disruptions

Let me pick three: First, the blurring in status of dependent worker or self-employed, which has many implications for establishing responsibilities and liabilities. Second, the use of algorithms in some of these crowd-work or micro-task platforms with all the biases embedded, for assessing human work performance and dues, across numerous countries and continents. Putting into question even further, the role of humanity and humans in work relationships? And of course most importantly, in a void of agreed and negotiated governance rules, engagement modalities are unilaterally determined by platform owners.

However, the real disruptive transition in work and in work-related governance, started earlier, mid-70s with the rapid spread of what is called now "hyper-globalization" model and the "neo-liberal" economic policies that sustain it.

The fragmentation of production systems and different business functions along global value chains, operating across many different national jurisdictions, has transformed radically the international division of labour and the profit sharing structure. This transformation was sustained by liberalization of trade, financial and investment policies, that favored countries with least taxation and labour regulation and protection, which in turn created the dynamics of the "race to the bottom" in a hyper-competitive environment.

This new policy framework, that has been by and large successfully disseminated across the globe, structurally weakened the post-World War II governance consensus in the world of work, based on the cooperation amongst the three parties (government, employers and workers) to negotiate and bargain for fair sharing in growth and productivity gains, including those accruing from technological developments.

In search of new consensus

The consensus on strategies and governance rules that could pursue in tandem economic growth, full employment, worker protection, welfare provision and improved living standards is broken. A model, that delivered for a good part in Western democracies during the "glorious thirties" or "les trente glorieuses" in French, and - held the same promise - of similar trajectories of convergence in the Global South.

Today, there is a shared diagnostic amongst social scientists including economists of all streams, (the phenomenon is rare and deserves to be underscored!) that Globalization policies of the last three decades, by and large, have not delivered on jobs, neither regarding employment levels nor with respect to the quality of jobs, incomes and conditions of work.

There is a plethora of factual evidence to illustrate these trends. Let me mention only two: First indicator is the labour income share in total income that has been on a declining trend, globally and over several decades, in spite of major labor productivity gains accrued in the same period. This trend is a major contributor to the rise in extreme income inequalities, that we are observing and in contrast with its direction prior to this era of hyper-globalization. The second indicator is informality: those working and producing in the informal economy today account for over 62 percent of the global workforce with no or limited access to development opportunities and to protections that accrue to formal work and business operations. The phenomenon of informality which for many decades, was associated primarily with developing country conditions, is reemerging globally in various guises including in advanced economies and including in the digital gig economy.

Better than indicators, I would like to borrow the metaphor, widely used to illustrate the fragmented world of work we have, "islands of productive, high-wage activities in a sea of poor jobs and pockets of unemployment" where "individuals swim as they can and surf over recurring crises".

The fault lines of gender, race, ethnicity, education, age at both extremes, young and old show that for a large number of people, "Work" is not playing as it did and as it should its inclusionary and redistributive function, and the promise of social upward mobility within and across generations.

This picture holds true for the Global North and the Global South with all the variations and nuances of geography, culture and policies that should be borne in mind, to qualify the local realities.

While the wide range of new technological developments, including the much decried robotics and AI, has the potential to create more jobs and to promote more inclusive labour markets and societies, it is readily apparent that, the new generation of digital technologies introduced in the highly polarized and competitive context, that I very summarily depicted, will only strengthen the polarization of our society and trends in wealth, market and power concentration.

Grasping the moment

Let me now turn to some good news. Because, there is. Understanding the moment is also about appreciating, how the conversation has shifted since the onset of the COVID-19. The pandemic, with all its deleterious impact on health, work and life, has had a positive outcome by exposing in a flagrant and undisputable manner, the structural inequalities that pre-existed COVID-19, and in particular by compelling reflection on the drivers and causes of widening social inequalities.

It is at the same time giving a higher moral imperative to the public demand for fairer and more sustainable societies. From different corners, calls abound to "revisit" and "renew" the "social contract". Interestingly, these calls, publications, initiatives, arise from so many different sources : from academia, civil society, public authorities, private sector- major corporations as well as small enterprises - unions, international organizations, not only those who have been at the forefront of social justice mandate, but also mainstream financial institutions, and so on.

So, understanding the moment for me is also about the positive burgeoning of ideas and proposals and announcements, in sum the building blocks of a new social contract. Naturally, the renewal of social contract means different things to different people. Some ideas are not new. They have been around for some time but have regained in vigor and are making their ways into policy. In the new policy discourse and debate however, there is a higher recognition of the systemic vulnerabilities and a central focus on transitions in work and the governance infrastructure.

The unprecedented efforts – in financial terms as well as in scope of operations - of the Rescue and Recovery Programmes in response to COVID's impact on jobs and the economy–has shown the range of policy options that have always been available, and the possibility of breaking through some of the policy taboos of the previous decades, such as the role of the State and regulatory frameworks, the limits on the public debt or taxation (domestic, international) and so on.

It will be impossible to go through all what is on the table, let me mention some in a random order, the proposals that include: anti-trust regulation, and policy frameworks for incentivizing investment for transition to low carbon economy and in the care economy- two areas with high job creation potential and high social returns. There also: Basic Universal Income, Universal Health Insurance coverage, and redefining the contours and space for participatory local democracy, social economy and social entrepreneurship. Conspicuously however, there is not enough innovation with respect to youth. The majority of proposals concern education and skills. Policies and strategies to promote equal opportunities to access quality education and skills development, including for closing the significant digital divide, is a necessary condition but not sufficient to overcome major transitional gaps and limbo that youth, in their diversities, are experiencing. The 2007/08 global financial crisis revealed how the nature and pathways of school-to-work transitions have changed, become more difficult with uncertain outcomes, including for the educated youth.

After a decade only, youth have been particularly and more severely hit by the COVID-19 crisis in their education, access to decent jobs, incomes and socio-psychological health. And by now, it is well established that young women and men entering the labour markets in times of crisis, endure long-term scarring impacts in terms of quality of jobs and wages.

The demands for Freedom, Democratic Rights and Decent Work were voiced, in tandem, by youth during the waves of the Arab Spring uprisings, a decade ago and since then, in youth protests that are regularly occurring in different regions. Numerous studies, surveys, opinion polls on youth transitions carried out since, reveal the extent to which, in youth perceptions and expectations, the issues of work with purpose, rights, space for meaningful civic engagement and political participation, are intertwined.

At a time, youth are showing their incredible convening and mobilizing power for the planet and for environmental transition, any renewed social contract should not only make a larger space for supporting youth's own multiple transitions, but also engage their critical and constructive thinking in influencing the governance norms and ethics of these massive and concomitant transformations.

Looking ahead

Let me end, by throwing a few questions: Will this extraordinary moment be seized? Will the changes of mindset or policy paradigms endure the COVID-19 crisis response? Is the pendulum swinging towards rehabilitating the objectives of full employment, universal access to social protection including through policies that diffuse more broadly and fairly, the higher productivity achieved through technology? Will the values of social justice and just transitions, "human-centered" or "human in command" shape the new economic and social and political model?

And the biggest challenge of all: how the models of social democracy and political democracy can be retooled and trusted in the present fraught social, media, and political environment and amid geopolitical tensions?

Will these changes impose themselves through leadership, multilateral cooperation or through more crises and social upheavals? The future will show.

THE IMPLICATIONS OF STATUS PRECARISATION FOR GIG WORKERS, CITIZENS, THE WELFARE STATE AND DEMOCRACY[32]

The status precarisation of labour that characterizes large segments of the gig economy results in a number of problems for individual workers, but also the welfare state and economy at large

by Johannes Kiess

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One of the defining characteristics of the gig economy is its challenge to established notions of employer and employee. Indeed, it is what makes platform-brokered work lucrative for business who seek to avoid responsibilities for workers. But it is also what makes it attractive for predominantly young workers as they are enthusiastic about irregular forms of work organization that promise more freedom than conventional 9 to 5 jobs. However, the "status question" is fundamental for the labour market, and basically all regulation is connected to the definitions of employer and employees. What is more, challenges to the status of workers relate to their status as citizens.

[32] This article has been written for the Geneva Graduate Institute - Albert Hirschman Centre on Democracy's series of commentaries on the need to redesign the platform economy on a more democratic and sustainable basis. (https://www.graduateinstitute.ch/communications/news/implications-status-precarisation-gig-workers-citizens-welfare-state-and)

DELPHI ECONOMIC FORUM

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Fundamental flaws

In a German case study[33] on the challenges of the gig economy for social partnership, we found the status question to be relevant for, among other issues, labour protection regulations, the applicability of the national minimum wage, the sustainability of the welfare state, and price competition for regular businesses. Since platforms typically refuse to adopt their Fürsorgepflicht (duty of care), i.e., the duty to ensure that workers wear protective equipment and keep within working hours, the increase of solo-self-employment through platform-brokered work may lead to increased hazard risks in traffic or on construction sites. This is simply because gig workers in this scenario are pushed to take risks to get a certain job, to make (more) money, or simply because they have to pay their bills.

Similarly, because the national minimum wage in Germany does not apply to freelancers, the status of many gig workers results in undercutting said minimum. Because platforms do not consider themselves employers, they do not contribute the usual social insurance dues. Even for some of the employer associations this is a problem because it results in old age poverty that the state has to compensate for with taxpayer-financed social aid. Also related to the avoidance of social security dues is price competition between regular businesses with regular employees and service-brokering platforms with gig workers. The latter will always be able to work cheaper given that they skimp on social security. All in all, the status precarisation of labour that characterizes large segments of the gig economy results in a number of problems for individual workers, but also the welfare state and economy at large.

[33] The German case study is part of a transnational project entitled ''Gig Economy and its Implications for Social Dialogue and Workers' Protection (2018-2019),'' funded by the Swiss Network for International Studies. The findings of the German case study are presented in a full report, on which this article is based, and it can be accessed here: https://bit.ly/3KKxVHX

Democratic spillovers

From a long tradition of political theory and empirical research we know that experiences at the workplace translate to the political sphere. This "democratic spillover" (Carole Pateman) has been used as an argument by trade unions and their political allies to strengthen workplace democracy and economic democracy. Already Thomas H. Marshall famously insisted that democracy needs to build not only on equal civil and political, but also on social and economic rights. The precarisation and individualization associated with gig work, which usually is organized against any collective rights and denies even the status as regular worker, clearly affects these social and economic rights. What is more, economic deprivation is associated with lower rates of political participation which, as predicted by Marshall, further increases inequalities. In our case study, trade union organizers repeatedly described how economic pressures, individualization, spatial dissolution of work, the anonymity of social media, and a depoliticized workforce are the principal obstacles for organizing. Hence, the gig economy contributes to and could even accelerate general tendencies in modern democracies. The specific organisation of work through platforms contributes to disabling citizens and, thereby, destabilising democracy which relies on a vivid civic culture.

HAVE YOU SEEN THE BOSS? CHALLENGES OLD AND NEW FOR WORKERS IN THE GIG ECONOMY[34]

by Tom Montgomery

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Often discussions surrounding the gig economy are bound up with the novelty of the online platforms and digital devices and applications that are associated with it. However, when thinking about the gig economy from the perspective of the future of work there are lessons to be learned from the past. As part of our research[35] into social dialogue and the gig economy in the United Kingdom (UK), we investigated the future of work that encompassed the perspectives of those whose labour was tied to the rise of online platforms and we elicited the views of those who were organising these workers, such as trade unions and labour organisations

Digital precarity

In our study, some of those involved in amplifying worker voice in the gig economy conveyed some scepticism about its novelty, arguing that the types of work on offer could sometimes be presented as new but were in fact a reinvention of precarity (Montgomery and Baglioni, 2020). This perspective implies a need for the platforms to reflect upon the quality of work they are generating but there is another dimension we should not ignore – the role of the consumer. The disposition of many of us in the UK (and beyond) has been to embrace the convenience of purchasing goods and services from our mobile device that the new platforms offer. This is a phenomenon that is far from fleeting – in fact, the trend towards online shopping may have become entrenched for a fresh cohort of consumers over the period of the pandemic as lockdown encouraged the population to embrace going online (Dalgleish, 2020). As such trends become the new normal, we should pay even closer attention to the quality of work that the platforms produce.Fully comprehending the quality of work in the gig economy does however require an appreciation of what is happening offline as well as online. It is important that we connect the quality of employment experienced by the fast-food worker and the platform courier who may both be part of the same online transaction. The concerns shared by these workers have been exemplified by their participation in a gig economy strike that took place in the UK in 2018 (BBC News, 2018).

[34] This article has been written for the Geneva Graduate Institute - Albert Hirschman Centre on Democracy's series of commentaries on the need to redesign the platform economy on a more democratic and sustainable basis. (https://www.graduateinstitute.ch/communications/news/have-you-seen-boss-challenges-old-and-new-workers-gig-economy)

[35] The research on the gig economy in the United Kingdom is part of a transnational project entitled ''Gig Economy and its Implications for Social Dialogue and Workers' Protection (2018-2019),'' funded by the Swiss Network for International Studies.

As such, when we cast our lens wider to consider the rise of non-standard forms of employment more broadly including the proliferation of zero hours contracts in the UK since the 2010s (Petkova, 2018), we can trace the connective tissue between the precarity of the past (Adams, et al, 2019) and the platform work of the present. These modes of labour market flexibility have evolved with technology to create contemporary dilemmas in the gig economy. For example, some workers may be content with the flexibility these platforms can offer while others view such work as a necessity (through a lack of other options) which they hope is a stepping-stone that transforms into a stable, permanent contract or career. What is particularly interesting here in terms of dialogue between workers and employers is how labour market flexibility in the era of the gig economy has served to obscure the role of 'the boss'.

Algorithmic bosses

An emergent effect of the rise of platform work has been the accelerated disappearance of the workplace boss. Recent research has uncovered the technological aspects of these new forms of algorithmic management (Wood, et al 2018), which speaks to some of the key factors enabling this change. The disappearance of 'the boss' gives rise to a range of issues but let us highlight two which may be particularly problematic when considering the types of future dialogue required to protect the rights of workers and nurture the development of worker voice. First, when a problem at work arises then the lines are somewhat blurred in terms of to whom such issues must be addressed, and accountability for resolving issues becomes opaque. Second, the rise of algorithmic management and the absence of a decision maker on the ground could make organising for better conditions for traditional worker organisations such as trade unions more difficult when real time decision making is said to be taking place 'elsewhere'. Understanding this change is particularly important when grasping the types of work generated by online platforms in the UK, where in recent years there has been a growth in self-employment, driven partly by those in the gig economy. Contention around whether or not such workers actually are self-employed or instead have a 'boss' have been at the centre of disputes in the UK.

Part of the explanation of the rise in self-employment in the UK connects with the growth of those platforms that involve either transport or the delivery of goods (Cant, 2019). It is the growth of jobs in these sectors that led many to hope that the Taylor Review into Modern Working Practices (Taylor, 2017), would bring greater clarity to the issue of worker status in the UK. However, concerns regarding the recommendations of that review, particularly from the trade union movement have for some rendered it something of a missed opportunity (Bales, et al, 2018). It is this impasse around the future of work in the UK, driven in part by the increasing dominance of platforms, and concerns over worker protections that has led to key decisions being made in court. The significance of legal avenues in the UK gives some indication of the experience thus far and perhaps the prospects going forward of developing an effective social dialogue. Some recent court rulings[36] have thus been the key factor in determining the status of gig economy workers as employees and this has been driven by support from trade unions – both emergent grassroots unions dedicated to representing gig workers as well as the long-established larger unions in the UK.

[36] Refer to: https://www.supremecourt.uk/cases/docs/uksc-2019-0029-judgment.pdf

Social dialogue

Perhaps then, a key goal in the era of platform work in establishing a more effective social dialogue is to overcome the way in which algorithmic management can obscure who owns and operates the platform and the decision making that effects the employment attached to them. For social dialogue to be effective going forward, perhaps a key first step is therefore to identify the boss. Failing to do so effectively may have specific consequences for young people entering the labour market. New cohorts may be uncertain as to where to direct their claims for better pay, opportunities for training and progression as well as any concerns they have regarding the workplace environment (e.g., in terms of health and safety or issues around equality, diversity and inclusion). This speaks to the important role of trade unions in terms of educating and organising a new generation of workers as well as navigating the technologies and data that are shaping the workplace of the future.

Although the concern with 'identifying' the boss outlined here may seem rudimentary, it is based on a recognition that a boss who is obscured by algorithmic management creates challenges for the future development of any meaningful social dialogue. The future of platform work in the UK and the future of social dialogue are therefore inextricably linked. Employers must reflect on whether they offer an attractive environment for new generations of workers.

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THE DIGITAL PLATFORM ECONOMY:

Unpacking a Vision of Decent 'Digiwork' at Global and National Levels

The time has come for a broader vision to democratise the platform or gig economy as a whole and to ensure decent ''digiwork''

by Marily Mexi

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When the platform economy launched a decade ago, proponents claimed it would revolutionise the world of work. Optimistic expectations proved febrile, however. The companies at its heart have faced severe criticism over inadequate employment protections (unfair work) (Chaibi, 2020), freeriding on conventional businesses (unfair competition) and inadequate consumer protection. Criticism has focused on the alleged degrees of freedom and autonomy, gig work offers.

Severe criticism

People choose such work because they value more freedom and autonomy, digital platforms say (Khosrowshahi, 2019). Yet there is strong evidence that freedom and autonomy do not always reach their apogee there. Excessive surveillance (Wood et al, 2018) through algorithmic controls, combined with reduced bargaining power (Choudary, 2018) has effectively undermined the freedom the firms tout and their workers desire. This power imbalance is also manifest in the arbitrary way platforms act to build profit on data generated by workers for free (Ibarra et al, 2017). The companies need to manifest a compelling vision of data justice, providing fair compensation and workers' control of the terms of their engagement with data.

The Covid-19 pandemic has further exposed the platform economy's dark side. During the early lockdowns, digital platforms successfully externalised responsibilities on to governments for financial support and on to platform workers for their own protection. Some have even increased surveillance of workers during the pandemic—with the potential this will become 'normalised' in its aftermath (Fairwork report, 2020). Moreover, as we report in a recent International Labour Organization research brief on social-dialogue outcomes reached globally during the early phase of the pandemic, there was only a vague focus on platform workers and other groups particularly vulnerable to the impacts of the Covid-19 crisis—such as women, migrants and informal workers (ILO, 2020).

Over time, it became widely understood that the balance had gone too much in favour of the platforms. That is why the EU Commission proposed a long-overdue legislative proposal to protect fundamental worker rights in the platform economy. The categorization of the legal employment status of persons working through platforms is at the heart of the proposal, since it creates the legal assumption that the contractual relationship is an employment relationship. Most crucially, the platform company will now bear the burden of evidence to overturn this legal presumption, reflecting the actual imbalance of bargaining power between the individual employee and the platform. In the wider platform economy landscape, the Commission's proposal would only (re-) create a bare minimum of worker rights. This does not, however, ensure fair salaries or adequate social protection. Collective bargaining agreements are the only way to go (Albrecht and Voggenreiter, 2022).

Decent 'digiwork'

The time for decent 'digiwork' has come. As demands escalate for more democracy at work[37], collective bargaining and social dialogue at national level are increasingly seen as part of the solution. Empirical evidence shows that co-ordinated bargaining systems are linked with less wage inequality and higher employment (OECD, 2019). Whether considering issues of workplace adjustment to new technologies or of job quality, workers' representation and collective-bargaining arrangements constitute key tools enabling governments and social partners to find and agree on fair, tailored solutions. Furthermore, due to its deliberative and reconciliation-building attributes, social dialogue can suggest avenues for tackling the more problematic aspects of platform work in mutually beneficial, and therefore sustainable, ways. It can address power imbalances between platforms and their workers—by enforcing the correct classification of workers and fighting misclassification, by promoting transparency and fair treatment over working conditions, by enabling access to social protection, training opportunities and occupational health and safety and by dealing with algorithmic discrimination and data transparency and justice (Mexi, 2019).

The time has come also to embed transparency and justice in labour markets and societies increasingly defined by data. Workers' demands for data compensation are likely to become one of the most confrontational issues with platforms in the years to come. New trade union strategies will be needed to push forward a data-as-labour agenda (Pettersson, 2019) as part of a wider vision of decent 'digiwork', which could enable 'data labourers' to organise and collectively bargain with platforms.

[37] European trade unions hand petition for more democracy at work to European Commissioner, 23/11/2020. Refer to: https://www.efbww.eu/news/european-trade-unions-hand-petition-for-more-democracy-at-work-t/1473-a

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All this requires, on one hand, global trade union co-operation and, on the other, country-specific action. In this context, therefore, mobilisation on the part of trade unions—with their valuable, sector-specific knowledge—is vital to level the playing-field, by bringing pressure for more fine-tuned regulation or by pushing digital platforms to come to the negotiation table. The recent Memorandum of Understanding (MOU) signed between the International Transport Workers Federation, and Uber to begin social dialogue on the continued support of decent work for drivers and couriers globally is a promising breakthrough.[38]

Policy recommendations

In a nutshell, for platform workers in unbalanced power relationships, social dialogue, worker organising, the development of agency, voice and representation and its expression through collective bargaining are the surest route to a more inclusive future. Beyond the academic literature, this has been confirmed by the work of the Organisation for Economic Co-operation and Development (OECD, 2020) and the International Labour Organization (ILO, 2018), as well as by the European Commission's discussions with social partners on how to regulate platform work.[39]

More research and policy action would help shape future momentum, setting in place national or global frameworks for structured dialogue and collective bargaining among governments, platform businesses and workers. This should be part of a broader strategy to democratise the platform economy as a whole—from its governance to the ability of individual workers to organise and make decisions together about their work – and to ensure decent "digiwork" (Mexi, 2020). The European Commission's willingness "foster the social dialogue on algorithmic management systems by introducing collective rights regarding information and consultation on substantial changes related to use of automated monitoring and decision-making systems" is a noteworthy development in the area of algorithmic management.[40]

Such an agenda of decent digiwork would engender a robust, democratic dialogue about the moral foundations of the platform economy at global levels—with the primary goal a more equitable and engaged society, which rebalances power in digital workplaces. In this direction, governments and international agencies also need to put in place effective frameworks of due diligence on labour issues, covering the digital platform economy, and support a formal role for labour and civil society in these frameworks. Pressing platforms to adopt voluntary codes of good conduct is also important for addressing imbalances. In the long run this could bring together existing initiatives[41] in a broader and coherent global framework, which could be actively endorsed by organisations such as the International Labour Organization and the European Union. While voluntary codes are no 'silver bullet' for fixing problems, they can have a more immediate impact than 'hard' law, which tends to move more slowly. In the case of globalised crowdwork platforms, such arrangements can lead to rebalancing power asymmetries in their cross-border operations. All these issues will soon be put on the table more intensely, as telecommuting (Baldwin, 2019) and virtual service delivery are triggering an acceleration of the globalisation of services (WTO, 2019) —in which crowdwork platforms play an important role.

[38] Refer to https://www.business-humanrights.org/en/latest-news/global-uber-signs-memorandum-with-transport-workers-federation-on-decent-working-conditions-for-drivers-couriers-globally/

[39] Refer to https://ec.europa.eu/commission/presscorner/detail/en/ip_21_686

[40] Refer to Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on improving working conditions in platform work. https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX-:52021PC0762&from=EN

[41] For an overview of these initiatives refer to https://www.eurofound.europa.eu/data/platform-economy/initiatives#codeofconduct

Managing global complexity

Concurrently, globalised markets driven by 'crowdwork' (involving work outsourced through an open call to a geographically dispersed crowd via digital platforms such as Amazon Tur or Upwork) raise fundamental policy regulatory questions: How can we address inequities fostered by platform crowdwork and create spaces for promoting democratic governance and participation of all actors in the crowdwork platform industry, allowing them to work together to ensure level playing fields against social dumping while avoiding a possible degradation of basic labor standards? There is an undeniable challenge: while much of the work done through crowdwork platforms is done globally, it tends to be done outside of the scope of national labour norms and rules in either their employers' or platform workers' home countries. As a result, what distinguishes the platform economy from previous labour patterns is the internationally distributed nature of crowdwork, which raises concerns regarding the precise location of regulatory – and governance – interventions. How would regulations apply to work done in Switzerland but provided online to a crowdsourcer client in another nation via a digital platform registered in the United States (or, in some cases, numerous platforms and clients in various countries)? And, even if a certain regulatory model is supposed to be applicable, how can it be implemented across borders?

In response to this problem, voluntary cross-border social dialogue activities and agreements, such as transnational company agreements, can provide inspiration (Papadakis and Mexi, 2021). International framework agreements between global union federations and multinational enterprises, as well as European Framework Accords between multinational enterprises and European trade union federations and/or European Works Councils, are examples of such agreements.

They are designed to promote labour relations and working conditions, particularly in the areas of freedom of organization and collective bargaining, and to construct a cross-border labour relations framework.

The introduction of this type of transnational private labour regulation via transnational company agreements has proven critical in bridging 'governance gaps' in increasingly complicated cross-border value chains (Delautre et al, 2021). Over 200 firms, largely European-based MNEs, signed 325 TCAs between 1988 and early 2020. TCAs may have a positive impact on the improvement of, and compliance with, labor standards in global supply chains, as evidenced by recent policy documents adopted by the International Labour Organization (ILO) (see ILO, 'Decent Work in Global Supply Chains' (n 4) 66; ILO

Resolution concerning decent work in global supply chains adopted on 10 June 2016 para 23(c); ILO, Meeting of experts on cross-border social dialogue, Final Conclusions, Geneva 12-15 February 2019 conclusion no 8). Simultaneously, the inherent adaptability and reflexivity of cross border social dialogue as manifested at the global level through intergovernmental and multilateral processes – most notably through the International Labour Organization itself[42] – presents a unique opportunity to ensure decent working conditions for all platform workers in the platform economy and to accommodate "voice," in Hirschmanian terminology, by transforming relations between platform companies and platform workers through democratic confluence spaces.

To summarize, both cross-border social dialogue and transnational company agreements can provide new opportunities for facilitating dialogue and promoting coordination between digital labor platforms, clients, and workers in response to the emergence of a global or "planetary labor market" (Graham and Amir Anwar, 2019) due to their qualities and outcomes (enhancing reflexivity and managing labor processes and economic activities that are no longer territorially limited while promoting labour standards) tested in a global supply chain environment. Transnational company agreements, in particular, can provide important analogies for designing similar instruments that can fit the complexity of cross-border platform-enabled crowdwork, which involves a network of (often) multiple entities, physical locations, and different regulatory domains where work is performed, mediated, and delivered.

[42] See Reports of the Recurrent Discussion Committee: Social dialogue and tripartism: Resolution and conclusions submitted for adoption by the Conference, May-June 2008. https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---relconf/documents/meeting-document/wcms_631652.pdf

Important message

Today, as the platform economy evolves, governments worldwide struggle to put in place far-reaching solutions, with international and multilateral co-ordination weak (Albrecht, 2020). Considering these difficulties and the globalized nation of digital platform markets, a global observatory dedicated to the platform economy could strengthen synergies and add policy coherence (Mexi, 2020).

Such an observatory could be entrusted with monitoring and providing country-level support on such issues as working conditions, algorithmic management and control, or cross-border social-security co-ordination (Weber, 2019). It could be administered by an existing international institution with a strong normative labour-standards agenda, such as the International Labour Organization and the European Union.

Wrapping up: One of the most worrying tendencies of our time is the diffusion of the undesirable mindsets and attitudes that govern most platform-type work and markets—by their very DNA less equitable and inclusive—into other spheres of life, devaluing the solidarity on which democratic citizenship depends. A big reset is necessary – both at global and national levels. A vision of decent digiwork aimed at democratizing the platform economy at both global and national levels is as much about identifying the agents of transformation as it is about articulating new ideas. It is, above all else, about people and their aspirations for a future of work which takes a big turn for the better.

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PLATFORM CAPITALISM, PLATFORM COOPERATIVISM AND THEIR EFFECTS ON WORKERS' SATISFACTION[43]

Learning from the approach of platform cooperatives can help us convert existing capitalist enterprises into more human-centered organizations

by Raymond Saner, Lichia Yiu & Melanie Nguyen

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The world's attention is zeroing in on the future of work, and the sharing economy is a very important element of that future. Specifically, the Sustainable Development Goals contain various targets pertaining to the future of work, and the International Labor Organization established a High Level Global Commission on the Future of Work in 2017. However, the sharing economy has faced various backlashes over the years as its capitalist enterprises prioritize profit-maximizing motives over its own workers, thus neglecting the well-being of workers to the detriment of economic and social equality.

In that context, the platform cooperative movement was born with a strong conviction to advocate for the common economic and social concerns of workers through "jointly-owned and democratically-controlled enterprises" (International Cooperative Alliance n.d.). Platform cooperatives offer the same services on technologically equivalent platforms compared to their capitalist counterparts, but the engagement of workers in these two business models are vastly different, due to their distinct goals and missions.

[43] This article has been written for the Geneva Graduate Institute - Albert Hirschman Centre on Democracy's series of commentaries on the need to redesign the platform economy on a more democratic and sustainable basis. The full paper on which this article is based can be accessed here: https://www.graduateinstitute.ch/sites/internet/files/2021-11/Full%20paper.pdf

Platform cooperativism and platform capitalism

Cooperatives have a significant presence in the world's economy today. According to the ILO, cooperatives provide 100 million jobs and ensure the livelihoods of half of the world's population. Beyond bringing employment, cooperatives provide decent work as they, by definition, value the principles of employee protection, fair profit-sharing, and community building. They play a major role in developing areas where private investors do not because, instead of relocating to areas with cheap labour, cooperatives are established by the community where it is located and grow to serve that community.

An innovative offshoot from the cooperative model is "platform cooperative," a term coined by scholar-activist Trebor Scholz referring to the cooperative model applied in the digital economy. Scholz claims that it follows the same principles as a traditional cooperative but there are two major differences. First, business transaction is conducted on digital platforms such as websites or mobile apps. Second, due to the interconnected nature of the digital economy, platform cooperatives are more efficient in fostering collaboration among their own members and between different cooperatives.

Platform capitalism exacerbates social and economic inequality because such enterprises enhance access to jobs that are traditionally taken by low-income, low-skill workers and causes a displacement of labor. Furthermore, workers are signed on as independent contractors instead of employees, depriving them of the ability to unionize and bargain for their rights, including minimum wage or unemployment benefits. As a result, platform capitalism has come under fire for distorting the local economy and neglecting workers' rights. Take Airbnb for example. The hotel industries in Spain and France have protested against unfair competition created by Airbnb. Local residents of cities with travel destinations have voiced their concern about the prohibitive rise in house prices and overcrowding by tourists brought about by the increasing popularity of Airbnb.

Similarly, Uber was involved in various scandals due to its low wages and lack of monitoring to ensure safety for drivers and customers. In Germany, Japan, and Spain, the government has forbidden Uber from operating due to its perpetuation of unfair competition.

In contrast to platform capitalism in the sharing economy, platform cooperatives offer a different way of organizing internet enterprises, one that is under democratic ownership and in line with Social and Solidarity Economy (SSE) principles. It can unite producers and consumers by committing to serve the well-being of all and striving for equitable distribution of benefits.

Fundamentals of worker satisfaction

How do the differences between the engagement of workers in platform cooperatives and in platform capitalist enterprises impact workers' satisfaction?

To answer the research question, we conducted qualitative case studies of two different businesses: TaskRabbit, a platform in the capitalist sharing economy, and Loconomics, a platform cooperative (Loconomics Cooperative Bylaws 2016), seeking to identify the ways TaskRabbit and Loconomics engage workers in four different domains: ownership, decision-making, distribution of profits and benefits, and interpersonal relationships.

All in all, we find that platform capitalist enterprises and platform cooperatives differ significantly in their mechanisms of worker engagement, both in theory and in practice, as exemplified by the case of TaskRabbit and Loconomics. While these two enterprises belong to the same industry and offer the similar services, they embody the spirit and the philosophy of different business models, which translates into their impact on workers' satisfaction.

Platform cooperatives put heavy emphasis on the social wellbeing of workers through implementing a joint-ownership model, an inclusive decision-making process, fair distribution of gains, and strong support for interpersonal relationship development. Thus, they are better geared toward maintaining and enhancing workers' satisfaction.

However, a major concern for platform cooperatives is whether the enterprise can remain profitable enough to survive and provide the best benefits to its workers. The scalability and replicability of this model need to be tested in the long run.

Many questions remain to be answered: How well will worker-engagement methods of platform cooperatives work when these enterprises get bigger? How can they ensure enterprise growth without compromising active participation of all workers and the quality of their interpersonal relationships? How can the platform cooperatives' approach be replicated to worker engagement in different industries? Addressing these questions will require consistent and interdisciplinary research, drawing from various fields such as political economy, psychology, and management.

A more human-centred future of work

Having said that, with all the potential benefits that platform cooperatives can offer to the community of workers, this business model could be an up-and-coming component of the SSE. Further technological advances will continue to support the growth of platform cooperatives and the transformative role they could one day play in the future of work. Even outside of the SSE movement, other business models could find certain elements of platform cooperatives applicable to their own situations. Learning from the approach of platform cooperatives can help us convert existing capitalist enterprises into more human-centered organizations. As a result, studying platform cooperatives and the dynamics they create among workers is important for scholars, policymakers, entrepreneurs, workers, and consumers alike. We need to ensure that technological advances and progress in labor protection are moving in synchrony, so that the human element is not left behind in the age of machines.

WE NEED MORE BIAS IN ARTIFICIAL INTELLIGENCE[44]

What makes one vision more desirable than another is not its neutrality, but whether it can better serve one's goals in the context of where those goals are being pursued

by Mario Mariniello

Mario Mariniello was senior fellow at Bruegel, and he led Bruegel's Future of Work and Inclusive Growth project.

The Muller-Lyer optical illusion consists of two lines of equal length that differ only in the direction of arrowheads at either end. Yet, to most observers, the line with arrowheads pointing outwards looks longer than the other. If you grew up in and among buildings with straight walls and 90 degree angles, you have learned to perceive lines according to geometric patterns. Your view of the Muller-Lyer lines is biased.

[44] This opinion piece was produced within the project 'Future of Work and Inclusive Growth in Europe', with the financial support of the Mastercard Center for Inclusive Growth. It was originally published Il Sole 24 Ore. (https://www.bruegel.org/comment/we-need-more-bias-artificial-intelligence)

DELPHI ECONOMIC FORUM

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Artificial intelligence developers sometimes fall into similar traps. They program life-changing applications, into which they project biases. Algorithms have led judges to be harsher on Black offenders when assessing the likelihood that defendants will commit the same crime again. Machine-learning applications favour male over female job applicants (Amazon scrapped its recruiting tool after the system learned to attach a lower score to applications that mentioned the word 'woman').

Automatic translation programs replicate gender stereotypes. For example translating from a language without gendered pronouns (such as Finnish) into English, the algorithm could suggest using 'he' when the action is 'to work' and 'she' when the action is 'to wash the laundry'.

We should be very concerned about bias embedded in artificial intelligence. Efforts by public authorities to curb it, such as the regulation being proposed by the European Commission in 'the Artificial Intelligence Act', are welcome.

Often, however, biases are not only embedded in the design of the algorithm. They are also external to it, originating in societal biases. Amazon's recruiting tool inherited the bias from a dataset covering a decade during which most job applications came from men (a symptom of the strong asymmetry in gender power in the technological sector). Similarly, automated translation applications learn gender stereotypes from the thousands of books used to train them. Discrimination against women and minorities is well reflected in literature.

No matter how objective we try to be, the mere decision to adopt artificial intelligence solutions has profound implications. That decision is inherently subjective and thus comes with some political responsibility, which goes beyond simply regulating the use of artificial intelligence.

Algorithms learn to be as discriminatory as the society they observe. They then suggest decisions that are inherently discriminatory, and thus contribute to exacerbate discrimination within society. Policy may break this vicious circle.

If public policy aims to improve decision-making and build a more inclusive society, it should deal explicitly with the question of the role of artificial intelligence in achieving the end goal. If artificial intelligence amplifies society's biases, policy may well need to intervene, either prohibiting its use or embedding counterbalancing biases. For example, algorithms that automatically rank subjective content in online chats could be compelled to attach lower weights to discriminatory comments. This, in effect, would distort the sentiments of a community: perhaps in the collective image of a community populated by men, women are not associated with intellectual work. But the algorithm would then yield a representation of the world closer to what we would like it to be. In medical research, desirable biases could be used to correct gender imbalances. Coronary heart disease is a leading cause of death for women, but men are overrepresented in clinical trials: artificial intelligence could favour women's enrolment over that of men.

This does not mean that politicians should systematically interfere with technology markets, micromanaging technology development and adoption. But an overall political vision is needed to set the direction of travel, if the aim is to live in a better world.

We often already call for the introduction of desirable biases through affirmative action. Gender quotas address discrimination against women in the selection for positions of power. Quotas do not however simply correct bias. They are also a political statement: gender equality is a tool to change the system structurally. Male-driven decision making in companies or public institutions could indefinitely perpetuate itself, with those in charge continuing to select those who match their male-oriented vision of the world. Imposing quotas is tantamount introducing a bias against that; it means rejecting one way of doing things and instead supporting a different vision that aims to correct historic marginalisation.

Similarly, the discussion on how to improve the use of artificial intelligence in Europe should not be separated from its structural implications.

In the 1960s, anthropologists realised that members of Zulu tribes in South Africa did not fall for the Muller-Lyer illusion. Unlike their peers from Western societies, they saw immediately the lines were of the same length. Their interpretation of the information provided was different. Zulus live in rounded huts in an environment where the sharp angles of European buildings are absent. Their geometric vision is different. Of course, a Zulu might find herself less at ease estimating distances in a European city.

Ultimately, what makes one vision more desirable than another is not its neutrality, but whether it can better serve one's goals in the context of where those goals are being pursued.

THE TRIPLE CONSTRAINT ON ARTIFICIAL-INTELLIGENCE ADVANCEMENT IN EUROPE

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Skills, data and financing shortcomings constrain artificial-intelligence innovation in Europe

by Mia Hoffmann and Laura Nurski

"This blog post was produced within the project "Future of Work and Inclusive Growth in Europe", with the financial support of the Mastercard Center for Inclusive Growth." (https://www.bruegel.org/blog-post/triple-constraint-artificial-intelligence-advancement-europe)

Shortcomings in Europe in human capital, data and the financing available all hold up adoption by European firms of artificial intelligence. These same barriers also constrain European AI research and development. Table 1 shows how barriers in terms of skills, financing and data come into play differently at each of the three stages of innovation (see our recent Policy Contribution[45] for a detailed discussion).

A head-start in AI research, development and diffusion can generate economic and geopolitical benefits. Rapid AI adoption in the private sector promises productivity gains and a competitive edge on global markets. Growing demand for AI technologies will generate economic benefits in countries that are home to developers of cutting-edge AI products.

Table 1: Outcomes of and barriers to successful AI advancement

	AI research	AI development	AI diffusion
Who does it?	Universities, private research laboratories	Technology companies (big tech & AI start-ups/scale-ups)	(Non-AI) firms across all sectors of the economy
Indicators of success			
	Number of paper/conference citations	Number of AI start-ups Number of AI unicorns Number of AI patents	% of firms adopting AI
Inputs (or barriers) to success			
Skills	Academic AI researchers	AI PhDs & Master degrees	Computer science degrees
Financing	Public funding	Venture capital	R&D subsidies or tax deductions
Data availability	External (public & private) data for testing techniques	External (public & private) data for training models	Internal data for fine-tuning models

Source: Bruegel, see Hoffmann & Nurski (2021) for full table.

AI development also arguably reinforces strategic autonomy by reducing dependence on foreign technology and providing opportunities for policymakers to shape international standards. Countries affiliated to scholars conducting frontier AI research may benefit from knowledge transfers to students and spillovers to the private sector (Gofman and Jin, 2020), and the ability to set research priorities through policy. Unsurprisingly, more than 30 countries now have national AI strategies,[46] including the US and China.

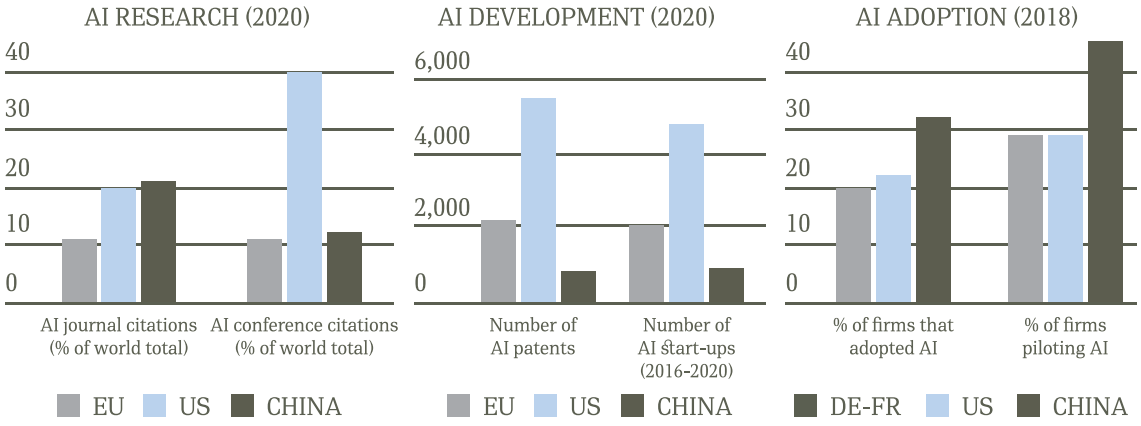
AI innovation outcomes in the EU, the US and China

Measuring advancement requires different metrics for the three stages of innovation – research, development and diffusion. AI research can be considered successful when it leads to journal and conference citations; AI development can be considered successful when it leads to patents or unicorns (start-up companies valued at $1 billion or more); and AI diffusion can be considered successful when firms pilot or integrate AI into their operations. In each of those areas, Europe is proving less successful than its international counterparts (Figure 1). Europe's skills, data and financing shortcomings contribute to this.

[45] Refer to https://www.bruegel.org/2021/11/what-is-holding-back-artificial-intelligence-adoption-in-europe/

[46] Refer to Artificial Intelligence Index Report 2021, Stanford University available here: https://aiindex.stanford.edu/report/

Figure 1: Comparing outcomes of AI success in the EU, the US and China

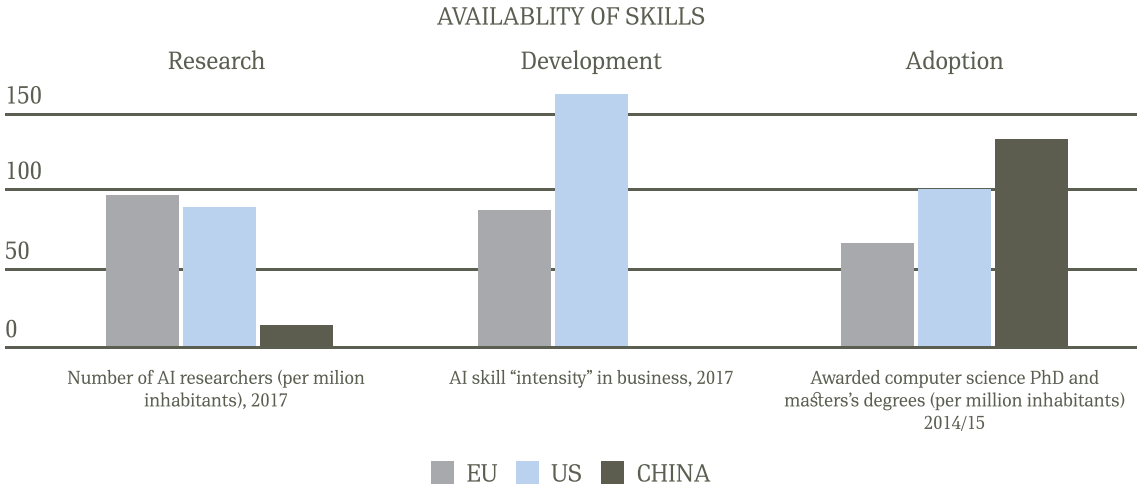


Source: Bruegel based on Duranton et al (2018), CBInsights & Zhang et al (2021). Note: a) Patents: Only ~8% of patents filed provide information on the geographical affiliation, therefore the data presented here has limited reliability. As a share of all global AI patent filings, the US accounts for 3,2%, the EU27 for 1.3% & China for 0.4%. b) Start-ups: the number reflects the sum of start-ups the received funding of at least $400.000 over the past five years (2016-2021)

AI skills availability in the EU, US and China

A skilled labour force is a key enabler of technological advancement. Competitive universities and academic talent enable countries to participate in frontier research. Skilled researchers generate productivity and quality spillovers (Azoulay et al, 2010) to their teams and co-authors. High levels of intellectual capital and skills have been found to boost innovation performance in high-tech firms (Buenechea-Elberdin et al, 2017), and the number and success of AI start-ups depend on the specialised expertise of their founders (Gofman and Jin, 2020). Finally, the availability of digital skills among staff is central to AI adoption (Kinkel et al, 2022). Four-fifths of EU companies consider the lack of skills in the labour force to be a critical barrier (Kazakova et al, 2020) to AI adoption.

Figure 2: AI skill availability in the EU, US and China



Source: Bruegel based on Anderson et al (2020) & Castro et al (2019). Note: The Chinese estimate for skills intensity in business relies on only one observation and was therefore removed.

The metrics shown in Figure 2 reflect skill endowments of the three economies for each stage of AI advancement. The EU has an excellent skills base in terms of AI research (column 1), but appears to have less of an advantage when it comes to leveraging this expertise in the private sector. The indicator for skill intensity in business shows that the EU has on average less than half as many AI researchers employed in top AI firms than the US. Moreover, the ability of EU firms to adopt AI systems and adjust them to their operational needs is limited by the relatively low availability of programmers and data engineers in the labour market, as proxied by the number of computer science degrees (column 3). Here, in line with the AI adoption estimates, the Chinese labour force appears better equipped to serve the needs of business.

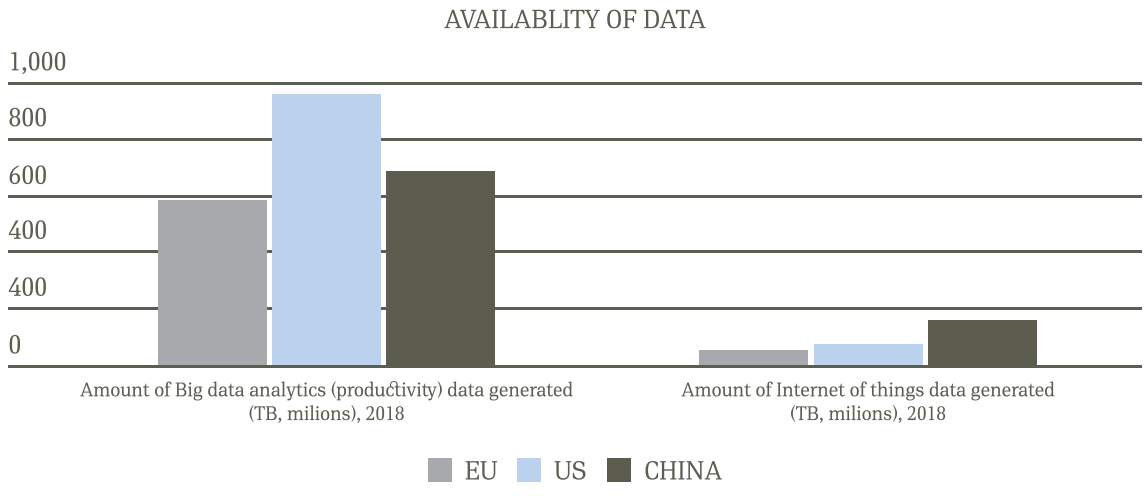
Data availability in the EU, US and China

Data availability is the second important driver of AI advancement. The ability to process and store huge amounts of data has been one of the key enablers[47] of recent AI research and development. Combined with advancements in scalable computer systems, the emergence of massive amounts of (public and private) data have allowed core AI algorithms, such as deep learning and reinforcement learning, to be explored at unprecedented scale and scope. For AI adoption by regular companies, however, the availability of internal company data is a more crucial determining factor, as AI technologies need to be fine-tuned to the specific context of each organisation. This algorithmic fine-tuning requires adoption of previous 'basic' technologies[48] such as data storage and computing power, because, unless data can be collected, stored and transformed, companies cannot begin to learn from it or use it to support intelligent decision making. More than half of EU companies have cited lack of internal data as a major or minor obstacle (Kazakova et al, 2020) to AI adoption.

[47] Refer to A Berkeley View of Systems Challenges for AI, available at: https://arxiv.org/pdf/1712.05855.pdf

[48] Refer to Advanced Technologies Adoption and Use by U.S. Firms: Evidence from the Annual Business Survey, available at: https://www.nber.org/papers/w28290

Figure 3: Data availability in the EU, US and China



Source: Bruegel based on Castro et al (2019).

The availability of data in digital form is determined by both the amount of data generated and its accessibility to researchers and companies. Large datasets of productivity data and data generated from connected devices and appliances can, for example, be used to train machine-learning algorithms in retail or industrial settings and are especially relevant to AI research and development. Data generation in the EU is significantly lower than in the US and China (Figure 3), likely driven by low levels of digitisation in European economies. Unfortunately, lack of information on firm-level data collection prevents us from making comparisons about internal data availability.

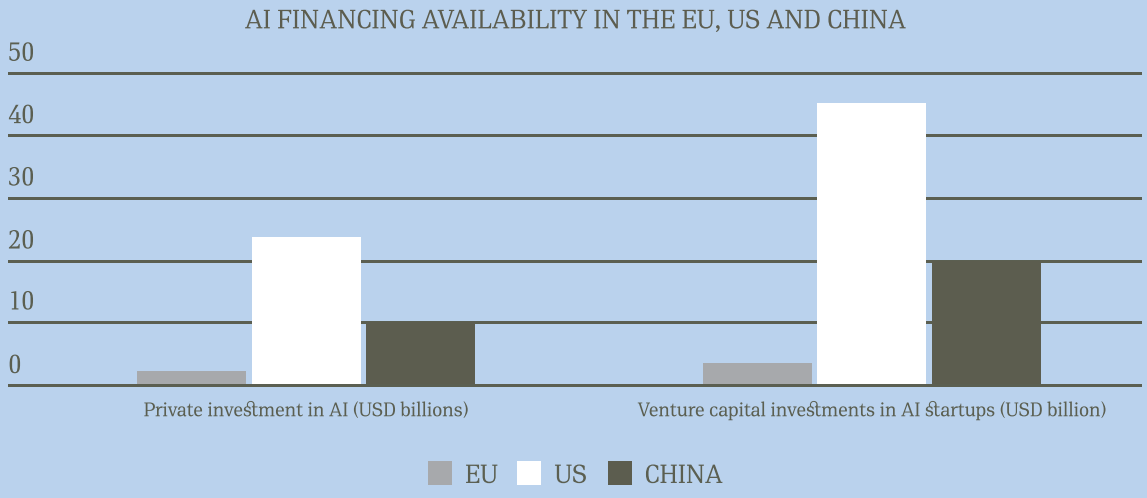
AI financing in the EU, US and China

Intuitively, access to financing is crucial for AI start-ups to scale-up and realise their ideas. Venture capital appears particularly suited to fill this gap (Kerr et al, 2014) since, in addition to providing funding, VC investment is associated with beneficial impacts on firms' operations. Similarly, financial constraints are a major barrier to technology adoption in regular non-AI firms. Complex technologies such as AI require significant operational and organisational adjustments (Hoffmann and Nurski, 2021a), the costs of which can be prohibitively high (Ghobakhloo and Ching, 2019), for some firms. Governments wishing to stimulate AI adoption should consider subsidies or tax incentives.

Compared to American and Chinese counterparts, European firms face dire budget constraints when it comes to AI (Figure 4). In 2020, VC flows into EU start-ups represented less than one quarter of the flows to China, and less than one tenth of those to the US. The same is true for private investment in AI. According to the OECD's AI Policy observatory,[49] based on 13 government agencies, total public AI R&D funding stood at $3.6 billion in 2019, the vast majority accounted for by US and EU spending (data on Chinese public R&D investment is not available for comparison).

[49] See https://oecd.ai/en/wonk/government-investment-ai-related-r-and-d

Figure 4: Bruegel based on OECO.AI (2021) and Zhang et al (2021)



Source: Bruegel based on OECD.AI (2021) and Zhang et al (2021)

Hoffmann, M. and L. Nurski (2021) "What is holding back artificial intelligence adoption in Europe?"

Policy Contribution 24/2021, Bruegel.

Policy recommendations

Compared to China and the US, lack of financing seems to be the most crucial barrier that Europe faces overall. Acquisition of the technology and adaptation of operational processes around AI prove constraining for regular businesses (Hoffmann and Nurski, 2021b). International comparisons often focus on the EU's shortfall in VC investment in AI, which is crucial for AI development. But to stimulate adoption of AI among regular non-tech firms, governments might better look to tax deductions or subsidies that support the acquisition of AI technology and related services.

Lack of availability of AI skills seems the main factor holding back the final adoption of AI in regular firms. International comparisons show that despite the EU's large number of academic AI researchers, Europe doesn't deliver the same amount of skilled labour to private firms, resulting in a lack of skilled data scientists who can put AI to practical commercial use. This suggests that the labour market is a binding constraint on AI adoption and an area to which the EU and member states should pay attention. Improving opportunities for adult learning and making data skills part of more educational curriculums are the first steps to take.

Finally, in terms of data availability, data generation in the EU appears to be trailing behind the US and China, a result of Europe's lagging digital transformation of businesses and public administration. While access to external (private and public) data is necessary for AI research and development, the availability of internal company data is more crucial for AI adoption by non-R&D-firms – for example, fine tuning of AI algorithms for the purposes of specific businesses. Governments should therefore first promote the digitisation of business and administration, and support the investments needed to improve technological readiness necessary for AI adoption.

Next, policymakers can focus on opening up public (anonymised) data and improving cross-country accessibility and comparability of datasets. Alleviating these most pressing constraints in terms of skills, financing and data would go a long way to promote AI advancement in Europe.

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AI IN GOVERNMENT: WHAT SKILLS FOR GOVERNMENT OFFICIALS AND PUBLIC SERVANTS?

With the growing use of AI, there is a pressing need to bridge the well-known gap between those who understand the organization, governance, and policymaking, with those who know the technology

by Jérôme Duberry

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« Digital transformation (DT) is increasingly establishing itself as a constant theme in contemporary academic and practitioner conversations. A quick search in Google Trends shows that interest skyrocketed from a level of 1 to 100 in the six years between 2013 and 2019. » (Hanelt et al., 2021, p.1159).

Facing pressure to digitalize their processes and services, governments and organizations are exploring the potential of digital technologies. This enthusiasm to digitalize public action responds to a growing demand to use digital technology to modernize public action and facilitate citizen participation (De Feraudy, 2019). This digital imperative is combined with the participatory imperative already weighing on the construction, implementation, and evaluation of public policies (De Feraudy & Saujot, 2017). However, the digitalization of governance, operations, and services is not an easy task. This article questions the skills needed to lead a digital transformation strategy in the public sector.

Unlocking the value of AI-driven government

E-government efforts take advantage of technological advances to (i) optimize the effectiveness and efficiency of government services, (ii) put the citizen back at the center of the design of services rendered by organizations, and (iii) increase trust in government (Ubaldi, 2020). Already in the 1990s, the internet and computer technology helped transform paper-based processes to fully digitized processes and services available online 24/7. Progressively, the automation and lowering of data collection costs, the massive increase of available data, and the shift of many face-to-face human activities to the digital domain, have put data processing at the heart of modern public action, and allowed for more efficient and cost-effective service delivery (Martens, 2018). Artificial intelligence (AI) enables organizations and governments to make sense of these large datasets. As Sharma, Yadav, and Chopra (2020) argue, "[w]ith rapid digital technological change, it is inevitable for the government to innovate its traditional methods in order to achieve better citizen engagement, accountability, and interoperability (...)."

AI can be considered useful for six types of government challenges: allocating resources, analyzing large datasets, overcoming the shortage of experts, predicting scenarios, managing procedural and repetitive tasks, and diverse data aggregation and summarization (Mehr et al., 2017). AI can also provide automated legal advice at lesser cost (Nissan, 2017). Moreover, AI can contribute to improving the efficiency and inclusiveness of the policy-making process through optimizing decision-making processes, data and opinion mining, game theory, and agent-based simulation (Milano, O'Sullivan, & Gavanelli, 2014).

According to Misuraca and Van Nodt (2020), AI presents many benefits for governments to increase the efficiency and effectiveness of their operations and services, such as:

Improving the knowledge management capacity (e.g., assist in the browsing and finding of relevant data in Slovakia);
Mapping and predicting risks (e.g., predicts burglaries in Switzerland);
Automatizing data collection and analysis (e.g., process satellite imagery in Estonia); some services (e.g., self-driving snowploughs in Norway), decision-making (e.g., Nursery child recruitment system used in Warsaw), and the communication with citizens (e.g., Chatbot to answer frequently asked questions in Latvia).

Evidently, citizens benefit strongly from more efficient and effective public action. However, prior research has questioned the real benefits of digitization of government operations and services. As Bannister and Connolly (2020) argue, the promises of digital technologies far exceed the reality and expectations of users (Bannister and Connolly, 2020). Technology is sometimes pursued by public institutions as an objective in itself, symbolizing modernity more than a desire to transform participation. It can be approached with a certain fetishism of functionalities (e.g., the possibility to "like" contributions) without a clear a priori need assessment analysis (Albarède et al., 2018). Misuraca et al. (2013) and Savoldelli et al. (2014) have even questioned the merits and real impact of the massive investments in digital technologies that governments have made in recent decades. To what degree do these digital transformations improve the efficiency and effectiveness of government operations and services?

The need for a digital transformation strategy

With the growing use of AI, there is a pressing need to bridge the well-known gap between those who understand the organization, governance, and policymaking, with those who know the technology. Said differently, we need to combine policy-governance and IT expertise in a digital transformation strategy. According to Pasha, Poister, and Edwards (2015), public-sector strategic planning consists of « rational-comprehensive approach to strategy formulation that uses a systematic process with specific steps such as external and internal assessments, goal setting, analysis, evaluation, and action planning to ensure long-term vitality and effectiveness of the organization. » Although highly iterative, these steps can be grouped in three stages around (i) need assessment, (ii) planning, and (iii) evaluating.

In their systematic review of the literature on digital transformation, Hanelt et al. (2021) identified similar stages in the development of a digital transformation strategy that focus on (i) contextual conditions, (ii) mechanisms, and (iii) outcomes. The first stage consists of assessing contextual conditions, which combines material (e.g., digital properties), organizational (e.g., organizational strategy and legacy), and environmental determinants (e.g., legal and infrastructural conditions).

The second stage focuses on "mechanisms" that link contextual conditions with outcomes (Hanelt et al., 2021). It consists of elements that innovate (e.g., leveraging digital capability) and elements that integrate (e.g., developing a digital transformation strategy). It requires to (a) understand the potential of data and added value of various digital technologies applied for public action, (b) analyse, design, and plan digital transformation projects, and (c) communicate with internal and external IT partners to implement the strategy.

The third stage focuses primarily on outcome and evaluation. It is about anticipating the desirable and undesirable impacts on the organization, its stakeholders, and its environment. This assesses the potential consequences of digital transformation on the organizational (e.g., automated, data-driven and virtual processes), economics (e.g., improved performance), and spill-over level (e.g., higher exposure to cyber-threats) (Hanelt et al., 2021).

In this context, the specific skills necessary to lead a digital transformation strategy include digital literacy to a large range of technologies (AI, blockchain, e-participation), law and regulation (what data to use and how), awareness of risks associated with digitalization and datafication (i.e., diversity, bias) and spill-over (cybersecurity, environment), strong analytical skills and deep understanding of the organization and its formal and informal governance processes, as well as soft skills including networking and communication to bridge the gap between IT and non IT experts.

If most public institutions are still in the early or developing stages of this digital transformation journey, continuing education programs at the nexus of governance-policy and technology are highly necessary to ensure that governments and organizations develop the internal skills to lead bespoke digital transformation strategies that fit their specific needs and context.

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EPILOGUE:
ALGORITHMIC MANAGEMENT IS THE PAST, NOT THE FUTURE OF WORK[50]

by Laura Nurski

The use of artificial intelligence in the workplace has been hailed as both the future of work (Caine and Firth-Butterfield, 2020) and its destruction. Worker-friendly applications of AI in the workplace include the automation of dangerous, dirty and dull tasks (Marr, 2017), strategic workforce planning (Moore and Eric Bokelberg, 2019) and learning and reskilling (Akdere, 2020). However, applications that might harm rather than help workers are also emerging. AI algorithms in hiring and promotion have been shown to discriminate (Dastin, 2018), for example. Equally worrying for workers is algorithmic management (AM) (O'Connor, 2016).

AM is the use of AI to assign tasks and monitor workers. It includes continuous tracking of workers, constant performance evaluation and the automatic implementation of decisions, without human intervention (Berg, 2019). These algorithms are designed to optimise the efficient allocation of resources in the production of goods and services, helping organisations reduce costs, maximise profits and ensure competitiveness in the market.

However, optimising efficiency can come at the expense of worker wellbeing. Deteriorating job quality is often a side effect of scheduling and allocation algorithms. In warehouses, robots are not yet replacing workers, but algorithms are optimising jobs to make workers more like robots (Ghaffary, 2019) and to minimise workers' idle time[51](to the point that they skip bathroom breaks) (Lecher, 2019). In retail, scheduling algorithms (Loggins, 2020) present workers with long and unpredictable hours, making it next to impossible to balance personal life with work. No longer confined to digital labour platforms, AM is now pervasive throughout the whole economy (Berg, 2019), particularly in retail, call centres, hospitals and warehouses.

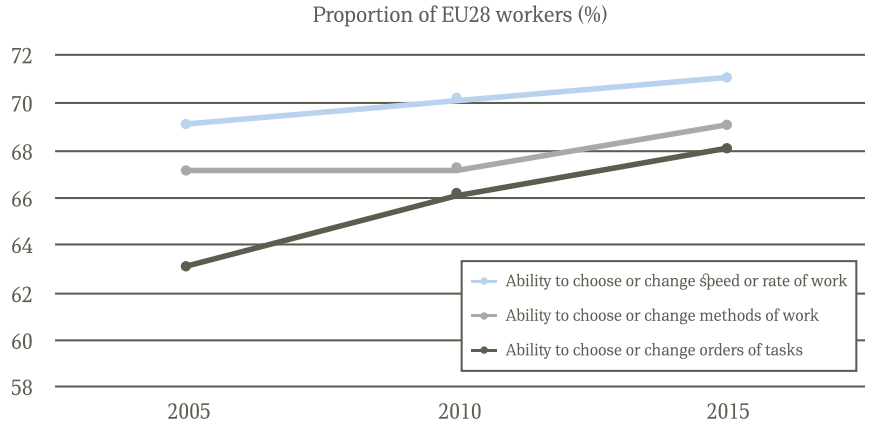
None of this is new however. We need not look far to find evidence of the harmful effects of such optimisation practices. Frederick Taylor's Principles of Scientific Management, written in 1911, reads like a twenty-first century guide to data-driven management (Walsh, 2019): data collection and process analysis, efficiency and standardisation, and knowledge transfer from workers into tools, processes and documentation. The digital transformation that organisations have gone through in the past decades has left them with mountains of data and cheap technology for storing and analysing that data. With the rise of workplace AI, Taylor's dream of perfectly optimised work processes might finally become a reality.

However, that would come with a price. The Ford factories adhering to Taylor's principles had a staff turnover rate of over 350% (meaning the entire staff had to be replaced 3.5 times per year). It is not hard to see that job quality was extremely bad on the Ford assembly lines.

There is a large body of evidence on the effect of job autonomy on workers' wellbeing and health. Jobs with low autonomy or control have been shown to lead to negative health outcomes and mental strain (Karasek, 1979). Acute conditions, cardiovascular risk, musculoskeletal disorders, mental health problems, functional disabilities and self-assessed health problems are also associated with low-autonomy jobs among older workers (Henseke, 2017). Data on observable health outcomes confirms the self-assessed effects: coronary heart disease (Rugulies et al, 2020) and even cardiovascular mortality (Niedhammer et al, 2020) have been found to be impacted by job control over time. These long-term effects on workers' health could be felt years after they have been exposed to low-autonomy jobs.

Indicators of job quality developed by Eurofound (the European Foundation for the Improvement of Living and Working Conditions)[52] include the ability to change the order of tasks, the ability to choose or change the speed or rate of work and the ability to change or choose methods of work. All three measures increased in Europe between 2005 and 2015 (Figure 1). Given AI's specific impact on automating exactly those types of decisions, there is a real risk that these forms of workplace AI could reverse that evolution and set worker wellbeing back 100 years.

Figure 1: Decision latitude increased among EU28 workers



Source: Bruegel based on Eurofound (2017) Note: includes the United Kindom

AI regulation versus labour regulation

Some protection for European Union workers against excessive AI-based optimisation might come from European Commission proposals[53] on ensuring trustworthy AI, published on 21 April. The Commission's goal is to guarantee the health, safety and fundamental rights of people and businesses, while promoting AI adoption and innovation.

The proposal identifies eight areas of AI application[54] considered high risk for health and safety. Rightly, the commission includes among these the use of AI in employment and workers' management. The Commission specifically mentions algorithms for assigning people to jobs (recruitment, selection, promotion and termination) and algorithms for scheduling and productivity (task allocation, monitoring and evaluation). According to the Commission,[55] these systems "may appreciably impact future career prospects and livelihoods of workers" by "perpetuating historical patterns of discrimination", and violating "rights to data protection and privacy".
However, as we have shown, concern about AI in the workplace should extend beyond career prospects and livelihoods into job quality and worker wellbeing. Besides AI regulation, EU workplace regulation could help mitigate the health risks associated with low job control stemming from algorithmic management. At European level, two main bodies of legislation are relevant in this context: labour law (covering working conditions such as working hours, part-time work and posting of workers, as well as informing and consulting workers about collective redundancies and transfers of companies)[56] and the Occupational Safety and Health (OSH)[57] Framework Directive (89/391) (creating a legal obligation for employers to protect their workers by avoiding, evaluating and combating risks to their safety and health).[58]

But neither body of legislation seems geared for the large-scale impact and fine-tuned precision of workplace AI systems, because employers have been found to use AI in ways that erode labour laws. Law professors Alexander and Tippett (2017) call this "the hacking of employment law", describing practices in which employers use software to "implement systems that are largely consistent with existing laws but violate legal rules on the margin".

However, the main legislative shortcoming related to the undermining of workers' autonomy (and long-term health) is that the specification of workplace risks or criteria for assessing them are left too vague. While the European Agency for Safety and Health at Work's (OSHA) practical guide[59] addresses psychosocial factors, the OSH directive doesn't mention any specific risks. The terms 'stress' and 'psychosocial risks' are not mentioned explicitly in most of the legislation, leading to a lack of clarity or consensus on the

terminology used (Leka et al, 2011). This leaves room for employers to pick and choose which risks to consider, let alone how to measure, address and mitigate them. The Commission's proposed AI regulation also leaves the definition of risks insufficiently specified.

Shortcomings and suggestions

Under the Commission's proposal, since employment and workers' management is included in the eight high-risk areas, workplace AI systems would be subject to strict obligations before they can be put on the market, including requirements for risk assessments and mitigation systems, data quality checks to minimise the risk of discrimination, logging of activity to ensure traceability, and transparency measures including detailed documentation and user information.

This is insufficient to protect workers adequately (De Stefano, 2021). Workplace AI systems will only be subject to risk assessments carried out by the employer or provider of the AI system. To strengthen worker protection, social partners could be given a role in overseeing AI systems at work. Workers opposing the outputs of high-risk AI systems could be given protection against disciplinary measures imposed by employers. Indeed, worker participation in the implementation and assessment of AI could partially mitigate the psychosocial risks of autonomy-reducing AI systems.

But besides the issue of who should assess the risks of workplace AI systems, there is the issue of which risks should be included in the mandatory assessment. The Commission's proposed AI regulation lists requirements for risk-management systems for high-risk AI systems in Article 9,[60] with as a first step "identification and analysis of the known and foreseeable risks associated with each high-risk AI system" (our emphasis). The emphasis throughout the proposal on safety, health and human rights leaves the interpretation of these "'known and foreseeable risks" too broad, with too much room for picking some risks over others.

While employers will consider obvious immediate safety risks (for example, the risk that a robot accidentally hurts a worker with its robotic arm), they might not equally consider the long-term health risks associated with taking away workers' autonomy. Given the link between job quality and health, job control measures are a more responsive indicator to assess whether an AI system poses a risk to workers' wellbeing in the long run. Job quality (and autonomy in particular) should therefore be explicitly included as a measure in the risk assessment of workplace AI, and processes should be put in place to mitigate any residual impact of AI on job quality and worker wellbeing.

The need for more tools and guidance on psychosocial risk management is clear (Leka et al, 2011), but in order to be binding the best place to address this risk definition is in the OSH legislation itself. The proposed AI regulation could then refer to psychosocial risks as defined in OSH legislation to be included in the required risk assessment and mitigation systems for the high-risk area of employment and workers' management.

Eurofound's job-control indicators – the ability to choose the order of tasks, the speed of work and the methods of work – provide a starting point for developing measures for psychosocial risk assessment. Given AI's specific impact on automating exactly those types of decisions, it is important to understand how different forms of autonomy relate to wellbeing at work. Not all autonomy is the same (De Spiegelaere et al, 2016) and different aspects of job control have different effects on wellbeing. Current research suggests that scheduling autonomy (choosing the order of tasks) could be stress-reducing, while learning autonomy (experimenting with methods of work) could be motivating. Only by understanding the distinctive impact of different types of autonomy on stress and engagement at work can the risks of AI for worker wellbeing be correctly assessed and mitigated. In an increasingly digital world of work, careful job design matters more than ever (Parker and Grote, 2019).

[50] This piece was produced within the project "Future of Work and Inclusive Growth in Europe", with the financial support of the Mastercard Center for Inclusive Growth (https://www.bruegel.org/blog-post/algorithmic-management-past-not-future-work).

[51] See https://time.com/5629233/amazon-warehouse-employee-treatment-robots/

[52] Refer to https://www.eurofound.europa.eu/topic/job-quality

[53] Refer to https://ec.europa.eu/commission/presscorner/detail/en/ip_21_1682

[54] Refer to Proposal for a Regulation of the European Parliament and of the Council Laying down harmonised rules on artificial intelligence (artificial intelligence act) and amending certain union legislative acts, available at: https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=75789

[55] Refer to: https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=75788

[56] See https://ec.europa.eu/social/main.jsp?catId=157&langId=en

[57] See https://ec.europa.eu/social/main.jsp?catId=148&langId=en

[58] Specifically on the potential discriminatory effects of AI, another relevant body of legislation deals with tackling discrimination at work. https://ec.europa.eu/social/main.jsp?catId=158&langId=en

[59] Available at: https://osha.europa.eu/en/publications/healthy-workers-thriving-companies-practical-guide-wellbeing-work

[60] Refer to Proposal for a Regulation of the European Parliament and of the council laying down harmonised rules on artificial intelligence (artificial intelligence act) and amending certain union legislative acts, available at: https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=75788

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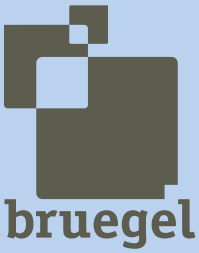

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