



# The Future of Work

## Skills and Resilience for a World of Change

European Political  
Strategy Centre

Work glues societies together. It translates talent into broader economic virtue and lends meaning as well as structure to most people's lives. In Europe, the majority of workers hold permanent contracts. However, tectonic shifts are re-shaping the ways that work is performed. First, the very architecture of the corporation is changing profoundly, largely powered by the Internet and digital technologies. Second, the perceived volatility of the economic recovery and the continuous exposure of the private sector to disruptive innovation push businesses to offer short-term contracts to respond quickly if a crisis strikes. Thus, many more job seekers are forced into short-term contracts, part-time work or other forms of labour which they see as undesirable. At the same time, in the digital economy 'precarious' or 'temporary' do not necessarily mean sub-optimal: more people voluntarily check out of the traditional '9 to 5' job routine to pursue more independent and flexible work arrangements. Autonomy can be experienced as more empowering and satisfactory. This rise in freelancing runs parallel to the growth of the *gig economy*, where digital technologies enable teams to be assembled around a given project – and often across borders – while platforms seamlessly connect buyers with sellers. Much of the latter takes place under the heading *collaborative economy*, which is offering opportunity not only for people seeking more flexibility but also to those who have often had fewer chances of landing a permanent job.

### The World of Work Has Always Evolved

The nature of work and the ways it is performed have changed multiple times and throughout human history. However, the pace of change has accelerated significantly, largely due to digital technologies. Many of today's jobs and most sought-after skills did not exist a decade ago, while routine occupations are vulnerable to automation.

### Opportunities, Disruptions and Transitions

Job polarisation and job displacement have intensified in advanced economies. At the same time, technological innovations offer new and flexible opportunities which often include those traditionally at the fringes of the labour markets. Policymakers need to manoeuvre between these two trends: preserving the core of a social market economy while being open to innovation and technology-driven change that impacts organisations and individuals alike.

### Keep Learning for Life-Long Resilience

Skills continue to be the best guarantor of social mobility and opportunity. But skills are not static and need to be updated and fine-tuned throughout working lives. This too often contrasts with Europe's educational systems which tend to be frontloaded. Opportunities for life-long learning are critical to support the numerous transitions that will likely characterise future employment.

### Public Policies Must Pave the Way and Accompany Change

Well-crafted public policies need to keep track of changes in the world of work, using data and digital technologies to better understand evolving trends, and offer more targeted support to individuals. Active labour market policies will seek to buttress potential fallouts and adapt to new realities. For instance, they will ease the transition from employment to freelancing and back, seeking ways to provide more security to gig economy workers, or making greater efforts to provide customised skills and trainings that maximise employment potential.

EPSC Strategic Notes are analytical papers on topics chosen by the President of the European Commission. They are produced by the European Political Strategy Centre (EPSC), the European Commission's in-house think tank.

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## 1. Work 4.0 and Beyond

### 1.1. Trends and Transformations

Work has always covered a diverse set of economic realities. It includes paid employment, own-account work, volunteering, as well as unpaid family work. Today, 'work' is increasingly becoming an umbrella concept for tasks performed under different legal, functional and geographic frameworks. Jobs are being broken down into projects that may either be outsourced to independent professionals and experts, or be reconfigured into projects that assemble physical or virtual teams, across borders and time-zones.

Non-essential tasks and functions have long been outsourced to allow companies to cut costs and focus their added value on core competences. Retail companies have used external contractors for their call centres and 24/7 customer support services for decades. Similarly, consulting and accounting firms outsource basic research and accounting tasks, while publishing houses outsource type-setting and editing to production teams on other continents. This allows them to benefit from time-zone differences to get a speedier turn-around on their projects at lower costs. Companies have moved from vertical integration to restructured contractual relations allowing

them to tap into global value chains and international talent as their needs and growth strategies evolve. In fact, as a global landscape of abundant and specialised knowledge becomes increasingly accessible, companies embrace the open innovation paradigm. In short, this involves harnessing external ideas and knowledge from multiple sources and combining these with internal capacities and R&D. The result is the ability to deliver efficient and innovative solutions to the marketplace. In today's economy, the ability to scale rapidly and internationally is fundamental, thereby transforming the 'crowd' into part of the value-added chain.

In addition to its global dimension, outsourcing has taken on an added dimension through the rise of the gig economy<sup>1</sup>. It has created a dynamic environment in which temporary positions are common and organisations contract with independent workers for short-term engagements. Tasks can be broken down and distributed even more widely through apps and online platforms. The bidding-style process through which tasks are offered, assigned, and performed allows for real-time, interactive and often mutual rating of the performance of service providers (both for seller and buyer) and the reliability of users. Whether it is looking for a babysitter on care.com, assigning a local house-errand on Taskrabbit, or turning to 99designs.com to get designers from around the world



### From Work as Employment to the Open Talent Economy

'On demand' work is on the rise as is a 'project-focused' approach to work. What has been referred to as the 'Hollywood model' is a discernible trend across numerous sectors.

How does this work in practice? Once a specific project, product or assignment is identified, a team of different people from different professions with distinct but complementary skills, comes together and collaborates in order to accomplish the task. Once the project is completed, the team disassembles and reconfigures with other members on another project (just like in Hollywood, teams and artists move on to the production of another film). The pharmaceutical industry is an interesting area within which this model has developed. For decades, the entire process from early-stage research to consumer sales was undertaken within one company. Recently, research is often ceded to startups or research labs, where teams of scientists, senior executives, and/or supporting managers and staff work on a single development project with venture capitalist funding. If successful, the team might sell the medication or its marketing rights to a company, disband, and move on to another project.

This short-term, highly flexible project-based business approach assembles people who hold specific skills and expertise for the particular requirements of the project and with a limited time and financial commitment. The adaptability of this approach is its advantage, particularly in conditions of economic uncertainty. It contrasts with the traditional corporate model, where employees are hired in longer term, open-ended jobs. In this project-based reality, there are real concerns that the bidding or competition processes between workers may negatively impact employment, protection and safety standards. To reap the opportunities offered, public policy needs to adapt and better target those who fall through the cracks of the traditional social system, which was designed for full-time workers with permanent contracts.

Adam Davidson, 'What Hollywood can teach us about the Future of Work,' New York Times, 5-5-2015, [http://www.nytimes.com/2015/05/10/magazine/what-hollywood-can-teach-us-about-the-future-of-work.html?\\_r=0](http://www.nytimes.com/2015/05/10/magazine/what-hollywood-can-teach-us-about-the-future-of-work.html?_r=0) ; Robert Weisman, 'Pharma gives drug development the Hollywood treatment,' Boston Globe, 27-9-2015, <https://www.bostonglobe.com/business/2015/09/27/biotech-startups-adopt-hollywood-model/hr5Mh6jw0V7w6v4SeGEpeJ/story.html>

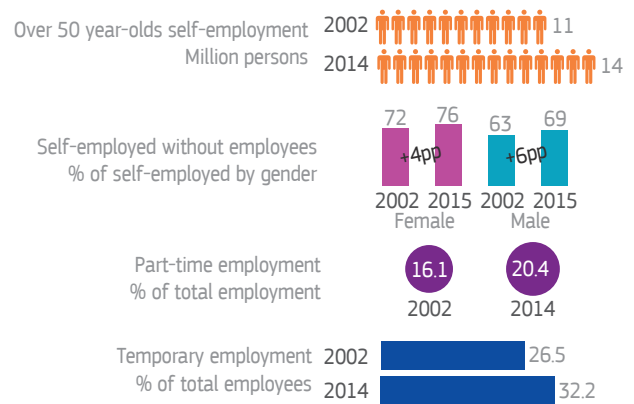
to submit brand logo ideas in a contest round-the-clock, the gig economy offers ways to tap into talent, services and expertise at a global level with unprecedented affordability and transparency while rewarding the reputation, demand and compensation of the best performers.

## 1.2. Rise of Independent and Alternative Working Arrangements

While the majority of workers are on permanent contracts, the preference for lean teams has led to a marked shift from ‘employees’ to ‘independent suppliers of services’ and ‘independent contractors.’

Self-employment in the EU constitutes 16.4 percent of the labour market<sup>2</sup>, with wide variation across Member States. Temps<sup>3</sup>, agency workers, on-call workers, contract company workers, independent contractors, independent professionals or freelancers, as well as part-timers, have been on the rise<sup>4</sup> (see Figure 1). In the case of Belgium for example, the number of hours worked by agency workers rose by over 11% in 2015 alone.<sup>5</sup> Similarly, in the USA, recent research suggests that all net employment growth since 2005 appears to have occurred in ‘alternative’ (i.e. non-standard) work arrangements—including temporary, gig and contract work. The overall percentage of workers engaged in alternative work arrangements rose from 10.1% in February 2005 to 15.8% in late 2014.<sup>6</sup> In the post-2008 period, companies are much more reluctant to offer full-term employment contracts given the volatile economic environment and the accelerating pace of global competition. This is more than likely to prevail in the years ahead.

**Figure 1: Employment Trends in the European Union: A Snapshot**



Source: Eurostat

These trends are feeding a patchwork of parallel employment realities that characterise today’s developed economies. ‘Non-standard’ work, in its numerous varieties, may offer greater flexibility and autonomy. At the same time it does tend to be less paid than the full-time equivalent, and is associated with less access to training. It is not the preferred option for many and it also brings greater risks due to frequent periods without or with very little income, as well as less favourable conditions in terms of accessing social security and necessary protection (healthcare, accident coverage and pensions primarily). On the other hand, these new forms of work can be a great accelerator for individuals who have been persistently shut out of the formal labour market. This is not to be under-estimated in times of a sluggish economic recovery creating too few jobs, and where concerns about the consequences of socio-economic marginalisation range from petty crime to the risks of radicalisation.

## Full-Time, Life-Long Corporate Jobs More Likely an Interlude than the Norm

Although there is widespread conviction that long-term corporate jobs are the norm and that temporary work is a novel form of ‘non-standard’ work, the opposite is likely the case.

Long-term corporate jobs guaranteeing full-time, life-long job security and benefits only became dominant in the ‘*trentes glorieuses*’ after 1945<sup>7</sup>. These developed as assembly lines and industrial machinery grew more complicated in times of full employment, making the need for a stable trained workforce to control quality and maximise production more pressing on the employers’ side. In parallel, the urban concentration of workers encouraged the advocacy for better employment conditions, and eventually privileges, in exchange for loyalty.

Full-time, life-long corporate jobs that emerged in the post-World-War II period have been overwhelmingly occupied by prime- and working-age men. The employment trajectories of women, younger workers, people with a migrant background, or also people with disabilities have been rather different, characterised by lower rates of employment and higher rates of part-time, temporary or self-employment. They have also faced more implicit forms of discrimination in the workplace, even though officially the legal framework for equal opportunities and non-discrimination should prevent this<sup>8</sup>.

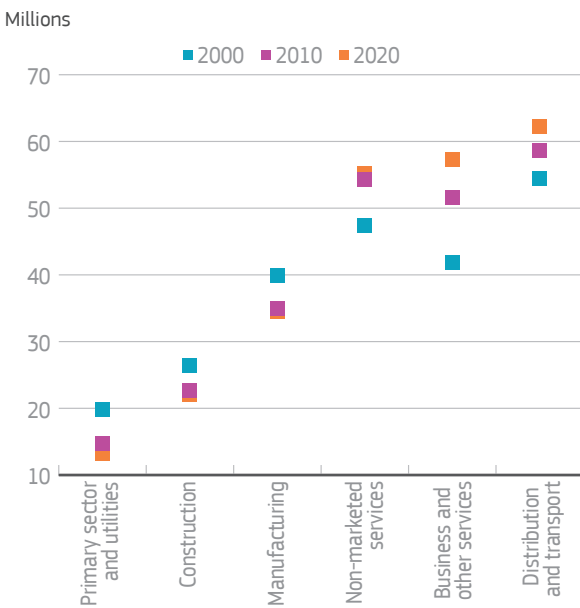
## 2. Gains, Losses and Changes in the World of Work

### 2.1. What Is Changing, And What is Not

Labour reallocation, i.e. the sum of job creation and job destruction, is intensifying. As new jobs are created, others risk being destroyed.<sup>9</sup> Depending on which tasks we currently assume may be replaced, estimates on the impact of automation on jobs vary, but there are certain telling trends. Machines are already capable of answering email and drafting summaries of sports' games. We may soon see driverless cars at the traffic lights, drones delivering goods, and algorithms replacing accountants, bank staff and legal assistance.<sup>10</sup>

The sectors most at risk of contraction in the future world of work are those that rely heavily on routine tasks, such as low-skill manufacturing jobs, but also some craft and clerical occupations (Figure 2). Where tasks are routine, automation is likely. As the trend towards more service-oriented economies is likely to continue<sup>11</sup>, job growth in the future can be expected to be in the service sector and particularly in non-routine elementary occupations such as personal care services.

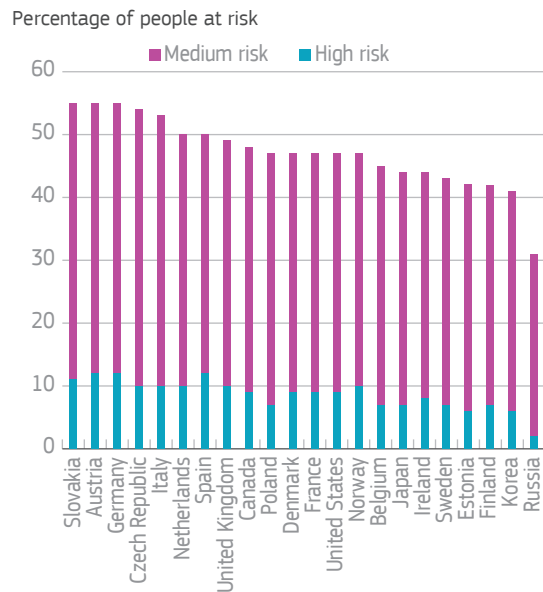
**Figure 2: Change in Employment by Activities in the European Union**



Source: Future Skills Supply and Demand in Europe Forecast 2012, Cedefop

Automation is by no means a synonym for work extinction. Indeed, 'substitution may mean the destruction of certain jobs, but not the destruction of employment.'<sup>12</sup> Certain estimates expect automation to lead to a net loss of more than 5.1 million jobs across 15 major advanced economies (see Figure 3).<sup>13</sup>

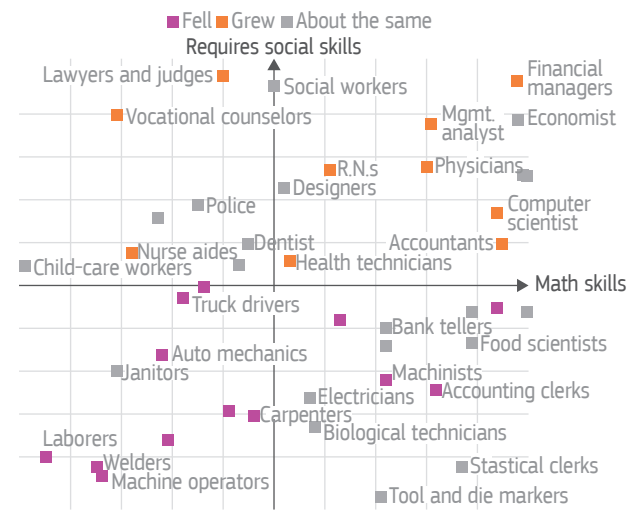
**Figure 3: Risk of Automatability of Jobs**



Note: Medium risk of automation affects 5% to 70% of tasks. High risk of automation affects over 70% of tasks.

Source: Amtz,M, T. Gregory and U. Zierahn, *The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis*, 2016, OECD.

**Figure 4: Social Skills and Change in Share of Jobs in the United States, 1980 to 2012**



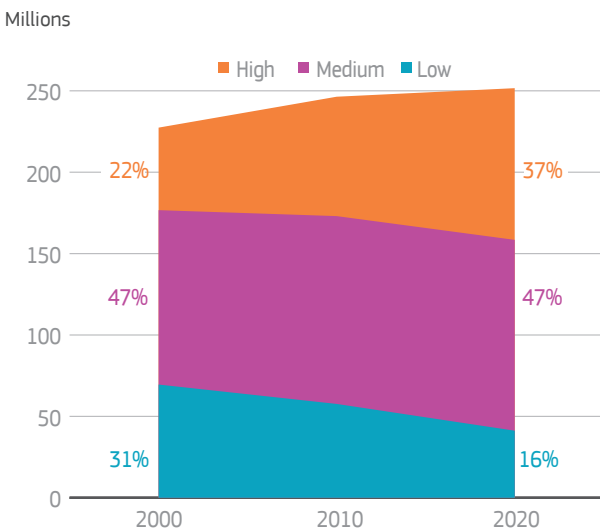
Source: David Deming, Harvard University

At the same time, the digital revolution has generated a surge in demand for new jobs and occupational categories that did not even exist a decade ago.<sup>14</sup> These include people with a high technology quotient such as big data specialists, social media managers, cognitive computing engineers, Internet of Things architects and blockchain developers.

The transformative trends of the digital revolution have also highlighted that some jobs will quite simply always be performed by humans, either because of the sort of skills required, or simply because of our preferences. Child care, care for the elderly, social work, mental health care for instance, easily stand out as jobs with low risk of automation.

The fact that certain tasks can be performed by technology means that time is 'freed' up for workers to perform other tasks and create value. As automation and artificial intelligence are leaping into new areas, the human-robot partnership will further transform the nature of work. Until now, the challenge for workers was to learn how to operate machines. Looking ahead, interactions will change with humans monitoring rather than operating machines and creatively defining what needs to be done and how, and then using robots to achieve precisely that. If recent trends are telling indicators, creativity, emotional intelligence and transversal skills are undoubtedly what will make the difference in the future (Figure 4). Research has shown that occupations requiring strong social, interpersonal skills and non-routine analytical skills have grown dynamically since 1980 with consistent wage growth.<sup>15</sup> Even in the tech industry, it is jobs that require both technical and interpersonal skills that are on the rise.

**Figure 5: Labour Force by Level of Qualification in the European Union**



Source: Future Skills Supply and Demand in Europe Forecast 2012, Cedefop

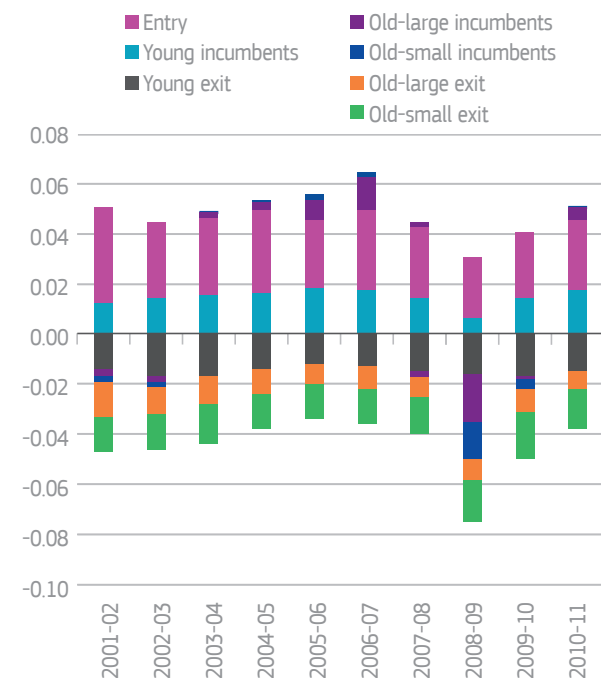
Cultures of sharing, negotiating with others and finding compromises seems to be what can 'save us' from the robots. Europe's advantage in the future highly-automated world of work lies in its creativity and highly-skilled workforce (Figure 5). A 2015 study<sup>16</sup> finds that 21% of US employment is highly creative – including occupations like artists, architects, web designers, IT specialists and public relations professionals. Economies like the UK where creative occupations make up a large proportion (around 24%) of the workforce may be better placed than others to resist the employment fallout of automation.

## 2.2. Capturing Value in the New World of Work

In this transformative context, charting a successful course in the world of work depends to a large extent on the quality of firms. Entrants and young firms remain the biggest contributors to employment creation in the OECD countries<sup>17</sup> (see Figure 6). However, it is highly-productive and internationally-active firms that have an exceptional impact on economic growth and expansion of employment. On average, about one percent of the internationalised, high-performing manufacturing firms in Europe produce more than 75% of output or foreign sales.<sup>18</sup> The changing world of work means that they will increasingly compete for the pool of available global talent.

**Figure 6: Contribution to Net Job Creation by Group of Firms in OECD**

Unweighted average in the non-financial business sector



Source: Science, Technology and Industry Scoreboard 2015, OECD

**Table 1: ‘Hottest’ Skills of 2015  
LinkedIn Global**

1	Cloud and Distributed Computing
2	Statistical Analysis and Data Mining
3	Marketing Campaign Management
4	SEO/SEM Marketing
5	Middleware and Integration Software
6	Mobile Development
7	Network and Information Security
8	Storage Systems and Management
9	Web Architecture and Development Frameworks
10	User Interface Design
11	Data Engineering and Data Warehousing
12	Algorithm Design
13	Perl/Python/Ruby
14	Shell Scripting Languages
15	Mac, Linux and Unix Systems
16	Channel Marketing
17	Virtualisation
18	Business Intelligence
19	Java Development
20	Electronic and Electrical Engineering
21	Database Management and Software
22	Software Modeling and Process Design
23	Software QA and User Testing
24	Economics
25	Corporate Law and Governance

Source: LinkedIn

Indeed, the most job-creating – and productive – firms, the so-called ‘frontier firms’, as well as the younger gazelles (a subset of rapidly growing firms) are seeking high-skilled and digitally-savvy workers<sup>19</sup> (see Table 1). As productivity gains result from investments in knowledge-based capital, it is no coincidence that top growth occupations in employee numbers are mostly high skilled ones, including software and sales professionals, where ICTs increase the returns to labour for highly skilled workers performing cognitive tasks.<sup>20</sup>

A particular concern for Europe is the projected skills shortage in the area of ICT (Information and Communications Technology), which is [forecast to lead to up to 825,000 unfilled vacancies by 2020](#). This is not only a lost opportunity for job seekers but also has the potential to be a real break on productivity and innovation, as well as the wider modernisation of the economy.

## 3. Changing Work-Life Patterns and Preferences

The profound changes underway are also accompanied by substantial transformations in people’s working life. Until recently, there has been a rather linear pattern in the transition from education and training, to work and retirement. This linearity is now largely a thing of the past.

Given the changes in the workplace, people will have to increasingly learn new skills to remain employable throughout their working life. They will be increasingly likely to change employers, jobs, employment status and professions numerous times and at faster paces than ever before. And, given that people live longer, they will most likely also have to work longer, either out of choice or necessity. While some have the tools and mindset to embrace this flexibly, not all are equipped with the skills, competences and support system to be able to respond to these changes.

At present, multiple and divergent realities coexist in Europe’s job markets. It remains difficult for women to re-enter the labour market after they have taken time out to raise children. Young graduates who have spent numerous years in full-time university education have the hardest time getting their first job, and often lack the skills necessary in spite of their formal qualifications. Similarly, 45-year olds who were laid off due to sectoral restructuring find it difficult to get a new job as they are often deemed ‘too expensive’, or even ‘too old’ to retrain. In short, many people find themselves excluded from gainful employment, let alone the opportunity to pursue quality work – a challenge which has been accentuated by the crisis.

For these reasons, training and reskilling will matter more throughout people’s working lives. Education obtained before one’s professional life will have to be regularly ‘topped-up’. Transitions will be more frequent and complex – particularly with regards to family and care responsibilities on the one hand, and employment and training on the other. These will have to be better supported than they are today.

At the same time, work-life balance preferences are changing. Millennials are keen to have more diversity and also more flexibility in their work patterns and commitments. They are reinventing the essence of economic exchange, professional fulfilment, and even consumption itself through the collaborative economy and a growing army of ‘prosumers’, with products and services being delivered on-demand and just-in-time. As for more mature workers, especially highly skilled, they are less and less interested in retirement and prefer to stay in the workforce for longer, albeit with flexible arrangements.<sup>21</sup>

Work tenure is also changing at a rapid pace. In the US, the median tenure of workers aged 25 to 34 years is 3 years which is three times less than that for workers aged 55 to 64 (10.4 years). As for the EU 28, the changes for the 25-34 year olds between 2000 and 2014, are telling too. Job tenure of 10 years and over decreased from 17.5% to 12.5%, while job tenure for 3-5 years increased from 17.7% to 19.4%.<sup>22</sup> This shorter tenure is not just the result of shorter time spent on the job market, it is also a conscious choice. It follows that one might soon have 15-20 different jobs in a lifetime.

As work patterns change and preferences shift, one dimension that does remain constant is a rather fundamental human need for belonging to a community. Freelancers and independent professionals are forming groups and associations, formally, informally and virtually. One such group is the [Freelancers Union](#), based in New York. Through associations such as these, they exchange experiences, seek advice, even lobby on work- and welfare-related issues. They also create community co-working spaces which allow new businesses to be created and create hubs of innovation that help kick start entrepreneurial ideas.

In the new world of work, attention is increasingly on the individual. The de-construction of work, the multiplication of professional pursuits in one's lifetime, the growing burden on individual adaptation to employment driven by automation and competition in the high-value segment are some of the more evident manifestations. While the jury is out on which of these trends will have positive or negative outcomes, resilient skills will be the game changers.

## 4. The Future of Work is All About Skills

'There's never been a better time to be a worker with special skills or the right education, because these people can use technology to create and capture value. However, there's never been a worse time to be a worker with only 'ordinary' skills and abilities to offer, because computers, robots, and other digital technologies are acquiring these skills and abilities at an extraordinary rate.'

Brynjolfsson E. and McAfee A., (2014) *The Second Machine Age. Work, Progress, and Prosperity in a Time of Brilliant Technologies*, New York: W. W. Norton & Company

The novel fluidity of work puts a premium on personal initiative and professional resilience. The link between employer and employee is being loosened, and this has repercussions for both. For employers who have to operate in a global context of high economic uncertainty,

investing in the systematic development of their staff is often a challenge. This is particularly so in the case of temporary or contract staff. At the same time, it matters hugely to a company's success to be able to access a workforce with directly usable skills and qualifications.

As for workers, the burden of employment is shifted to her/his abilities to adapt and remain relevant, and to ensure adequate access to welfare, decent and fair work conditions and sustainable employment protection. While many are driven by the preference for agency and autonomy, not all workers have the tools to be equally self-resilient nor to sustainably tackle societal, personal and professional risks. Access to up- and re-skilling opportunities that have currency on the job-market, and to adequate welfare protection are the most fundamental challenges that workers and job seekers are confronted with in the changing world of work.

In recent years, the polarisation of today's workforce between highly-skilled, well-paid jobs and lower-paid, low-skilled ones has intensified.<sup>23</sup> Meanwhile, the share of the low-educated is contracting across all major occupational groups, even in 'elementary occupations' where it fell by four percentage points between 2008 and 2012. Such an environment may compound the efficient matching of skills and jobs available in Europe. Evidence from Sweden suggests a link between displacement rates and educational level: well-educated, native-born prime age men have the highest chances of re-employment. Workers who are involuntarily separated from their job due to economic or (increasingly) technological reasons tend to suffer wage losses upon entering a new job, typically attributed to a loss of job-specific skills.<sup>24</sup>

The risks of growing polarisation and displacement can be addressed by bolstering the resilience of workers through re-skilling and up-skilling opportunities throughout one's life, especially at a time when career transitions and self- or temporary employment are increasingly the new normal. In-work access to training remains highly dependent on the type of contract: almost one in two employees on permanent contracts receive training compared to 32% of employees with fixed contracts and 19% of self-employed.<sup>25</sup> Thus, it is often the case that those who need life-long training the most are those who have the least access to it.

## 5. Dynamic and Resilience-Building Public Policies

Zygmunt Bauman, one of the world's leading sociologists, has described the current uncertainty and unpredictability – as well as the inequalities in the ways risks and opportunities are experienced – as living in 'liquid times'.<sup>26</sup> The post-crisis environment is characterised by particularly high levels of unpredictability for both workers and businesses. The transitions that the digital revolution is

bringing to all aspects of our work and life - both in their challenges and their opportunities are likely to magnify the sense of unpredictability and complexity even further.

Public policy therefore needs to respond more dynamically to the changing reality of the world of work. Rather than being about the anonymous and largely uniform membership of the labour market, it needs to respond to the diverse journeys people undertake throughout their life and careers with anticipation and innovation. This requires a comprehensive approach that includes: refitting education, supporting firms in growth and job creation through investing in skills, customising and ensuring portability of social rights, and developing indicators that enable public investment to lead to effective social outcomes.

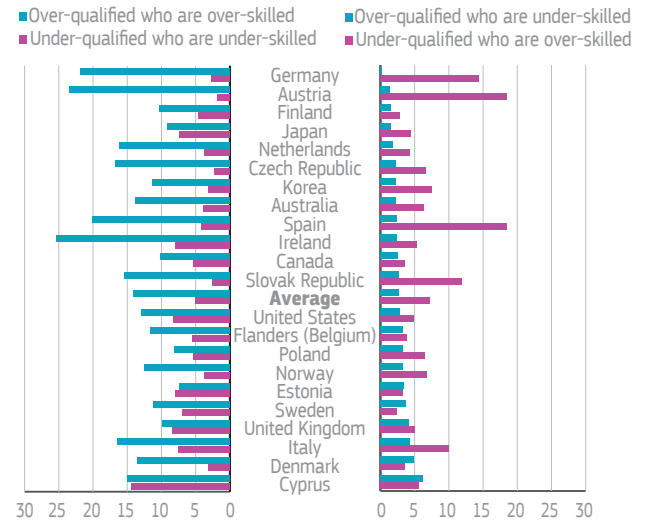
The European Commission's initiative to launch a **European Pillar of Social Rights** aims to identify the most transformative trends within work and welfare systems, the changing needs in employment and social policies, and the good practices in meeting these challenges and opportunities. In effect, a dedicated focus of the on-going **public consultation** process (March – December 2016) is on the Future of Work.

## 5.1. Refitting Education

The changing world of work requires a multi-layered policy response, covering the entire life-trajectory, from cradle to retirement. Education, training and the opportunity for retraining throughout one's life need to be the starting point. The most important capital for the world of work ahead is skills, and yet, many youths as well as adults across Europe have considerable basic cognitive and non-cognitive skills' deficits even if they hold formal qualifications.<sup>27</sup>

**Figure 7: Qualification and Skills Mismatch in Literacy**

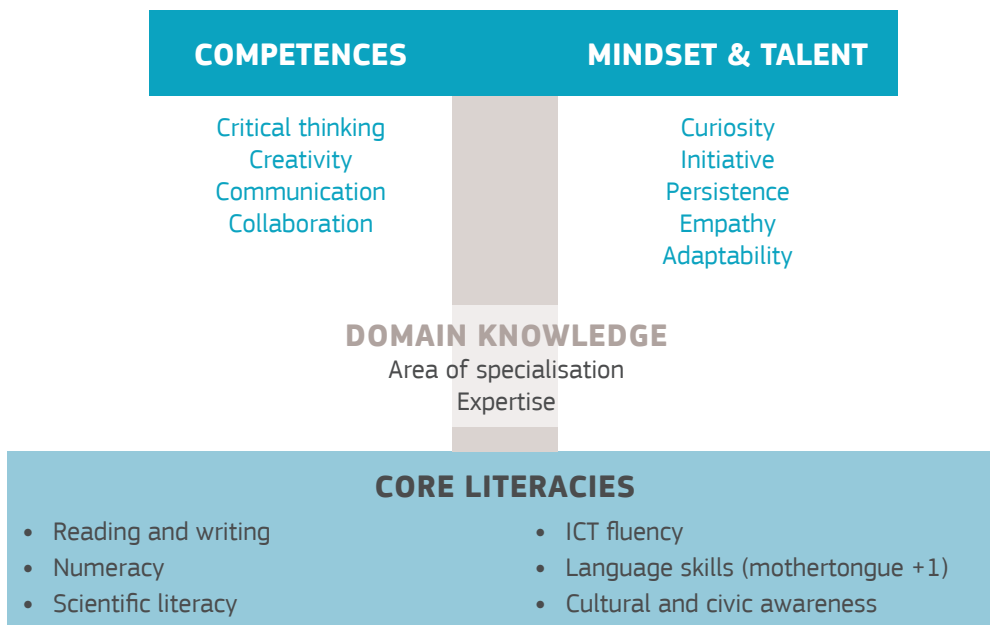
Percentage of qualification-mismatched who are in each literacy mismatch status



Source: Skills Outlook 2013, OECD

The importance of non-cognitive skills for the labour market has been widely recognised. Such skills range from achievement motivation, perseverance, problem-solving, resilience, self-control, team-work, initiative, the ability to socialise and to follow an ethical code of behaviour.<sup>28</sup> However, today's education systems are not always proficient in the provision of these sorts of skills. In many EU Member States, training in basic economic and financial literacy is not part of the standard curriculum and training on digital literacy and entrepreneurship has still much room to cover.

**Figure 8: Skills and Resilience For a World of Change**



Note: This framework is inspired by the T-Skill framework (see endnote 31)



Refitting education for the demands of the world of work requires novel forms of schooling and teaching with a focus on the application of knowledge. Transversal competences – such as better management of one's own learning, social and interpersonal relations and communication – need to be integrated in all learning methods from pre-school to training schemes for mature workers (Figure 8).<sup>29</sup> As David Deming of Harvard University once observed, the most advanced preschool classrooms 'look a lot like the modern work world'. 'Children move from art projects to science experiments to the playground in small groups, and their most important skills are sharing and negotiating with others.'<sup>30</sup>

Similarly, social skills need to be part of the curriculum to create conditions for complementing technology with the human touch. In many business and medical schools, so-called flipped classrooms focus on interactive discussion while lectures are to be followed online outside of the

classroom. Vocational training schemes that successfully complement vocational skills with instruction in maths, science and language, like in Germany's dual education system, are well equipped for the changing employment landscape while providing flexibility for life-long learning. Apart from promoting new ways of learning, it is equally important to ensure access to world-class education and talent, to make sure that the EU's younger generation sources from international best practices.

In the collaborative work culture and economy of the future, having broader analytical skills and knowledge, and being able to learn fast by linking up different perspectives from different disciplines, appears more relevant than ever.<sup>31</sup> This competence is often referred to as T-shaped skills, where the T represents the depth of an expertise in a single field, whereas the horizontal bar is the ability to collaborate across disciplines.

## Skill Development in Flagship EU Funding Programmes

The European Social Fund and the European Regional Development Fund will inject over EUR 30 billion to support skills development in the period 2014-2020, while the Erasmus+ programme supports skills development in education and training with nearly EUR 15 billion. Moreover, through the European Structural and Investment Funds (ESIF), the EU plans to invest EUR 454 billion in Europe's cities and regions, while channelling funding to over 2 million enterprises to support growth, increase competitiveness, develop projects and most importantly, create new jobs.

In addition to the ESIF, bridging the investment gap through the implementation of the European Fund for Strategic Investments (EFSI) can have a significant impact on improving Europe's job prospects. Human capital formation is a core priority area of EFSI while its most successful spending vehicle to date is aimed at SMEs and mid-cap companies. It is estimated that 1.8 million jobs can be created directly or indirectly through the leveraging effect of the Investment Plan on the assumption that projects selected do not 'crowd out' private investment.<sup>32</sup>

Mainstreaming EFSI to areas with highest unemployment levels can help address labour market disparities across the EU while synergy should also be established with the smart specialisation strategy. Complementary support to skill development can generate additional positive gains in the volume of employment. Indeed, the EFSI regulation states clearly that projects in the field of human capital, culture and health should include education, training, the development of ICT skills and digital education. Member States should offer customised training programmes to improve the skills-matching performance of the labour market in the sectors benefiting from the EFSI. Beyond complementing Member States actions, a dedicated 'human capital investment' instrument could be added to the EFSI, providing pooled finance for investment in this area in the same way that the framework already does for SMEs.

## 5.2. Skills Endowment

The increased likelihood of job changes, contractual and on-demand work, means that it will be more difficult to target training and retraining. Therefore, the risk of human capital depletion could grow. As already mentioned, employers may be more selective when investing in their employees' training or reskilling. This means that new arrangements will have to be crafted to effectively share the burden of (regular) training between individual workers, employers, and the state.

Today, publically-financed education is mainly directed towards children and young adults not yet in employment. In the future, such arrangements need to

focus just as much on workers and job-seekers aiming to fundamentally improve their employability.

Innovative public-private partnerships between schools, universities and private training providers, should be encouraged to invest in skills-development and human capital of a fluid and highly mobile workforce.

Such a 'skills endowment' could be pre-financed through education-linked loans that would only have to be paid back when and if the recipient achieves a certain level of income through their subsequent employment. This investment approach draws from the English student loans model.

## Examples of Customised Policy in Member States

- **France's Compte Personnel d'Activité (CPA)**<sup>33</sup> is anticipated to be in place early 2017, as introduced by the 2015 Bill on Social Dialogue and Employment. Its aim is to enable individuals to decide how to best mobilise their benefits to fit their individual circumstances. The CPA would guarantee that benefits are no longer contingent on an individual's job. Instead, an individual activity account would provide each active member of the labour force their social benefits (training, support to start a business, shift to part-time work, early retirement) in the form of points, regardless of employment status. These benefits – in the form of 'points' – would be adjusted to correct for different inequalities, targeting in particular early school leavers, under 26 year olds in precarious employment, granting them more points than their university-graduate peers for example.
- The **Czech 'Education and work' web portal**<sup>34</sup> was established as part of the reform of education and training policies aimed at ensuring that individuals are better able to discover, validate and further develop outcomes of prior learning. The tool links existing vacancy databases to information on training courses, providers, and generic occupation overviews. It intends to create practical individual pathways to benefit from the possibilities of the national qualifications framework. Through user self-assessment, using the skill descriptions found in the vocational qualifications, and by suggesting possibilities for gaining a vocational qualification that is purely skill/competence-based and matched to labour market needs, the instrument matches skills with jobs (and the other way around).

### 5.3. Customisation of Social Policy

Re-designing employment services and active employment policies for a flexible world of work calls for governments to find more innovative ways of policy intervention. Supporting employability can no longer be a one-off action. It involves a series of measures and

instruments that may be personalised at different stages of one's working life. As workers are more likely to change employers, jobs, sectors and even countries, benefits and protection must be linked to the individual and not to jobs or unemployment, which disadvantages those with non-standard employment or risks unwillingly incentivising informal work or inactivity.

### Assembling Individual Tasks into a Standard Contract

Care and non-care personal and household services in Europe are increasingly outsourced by households to third parties. The care sector, which has a notable potential in terms of job creation, is largely characterised by undeclared labour and therefore uncertain and even risky working conditions. Certain schemes, however, have been particularly successful in creating formal jobs leading to standard contracts and full social protection coverage.

The *Titres-Services* voucher model established in Belgium since 2004 is one such successful example. Workers are employed by an organisation (private or public, for-profit or not) that sells the services to different households. Households pre-purchase vouchers, usually on-line and use these to request the services they need (cleaning, washing, ironing, gardening, shopping, meal preparation, etc) from the company. The company then assigns the tasks to a worker. The price of each hourly voucher is set by the state which also offers a 30% tax deduction to users of *Titres-Services*, thereby providing users with an incentive to prefer a formal arrangement for these services over undeclared work. For the worker, the accumulation of vouchers by working in different households each day offers them access to a formal labour contract guaranteeing the same rights as any other worker, including paid vacation, health and pension rights. Depending on the number of vouchers collected the worker may choose to work part-time or full-time and after three consecutive months with the same provider, fixed-term contracts become open-ended. Employers can benefit from a reduction in their social contribution if they recruit long-term unemployed participating in activation programmes. Unemployed persons and recipients of social assistance are targeted by this measure, as 60% of jobs under the scheme must be attributed to such categories of people.

The scheme is quite costly for the public purse due to the tax-reduction offered. However, the direct and indirect advantages far outnumber the costs. Among these: decrease in unemployment; new social contributions; new receipts on personal income tax; the impact on consumption from new workers; the indirect creation of new jobs like administrative jobs in the agencies and freeing up women who use the vouchers to free up time so they can pursue their own careers. And of course, the societal benefits of creating new jobs particularly for low-skilled workers under decent working conditions and social protection, and reducing the informal sector.

Sources: ORSEU (2013), Developing personal and household services in the EU - A focus on housework activities; Report for the DG Employment, Social Affairs and Social Inclusion. <http://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=7664>

One way of going about customisation of social policy could be the establishment of **notional personal human capital accounts** to create a pool of resources for everyone to use throughout their careers. Depending on specific requirements, the resources could be used for training and retraining purposes related to work assignments. Apart from a fraction of their salary being designated for the function, workers would be in the position to benefit from tax-free contributions to their schemes from employers and/or public and private partners. The scheme could be relevant for all workers, whether holding fixed contracts or being self-employed, further levelling the field in the world of work.

## 5.4. Data is Knowledge and Key for Effective Policies

We still know little about the new dynamics described above and how firms and workers cope with them.

Measuring resilience, targeting investment, assessing the return, and turning public intervention to where it is needed the most requires the use of micro-data.

Big data offers an unprecedented opportunity to track and anticipate gaps in skills, map mismatches and polarisation in the job market, and marry employers' need with employees' capabilities. It also offers transparency for individuals to understand potential career options, education and training requirements and how these are remunerated in the labour market. Modernising and expanding job classifications may also be necessary given the transformations underway.

What is more, big data offers policymakers the chance to leverage behavioural insights and avoid inefficiencies in implementation. Experience of agencies such as the UK Behavioural Insights Team with the Department for Work and Pensions shows that studying the behaviour of job-seekers can substantially increase policy returns. There is a case for accelerating and streamlining the adoption of data-driven and evidence-based policy and decision-making. A number of ongoing projects yield very promising results, including Vacancies for ICT – Online Repository (Victory project), which is a big data related pilot initiative to map online vacancies for jobs and associated skills. Another example is [www.data4policy.eu](http://www.data4policy.eu), which supports big data and other innovative data-driven approaches for evidence-based policy making.

Finally, combining the potential of big data with more regular labour force surveys would permit to better monitor changes in the pace and nature of work relationships. This is fundamental to understand the forces affecting the European economy, the working conditions, and the quality of life of European workers.

These precise efforts are already underway in the US with the RAND-Princeton Contingent Worker Survey (RPCWS) in 2015. The Contingent Worker Survey tracks alternative (or non-standard) work relationships in the United States. It had not been conducted since 2005 meaning there was a substantial lack of data on ongoing labour market developments. To respond to this data-void, Lawrence F. Katz from Harvard University and Alan B. Krueger from Princeton University based themselves on the Bureau's Contingent Worker Survey and expanded it to gain more complete information on work arrangements. Having more dynamic data is core to be able to monitor and diagnose developments in Europe's labour markets.

Effectively investing in people requires that governments make their instruments for social investment user-centred. Drawing on the pools of available data governments identify future needs for policy intervention as well as emerging vulnerabilities and opportunities that may be better tapped into through early activation measures.

## Conclusions

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The world of work is part-and-parcel of the changing economy, heavily influenced by globalisation, international value and supply chains, more division of labour, and digital disruption. Work is no longer a static concept but an umbrella term for roles performed in a different manner and under different legal arrangements. Public policy needs to adapt to this new situation and benefit from the agility that comes with it while mitigating the downsides. Europe has a strong manufacturing base, a diverse and talented workforce and a large creative economy that offer a rich backdrop for a future of work with creative and fulfilling jobs. By orchestrating more tailor-made, customised interventions, based on granular insights provided by big data sources, it can achieve better results and foster the context within which both individuals and firms can thrive. Governments need to find more innovative ways to offer life-long and personalised support for employment, skills and welfare, adapted to the needs of individuals.

## Notes

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