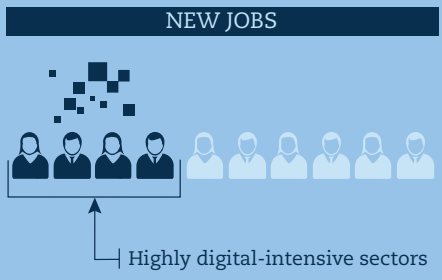
Chapter 5

ENSURING GOOD JOBS FOR ALL

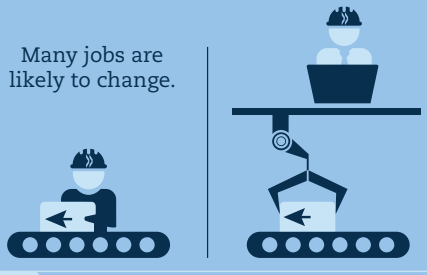
Over the past decade, **4 out of 10 new jobs** in the OECD were **created in highly digital-intensive** sectors.



Promote education and training to deliver a mix of skills to succeed in a digital world of work.

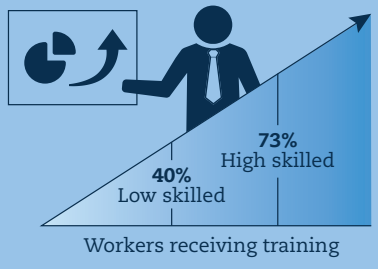
An estimated **14%** **of jobs face high likelihood of automation** and another **32% are likely to face significant change** in how they are carried out.

Many jobs are likely to change.



Support workers to facilitate their transition into jobs with a low likelihood of automation.

Despite **high returns on training the low-skilled**, firms provide more training to high-skilled **workers**.



Step up and target training, especially for the low-skilled.

Only 0.13% **of GDP on average is spent on training** of the unemployed and of workers at risk of involuntary unemployment.

Ensure that nobody is left behind as labour markets transform.

ENSURING GOOD JOBS FOR ALL: WHAT MATTERS MOST FOR POLICY?

Prepare workers for many new jobs and changes to existing ones

- Digital transformation leads to creative destruction, with jobs being lost and others being created. Estimates of possible automation of tasks suggest that 14% of jobs face a high likelihood of automation and another 32% are likely to face significant change over the next 10 to 20 years.
- To date, concerns around massive technological unemployment have not materialised; employment rates are at a record high in many countries and the digital revolution has contributed significantly to job creation: four out of ten jobs were created in highly digital-intensive sectors over the past decade.
- As labour markets transform, it is imperative to promote successful and fair transitions from declining to expanding jobs, e.g. by striking a balance between flexibility and mobility, on the one hand, and job stability on the other, including through social dialogue.

Empower people with a mix of skills to succeed in a digital world of work

- Ensure that people develop the skills they need to succeed in the digital world of work, notably sound cognitive skills, information and communication technology (ICT) skills, complementary skills, specialist skills and the ability to cope with change and keep learning, including out of work.
- Improve the accessibility, quality and equity of education for young people and of training systems for adults throughout their working life, including through better use of digital technologies for learning.

Get ready for a massive training challenge

- With nearly half of the labour force facing a significant likelihood of automation where the tasks performed in different occupations may change, the provision of up-skilling and re-skilling opportunities looms large. Training opportunities need to be life-long and with incentives for training of those most in need, notably low-skilled workers, only 40% of which receive firm-based training.
- Address barriers to adult learning, e.g. through policies supporting informed learning choices, new techniques such as distance learning and promoting adult learning, and strengthening financing of life-long learning as well as systems of skills validation.

Improve social protection to ensure that no one is left behind

- Strengthen and adapt social protection, including for non-standard forms of work; average spending on training for unemployed and workers at risk of involuntary unemployment across OECD countries is only 0.13% of gross domestic product (GDP).
- Leverage active labour market programmes to support displaced workers and design effective income support schemes to provide income security without undermining work incentives.

Address concerns around emerging forms of work

- Ensure good outcomes for all workers through a mixture of applying and, where necessary, reviewing and extending labour market regulation, as well as improving social protection and strengthening workers' voice.
- Reduce the risk of arbitrage between forms of employment and work by ensuring neutrality in terms of regulation, taxes and benefits.

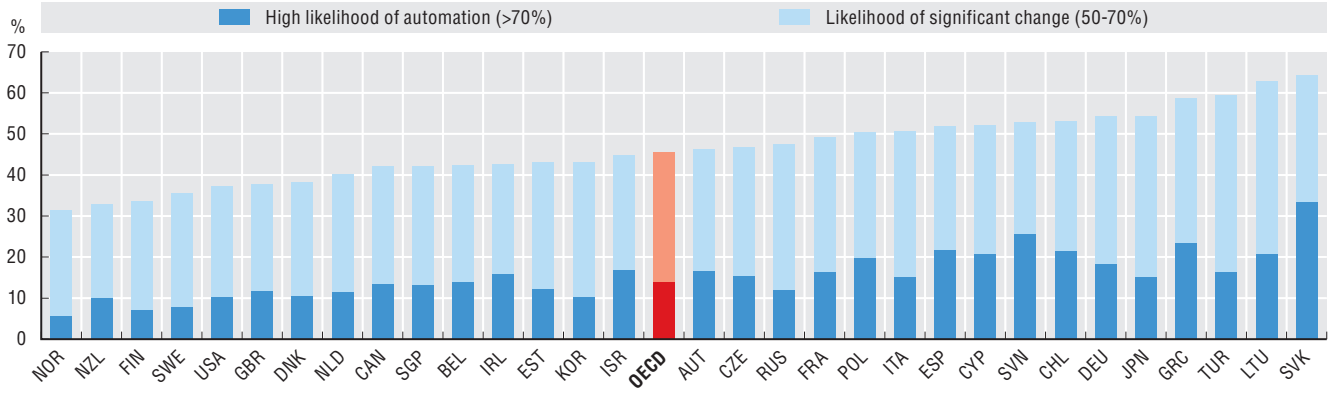
Digital transformation leads to creative destruction, with jobs being lost and others being created; however, employment rates are at record high levels in many countries. As labour markets transform, many of the new jobs are likely to differ from the ones we know. Empowering people with the mix of skills needed to succeed in a digital world of work, including by improving education and training systems throughout the life cycle, facilitating job-to-job transitions and ensuring adequate social protection, is essential. Some workers are likely to benefit more from digital transformation than others: policies aimed at prosperous economies and inclusive societies need to ensure a successful and fair transition for all.

Digital transformation is creating many new job opportunities, but is also challenging many existing jobs

Much attention has focused on estimations of the number of jobs that may be affected by automation in the future. While bounded by uncertainty, the percentage of jobs that face a high likelihood of automation, based on an estimation of the tasks that could be automated over the next 10 to 20 years, is 14% on average in the countries that participated in the OECD Survey of Adult Skills. In addition, an estimated 32% of jobs are likely to face significant change in how they are carried out, due to automation of some tasks within these jobs. In total, almost half of all jobs might thus face significant change (Figure 5.1). Viewed through the lens of skills, computers are already now considered to be close to reproducing the proficiency of literacy skills used by 62% of workers every day in OECD countries (Elliott, 2017[1]).

5.1. A significant share of jobs could be affected by automation

Likelihood of automation or significant change to jobs, as a percentage of all jobs, 2012 or 2015



Notes: StatLink contains more data. See Chapter notes.[1]

Source: Nedelkoska and Quintini, (2018[2]), "Automation, skills use and training", *http://dx.doi.org/10.1787/2e2f4eea-en*.

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However, it is unclear how much of the likelihood of automation will actually materialise. There seems to be a large gap between what can be automated from a technical point of view and what is currently being automated by firms. A host of factors can affect technology adoption, including policy, economic, industry, legal, ethical and social factors. For example, market forces driving the relative prices of capital and labour; market structure and the presence of big, medium or small firms in a location or industry; institutional norms and regulations; and consumer, societal preferences and ethical norms all shape technology adoption (OECD, 2018[3]). In addition, a range of skills and organisational changes are needed to effectively put digital technology to work. Robots might even contribute to containing job losses that occur through offshoring in some developed economies by decreasing the need for relocating certain activities (De Backer et al., 2018[4]).

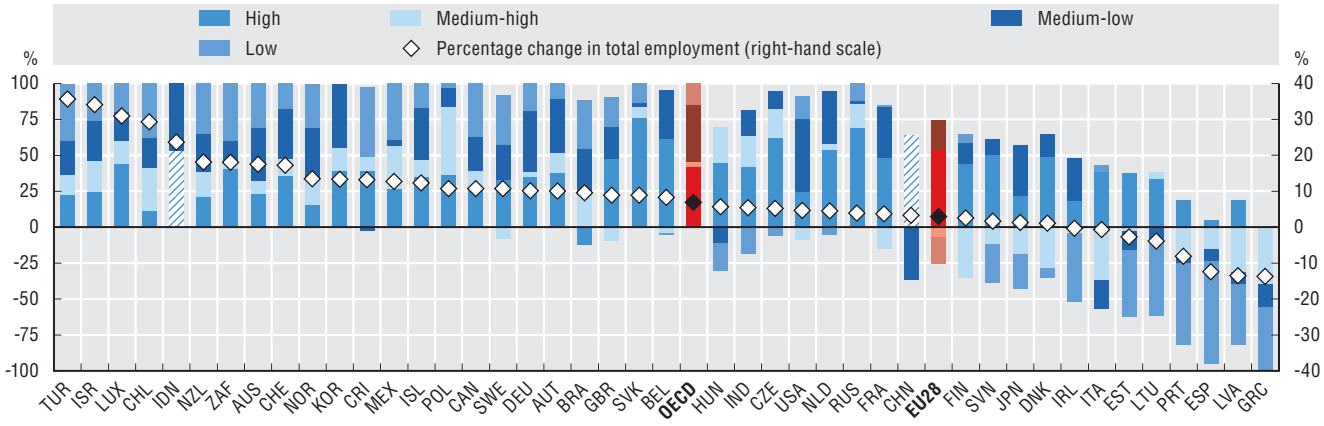
The likelihood of automation is not equally distributed across countries, regions and socio-demographic groups. For example, important geographical disparities exist in both the likelihood of digitally induced job creation and job automation within many countries. This implies that digital transformation may

exacerbate inequalities between regions, as new jobs might appear in places other than where jobs may be lost (Sorbe, Gal and Millot, 2018[5]). Evidence from the United States shows that new industries have mainly appeared in urban areas that have a large share of high-skilled workers (Berger and Frey, 2015[6]), and that regions which are most exposed to the adoption of robots have seen negative effects on employment and wages (Acemoglu and Restrepo, 2017[7]). This is in line with the finding that regions that face a lower likelihood of automation tend to have a larger share of workers with tertiary education, more jobs in services, and are highly urbanised (OECD, 2018[8]).

Turning to evidence on job creation and destruction over the past decade, digital transformation was a contributor to overall job creation across the OECD. Between 2006 and 2016, total employment in the OECD grew by 6.9%, a net gain of about 38 million jobs. While digital transformation may have destroyed some jobs, highly digital-intensive sectors (Calvino et al., 2018[9]) contributed 42% or 16 million jobs of these net job gains (Figure 5.2). This finding is in line with the theoretical assumption that in addition to direct job creation, investment in or use of ICTs should result in indirect job creation by contributing to rising productivity, lower prices and new products that lead to higher final demand and in turn employment (OECD, 2016[10]). In contrast to the job creation in digital-intensive sectors, a large majority of job losses that took place over the same period in some countries occurred in sectors of low or medium digital intensity.

5.2. Digital-intensive sectors contribute to job creation

Contributions to changes in total employment, by digital intensity of sectors, 2006-16



Notes: StatLink contains more data. See Chapter notes.[2]

Source: OECD (2019[11]), *Measuring the Digital Transformation*, *https://dx.doi.org/10.1787/9789264311992-en*, based on OECD calculations based on OECD, *STAN Database*, *http://oe.cd/stan*; National Accounts Statistics; national sources; and OECD, *Inter-Country Input-Output Database*, *http://oe.cd/icio* (accessed October 2018).

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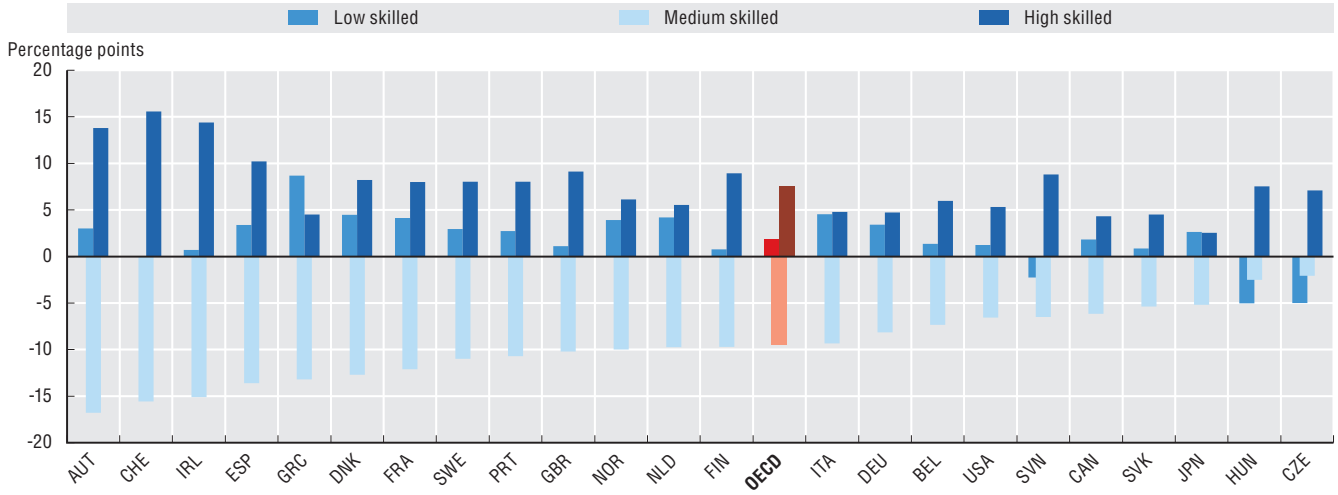
New job creation combined with likely changes to and possible destruction of existing jobs transforms labour markets. Governments, together with social partners, need to help workers transition into new jobs. Adapting to technological progress and new forms of organisations and work requires policies to facilitate the transition of workers across businesses, industries, regions and occupations. An important condition for workers to transition to new jobs are well-functioning labour markets. The 2018 OECD Jobs Strategy provides guidance on how to improve labour market performance along three dimensions: more and better jobs; inclusive labour markets; and adaptability and resilience. Adaptability and resilience are particularly important in the context of digital transformation since they require flexibility for firms and the mobility of workers, investments in skills and training, the provision of well-set minimum wages and adequate social safety nets, combined with strong activation policies, targeted support for displaced workers, social dialogue and collective bargaining at different levels (OECD, 2018[12]).

Prepare workers for many new jobs and changes to existing ones

Over the past two decades, labour markets in most OECD countries have polarised; that is, the share of employment in high-skilled (and to some extent in low-skilled) jobs has increased, while the share of employment in middle-skilled jobs has decreased (Figure 5.3). This corresponds with the finding that the labour market demand for cognitive skills such as written and oral expression, numeracy, reasoning and complex problem solving has increased in the last decade, while demand for routine and physical abilities has dropped significantly (OECD, forthcoming[13]).

5.3. Labour markets have polarised in nearly all OECD countries

Percentage point change in share of total employment, by skill level, 1995 to 2015



Note: See Chapter notes.[3]

Source: OECD (2017[14]), *OECD Employment Outlook 2017*, *https://doi.org/10.1787/empl_outlook-2017-en.*

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Workers that are the most likely to benefit from high-skilled job opportunities, notably in digital-intensive sectors, are workers with skills that complement technology and can perform non-routine tasks. Looking ahead, the ones that may bear much of the potential costs of digital transformation are likely to be low-skilled workers in jobs that are likely to face automation, increased competition from middle-skilled workers, and difficulties to adapt to new skills needs (OECD, 2017[14]).

Regardless of skill level, it is important to ensure that workers benefit from the productivity gains associated with digital transformation. Over the past two decades, this has not necessarily been the case, as real median wage growth in most OECD countries has decoupled from labour productivity growth (OECD, 2018[15]). As a result, productivity gains no longer appear to automatically translate into wage gains for all workers.

To help ensure positive outcomes for workers, it is imperative to facilitate successful and fair transitions from declining to expanding jobs, e.g. by striking a balance between the flexibility of firms and the mobility of workers, on the one hand, and job stability on the other, including through social dialogue (OECD, 2018[12]). This includes the ease with which entrepreneurs can start or liquidate a business, firms can adjust their workforce in response to changing business conditions, and workers can move between firms and places in search of better matches for their skills and career ambitions. The functioning and regulation of financial, housing and product markets also matter, including through policies that affect entry and exit.

Labour market policies and institutions play a critical role by determining the flexibility with which firms can adjust their workforces (while giving workers adequate protection) and the ease with which workers can move across firms. The latter depends to an important extent on the transferability of skills, the portability of benefits, and the availability of effective employment services and active labour market programmes to facilitate job-to-job transitions. Worker mobility also depends on wage

incentives for workers to move from low to high-productivity firms, highlighting the importance of allowing sufficient scope to adjust wages to business conditions at the firm level, especially in countries where collective bargaining predominantly takes places at the sector or national level. Finally, it is also important to design education and training policies to facilitate transitions across occupations, while ensuring quality jobs that make maximal use of workers' skill sets and offer attractive compensation.

Empower people with a mix of skills to succeed in a digital world of work

People need the right mix of skills to succeed in technology-rich work environments and to be prepared for new and changing jobs. Evidence shows the importance of cognitive skills such as literacy, numeracy and problem solving for workers in any industry to thrive in a digital and interconnected global economy (Grundke et al., 2017[16]; Grundke et al., 2018[17]). There is a growing consensus that transversal skills, such as thinking critically and creatively, solving problems, making informed decisions while using technology and behaving collaboratively, are critical.

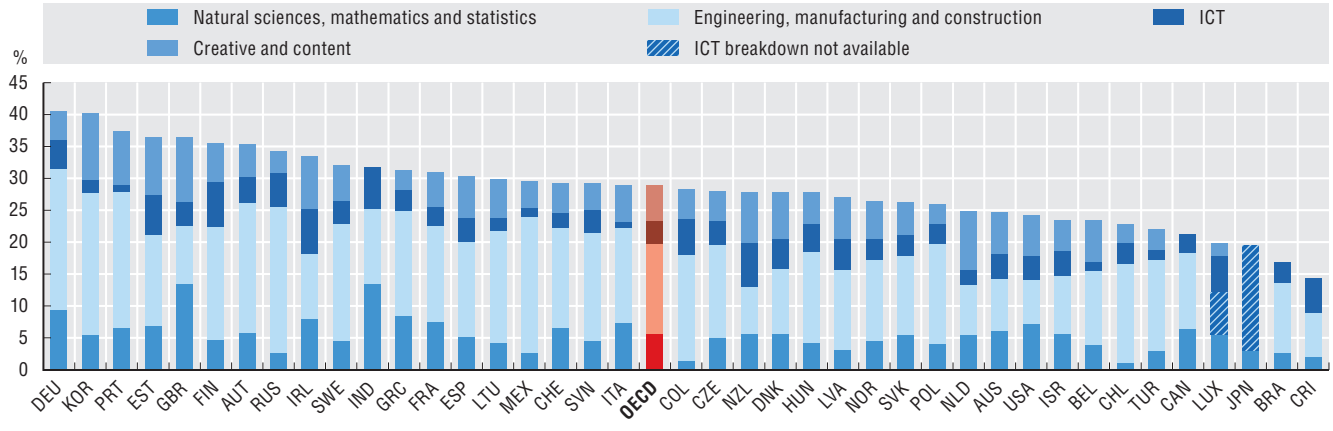
At the same time, developing these skills cannot come at the expense of content knowledge, as working in a digital environment requires a deep grasp of substance (OECD, forthcoming[13]). Furthermore, complementarities between technology and workers are likely to grow with the digitalisation of workplaces, which is expected to lead to greater use of cognitive skills, for example advanced numeracy skills. In addition, more freedom in the planning and organisation of work, linked to the fact that much work is likely to involve fewer routine tasks, requires better management and communication skills to successfully work in teams (OECD, forthcoming[13]).

While uncertainty remains about the exact changes in skills needed to thrive in a digital world of work, the following skills are among those that seem crucial: general cognitive skills, notably literacy, numeracy and ICT skills;[4] complementary skills and competencies,[5] such as complex problem solving, critical and creative thinking, autonomy, team work, complex social interaction skills, emotional intelligence and a strong ability to continue learning. Many jobs, notably in digital-intensive sectors and occupations, also require ICT specialist[6] and/or data specialist[7] skills that are in high demand in many countries (OECD, 2017[18]).

While skills are acquired in multiple ways and at different stages of life and work, primary to tertiary education are essential to provide people with the skills that form the foundation for their (working) life, including for life-long learning. When it comes to tertiary graduates in fields of study that are key in the digital age, important differences emerge among countries. The proportion of graduates in ICT, science, mathematics, engineering, and creative fields of study vary importantly, from over 40% in the country with the highest shares to 20% or less in the countries with the lowest shares (Figure 5.4).

5.4. Key fields of study to prepare people for a digital world of work

Tertiary graduates, by field of education, as a percentage of all tertiary graduates, 2016



Note: See Chapter notes.[8]

Source: OECD (2019[11]), *Measuring the Digital Transformation*, *https://dx.doi.org/10.1787/9789264311992-en*, based on OECD calculations based on OECD, *Education Database*, *http://www.oecd.org/education/database.htm* (accessed September 2018).

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Some skills are particularly rewarded in digital work environments: workers in digital-intensive industries with high science, technology, engineering and mathematics skills and high levels of self-organisation or management and communication skills tend to earn a wage premium relative to those in non-digital intensive industries (Grundke et al., 2018[17]). On the other hand, low-skilled workers seem to experience downward pressure on their wages as a result of digital transformation (Acemoglu and Restrepo, 2017[7]; Dauth et al., 2017[19]; Graetz and Michaels, 2017[20]; Nedelkoska and Quintini, 2018[2]).

Wages are also affected by the skills workers acquire through formal education as well as training and learning throughout their working life. On average 8% of workers train towards a formal qualification, although such training tends to result in lower wages, which may reflect the time taken off work by workers to take formal courses. In contrast, 41% of workers engage in non-formal learning, with an associated 11% increase in wages, and about 70% take part in informal learning activities, which results in a 3.5% rise in wages (Quintini, forthcoming[21]).

Everyone should have the chance to acquire needed skills and effectively use and continuously improve them. Starting from early childhood education, the accessibility, quality and equity of education for young people and of training for adults along their working life need to improve, including through better use of digital technologies for digital learning (Box 5.1).

5.1. Digital learning tools for adult and life-long learning

Digital technologies create new possibilities for education and training. Digital learning and open education comes in many forms (e.g. post-secondary, undergraduate and graduate education, continuing education, short-term training and professional development). It can be offered by formal educational institutions, industry, or new entrants in the education and training fields. Digital learning can lower the cost of training, increase flexibility in training provision, and better meet individual needs, among others (OECD, forthcoming[13]). Digital learning and open education holds much promise to foster adult and life-long learning.

One form of digital learning is online learning, which notably enables distance learning and can be open to a large number of students. Online learning includes tutorials, recorded lectures, online educational resources, as well as small, private online courses or massive open online courses (MOOCs). MOOCs have attracted much attention over recent years, but the return on experience on their potential for education and training is still limited. Other forms of digital learning are discussed in Chapter 3.

While the first popular MOOCs were offered by formal post-secondary educational institutions and focused on traditional academic subject areas, more recently the number of MOOCs that aim at enhancing skills and providing professional development have increased. Some of these skills-oriented MOOCs have been created by, or in co-operation with, multinationals that help set the curricula or are prepared to accept certificates of successful MOOC completion in their hiring processes. For firms, MOOCs may provide a potentially cost-effective means of investing in their employees. Users of open education are largely employees that combine it with formal education and, to a lesser extent, workers on the job (OECD, 2016[22]; OECD, forthcoming[13]).

One key challenge with many MOOCs is that completion rates are very low, and that patterns of participation and completion seem to replicate offline learning patterns, i.e. the highly educated and highly skilled are more likely to participate in and finalise courses than low-skilled ones. It is thus unclear whether MOOCs will reduce or actually reinforce inequalities in adult learning (OECD, forthcoming[13]). For those who complete online courses, certification and/or their recognition remains a challenge, despite many innovative approaches to certification that have evolved with digital learning, e.g. digital badges, nano and micro degrees, and other alternative forms of credentials.

Sources: OECD (2016[22]), *Massive Open Online Courses (MOOCs): Trends and Future Perspectives*, *http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=EDU/CERI/CD/RD(2016)5&docLanguage=En;* OECD (forthcoming[13]), OECD *Skills Outlook 2019*.

Occupations requiring formal training and related curricula need to evolve with a long-term vision, and the conditions and quality of teaching need to improve. In addition, policies should help individuals navigate uncertain and evolving work environments by promoting comprehensive information about skills and learning opportunities; making learning opportunities flexible and affordable for both individuals and employers; and establishing mechanisms to ensure the quality and credibility of learning. It also important that policies foster engagement in learning for all, notably those most at risk of having their skills become obsolete. Overall, people's readiness to learn, which is strongly correlated with cognitive skills, is a crucial determinant of participation in training programmes but also of learning from experience and expanding opportunities of digital learning (OECD, forthcoming[13]).

As the provision and forms of education, training and learning expand and diversify, a key question to be addressed is how to design and organise the certification of learning, including digital learning, to provide clarity to firms and individuals and to facilitate the recognition of skills acquired formally and informally. Many labour markets are characterised by a pool of workers with similar educational attainment but very different skills. In addition, firms are not only demanding more in terms of workers' skills requirements but also increasingly testing skills on their own rather than relying on diplomas.

Similarly, skills acquired by workers through non-formal and informal learning are not often certified and not easily recognised by other employers, which is likely to weaken learning incentives and the ability of workers to fully benefit from such learning (OECD, forthcoming[13]; Quintini, forthcoming[21]). It is therefore crucial to develop better accreditation mechanisms that complement the traditional diploma, including certifications that are independent from the completion of years of education, and to move towards a reliable assessment of skills rather than only a certification of participation in learning activities (OECD, forthcoming[13]).

To develop a holistic approach to improving education and training systems, governments need to invest strategically. To help governments do so, the 2019 OECD Skills Strategy, currently being reassessed, provides an integrated, cross-government strategic framework to help countries identify the strengths and weaknesses of their national skills systems, benchmark them internationally, and develop policies that can transform better skills into better jobs, economic growth and social inclusion. The OECD Skills Strategy identifies three imperatives – life-long learning, fostering equitable opportunities and outcomes, and making better use of digital technology as a learning device. It advocates for three core areas of policy action: 1) Developing relevant skills across the life course; 2) Using skills effectively in all facets of work and society; and 3) Strengthening the governance of the skills system (OECD, forthcoming[23]).

In addition, co-ordination among education and training institutions, employers, and social partners and institutions is crucial to make education and training programmes more responsive to changing needs and help target those who need learning opportunities the most. This should include high-quality and independent orientation and counselling on life-long learning for all workers and the unemployed over their whole career span.

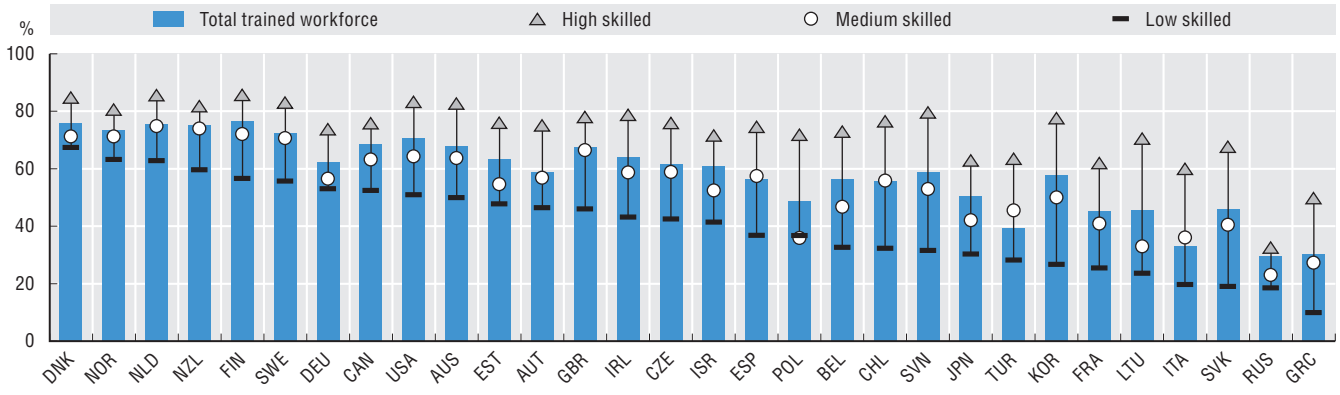
Get ready for a massive training challenge

Low-skilled workers tend to face the greatest urgency to up-skill or re-skill because their jobs are more likely to be automated, as more routine-intensive occupations tend to require lower skills, although this correlation is not necessarily very strong (Marcolin and Squicciarini, 2018[24]). Conversely, higher skilled workers tend to benefit relatively more from technological change, because their skills are more easily transferable to other jobs or more likely to complement technology.

Nevertheless, low-skilled workers are less likely to receive firm-based training than medium- and high-skilled workers (Figure 5.5). This may be partly explained by barriers that hamper participation in adult learning for the lower skilled, notably the lack of basic skills to meet entry requirements, as well as time constraints and low motivation (OECD, 2019[25]). Important potential could be realised if the share of low-skilled workers receiving firm-based training (40%) increased to the share of high-skilled workers receiving training (73%), in particular given that the training of low-skilled workers can significantly improve the diffusion and use of digital technologies in firms and, in turn, productivity (see Chapter 3) (Andrews, Nicoletti and Timiliotis, 2018[26]).

5.5. Fewer low-skilled workers receive training than medium- and high-skilled workers

Workers receiving firm-based training, by skill level, as a percentage of workers in each category, 2012 or 2015



Note: See Chapter notes.[9]

Source: OECD (2019[11]), *Measuring the Digital Transformation*, *https://dx.doi.org/10.1787/9789264311992-en*, based on OECD calculations based on (OECD[27]), *Survey of Adult Skills (PIAAC)*, *www.oecd.org/skills/piaac/publicdataandanalysis* (accessed October 2018).

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Facing greater likelihood of automation, low-skilled workers also face greater difficulties than high-skilled workers to move to occupations that are not affected by automation. However, retraining low-skilled workers would be less costly than re-training high-skilled workers, taking into account the opportunity cost of training. On the one hand, high-skilled workers move more easily from one job to the next than low-skilled workers, because cognitive skill distances[10] between different high-skilled occupations are smaller than between different low-skilled occupations as well as between medium-skilled and high-skilled occupations (Bechichi et al., 2018[28]). On the other hand, the move of a high-skilled worker from a job at high likelihood of automation to a job at lower likelihood of automation is more costly than the same move of a low-skilled worker, because high-skilled workers' opportunity cost of leaving employment for training is higher than the opportunity cost for low-skilled workers (Marcolin, Squicciarini and Jamet, forthcoming[29]).

Transitions into occupations at low or medium likelihood of automation seem to be possible for all workers, but not necessarily acceptable in that some transitions may entail important human-capital losses and/or wage cuts. After a retraining spell of six months or less, workers in almost all occupations could possibly transition to another occupation that is relatively similar in terms of cognitive skill requirements, task-based skills and knowledge areas. But not all transitions that are in principle possible are necessarily acceptable to workers. In fact, with training efforts of at most one year, few acceptable transitions exist for low-skilled occupations, as all other occupations are characterised by higher skills requirements. Acceptable transitions for high-skilled occupations are also rare with the same training efforts, in particular because several of the possible transitions would entail important wage cuts or the acceptance of jobs for which workers are overqualified (Squicciarini and Jamet, forthcoming[30]).

All workers and people looking for employment should have the opportunities and incentives to up-skill and/or re-skill throughout their lives – whether through formal education or training or through non-formal and informal learning. Several key aspects should be considered to make life-long learning a reality, especially for low-skilled individuals. This includes designing effective incentives for investments in training (e.g. personal training accounts, or life-long training rights) and developing mechanisms to allow for the portability of training rights between employers so that accumulated rights are not lost when workers change jobs. In addition, it is important to motivate workers and remove time and other constraints to increase participation in education and training. This is also important for workers in non-standard forms of work who can face particular challenges to access life-long learning opportunities and are often less likely than standard workers to participate in training.

Well-performing adult training systems play a crucial role in ensuring that workers at all skill levels and ages receive the training they need to be resilient to changes in jobs and benefit from new opportunities. Adult learning remains a weak link in the life-long learning agenda. Average participation in adult

learning is only about 40% in OECD countries. This share is even lower for those most in need of up-skilling and re-skilling: adult learning participation of those with low skill levels is 23 percentage points lower than for those with medium and high skills. While it should be in the interest of firms to understand the training needs of their employees, on average only two out of three firms assess their future skill needs and those who do, do not always align their training policy with this assessment. These shortcomings are likely to increase the pressure on adult learning systems to deliver (OECD, 2019[25]).

Policy action can improve the future readiness of adult learning systems by:

- making adult learning systems more inclusive, for example through providing better information and guidance, flexible learning provision, and the recognition of prior education and training
- more closely aligning adult learning with skill needs, for example by ensuring high-quality information on skill needs to help shape learning systems
- improving the quality of training, for example by setting and monitoring quality standards, ensuring that training leads to certification, and regularly evaluating adult learning programmes
- ensuring adequate financing of adult learning, including by calling upon employers and individuals, in addition to governments, to contribute to training costs in line with the benefits they obtain
- improving governance to enable effective vertical and horizontal co-ordination on adult learning within the government, as well as co-operation with social partners and other stakeholders (OECD, 2019[25])
- raising aspirations for learning, strengthening systems of skills validation and certification, and encouraging the development of education and training markets that are responsive to the needs of adults (OECD, forthcoming[13]).

The scale of the challenge to empower everyone with the skills needed to succeed in a digital world of work goes beyond the capabilities of governments. The aggregate cost alone for retraining all workers in jobs that face a high likelihood of automation in a given country looms large (Marcolin, Squicciarini and Jamet, forthcoming[29]). However, the cost does not need to be incurred all at once, since jobs losses in occupations that face a high likelihood of automation are likely to be gradual. Importantly, countries have yet to determine how to split the cost between employers, governments and workers. Finally, money is not the only question. For example, governments should encourage employers to invest in training, provide incentives for the private sector to invest in the development of transferable skills, build work-based learning into educational programmes, and create an environment where people have greater discretion over learning activities.

Improve social protection to ensure that no one is left behind

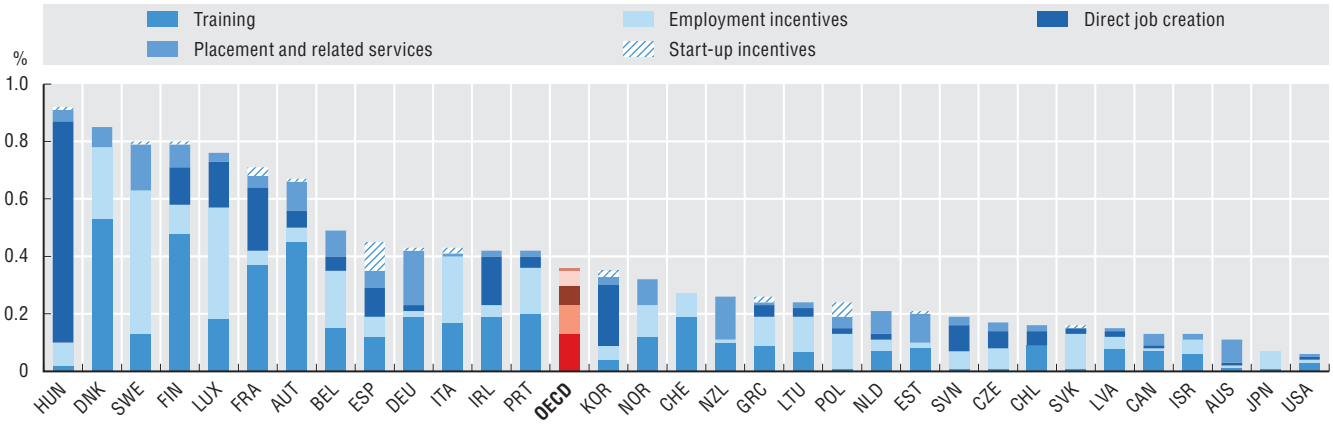
Not all workers who transition into new occupations or those that try to enter the labour market for the first time or after an unemployment spell will necessarily find a new job immediately. Adequate social protection is thus crucial to enable a successful and fair transition for all, including for displaced workers. A starting point for improving (re-)employment prospects and income security, especially for displaced workers, is a system of well-designed and adequately resourced active and passive labour market programmes, which are implemented often as a part of national activation strategies (OECD, 2018[3]).

Active labour market programmes should provide all displaced workers timely access to basic job search services and target the workers that require more intensive (re)employment services or retraining. Public spending on active labour market programmes differ significantly across countries and are quite low in some, considering the important effects of such spending on the services for displaced workers, such as re-employment assistance (Figure 5.6). Average spending on training for the unemployed and workers at risk of involuntary unemployment across OECD countries is only 0.13% of GDP, which seems low in view of the expected costs of retraining workers in jobs that face a high likelihood of automation.

Some workers may temporarily require support in the form of unemployment benefits. A well-designed unemployment benefits scheme is crucial to providing adequate income security. Income support schemes should be designed with the general objective in mind to provide income security and compensate for lost earnings without undermining work incentives. For example, the provision of a temporary wage supplement to displaced workers who return to work rapidly by accepting a new job at a lower pay level can be helpful in this regard (OECD, 2018[3]).

5.6. Active labour market spending differs significantly across countries

Public expenditure on active labour market policies, as a percentage of GDP, 2016



Note: See Chapter notes.[11]

Source: OECD (2019[11]), *Measuring the Digital Transformation*, *https://dx.doi.org/10.1787/9789264311992-en*, based on OECD, *Labour Market Programmes Database*, *https://doi.org/10.1787/0305a59d-en* (accessed October 2018).

StatLink https://doi.org/10.1787/888933915259

Overall, governments may need to make social protection more sustainable, effective and adaptable. Given that many countries already struggle to provide adequate social protection for workers with non-standard work contracts (e.g. temporary contracts, self-employed, on-call labour), the advent of work in platform-mediated work may increase the burden on social protection systems. (OECD, 2018[31]).

An increasing number of people only work occasionally and/or have multiple jobs and income sources, with frequent transitions between dependent employment, self-employment and work-free periods. Many people work informally and are not protected under existing rules. All this is adding to the challenges faced by existing social security systems, which are still largely predicated on the assumption of a full-time, regular, open-ended contract with a single employer. As a result of these challenges, more workers risk falling through the cracks, although the scale of the problem that lies ahead is difficult to predict at this stage.

Several countries are experimenting with various forms of basic income schemes which, besides being simple, have the advantage of not leaving anyone without support. However, an unconditional payments to everyone at meaningful but fiscally realistic levels would require tax hikes as well as reductions in existing benefits, and would often not be an effective tool for reducing poverty. In addition, some disadvantaged groups would lose out when existing benefits are replaced by a basic income, illustrating the downsides of social protection without any form of targeting at all (OECD, 2017[32]).

Address concerns around emerging forms of work

Evolving use of digital technologies and new business models, among other drivers, have given rise to online platforms that facilitate the emergence of platform-mediated work, such as "crowd work", "gig work", and other forms of often on-demand labour. Workers in platform markets often benefit from low entry barriers and flexibility, which can facilitate the labour market integration of under-represented groups (and may promote inclusiveness). Most of such work seems to be carried out as some form of non-standard work, notably by independent self-employed or own-account workers and in many cases as a part-time job. While this diverse group of workers appears to have grown fast over recent years, it is estimated to be a very small share of overall employment (OECD, 2016[33]; Schwellnus, forthcoming[34]), and measuring the exact size and more specific characteristics of this population still remains a challenge (OECD, 2019[11]).

Labour market outcomes vary greatly across non-standard workers, in particular in terms of pay, job security and social protection. For example, own-account workers are significantly more likely than employees to earn less than the minimum wage (OECD, 2018[3]). Such workers are also less likely to

be covered by collective bargaining arrangements and/or some labour regulations, tend to receive less training and tend to be more exposed to job strain. Some platforms also go beyond being a mere facilitator or marketplace, e.g. in determining prices, working times, or details of services provision, which can undermine the flexibility and autonomy associated with genuine self-employment (OECD, 2018[31]). Ensuring good outcomes for all workers requires a mixture of reviewing labour market regulation; making social protection more sustainable, effective and adaptable; and promoting workers' voice. In some cases, new business models facilitated by technological change may have spurred growth in false self-employment, which needs to be addressed.

Different forms of platform-mediated work may also be facilitated by and have implications for taxation. Labour taxes are the largest tax category in almost all OECD countries. Tax differentials across employment types therefore have the potential to significantly affect labour markets as well as revenue. On the one hand, this raises questions about the extent to which the changes in labour markets are tax-driven, and on the other hand it raises the question whether and how tax systems need to adapt to a rise in non-standard work.

The first best outcome of optimal tax theory is the principle of neutrality: policy makers must ensure that tax systems are neutral across employment forms. However, achieving this objective may be complicated if other policy priorities take precedence. Different forms of work have different characteristics that may merit different tax treatment, for example differences in entrepreneurial risk, rights to social benefits and business expenses (Milanez, forthcoming[35]). However, if certain forms of employment are subject to lower non-wage labour costs, this should be a deliberate policy choice (OECD, 2018[31]).

Given that certain groups seem to be over-represented in non-standard forms of work (typically women, youth, the least-skilled, workers with disabilities, workers in small firms and migrants), increasing the quality of on-demand jobs can help reduce the risk of increased labour market segmentation. The design of platform markets themselves, in particular review and reputation systems, may also have adverse effects, such as barriers to entry, which could be addressed, for example, by increasing the portability of reputations across platforms (OECD, 2016[33]). Also, if firms use such forms of work to avoid tax and other financial obligations, there is a risk that such work would result in a transfer of fiscal responsibilities from employers onto governments and individuals.

As digital transformation may further promote non-standard forms of work, this may result in reduced job security for many workers. Many might not be protected at all by the standard rules for hiring and firing that apply to open-ended contracts. Oftentimes, more flexible rules apply (e.g. in cases of temporary employment or dependent self-employment) while in other cases, workers are excluded from employment protection legislation altogether (e.g. the self-employed). For some of the emerging forms of work, it is not even clear what the status of workers is, who the employer is and what rules should apply to them.

In some cases, governments may wish to consider whether tax and benefit systems need to be extended and/or adapted to new forms of work so that all workers are both provided with some minimum protection and their various sources of income are brought into the tax system. Portability of social security entitlements can help prevent the loss of benefit entitlements when workers move between jobs, contract types, and into and out of employment. Governments may also consider expanding the role of non-contributory schemes so that no one is left without social protection as a result of their contract status. Labour market regulation and tax policy should thus be reviewed to ensure neutrality between various forms of work and to avoid non-standard forms of work that create dependencies. In addition, it is important to avoid regulatory arbitrage, resulting in employers and workers choosing non-standard contracts solely to circumvent taxes and regulations on regular contracts.

It is essential for countries not only to ensure that existing regulations are properly enforced, but also to examine their legal frameworks to determine whether they need to be updated and/or adjusted so that all workers, regardless of contract type, receive adequate rights, benefits and protections. This includes employment protection legislation, minimum wage laws, policies that determine working time, and occupational health and safety regulations. Countries should also consider how existing regulations can be more effectively enforced in the face of new business models, and what complementary legal and regulatory measures can help.

Last but not least, governments can foster social dialogue and collective bargaining. Anticipating future challenges and opportunities, finding solutions, managing change proactively, and shaping the future world of work can be achieved more easily and effectively if employers, workers and their representatives work closely together with governments in a spirit of co-operation and mutual trust. It should be noted that since the 1980s, the process of collective representation and negotiation has been challenged in the OECD; union membership declined from 30% to 17% and the proportion of workers covered by collective agreements decreased from 45% to 33%. Platform-mediated forms of work add to the challenge of organising and strengthening workers' voice since individuals are increasingly working alone, separated by geography, language and legal status or a lack of the necessary information, and in many countries independent workers (self-employed contractors) cannot unionise since it would violate competition law (OECD, 2018[31]). Going forward, it is important to understand how to promote workers' representation in a world where flexible forms of employment may become more common.

Notes

Israel
The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

1. Figure 5.1: Jobs face a high likelihood of automation if their likelihood of being automated is at least 70%. Jobs that are likely to face significant change are those with a likelihood of being automated estimated at between 50% and 70%. Data are sourced from (Nedelkoska and Quintini, 2018[2]). The data for the following 24 countries from the first round of PIAAC refer to the year 2012: Australia, Austria, Belgium (Flanders), Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Japan, Korea, the Netherlands, Norway, Poland, the Russian Federation (excluding Moscow), Slovak Republic, Spain, Sweden, the United Kingdom (England and Northern Ireland) and the United States. Data for the remaining countries refer to 2015 and are sourced from the second round of the first wave of the PIAAC survey. For the Russian Federation, the PIAAC sample does not include the population of the Moscow municipal area. The data published, therefore, do not represent the entire resident population aged 16-65, but rather the population of the Russian Federation excluding the population residing in the Moscow municipal area.
   Note by Turkey
   The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".
   Note by all the European Union Member States of the OECD and the European Union
   The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.
2. Figure 5.2: Digital intensity is defined according to taxonomy described in (Calvino et al., 2018[9]). For the People's Republic of China, Costa Rica, Brazil, India, Indonesia and the Russian Federation, data refer to 2006-15. Low digital-intensive sectors are defined according to ISIC Rev.4: Agriculture, hunting, forestry and fishing (Divisions 01 to 03), Mining and quarrying (05 to 09), Food products, beverages and tobacco (10 to 12), Electricity, gas and water supply; sewerage, waste management and remediation activities (35 to 39), Construction (41 to 43), Transportation and storage (49 to 53), Accommodation and food service activities (55 to 56), Real estate activities (68) and Activities of households as employers; undifferentiated activities of households for own use (97 to 98). Medium-low digital-intensive sectors include: Textiles, wearing apparel, leather and related products (ISIC Rev. 4 Divisions 13 to 15), Chemical, rubber, plastics, fuel products and other non-metallic mineral products (19 to 23), Basic metals and fabricated metal products, except machinery and equipment (24 to 25), Education (85) and Human health and social work activities (86 to 88). Medium-high digital-intensive sectors include: Wood and paper products; printing (ISIC Rev. 4 Divisions 16 to 18), Machinery and equipment (26 to 28), Furniture; other manufacturing; repair and installation of machinery and equipment (31 to 33), Wholesale and retail trade, repair of motor vehicles and motorcycles (45 to 47), Publishing, audiovisual and broadcasting activities (58 to 60), Public administration and defence; compulsory social security (84) and Arts, entertainment and recreation (90 to 93). High digital-intensive sectors include: Transport equipment (ISIC Rev. 4 Divisions 29 to 30), Telecommunications (61), IT and other information services (62 to 63), Financial and insurance activities (64 to 66), Professional, scientific and technical activities; administrative and support service activities (69 to 82) and Other service activities (94 to 96).
3. Figure 5.3: High-skill occupations include jobs classified under the ISCO-88 major groups 1, 2, and 3. That is, legislators, senior officials, and managers (group 1), professionals (group 2), and technicians and associate professionals (group 3). Middle-skill occupations include jobs classified under the ISCO-88 major groups 4, 7, and 8. That is, clerks (group 4), craft and related trades workers (group 7), and plant and machine operators and assemblers (group 8). Low-skill occupations include jobs classified under the ISCO-88 major groups 5 and 9. That is, service workers and shop

and market sales workers (group 5), and elementary occupations (group 9). As agricultural, fishery and mining industries were not included in the analysis, those occupations within ISCO-88 group 6 (skill agricultural and fisheries workers) were likewise excluded. The above chart includes 15 of the 18 listed industries. The excluded industries are the following: Agriculture, hunting, forestry and fishing (1), Mining and quarrying (2), and Community, social and personal services (18). As a result of unavailable data for 1995, a different starting year was used for some countries. Norway, Slovenia, and Hungary used 1996; Finland, Sweden and the Czech Republic used 1997, while the Slovak Republic used 1998. The OECD average is a simple unweighted average of the selected OECD countries. Data for Japan over the period examined is reported under four different industry classifications and highly aggregate occupation groups. a) European employment data beyond 2010 was mapped from ISCO-08 to ISCO-88 using a many-to-many mapping technique. This mapping technique is described in Annex 3.A4 (OECD, 2017[14]). Data for Japan is for the period 1995 to 2010 due to structural break in the data. b) Employment data by occupation and industry for the United States prior to 2000 were interpolated using the occupation-industry mix for the years between 2000 and 2002, and matched with control totals by occupation and by industry for the years 1995 to 1999. Employment data for Canada, and the United States were transposed from the respective occupational classifications (SOC 2000) into corresponding ISCO-88 classifications. c) EU-LFS data contains a number of country specific structural breaks which were corrected by applying the post-break average annual growth rates to the pre-break data by skill level (high, middle, low). Adjustments were performed for all relevant documented breaks in the ISCO occupational coding between 1995 and 2009. That is Portugal (1998), the United Kingdom (2001), France (2003), and Italy (2004). Undocumented breaks in the data for Finland (2002) and Austria (2004) were not adjusted. d) Underlying industrial data for Switzerland are classified according to the General Classification of Economic Activities (NOGA 2008). Swiss data for 1995 are derived from representative second quarter data, while data for 2015 is an annual average.

4. ICT skills used at work include, for example, basic computer skills, communication and information search skills, and proficiency in using office productivity software.

5. The concept of competency involves the mobilisation of knowledge, skills, attitudes and values to meet complex demands (OECD, 2018[36]).

6. ICT specialists include ICT service managers, ICT professionals, ICT technicians, electro-technology engineers, and electronics and telecommunications installers and repairers.

7. Data specialists include mathematicians, actuaries, statisticians, and database and network professionals.

8. Figure 5.4: The "Creative and content" field includes arts (including graphic design), journalism and information. For Japan, "Creative and content" fields of education are not presented due to data availability.

9. Figure 5.5: The percentages of trained people are calculated as the ratio of total employed persons displaying a given skill level and receiving training at least once in the year, over the number of a country's workers displaying a given skill level. Training refers to formal, on-the-job or both types as defined in Squicciarini et al. (2015[37]). Low-skilled individuals refers to persons who have not completed any formal education or have attained 1997 ISCED classification level 1 to 3C degrees (if 3C is lower than two years). Medium-skilled individuals have attained a 3C (longer than two years) to 4-level degree. High-skilled individuals have attained a higher than ISCED-1997 category 4 degree. Values are reweighted to be representative of the countries' populations. The total trained workforce is the proportion of workers in a country who engaged in training at least once in the year. The data for the following 23 countries from the first round of PIAAC refer to the year 2012: Australia, Austria, Belgium (Flanders), Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Japan, Korea, the Netherlands, Norway, Poland, the Russian Federation (excluding Moscow), Slovak Republic, Spain, Sweden, the United Kingdom (England and Northern Ireland) and the United States. Data for the remaining countries refer to 2015 and are sourced from the second round of the first wave of the PIAAC survey. For the Russian Federation, the PIAAC sample does not include the population of the Moscow municipal area. The data published, therefore, do not represent the entire resident population aged 16-65, but rather the population of the Russian Federation excluding the population residing in the Moscow municipal area.

10. Skill distances between different jobs are measured in terms of underlying skill needs and task contents of different jobs.

11. Figure 5.6: For Greece, Italy, Luxembourg and Spain, data refer to 2015. OECD data on public expenditure on labour markets are based mainly on information about individual labour market programmes appearing in state budgets and the accounts and annual reports of bodies implementing the programmes. See: *http://www.oecd.org/els/emp/Coverage-and-classification-of-OECD-data-2015.pdf*. Public expenditure on active labour market policies relates to spending by central and local public authorities on schemes aimed at the following "targeted persons": unemployed (i.e. not in work, actively seeking), inactive (i.e. would like to work, not actively seeking) or employed but at risk of involuntary job loss. Placement and related services are typically provided by the public employment service or other publicly financed bodies. They include employment counselling and case-management, referral to opportunities for work, information services and so on. Training includes targeted institutional and workplace-based training of

targeted persons. Employment incentives include incentives where the employer covers the majority of the labour cost, and job rotation/sharing schemes where a targeted person substitutes for an employee for a fixed period. Direct job creation relates to new jobs where the labour cost is majority funded by public funds for a limited period. Start-up incentives encourage targeted persons to start businesses or to become self-employed.

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