Policy Brief

The 2019 Future of Work Index

How the World of Work is Changing – and How Policy Needs to Change with It

theLisbonCouncil

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Introduction and Key Findings

New Challenges, New Tools

The world of work is changing.[1] On that we all agree. But how?[2] And with what consequences?[3] Most importantly, do the policies in place today adequately prepare our citizens for a future based on change, flexibility, knowledge and creativity? Do those same policies still provide what might reasonably be called a social safety net?

To answer these and other questions, the Lisbon Council produced **The 2019 Future of Work Index**, a 16-indicator ranking built around three pillars. See Table 1 on page 13 for a detailed overview and description of the Index.[4] And Table 2 on page 14 for the 2019 results.

At its most basic level, the index measures and evaluates European Union member states based on I. **Modern Workforce**, also known as "workplace inclusion," which assesses the level and depth to which traditionally marginalised groups – women, immigrants, young, old and disabled – participate in the workforce, II. **New Jobs and New Tools**, which measures the enthusiasm and passion with which individual countries are embracing digital technology and moving towards modern ways of organising economic life, and III. **Transition Effectiveness**, which measures the speed with which countries are adapting their social models, ensuring that real protection is on offer against the background of a fast-evolving set of social needs and offering genuine security in a time of deep-seated economic change. Behind it all is a simple premise: policymakers shouldn't set out to restore the workforce to the rules and reality of the 1930s – or insure against social challenges that have long since been met in the world's richest, most developed countries. To the contrary, the goal should be to understand how and where the world of work is changing in 2019 and the years ahead – and to define how and where policy needs to change along with it.

Towards that end, we highlight six key trends:

1. **Changing Workforce**. People are living longer – and working longer, too.[5] And while calls to exclude women from the workforce and positions of leadership within it still crop up occasionally in fringe political appeals, the world itself has decisively moved on. More than 392 million women have entered the global workforce since 1991, a 44% increase.[6] Men are no longer the sole breadwinner in most families as they were a century ago in predominantly industrial and agrarian economies. Two additional facts are worth noting. First, despite their long exclusion from the workplace and despite still being denied equal representation in management and leadership positions, women are outstanding workers in the areas where knowledge-economy success and failure are determined. They do better than men on reading comprehension in every country surveyed in the OECD's flagship student assessment – and often on mathematics and science as well.[7] A study from Korn Ferry Hay Group found that women outperformed men on 11 of 12 "emotional intelligence competences" surveyed.[8] Second, these changes have contributed to deep shifts in family structure.

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1 Several people agreed to read early drafts of this policy brief, and many others contributed to the thinking and discussions behind it in a series of seminars held between March 2017 and June 2019 as part of **The Future of Work Laboratory**. A special thanks to all who contributed or took part in other ways. For a list, see the acknowledgements on page 104. The views expressed in this paper are those of the authors alone and do not necessarily reflect the views of the Lisbon Council or any of its associates. As ever, all errors of fact or judgment are the authors' sole responsibility.

2 See, *inter alia*, Global Commission on the Future of Work, *Work for a Brighter Future* (Geneva: ILO, 2019); European Political Strategy Centre, *The Future of Work: Skills and Resilience for a World of Change* (Brussels: European Commission, 2016); Max Neufiend, Jacqueline O'Reilly and Florian Ranft (eds), *Work in the Digital Age* (London: Rowman, 2018).

3 Paul Hofheinz, "Making a Progressive Future of Work," *Policy Network*, 22 May 2017. The paper was also presented at a Renner Institut seminar in Vienna, Austria on 22 May 2017.

4 All data is for 2018 unless otherwise noted.

5 Hans Rosling, Ola Rosling and Anna Rosling Rönnlund, *Factfulness: Ten Reasons We're Wrong about the World – and Why Things are Better than You Think* (London: Sceptre, 2018).

6 International Labour Organisation, *World Employment and Social Outlook*, accessed 27 May 2019.

7 Women outperformed men on reading performance in every one of the 70 countries assessed in the OECD's 2015 Programme for International Student Assessment (PISA). Women did better than men in mathematics in 25 countries and better than men in science in 30. See OECD, *PISA 2015 Results (Volume I): Excellence and Equity in Education* (Paris: OECD, 2016).

8 The 12 competences evaluated were achievement orientation, adaptability, coaching and mentoring, conflict management, empathy, emotional self-awareness, inspirational ledership, influence, organisational awareness, positive outlook, teamwork and emotional control. Women outperformed men in all categories except emotional control, where no gender difference was reported. The study was based on a survey of 55,000 professionals in 90 countries. Korn Ferry Hay Group, "Women are Better at Using Soft Skills Crucial for Effective Leadership and Superior Business Performance, *Korn Ferry Hay Group*, 04 March 2016.

More than two-thirds of European families – some 145 million – are now one- or two-person households. This amounts to tremendous social change, with the end results felt directly in every community and in all 221 million households across the continent.[9]

2. **Evolving Workplace.** The changing workforce has brought corresponding evolution to the workplace. In the old days, jobs belonged primarily to men, many of whom had full households of dependents to support.[10] That required a high salary (even when the value added by the work was relatively low) and a virtual life-time guarantee of employment in one job to sustain it. Now, with both parents taking on new levels of responsibility for children and family, different patterns of work are gaining importance. The ability to arrange the day around multiple tasks has historically been (and still is) very important to giving working parents the flexibility to take part in the workforce. The result is a dramatic change in the way households organise and finance themselves. Many two-income families now save relatively little for university tuition or retirement. Instead, they pay for expensive childcare that allows both parents to stay in the workforce. The palpable strain on families – and the concurrent need for more readily accessible childcare and more flexible work-time arrangements – has not yet been successfully processed into the European social model or fully understood by policymakers.

3. **A Global Economy.** The economy itself is more open and less forgiving than it used to be – partly as a result of globalisation, but also thanks to the ever higher value-added content of work, particularly in the so-called "developed economies." Many middle-skilled jobs have simply disappeared.[11] If you are high-skilled, globalisation has probably been a boon for you. But if you are under-skilled and expensive – like many European workers – and you're not able or ready to retrain to work with modern tools and methods, you are probably in big trouble. The challenge here has not yet been adequately built into Europe's social-policy mix, which sometimes seems to be running on autopilot, addressing the social challenges of the 20th century and leaving very important 21st century problems largely unanswered. Paying benefits to the unemployed – while important – is not the same as educating everyone adequately – or making sure that education is there not just for the young and affluent but is available to people throughout their lifetime, including those who need it most, when they need it most. The economy is fast dematerialising – especially for workers and the companies that employ them at the high-value-added end of the scale.[12] Knowledge work will be the way of the future, even as manufacturing remains very important and services themselves come to be an increasingly important part of the process we used to think of uniquely as "manufacturing."[13]

'The world of work is changing. On that we all agree. But how? And with what consequences?'

9 Eurostat, "People in the EU: Statistics on Household and Family Structures," December 2017 update.
10 Arlie Hochshild and Anne Machung, *The Second Shift: Working Families and the Revolution at Home* (New York: Penguin, 2012).
11 David H. Autor, "Work of the Past, Work of the Future," Richard T. Ely Lecture, *American Economic Association Paper and Proceedings*, 27 February 2019.
12 Laia Pujol Priego, David Osimo and Jonathan Douglas Wareham, "Data Sharing Practice in Big Data Ecosystems," *ESADE Business School Research Paper*, 2019.
13 Autor, op. cit.

4. **New Careers, New Paths.** The result is a key development often commented upon, even if its reality is too seldom addressed; life-time employment has become a thing of the past. Most people will switch jobs on average ten times during their working life – and possibly even change careers just as many times.[14] There need to be more mechanisms for coping with this, allowing people to dip in and out of the workforce – and in and out of the education system. As Andreas Schleicher of the OECD has put it, "We used to learn to do the work. Now the learning has become the work."[15]

5. **Rise of Independent Work and Freelancing.** Against the backdrop of an increasingly competitive global economy and the ever-shifting competitive landscape within it, it is perhaps not surprising that the fastest growing part of the workforce is made up of part-time and short-term (temporary) workers.[16] The massive economic upturn of the last six years has seen an unprecedented surge in job creation: more than 13.2 million people have joined the workforce in Europe since 2013.[17] But the figure obscures an equally important trend: the movement of an increasing number of skilled workers to part-time and self-employment.[18] Fully 42% of all active Europeans now work on contracts that are not full-time and open-ended, according to Eurostat data.[19] Often, this movement is disparaged as the rise of the "gig economy" made up of "McDonald's jobs" that Europeans doesn't want or need.[20] But the reality is much more complicated.[21] Part-time work and self-employment are helping people fill in many gaps.[22] And, despite some evident problems around low-paying, low-skilled jobs, part-time work has proven to be an extremely useful tool in fighting social exclusion, helping immigrants to get a toehold on the social ladder, allowing employers to innovate and putting people on the path towards happy, healthy and sustainable lives.[23] It is time we find a better way of referring to this work – and legislating for it – than dismissing it as "non-standard."

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14 European Commission Staff Working Document, *Impact Assessment, Accompanying the Proposal for a Council Recommendation on Access to Social Protection for Workers and the Self-Employed* (Brussels: European Commission, 2018); The U.S. Bureau of Labour Statistics gives the figure of 11.7 jobs between the ages of 18-48 in the U.S. See also Jeffrey R. Young, "How Many Times Will People Change Jobs? The Myth of the Job-Hopping Millennial," *EdSurge: Jobs and Careers*, 20 July 2017.

15 Mr Schleicher made this comment at a Future of Work Laboratory seminar on artificial intelligence, world-class schools and the future of work. For more, see Andreas Schleicher, *World Class: How to Build a 21st Century School System* (Paris: OECD, 2018). And watch the interview with Andreas Schleicher on the Lisbon Council YouTube Channel at https://www.youtube.com/watch?v=vaqNp8VYIU4.

16 Eurostat, *Employment by Professional Status and Full-Time/Part-Time and Temporary Employees by Sex, Age and Occupation*, and Lisbon Council calculations.

17 Eurostat, *Employment by Professional Status*, and Lisbon Council calculations.

18 Eurostat, the statistical arm of the European Union, shows that the percentage of skilled workers among freelancers is rising. Europe has 23,440,900 "solo self-employed workers without employees," a 2% rise since 2008. Of that, 96% are medium- and high-skilled workers. Low-skilled workers make up only 4% of freelancers, and they are falling as a total percentage. There are 18% fewer low-skilled workers working as freelancers in 2018 than there were in 2008. See Eurostat, Self-Employment by Occupation.

19 Eurostat, *Employees by Type of Employment Contract, Age and European Socio-Economic Group*; Ibid, *Employment by Professional Status and Full-Time/Part-Time*, and Lisbon Council calculations.

20 See Global Commission on the Future of Work, op. cit.

21 In a recent study, the U.S.-based Freelancers Union calculates that there are more than 56.7 million freelancers in the U.S., up 3.7 million in the last five years. Most of the growth is coming from people choosing to freelance and not from people who say they are forced to do so through economic necessity. According to the study, Americans spent more than one billion hours per week freelancing in 2018, an increase of 72 million hours per week since 2015. Similar data for the European workforce is difficult to find and would be a useful area for Eurostat, the European Commission and the International Labour Organisation to investigate and produce in frequent intervals. The lack of systematic official interest in freelancing has led to large data gaps in Europe. See Freelancers Union, *Freelancing in America*: 2018 (New York: Freelancers Union, 2019). The study is based on an online survey of 6,001 U.S. adults conducted by Edelman Intelligence.

22 James Manyika, Susan Lund, Jacques Bughin, Kelsey Robinson, Jan Mischke and Deepa Mahajan, *Independent Work: Choice, Necessity and the Gig Economy* (San Francisco: McKinsey Global Institute, 2016).

23 Among important recent reform proposals, European Commission President Elect Ursula von der Leyen has proposed a "fair minimum wage" for "every worker in our union" and a "European unemployment benefit reinsurance scheme." See Ursula von der Leyen, *My Agenda for Europe: Political Guidelines for the Next European Commission 2019-2024* (Brussels: European Union, 2019).

6. **Policy Lags.** The implications of these changes have not yet been fully understood – let alone incorporated into a consistent body of thoughtful social legislation that provides a social safety net fit for the modern age. The trends – and the role these trends now play in our daily lives – have, however, set in motion an overdue debate about the large disparity of benefits between the self-employed and full-time-contract workers. One school of thought has a simple solution: turn the part-time workers into full-time contract labourers.[24] But this response is problematic. For one, it would create expensive new commitments in a workplace where many workers' principal needs are more about coping with permanent change and navigating complicated family commitments. And it may simply be unsustainable in an economy where European companies face such fierce global competition on quality, value-added and price. Other efforts show more promise – including reforms that attach social benefits to individuals rather than jobs (see the box on New Systems: Individual Accounts and the Role of the State on page 51 for some recent examples). Put simply, countries that move the most quickly to adapt their benefit systems to modern challenges – offering more access to education, more support for working families and more access to a broader, more diverse labour market – are the ones destined to generate the most wealth and deliver the most social inclusion and wellbeing over time. This may require a Copernican Revolution in thinking. But the asteroids of reform have already been spotted coming from countries as diverse as Canada, Denmark, France, Singapore and the United States.[25]

What, then, are the key findings of The 2019 Future of Work Index?

1. **Sweden** (No. 1), **Denmark** (No. 2) and **The Netherlands** (No. 3) top the list. All three score well on the new jobs and new tools indicator, which measures transition to the knowledge economy. And all three are within the top five on the transition effectiveness indicator and the top six on the modern workforce indicator.
2. **Finland** (No. 4) also does well, but a low score (No. 15) on the modern workforce indicator brings its overall performance down, indicating more work needs to be done there on broadening workplace inclusion. But, with a healthy dose of progressive policies at the national level, Finland does well on transition effectiveness with a No. 2 score. For a discussion of the Finnish situation, see the country profile on page 68.
3. Despite its No. 1 finish, **Sweden** is a surprisingly modest performer on the modern workforce indicator, where it is No. 5, even though social inclusion is a flagship issue for Swedish national identity. Sweden tops on gender balance, with a No. 1 finish on female participation in the workforce. And older population inclusion, at No. 2. But its record on integrating immigrants into the workforce (No. 22) drags its overall performance down. For a discussion of the Swedish situation, see the country profile on page 76.
4. At the bottom of the index is **Greece** (No. 28), which suffers from poor performance in all three categories (modern workforce, new jobs and new tools and transition effectiveness). it comes dead last at No. 28 in the modern workforce and transition effectiveness indicators. For a discussion of the Greek situation, see the country profile on page 70.
5. **Italy** (No. 24) does worst among Europe's large, industrialised economies. It ranks No. 26 on the modern workforce, No. 17 on new jobs and new tools and No. 26 on transition effectiveness indicators. Put simply, with an annual gross domestic product of €1.7 trillion and a population of 61 million, Italy will have to do better if Europe is to do better. See the Italy country profile on page 72.

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24 See Global Commission on the Future of Work, op. cit.

25 France pioneered the "*compte personnel d'activité*" programme. Denmark launched Flexicurity. Canada gave us parental benefits and the U.S., under President Barack Obama, put in place the first effort to provide health insurance to all Americans regardless of their employment status. Singapore introduced the SkillsFuture initiative, which is discussed in a box on page 51. See Hofheinz, *Progressive Future of Work*, op.cit.

6. **Romania** (No. 25), **Croatia** (No. 26) and **Bulgaria** (No. 27) also do poorly with low scores in all categories. Romania in particular comes dead last (No. 28) on new jobs and new tools. See the Romania country profile on page 74.

7. Among the countries that perform well are the **United Kingdom** (No. 5) and **Germany** (No. 8). The United Kingdom, for one, is helped by a healthy labour market and a remarkably inclusive labour force; it ranks No. 1 on overall workforce inclusion. But its policies on transition effectiveness are a disappointing No. 7. Germany, meanwhile, does reasonably well on workforce inclusion and new jobs and new tools. But its No. 15 finish on transition effectiveness shows that the country urgently needs better, more modern policies to help its evolution. See the United Kingdom country profile on page 78.

8. Other surprises are **Estonia** (No. 6) and **Belgium** (No. 17), which might have been expected to do better. Estonia scores well on modern workforce (No. 2) and transition effectiveness (No. 4), meaning its workforce is well integrated and its policy framework effective; but it does surprisingly poorly on new jobs and new tools (No. 13). Belgium, too, surprises at No. 17, below the **EU Average**. On new jobs and new tools, it is above the EU Average at No. 8; but its workforce remains weak on inclusion, giving it a shocking No. 23 finish on this key indicator, largely due to poor integration of immigrants (No. 24), high youth unemployment (No. 22) and early retirement age (No. 23). Future governments will need to tackle these problems – for the sake of the economy and for the sustainability of the social system overall. See the Estonia and Belgium country profiles on pages 66 and 64.

9. **Estonia** (No. 6) is the only "new member state" reaching the top ten.

10. Overall, there is a large gap between the top and the bottom performers – more than 60 points according to the scoring. **Sweden** tops the list at No. 1 with an overall score of 81.29, indicating real strength on all three pillars. **Greece** (No. 28) is at the bottom with an overall score of 21.31. **Croatia** (No. 26, with a 33.06 score) and **Bulgaria** (No. 27, with a 31.89 score) also do poorly, although, in the Croatian case, there are only 12 of 16 available indicators, which prevents definitive analysis.

'More than 392 million women have entered the global workforce since 1991, a 44% increase.'

How the Index Works

We believe there are three crucial components for measuring the quality and depth of highly developed countries' commitments to preparing their workforces for the future and ensuring their social system addresses modern needs. First and foremost, **the workforce must be mobilised and integrated**; economies that exclude workers on the basis of age, nationality or sex are doing themselves no favours. To the contrary, a modern knowledge economy can and does rely on the participation of everyone. We must fight for our position in this world. There are no gifts or handouts; certainly not for nations which are already, *prima facie*, rich.

But if the workforce is integrated and mobilised, an equally important question is **how well is that workforce prepared for the modern economy?** Do they have the right skills for the digital economy? And are the digital jobs there for them if they want and need them? This is a trickier point to evaluate, though basic measures of digital literacy, digital skill levels and the percentage of industry that has been digitised or takes some part in the digital economy are a good starting point. Our discussion and analysis of these points begins on page 26.

Finally, nothing is certain in this world except the notion that what we see today will be different tomorrow. Politics and policymaking in the modern age are in many ways a matter of **preparing for and managing change.** How do we help people develop, starting from the time they are children? How do we help them continue developing once they are adults? And just as importantly, how do we care for them and nurture them at those ages and in those times when they need our help and assistance? Here we believe several public-policy achievements are important. Access to labour and product markets is key; it doesn't matter how well-prepared people are if the jobs and opportunities aren't there too. One important indicator of this is the speed with which the unemployed are able to get new jobs. This varies widely in European states. In Sweden, the average wait is eight months. In Greece, it runs around 2.5 years.[26]

The outcome of this reflection is an index with three pillars: **Modern Workforce, New Jobs and New Tools** and **Transition Effectiveness.** Each pillar is made up of sub-indicators (four for modern workforce, six for new tools and new jobs and six for transition effectiveness). There are also four boxes – scattered throughout the text – focusing on key themes: the move towards individual accounts and new models of social-benefit provision (page 51), the rising trend towards increasing parental benefits (page 14), wages, agency and the minimum wage (page 42) and the training dilemma (page 59).

Not all of the research is contained in this study. There is also a **Policy Bank**, which catalogues reform efforts in EU member states. It is available online at http://policybank.eu/. This is an effort to chronicle the reform steps that countries are taking to prepare themselves for the modern economy. Future editions of this study hope to have more to say on which reforms do or do not work. For now, we have to be satisfied just to ask, "is there a reform?" to give us insight into which countries are at least trying.

We close the policy brief with eight country profiles, where each country's performance – its strengths and weaknesses – are detailed and described. The aim is not to flatter some or embarrass others. To the contrary, every country has areas where they can improve. The aim is to help countries understand what those areas are – where the weak spots in their social fabric and policy framework lie – and to find ideas and inspiration from other countries that might be doing things a little bit better. We start from the premise that every country can be a top performer. But the crucial thing is to get the policy mix right.

26 Eurostat data on unemployment by sex, age and duration of unemployment, Lisbon Council calculations. The averages were calculated based on the Eurostat data on duration of unemployment. The breakdowns for unemployment duration were less than one month, one to two months, three to five months, six to 11 months, 12-17 months, 18-23 months, 24-47 months and 48-60 months. A person remaining longer than five years in unemployment is considered inactive.

Table 1. The Future of Work Index

Pillar	Indicator		Source
I. Modern Workforce	I.1. Women Employment Rate		Eurostat
	I.2. Immigrant Population Employment Rate (Foreign-Born Citizens)		Eurostat
	I.3. Youth Employment Rate (age 15-29)		Eurostat
	I.4. Active Older Adults Employment Rate (age 55-74)		Eurostat
II. New Jobs and New Tools (The Digital Economy)	II.1. Digital and Creative-Economy Skills	II.1.1. Percentage of Population (16-74 Years Old) Who Can Use the Internet and Do So At Least Once a Week	Eurostat
		II.1.2. Problem Solving in Technology-Rich Environment (Percentage of Adult Population Scoring Above Proficiency Level 2)	Organisation for Economic Co-operation and Development
	II.2. Digital Industry	II.2.1. Adoption of Digital Technology (Digitisation and e-Commerce) by Businesses	European Commission
		II.2.2. Share of the Data Economy in Gross Domestic Product	Datalandscape.eu
	II.3. Investment in Intangible Assets	II.3.1. Average Investment in Intangibles as Percentage of Gross Fixed Capital Formation	Eurostat
		II.3.2. Average Public Investment in Intangibles as Percentage of Gross Fixed Capital Formation	Spintan.net
III. Transition Effectiveness	III.1. Speed of Finding a New Job		Eurostat
	III.2. Percentage of Active Workforce Engaged in Training and Lifelong Learning		Eurostat
	III.3. Access to Social Security Benefits and Transition Assistance for the Self-Employed and Workers Other Than Full-Time, Long-Term Employees		European Commission
	III.4. Access: Labour and Product Market Openness	III.4.1. Access to Licensed Professions	European Commission
		III.4.2. Ease of Becoming an Entrepreneur	World Bank
		III.4.3. Product Market Openness	Organisation for Economic Co-operation and Development

'Policymakers shouldn't set out to restore the workforce to the rules and reality of the 1930s – or insure against social challenges that have long since been met in the world's richest, most developed countries.'

Table 2. The 2019 Future of Work Index – Overall Results

Rank	Country	Overall Score	Modern Workforce (Rank)	New Jobs and New Tools (Rank)	Transition Effectiveness (Rank)
1	Sweden	81.29	5	1	1
2	Denmark	79.13	6	2	3
3	The Netherlands	75.83	3	4	5
4	Finland	74.58	15	5	2
5	United Kingdom	73.18	1	3	7
6	Estonia	70.73	2	13	4
7	Ireland	66.80	9	6	10
8	Germany	64.55	4	7	15
9	Cyprus	60.75	14	9	9
10	Austria	60.56	10	10	14
11	Czech Republic	56.63	7	15	18
12	Luxembourg	56.09	19	16	6
13	Malta	55.90	12	14	12
	EU Average	55.33			
14	Portugal	53.26	13	19	13
15	Slovenia	53.15	16	18	8
16	Lithuania	52.36	8	20	20
17	Belgium	50.67	23	8	19
18	Latvia	50.55	11	23	16
19	Spain	48.96	25	12	11
20	France	45.82	24	11	22
21	Poland	42.76	17	25	21
22	Hungary	41.95	21	24	17
23	Slovakia	41.47	18	21	25
24	Italy	35.79	26	17	26
25	Romania	34.61	20	28	23
26	Croatia	33.06	27	22	24
27	Bulgaria	31.89	22	27	27
28	Greece	21.31	28	26	28

Canada: Why Helping Families is Good Politics

Women entering the workforce have had a profound effect on the workplace – and on family life as well. More and more, men and women find themselves splitting chores that one or the other once fulfilled alone. Even more challengingly, moms and dads are forced to figure out ways to raise children and maintain healthy households while pursuing careers that take up much of their waking time and attention, five days a week. "...

…”

This is an incredibly daunting task, and in many ways an unfair one. Back when German Social Democrats (and their nemesis Otto von Bismarck) were devising the world’s first comprehensive welfare system, no one was thinking about a challenge like this. To the contrary, the economy was built around a male hierarchy – men were to bring home the bread and women were to raise the family. That it seldom happened quite that way is largely irrelevant – the policies were conceived around that version of reality. And so it is largely to this day.

Awareness of women’s right to an equal role in society is rising and, indeed, the principle of gender parity has been accepted for the first time at the highest level in the European Union with Ursula von der Leyen’s pledge to achieve full gender balance at the European Commission by the end of her term. But Ms von der Leyen – a former German defence minister and mother of seven – will surely know that quotas and aggressive recruitment are only one part of the story. Families still struggle with a social system that frankly does very little for them. The system of day-care facilities is overcrowded and underfunded – many families face long waiting lists or must pay privately at often exorbitant cost just to keep both parents in the workforce. Child benefits are patchy at best – often designed more as poverty prevention than vital support for working families in need. And part-time work itself – often the only way a working parent can successfully structure his or her week – is officially frowned upon even though it is the fastest growing type of work on offer, and not always for involuntary reasons.

Canada has been an outlier in the effort to change this. In 2015, Justin Trudeau ran for prime minister largely on a pledge to massively extend “parental benefits,” proposing to consolidate a host of earlier child-benefit reforms into an easier-to-manage package and dramatically extend the amount of funding available to assist working families (including single-parent households). The programme was expensive – but it resonated with Canadian voters. In the end, Mr Trudeau inspired a massive 22% shift in voter preferences and picked up 184 seats for his Liberal Party of Canada – the largest swing in Canadian history – to become prime minister. Many credit the popularity of his expanded childcare policy and the obvious connection it showed with social dilemmas that other parties were only beginning to spot.

The heart of the Trudeau policy is fairly simple. First and foremost, Canadian parents are now entitled to an increased amount of family leave – up to 18 months – and on more flexible terms. Dads can now take part. And the length of time that both or either parent can qualify for employment insurance-funded leave is subject to an adjustable formula, making it both more generous and more flexible. Basic payments to families with children under the age of 18 – more than 3.3 million families – grew substantially; more than 1.8 billion Canadian dollars [€1.15 billion] of additional benefits have been made available. And even the over-run day-care system was attacked aggressively; in 2017, the government announced that it would invest 7.5 billion Canadian dollars [€4.98 billion] over 11 years to “support more accessible and affordable early learning and child care.”

The jury is still out on the Trudeau reforms: the Liberal leader faces a difficult re-election in October 2019. But for one bright and shining moment, Justin Trudeau proved one important thing: families matter. Governments that can make it easier for families to navigate the massive social transition we are living through and make it easier for bosses and employees to be better moms and dads are likely to benefit electorally. And they will make the world a better place.

Chapter I

Modern Workforce

Table 3. Modern Workforce – Composite Ranking

Rank	Country	Score
1	United Kingdom	79.65
2	Estonia	78.50
3	The Netherlands	77.35
4	Germany	74.10
5	Sweden	73.78
6	Denmark	73.77
7	Czech Republic	69.82
8	Lithuania	69.53
9	Ireland	67.93
10	Austria	64.43
11	Latvia	62.85
12	Malta	60.09
13	Portugal	59.48
14	Cyprus	59.04
15	Finland	58.58
16	Slovenia	55.71
17	Poland	54.63
	EU Average	53.19
18	Slovakia	50.79
19	Luxembourg	48.35
20	Romania	45.42
21	Hungary	42.23
22	Bulgaria	39.11
23	Belgium	36.23
24	France	34.41
25	Spain	33.91
26	Italy	28.69
27	Croatia	24.65
28	Greece	10.76

Source: Eurostat (Lisbon Council calculations)

Life is not what it used to be. That's for certain. But the question is, how is it changing? And how do we – as a society, as mothers, fathers, working people and policymakers – need to be changing along with it?

These days, the discussion on the future of work is often seen as little more than an extension of the debate around artificial intelligence – how will this new technology be deployed?[27] What will it change in the way we take decisions and how we organise our workforce? What will the effect be on wages and wage negotiations? And, most controversially, how many people will it render jobless, unemployable or just plain superfluous?

27 See, for example, Giorgios Petropoulos, J. Scott Marcus, Nicolas Moës and Enrico Bergamini, *Digitalisation and European Welfare States* (Brussels: Bruegel, 2019): Michel Servoz, *The Future of Work? Work of the Future* (Brussels: European Commission, 2019).

A discussion of the effects of artificial intelligence on the workforce is beyond the scope of this paper – though many stabs have been taken, some relevant, some highly speculative.[28] But our contention is that – well beyond the effects of automation on the workforce – old-fashioned social change has driven more disruption than any computer will ever create. Put simply, the world has moved decisively from a male-dominated society built around single-income households to one based on a broad, expansive working population with opportunities (in theory, if not always in fact) open to all. This means first and foremost the work-place arrival of social groups previously excluded *en masse* from the workforce – women, the young, older adults and immigrants.

This development has brought much change in its wake – not the least of which in the needs and requirements individuals have for jobs, work and study. Put simply, a family is no longer a large group of dependents with a full-time employed man providing for them.[29] Today, every family member is demanding the same opportunities that were previously only there for the male head of household. And they are demanding the same recognition, the same pay and access to the same jobs.

In policymaking terms, this has a simple but profound implication: a job is no longer something that always needs to be 1) full time, 2) highly paid, and 3) guaranteed for a lifetime. These were virtual requirements in the old economy – indeed, they were fundamental to the social contract built around the prevailing social structure of the time. But the new economy demands something else. First and foremost, it demands equal access, including for those who might not be able to spend 40 hours a week sitting in an office or manning an assembly line because of family or other commitments. This means the era of "one-size-fits-all" jobs is gone. The new workplace can and should be defined by a plethora of opportunities, open to all – including freelancing, part-time work, even the gig-economy – which can and should co-exist with the long-term, full-time jobs that still make up such an important part of some people's lives.

'The new jobs and new tools indicator measures the enthusiasm and passion with which individual countries are embracing digital technology and moving towards modern ways of organising economic activity.'

28 See, inter alia, Carl Benedikt Frey and Michael A. Osborne, "The Future of Employment: How Susceptible are Jobs to Computerisation?" *Oxford Martin School,* 17 September 2013; Martin Ford, *The Rise of the Robots: Technology and the Threat of Mass Employment* (London: Penguin, 2013).

29 Hochschild and Machung, op. cit.

Flexible work arrangements have one very important characteristic: what they lose in economic guarantees is made up for in other ways: most notably, women, the young, older adults and foreign-born now have multiple entry points into the economy. They cannot and never should be excluded. And, indeed, societies which do best at mobilising and including people from those traditionally marginalised groups not only solve a moral dilemma; they also reap immense economic benefit by putting so much of their rich human capital to work in the creation of value which all of society can enjoy. An inclusive workforce is a strong workforce. The more opportunities we provide for entry, exit, re-training, re-deployment and re-engagement, the better off society will be.

In order to track the progress of European countries on these key deliverables, we built the **Modern Workforce** indicator, which measures the success with which individual countries have managed to engage and mobilise traditionally marginalised groups within the workforce. It forms the first of three pillars in **The Future of Work Index**, and is itself made up of four easy to quantify sub-indicators: the employment rates for women, the young, older adults and immigrants. In producing this indicator, we deliberately chose to exclude some things. It does not measure, for example, the level of inequality within these economies or among these groups – that calculation, as important as it is, is a subject for another study.[30] Nor does it measure the unemployment rates – which have done so much to shatter lives and generate headlines in countries when they ran excessively high in recent recessions. What it does is look at the raw figures: how many people from each group as a percentage of the population are working? The statistics themselves all come from Eurostat and other publicly available sources.

Among the key findings:

1. The **United Kingdom** (No. 1), **Estonia** (No. 2) and **The Netherlands** (No. 3) top the ranking – but for very different reasons. The United Kingdom wins mostly by scoring consistently high across all four categories. On women in the workforce, it is No. 7. On youth employment, it is No. 5. And on active older adults, it is No. 6. But where you really see the difference is on working immigrants where it ranks No. 3 – well ahead of other large European economies (only **Czech Republic** and **Poland** with relatively small immigrant communities do better). Long before immigration became a flashpoint in the Brexit debate, the United Kingdom had one of the highest success rates of employing immigrants in the economy – as almost any recent visitor to London will have surely noticed. The United Kingdom has also avoided the sky-high youth unemployment that has plagued its continental counterparts. On this crucial indicator, **France** (No. 21), **Greece** (No. 28), **Italy** (No. 27) and **Spain** (No. 26) do particularly poorly.
2. The secret of **Estonia** (No. 2) is the overall inclusiveness of its economy. It scores No. 1 on active older adults workforce, with around 50% of its 55-74-year-olds still in work. On female participation rates, it only lags behind league-leader **Sweden.** But Estonia's relatively poor scores on immigrant population employment rate (No. 14) and youth employment (No. 8) keep it just short of the top slot – and show policymakers where this Baltic out-performer could still improve.
3. **The Netherlands** (No. 3) is another success story. Most notably, it scores extremely well on youth employment, where its 70% employment rate drives it to the No. 1 slot. The Netherlands also scores well on female inclusion (No. 3) and active older adults (No. 7), but its performance on working immigrants (No. 15) shows policymakers where more work can and should be done.

30 See, *inter alia*, OECD, "Going Digital: The Future of Work for Women," *The Pursuit of Gender Equality* (Paris: OECD, 2017); ILO, *Women at Work: Trends 2016* (Geneva: ILO, 2016).

4. Among the genuine surprises is **Sweden** (No. 5). Not surprisingly, it tops the league for female participation – at No. 1 – and active older adults – at No. 2. But the country's recent problems show more clearly in other areas. Its performance on youth employment is a not quite league-leading No. 7 – though it is above the European Union average. But on employment of migrants, it is only No. 22 – a sign of the trouble Sweden has had integrating the recent flux of migrants despite its open-door policies.

5. Bottom of the league table are **Italy** (No. 26), **Croatia** (No. 27) and **Greece** (No. 28). Italy is hampered by below European Union average performance in all areas. On youth employment, it fares particularly badly, at No. 27, ahead of only Greece. And the same is true for women employment (No. 27). On active older adults, it does slightly better – at No. 17 – despite having a relatively large cohort of older adults. Its scores for integrating migrants – despite recent controversy in this area – is slightly better. There, it finishes at No. 18 – in the middle of the EU pack but still below the **EU Average**.

6. **Croatia** (No. 27) also has weak scores in all areas. It finishes at No. 26, No. 27, No. 24 and No. 26 on female, immigrant, youth and older adult employment rates, respectively.

7. Few countries in recent years have suffered as much as **Greece** (No. 28), the victim of a double-dip recession, an internal devaluation and a massive fiscal adjustment taken in response. One hopes (and likes to think) that Greece has used this moment to fix some long-term structural problems. But the early verdict is that the economy remains inflexible and closed to many of those whose creative talents it needs most. It ranks dead last (No. 28) on female, youth and older adults employment rates. Its marginally better No. 26 performance on immigrant employment levels (50%) is better than **France** (No. 28, with a 49% rate) but well below the **EU Average** (60%).

'Transition effectiveness measures the speed with which countries are adapting their social models, ensuring that real protection is on offer against the back-ground of a fast-evolving set of social needs and offering genuine security in a time of deep-seated economic change.'

I.1. Women in the Workforce

Table 4. Women Employment Rate – Ranking

Rank	Country	Employment Rate	Score
1	Sweden	66.3%	100.00
2	Estonia	64.1%	92.78
3	The Netherlands	63.2%	89.54
4	Germany	63.1%	89.41
5	Lithuania	62.7%	87.86
6	Denmark	62.4%	87.08
7	United Kingdom	62.2%	86.22
8	Latvia	61.7%	84.70
9	Austria	60.3%	80.18
10	Finland	59.6%	77.89
11	Slovenia	58.2%	73.28
12	Portugal	58.2%	73.20
13	Luxembourg	57.5%	70.78
14	Czech Republic	57.4%	70.61
15	Ireland	57.4%	70.53
16	Cyprus	57.1%	69.54
	EU Average	55.0%	62.64
17	Bulgaria	53.5%	57.70
18	Slovakia	53.5%	57.66
19	France	53.2%	56.54
20	Hungary	52.9%	55.51
21	Belgium	52.6%	54.71
22	Poland	52.0%	52.59
23	Malta	51.7%	51.70
24	Romania	49.9%	45.60
25	Spain	49.5%	44.40
26	Croatia	47.6%	38.16
27	Italy	42.7%	21.89
28	Greece	39.1%	10.00

Source: Eurostat (Lisbon Council calculations)

Sweden (No. 1), **Estonia** (No. 2) and **The Netherlands** (No. 3) top the list while **Croatia** (No. 26), **Italy** (No. 27) and **Greece** (No. 28) make up the bottom. The disparity marks a wide gap in European social performance. Sweden leads with a 66.3% female participation rate. In Greece, the figure is 39.1%. The **EU Average** employment rate for women is 55% – with 16 countries above and 12 below.

I.2. Immigrants at Work

Table 5. Immigrant Population Employment Rate – Ranking

Rank	Country	Employment Rate	Score
1	Czech Republic	79.5%	100.00
2	Poland	72.9%	80.27
3	United Kingdom	72.0%	77.43
4	Ireland	70.6%	73.24
5	Malta	70.3%	72.40
6	Slovenia	67.6%	64.55
7	Romania	66.7%	61.66
8	Portugal	66.4%	60.96
9	Luxembourg	66.3%	60.71
10	Slovakia	65.7%	58.91
11	Denmark	63.6%	52.47
12	Austria	63.2%	51.40
13	Cyprus	62.8%	50.23
14	Estonia	62.4%	49.04
15	The Netherlands	62.0%	47.65
16	Lithuania	61.6%	46.67
	EU Average	60.9%	44.37
17	Germany	60.9%	44.36
18	Italy	60.3%	42.73
19	Spain	57.0%	32.83
20	Finland	56.5%	31.46
21	Hungary	56.4%	31.19
22	Sweden	56.3%	30.70
23	Latvia	54.5%	25.45
24	Belgium	53.7%	22.98
25	Bulgaria	51.3%	16.01
26	Greece	50.3%	13.06
27	Croatia	50.0%	12.06
28	France	49.3%	10.00

Source: Eurostat (Lisbon Council calculations)

Czech Republic (No. 1), **Poland** (No. 2) and the **United Kingdom** (No. 3) top the ranking, but the comparison is in some ways spurious. Some countries, like **Austria** (No. 12), **Germany** (No. 17) and **Spain** (No. 19), have large immigrant populations, with 1,083,200 (16.34% of the overall working age population), 8,340,500 (13.46%) and 3,865,500 (10.98%) working-age immigrants, respectively. While the high employment figures for Czech Republic and Poland derive from a relatively small community of migrants to draw from (168,200 and 137,000, respectively).[31]

31 We have relied on Labour Force Survey data. Other sources, including the National Bank of Poland, give different figures. See Iza Chmielewska, Grzegorz Dobroczek and Adam Panuciak, *Obywatele Ukrainy pracujący w Polsce – raport z badania: Badanie zrealizowane w 2017 r.* (Warszawa: Narodowy Bank Polski, 2018).

The point is, big countries with large immigrant populations face different challenges than the smaller ones. For a ranking of EU countries by size of their immigrant population as a percentage of their total working-age population – given here not to judge but to make comparisons among country performance more meaningful – see Table 6 below.

The more interesting part of the story comes at the bottom of the immigrant employment league tables. There, **Greece** (No. 26), **Croatia** (No. 27) and **France** (No. 28) do especially badly. For France, this represents a social catastrophe – it is a large country with a large immigrant population (3,389,100, or around 7% of the population). Low employment in this area means that the country is doing especially poorly at integrating migrants. Other notable failures are **Germany** (No. 17), **Italy** (No. 18) and **Belgium** (No. 24) – all below the **EU Average** (60%) and all the scene of relatively vibrant debates over the role and function of immigrants in modern society. **The Netherlands** (No. 15) also lags.

Table 6. Foreign-Born Working-Age Population (2018)

Rank	Country	Foreign-Born Population Share in Total Working-Age Population	Number of Foreign-Born Citizens
1	Luxembourg	49.80%	228,200
2	Cyprus	18.55%	119,700
3	Malta	16.38%	61,900
4	Austria	16.34%	1,083,200
5	Estonia	15.58%	151,700
6	Ireland	14.48%	516,900
7	Latvia	13.94%	196,700
8	Germany	13.46%	8,340,500
9	Belgium	11.05%	929,200
10	Spain	10.98%	3,865,500
11	United Kingdom	10.15%	4,895,400
12	Denmark	9.29%	404,700
13	Italy	9.01%	4,070,000
14	Sweden	8.35%	622,600
	EU Average	8.08%	30,753,800
15	France	7.07%	3,389,100
16	The Netherlands	5.13%	663,500
17	Greece	5.04%	401,900
18	Slovenia	4.37%	68,600
19	Finland	3.46%	141,900
20	Portugal	2.36%	183,800
21	Czech Republic	2.07%	168,200
22	Lithuania	0.82%	17,200
23	Hungary	0.62%	45,900
24	Poland	0.49%	137,000
25	Croatia	0.44%	13,800
26	Slovakia	0.25%	10,800
27	Bulgaria	0.21%	11,300
28	Romania	0.10%	14,400

Source: Eurostat (Lisbon Council calculations)

I.3. Youth Employment

Table 7. Youth (15-29) Employment Rate – Ranking

Rank	Country	Employment Rate	Score
1	The Netherlands	70.9%	100.00
2	Malta	67.5%	92.40
3	Denmark	63.4%	83.54
4	Austria	62.7%	81.93
5	United Kingdom	62.6%	81.74
6	Germany	59.4%	74.76
7	Sweden	58.7%	73.16
8	Estonia	58.3%	72.19
9	Finland	55.5%	66.04
10	Ireland	52.6%	59.77
11	Latvia	52.1%	58.64
12	Slovenia	51.8%	58.03
13	Lithuania	50.7%	55.54
14	Cyprus	50.5%	55.10
15	Poland	50.2%	54.53
	EU Average	49.8%	53.59
16	Czech Republic	49.0%	51.88
17	Luxembourg	48.1%	49.83
18	Hungary	47.1%	47.64
19	Slovakia	45.9%	44.92
20	Portugal	44.7%	42.42
21	France	44.7%	42.38
22	Belgium	43.4%	39.42
23	Romania	43.0%	38.63
24	Croatia	41.3%	34.92
25	Bulgaria	40.8%	33.65
26	Spain	37.7%	26.88
27	Italy	30.8%	11.72
28	Greece	30.0%	10.00

Source: Eurostat (Lisbon Council calculations)

The Netherlands (No. 1), **Malta** (No. 2) and **Denmark** (No. 3) top the youth employment indicator, demonstrating that their economies are still able to find places for recent graduates and school leavers. **Austria** (No. 4) and the **United Kingdom** (No. 5) also do well, with youth employment rates above 60%. **Spain** (No. 26), **Italy** (No. 27) and **Greece** (No. 28) round out the bottom. The youth employment rates there should give every policymaker pause for reflection: 37.7%, 30.8% and 30%, respectively. Overall, the **EU Average** of 49.8% indicates that youth employment in Europe remains an Achilles heel in some otherwise healthy labour markets.

I.4. Active Older Adults

Table 8. Active Older Adults (55-74) Employment Rate – Ranking

Rank	Country	Employment Rate	Score
1	Estonia	50.6%	100.00
2	Sweden	48.2%	91.25
3	Lithuania	47.2%	88.03
4	Germany	47.2%	87.86
5	Latvia	45.7%	82.61
6	United Kingdom	43.1%	73.19
7	The Netherlands	42.8%	72.21
8	Denmark	42.7%	72.00
9	Ireland	41.7%	68.17
10	Portugal	39.8%	61.34
11	Cyprus	39.7%	61.32
12	Finland	39.1%	58.95
13	Czech Republic	38.5%	56.79
	EU Average	37.2%	52.17
14	Bulgaria	36.3%	49.08
15	Austria	34.9%	44.22
16	Slovakia	34.2%	41.67
17	Italy	33.3%	38.44
18	Romania	32.6%	35.80
19	Hungary	32.2%	34.58
20	Spain	31.4%	31.52
21	Poland	31.3%	31.14
22	France	30.6%	28.70
23	Belgium	30.3%	27.80
24	Slovenia	30.1%	26.99
25	Malta	29.2%	23.85
26	Croatia	26.3%	13.48
27	Luxembourg	25.9%	12.08
28	Greece	25.3%	10.00

Source: Eurostat (Lisbon Council calculations)

Active older adults is a peculiar category of workers, taking into account many pension-ready workers and mixing them together with those who would like to work but cannot find jobs because of their age. This kind of bias is difficult to weed out of the statistics, so perhaps it is best to just let the statistics speak for themselves. Measured by the size of workers aged 55-74, **Estonia** (No. 1), **Sweden** (No. 2) and **Lithuania** (No. 3) top the ranking. **Germany**, at No. 4, also does well. But **Spain** (No. 20), **Poland** (No. 21), **France** (No. 22) and **Belgium** (No. 23) all disappoint, reflecting long-term structural problems (e.g., Poland) and short-term political choices (e.g., Belgium). The bottom of the league table belongs to **Croatia** (No. 26), **Luxembourg** (No. 27) and **Greece** (No. 28).

Chapter II

New Jobs and New Tools (The Digital Economy)

Table 9. New Jobs and New Tools – Composite Ranking

Rank	Country	Score
1	Sweden	79.6
2	Denmark	77.2
3	United Kingdom	76.9
4	The Netherlands	76.0
5	Finland	75.4
6	Ireland	71.5
7	Germany	64.8
8	Belgium	63.6
9	Cyprus	62.1
10	Austria	60.1
	EU Average	57.3
11	France	55.8
12	Spain	52.2
13	Estonia	50.7
14	Malta	47.9
15	Czech Republic	47.6
16	Luxembourg	46.6
17	Italy	41.8
18	Slovenia	41.6
19	Portugal	41.3
20	Lithuania	37.0
21	Slovakia	35.7
22	Croatia	35.4
23	Latvia	34.2
24	Hungary	31.0
25	Poland	26.3
26	Greece	24.2
27	Bulgaria	24.1
28	Romania	15.6

Source: European Commission, Eurostat, OECD, spintan.net, International Data Corporation and the Lisbon Council (Lisbon Council calculations)

Ours is an era of economic and social upheaval. The advent of globalisation, the end of the monopoly on power by male hierarchies, the arrival of instantaneous global communication at zero marginal cost, the entry of one billion Chinese into the global workforce and the revolution in health and longevity in the developing world are just the start.[32] Add to that the arrival of global markets in local communities and local communities in global markets, the rise of disruptive new economic relationships implied by "peer-to-peer" communication, the coming explosion of radically new services made possible by the Internet of Things, fifth generation cellular network technology, data analytics and the radical democratisation of knowledge implied by the dissemination – at essentially no cost – of the totality of human knowledge with the click of a mouse.

32 See Jeffrey D. Sachs, *The End of Poverty: How We Can Make It Happen in Our Lifetime* (London: Penguin, 2005).

The fact is, amid all of these developments, the way forward has never been more clear for the world's industrialised economies – or the roughly 1.3 billion people who live within it.[33] Put simply, reaching and staying at the top of the global value-added chain means Europeans and North Americans must be at the forefront of these developments, adapting and reforming institutions to deliver the highly trained, deeply skilled and instinctively creative workforce it will take to remain "advanced economies."[34] The most basic part of this formula is clear: workers in the developed world can and must be able to use the Internet; and they need to have advanced "problem-solving" skills which are beyond the reach of simple artificial intelligence-driven automation and algorithms.[35] What's more, business and industry must embrace the new opportunities, seizing access to global markets and continuing to deliver innovative products and services that can demand the higher prices that European wages and the social model require. And they must continue to invest in the businesses of the future, making sure that their advanced-world companies remain at the forefront of global innovation.

'Despite some evident problems around low-paying, low-skilled jobs, part-time work has proven to be an extremely useful tool in fighting social exclusion, helping immigrants to get a toehold on the social ladder, allowing employers to innovate and putting people on the path towards happy, healthy and sustainable lives.'

33 The United Nations calculates that there are 1.3 billion people living in "developed" regions, or around 16.5% of the global population. For comparison, there are still 6.4 billion people living in "less developed" regions, or 83.5% of the world's 7.7 billion people. For more, see United Nations, *2019 Revision of World Population Prospects*, accessed 21 June 2019.

34 Michael E. Porter, *The Competitive Advantage of Nations: Creating and Sustaining Superior Performance* (New York: Free Press, 2011).

35 Autor, op. cit. See also Hasan Bakhshi, Ian Hargreaves and Paul Hofheinz, *The Creative Economy in Europe: Why Human Beings Remain the Economy's Key Asset* (Brussels and London: The Lisbon Council and Nesta, 2017).

To measure this, we created the **New Jobs and New Tools** indicator, a complex three-part metric which looks at 1) the level of digital and other advanced skills in national economies, 2) the intensity with which national businesses have embraced and adopted digital technology, thereby offering new economic opportunities, and 3) the level and commitment to investing and developing so-called "intangible" assets – the part of national balance sheets which most closely corresponds with "new-economy" investment.[36]

The results are fascinating:

1. **Sweden** (No. 1), **Denmark** (No. 2) and the **United Kingdom** (No. 3) top the list with high scores in all areas. Just behind them are **The Netherlands** (No. 4), **Finland** (No. 5), **Ireland** (No. 6), **Germany** (No. 7) and **Belgium** (No. 8). These countries seem to have the strongest footprint in the digital economy as measured by workforce talent, industry adoption and future-friendly investment.
2. At the bottom of the list are **Poland** (No. 25), **Greece** (No. 26), **Bulgaria** (No. 27) and **Romania** (No. 28). Poland suffers particularly from low adoption rates of digital technology in industry – and low investment rates in new technology. Greece, Bulgaria and Romania have trouble-implying scores in all areas.
3. Among the surprisingly modest performers are **France** (No. 11), **Spain** (No. 12), **Estonia** (No. 13) and **Italy** (No. 17) – all of which lag the **EU Average**.
4. **France** comes out ahead of the **EU Average** on skills, but lags on industry adoption and investment. Its 43.8 score on investment in intangible assets, where it ranks No. 8 in the overall league table, is almost half the score of **Ireland** (81.1), the league-table leader in this category.
5. The surprising No. 13 place finish of **Estonia** is a sign of continued structural weakness in Europe's most digital economy. Many of the advances for which Estonia is world famous have taken place in the public sector. The private sector remains small and underdeveloped. Seen from this perspective, the country is still essentially in the "catch-up" phase of other post-Soviet economies. Even skills and advanced problem solving, where Estonia finishes No. 14 in comparison with its EU peers, are below the **EU Average**.
6. **Italy** (No. 17), as so often, is a special case. This €1.7 trillion economy – a member of the G7 group of industrial nations – scores below transition economies **Hungary** (No. 20), **Croatia** (No. 21), **Lithuania** (No. 22) and **Poland** (No. 23) on digital and advanced problem-solving skills, a shocking outcome and a major structural challenge for this country. See Table 10 for more on this sub-indicator.

36 Jonathan Haskel and Stian Westlake, *Capitalism without Capital: The Rise of the Intangible Economy* (Princeton: Princeton University Press, 2017).

II.1. Digital and Creative-Economy Skills

Table 10. Digital and Creative-Economy Skill Level – Ranking

Rank	Country	Score
1	The Netherlands	94.9
2	Sweden	94.2
3	Finland	93.5
4	Denmark	92.0
5	Luxembourg	91.3
6	United Kingdom	85.0
7	Germany	80.7
8	Belgium	74.2
9	France	71.0
10	Austria	68.2
11	Cyprus	68.1
12	Czech Republic	67.8
	EU Average	65.2
13	Spain	65.2
14	Estonia	63.7
15	Latvia	59.4
16	Malta	56.5
17	Ireland	50.2
18	Slovenia	48.8
19	Slovakia	47.8
20	Hungary	41.9
21	Croatia	36.1
22	Lithuania	35.8
23	Poland	33.8
24	Italy	33.2
25	Portugal	30.3
26	Romania	21.6
27	Greece	18.7
28	Bulgaria	10.0

Sources: Eurostat, OECD (Lisbon Council calculations)

Assessing the skill level of a population is a surprisingly perilous task – with several global projects founded in recent years to map skills and skills needs and to provide semi-annual recommendations on how policy can be better adjusted to deliver better outcomes. The result is an explosion of information in this key field – though the consistent findings of the many institutions studying the problem continue to be relegated to the fringe of national debates, often well away from programmes where concrete, society-wide action might be taken or programmes designed to deliver anything more than an experimental "feel good" project or a loose knit public-private coalition.

At the end of the day, we believe there are two areas where progress is crucial: 1) basic digital skills, and 2) complex problem solving. Societies that overcome one or the other or both are often best placed to make a success of the digital era. With that in mind, we drew two separate indicators together – Eurostat's "Frequency of Internet Use by Individuals" indicator, which measures the percentage of the population which can access the Internet and does so at least once a week, and the OECD's "Problem Solving in Technology-Rich Environment" indicator from the Programme for International Assessment for Adult Competencies (PIAAC) study – to create a unified score on digital and creative skills.

The key findings:

1. Europe's digital titans – **The Netherlands** (No. 1), **Sweden** (No. 2), **Finland** (No. 3) and **Denmark** (No. 4) – all lead. Their populations are highly skilled, Internet-wise. And workers there have a strong foundation in "complex problem solving" which will help them thrive in an increasingly multi-faceted, dematerialised economy.
2. **Luxembourg** also does well with a strong finish in the No. 5 position.
3. Bottom of the pack are **Romania** (No. 26), **Greece** (No. 27) and **Bulgaria** (No. 28).
4. Among Europe's leading economies, **Portugal** (No. 25) and **Italy** (No. 24) both do very poorly on digital skills – a sign that Europe's "digital divide" is pronounced and cavernous. The gap between Europe's most digitally literate countries – **The Netherlands** (No. 1), **Sweden** (No. 2) and **Finland** (No. 3) – adds up to a nearly 3:1 differential between the leaders and the laggards in the percentage of the population that can use the Internet and solve advanced problems independently.

'Poland suffers particularly from low adoption rates of digital technology in industry – and low investment rates in new technology.'

Table 11. Percentage of Population (16-74) Who Can Use the Internet and Do So at Least Once a Week – Ranking

Rank	Country	Percentage of Population	Score
1	Denmark	95%	100.0
2	The Netherlands	94%	97.1
–	United Kingdom	94%	97.1
4	Finland	93%	94.2
5	Luxembourg	92%	91.3
6	Sweden	91%	88.4
7	Germany	90%	85.5
8	Belgium	87%	76.8
–	Estonia	87%	76.8
10	France	85%	71.0
–	Austria	85%	71.0
12	Czech Republic	84%	68.1
–	Cyprus	84%	68.1
	EU Average	83%	65.2
14	Spain	83%	65.2
15	Latvia	81%	59.4
16	Ireland	80%	56.5
–	Malta	80%	56.5
18	Slovenia	79%	53.5
19	Lithuania	78%	50.6
–	Slovakia	78%	50.6
21	Hungary	75%	41.9
–	Poland	75%	41.9
23	Croatia	73%	36.1
24	Italy	72%	33.2
25	Portugal	71%	30.3
26	Greece	70%	27.4
27	Romania	68%	21.6
28	Bulgaria	64%	10.0

Source: Eurostat

'Societies must strive to put the most number of educational opportunities in front of people. The state needs to be there – with the proper tools and right advice – at key moments in a person's life.'

Table 12. Problem Solving in Technology-Rich Environment – Ranking

Percentage of Adult Population Scoring Above Level-2 Proficiency (2015 data)

Rank	Country	Percentage of Adult Population	Score
1	Sweden	44%	100.0
2	Finland	42%	92.7
3	The Netherlands	42%	92.7
4	Denmark	39%	84.1
5	Germany	36%	76.0
6	United Kingdom	35%	73.0
7	Belgium	35%	71.6
8	Czech Republic	33%	67.5
9	Austria	32%	65.4
10	Estonia	28%	50.7
11	Slovakia	26%	44.9
12	Slovenia	25%	44.1
13	Ireland	25%	43.9
14	Poland	19%	25.6
15	Lithuania	18%	20.9
16	Greece	14%	10.0
	EU Average	n/a	n/a
	Bulgaria	n/a	n/a
	Croatia	n/a	n/a
	Cyprus	n/a	n/a
	France	n/a	n/a
	Hungary	n/a	n/a
	Italy	n/a	n/a
	Latvia	n/a	n/a
	Luxembourg	n/a	n/a
	Malta	n/a	n/a
	Portugal	n/a	n/a
	Romania	n/a	n/a
	Spain	n/a	n/a

Source: OECD

Note: Proficiency levels in problem solving in technology-rich environments are the follows: below Level 1 = less than 241 points; Level 1 = 241 to less than 291 points; Level 2 = 291 to less than 341 points; Level 3 = equal to or higher than 341 points

II.2. Digital Industry (The Fourth Industrial Revolution)

Table 13. Digital Industry – Ranking

Rank	Country	Score
1	Denmark	90.7
2	Finland	84.4
3	The Netherlands	84.3
4	Ireland	83.2
5	United Kingdom	78.0
6	Sweden	77.4
7	Belgium	73.0
8	Estonia	71.5
9	Germany	71.5
10	Spain	69.3
11	Austria	67.4
	EU Average	62.0
12	Malta	58.3
13	Cyprus	56.0
14	Lithuania	55.4
15	Portugal	53.0
16	France	52.6
17	Italy	48.8
18	Slovenia	44.5
19	Czech Republic	43.2
20	Slovakia	40.5
21	Croatia	34.8
22	Latvia	33.1
23	Bulgaria	32.0
24	Luxembourg	26.1
25	Poland	23.1
26	Hungary	23.1
27	Greece	19.5
28	Romania	15.3

Sources: European Commission, Eurostat, International Data Corporation and the Lisbon Council (Lisbon Council calculations)

It's one thing to take part in the digital revolution. It's another thing to be at the head of it. To measure this, we created the **Digital Industry** indicator, which has two parts. Pillar 1 is a measure – taken from the European Commission – that looks at the "adoption of digital technology by business." This indicator, which serves as the fourth pillar of the European Commission's flagship Digital Economy and Society Index, measures the percentage of companies in an economy that have adopted electronic identification sharing, radio frequency identification (RFID), social media, e-invoicing, cloud solutions or online sales.[37] Pillar 2 is a calculation of the value created by data and other traditional companies that use data. It is compiled by International Data Corporation, a U.S.-based market intelligence firm, and used as a reference indicator by the European Commission. The figure is arrived at by counting the number of data companies in the economy and calculating the amount of value those companies generate – then adding a figure, based on ICT expenditure, for the amount of data being consumed and produced.[38]

Among the key findings:

1. **Denmark** (No. 1) leads this ranking with high scores for digitised industry (No. 1) and a relatively large footprint in data-driven businesses (No. 5).
2. **Finland** (No. 2), **The Netherlands** (No. 3) and **Ireland** (No. 4) also score well. The difference between them is so small that it is effectively a three-way tie for second place.
3. The **United Kingdom** (No. 5) does well in the data-economy realm (where it finishes No. 1 on this sub-indicator; see Table 15 on page 37), but it does less well on digitised business (where it is No. 14, below the **EU Average**; see Table 14). Too much of the United Kingdom's business is still off-line. United Kingdom companies are taking too little advantage of the productivity boost and market deepening that technology can provide. But lagging behind could easily become an advantage: it means the United Kingdom economy still has much untapped growth potential within it.
4. **Germany** (No. 9) – which fancies itself a leader of the fourth industrial revolution – actually performs more or less at the **EU Average** on these key indicators. Germany is No. 12 on adoption of digital technology by business, behind **Portugal** (No. 11 on the "adoption of digital technology by businesses" indicator) and just ahead of **Czech Republic** (No. 13 on this sub-indicator; see Table 14).
5. **Hungary** (No. 26), **Greece** (No. 27) and **Romania** (No. 28) are at the bottom.

'We believe there are two areas where progress is crucial: 1) basic digital skills, and 2) complex problem solving. Societies that overcome one or the other or both are often best placed to make a success of the digital era.'

37 European Commission, *Digital Economy and Society Index Report 2018: Integration of Digital Technology* (Brussels: European Commission, 2018).

38 International Data Corporation and the Lisbon Council, *First Report on Facts and Figures: Updating the European Data Market Study Monitoring Tool* (Brussels: European Commission, 2018).

Table 14. Adoption of Digital Technology by Businesses – Ranking

Rank	Country	Percentage of Businesses	Score
1	Denmark	61.3%	100.0
2	Finland	60.9%	99.2
3	Ireland	60.0%	97.4
4	Sweden	56.4%	89.8
5	Belgium	54.6%	86.1
6	The Netherlands	52.3%	81.5
7	Spain	49.8%	76.2
8	Slovenia	47.9%	72.3
9	Lithuania	47.5%	71.4
10	Austria	44.1%	64.6
11	Portugal	41.9%	60.0
12	Germany	41.3%	58.7
13	Czech Republic	40.4%	56.9
	EU Average	40.1%	56.2
14	United Kingdom	40.0%	55.9
15	Malta	38.9%	53.7
16	France	37.8%	51.5
17	Cyprus	37.7%	51.2
18	Slovakia	37.4%	50.7
19	Estonia	37.1%	49.9
20	Italy	36.8%	49.4
21	Croatia	35.4%	46.6
22	Luxembourg	33.2%	41.9
23	Latvia	27.0%	29.2
24	Greece	26.9%	29.0
25	Hungary	25.1%	25.1
26	Bulgaria	24.4%	23.8
27	Poland	23.5%	21.9
28	Romania	17.8%	10.0

Source: European Commission (Digital Economy and Society Index 2018)

'The palpable strain on families – and the concurrent need for more readily accessible childcare and more flexible work-time arrangements – has not yet been successfully processed into the European social model or fully understood by policymakers.'

Table 15. Share of the Data Economy in GDP (2017 data) – Ranking

Rank	Country	Percentage of GDP	Score
1	United Kingdom	2.93%	100.0
2	Estonia	2.77%	93.1
3	The Netherlands	2.63%	87.2
4	Germany	2.57%	84.3
5	Denmark	2.50%	81.4
6	Austria	2.24%	70.2
7	Finland	2.22%	69.7
8	Ireland	2.21%	69.0
	EU Average	2.18%	67.9
9	Sweden	2.12%	65.0
10	Malta	2.06%	62.8
11	Spain	2.05%	62.3
12	Cyprus	2.02%	60.9
13	Belgium	1.99%	59.9
14	France	1.85%	53.8
15	Italy	1.72%	48.2
16	Portugal	1.67%	46.0
17	Bulgaria	1.53%	40.1
18	Lithuania	1.51%	39.3
19	Latvia	1.46%	37.0
20	Slovakia	1.30%	30.3
21	Czech Republic	1.28%	29.5
22	Poland	1.16%	24.2
23	Croatia	1.13%	23.0
24	Hungary	1.08%	21.0
25	Romania	1.07%	20.5
26	Slovenia	0.98%	16.7
27	Luxembourg	0.83%	10.3
28	Greece	0.82%	10.0

Sources: Eurostat, International Data Corporation and the Lisbon Council (Lisbon Council calculations)

II.3. Investment in Intangible Assets

Table 16. Intangible Assets Investment – Ranking

Rank	Country	Score
1	Ireland	81.1
2	United Kingdom	67.8
3	Sweden	67.3
4	The Netherlands	48.8
5	Denmark	48.7
6	Finland	48.2
7	Austria	44.8
	EU Average	44.8
8	France	43.8
9	Belgium	43.6
10	Italy	43.3
11	Germany	42.1
12	Portugal	40.5
13	Greece	34.4
14	Czech Republic	31.9
15	Slovenia	31.5
16	Bulgaria	30.4
17	Malta	29.1
18	Hungary	28.0
19	Luxembourg	22.4
20	Spain	22.2
21	Poland	21.9
22	Lithuania	19.8
23	Slovakia	19.0
24	Estonia	16.9
25	Latvia	10.1
26	Romania	10.0
	Croatia	n/a
	Cyprus	n/a

Sources: Eurostat, Spintan.net (Lisbon Council calculations)

The Internet is a unique economic phenomenon. Zero marginal cost communication has led to the emergence of increasingly complex supply chains and the rise of a global economy based on talent and knowhow.[39] The result is an explosion of so-called "intangible" goods – this is the intellectual property, goodwill, trade names and other immaterial items where a heavy national footprint is often synonymous with a high ranking in global value chains.[40]

39 The calculations in this section draw on the cutting-edge work of Carol Corrado, Kirsten Jäger and Cecilia Jona-Lasinio, *Measuring Intangible Capital in the Public Sector: A Manual* (Brussels: European Commission, 2016).

40 Jonathan Haskell and Stian Westlake, *Capitalism Without Capital: The Rise of the Intangible Economy* (New Jersey: Princeton University Press, 2018).

The important point to grasp is that – whatever change the Internet has brought – "products" are still being made and "goods" are still being traded. But what products? And what goods? And how successful are societies and economies at developing and creating them?

The growing value and economic weight of so-called "intangible assets" is as easy to observe as dark matter in the universe – and almost as difficult to measure.[41] Put simply, we see investment in these assets rising quantifiably in the national accounts of the most successful economies of the world. In Europe, for one, investment in intangible assets has risen to 4.4% of gross domestic product since 2005, almost a full percentage point increase. But that boost conceals some massive differences. Ireland, for one, is far ahead of its European peers in the share of investments directed towards intangible assets.[42] But Romania, despite its 19 million population, shows little footprint. This a sign that some countries are moving decisively into the growth and high-value-added areas of the future while others are underinvesting and having a more difficult time leaping to the forefront of global value chains.

As this policy brief is about the future and not the past, we chose to rank countries based on the size of their investment in intangible assets. In order to measure this, we took Gross Fixed Capital Formation (GFCF) – the amount spent on new and existing fixed assets – as the reference point, measuring how much of that GFCF – private and public – was being invested in intangible assets.

Among the key findings:

1. **Ireland** (No. 1), the **United Kingdom** (No. 2) and **Sweden** (No. 3) top the list. Ireland's 81.1 score on investment in intangible assets is nearly twice the **EU Average** (44.8). The United Kingdom and Sweden also finish strongly with 67.8 and 67.3, respectively.
2. All told, seven EU countries finish above the **EU Average**, including **The Netherlands** (No. 4), **Denmark** (No. 5), **Finland** (No. 6) and **Austria** (No. 7).
3. Interestingly, among the laggards are some countries that perform well in other areas: **Estonia** (No. 24) and **Latvia** (No. 25).[43]
4. **Ireland** (No. 1), **Sweden** (No. 2) and **Denmark** (No. 3) lead the league table on the average investment in intangible assets, a sub-indicator ranked in Table 17. The **United Kingdom** (No. 1), **Sweden** (No. 2) and **Finland** (No. 3) top the ranking for public investment in intangible assets as a percentage of overall investment, as seen in Table 18. Only Sweden does well in both sub-indicators. Ireland, by contrast, makes up for a No. 4 finish on public investment with extremely high private-sector investment.
5. Overall, and based on data outside of the scope of this policy brief, investment in intangible assets as a percentage of gross value added rose in 16 of 26 European Union member states between 2013-2015 and 2016-2018, and fell in 10. The largest decline was in **The Netherlands** (No. 16), which saw a one percentage point fall. See Chart 1 on page 42 for more.

41 Paul Hofheinz and Michael Mandel, *Uncovering the Hidden Value of the Digital Trade: Towards a 21st Century Agenda of Transatlantic Prosperity* (Brussels and Washington: The Lisbon Council and Progressive Policy Institute, 2015).

42 Since 2010, Ireland has the highest share of the investments in intangible assets, varying between 29% and 33% of gross fixed capital investments (Eurostat data on gross fixed capital formation by asset type). In 2015, the investments in intangibles accounted for 54% of gross fixed capital formation (up 25% compared to 2014) and in 2016 reached 64%. In the following years, the share slightly dropped, but remained well above the EU Average of 20% (In 2017, it was 45% and in 2018, 37%).

43 There is no data for Croatia or Cyprus.

Table 17. Average Investment in Intangibles as Percentage of Gross Fixed Capital Formation – Ranking

Rank	Country	Percentage of GFCF	Score
1	Ireland	50.20%	100.0
2	Sweden	25.91%	49.8
3	Denmark	25.75%	49.5
4	France	25.02%	48.0
5	The Netherlands	22.03%	41.8
6	Austria	21.28%	40.3
	EU Average	19.73%	37.1
7	United Kingdom	18.97%	35.5
8	Germany	18.77%	35.1
9	Belgium	18.18%	33.9
10	Finland	18.15%	33.8
11	Italy	17.53%	32.5
12	Portugal	16.28%	30.0
13	Malta	15.86%	29.1
14	Slovenia	15.70%	28.8
15	Czech Republic	15.03%	27.4
16	Spain	13.69%	24.6
17	Greece	13.40%	24.0
18	Hungary	11.73%	20.6
19	Lithuania	11.34%	19.8
20	Bulgaria	10.14%	17.3
21	Estonia	9.95%	16.9
22	Luxembourg	8.18%	13.2
23	Poland	7.48%	11.8
24	Slovakia	6.82%	10.4
25	Latvia	6.65%	10.1
26	Romania	6.62%	10.0
	Croatia	n/a	n/a
	Cyprus	n/a	n/a

Source: Eurostat (Lisbon Council calculations)

'Modern workforce, also known as "workplace inclusion," assesses the level and depth to which traditionally marginalised groups – women, immigrants, young, old and disabled – participate in the workforce.'

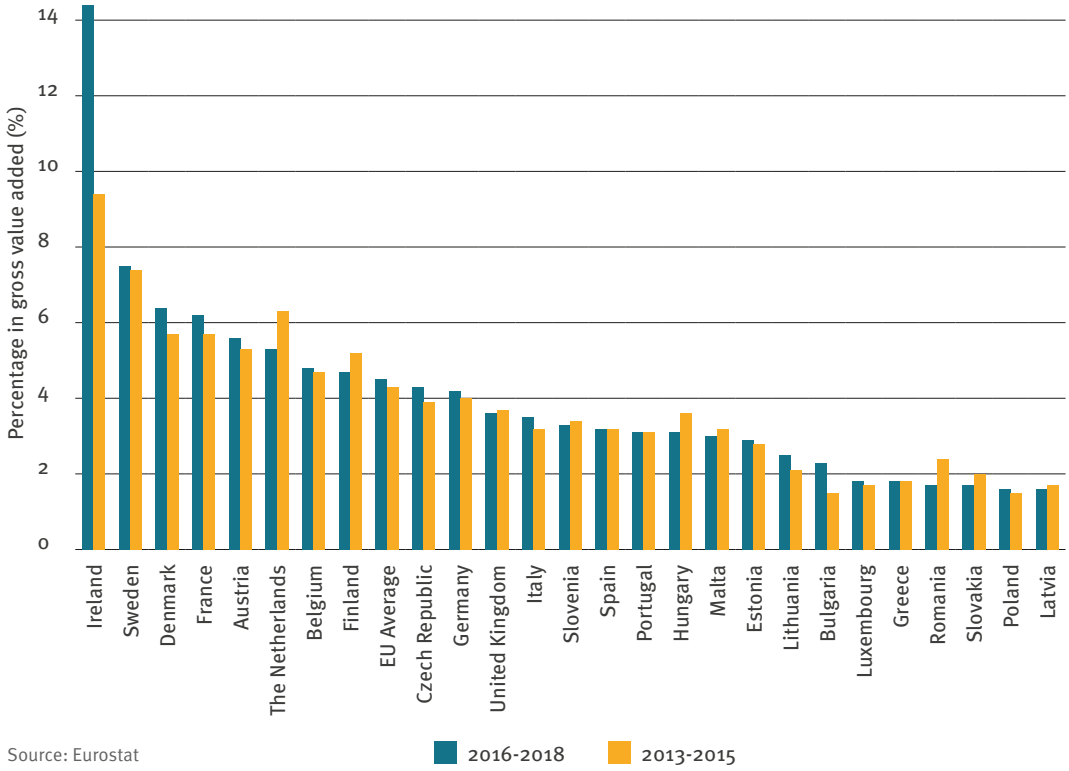
Table 18. Average Public Investments in Intangibles as Percentage of Gross Fixed Capital Formation (2015 data)

Rank	Country	Percentage of GFCF	Score
1	United Kingdom	10.92%	100.0
2	Sweden	9.24%	84.7
3	Finland	6.81%	62.5
4	Ireland	6.77%	62.2
5	The Netherlands	6.07%	55.8
6	Italy	5.89%	54.1
7	Belgium	5.80%	53.3
	EU Average	5.71%	52.5
8	Portugal	5.55%	51.0
9	Austria	5.37%	49.4
10	Germany	5.34%	49.1
11	Denmark	5.22%	48.0
12	Greece	4.86%	44.7
13	Bulgaria	4.73%	43.6
14	France	4.31%	39.7
15	Czech Republic	3.94%	36.3
16	Hungary	3.83%	35.3
17	Slovenia	3.71%	34.2
18	Poland	3.46%	32.0
19	Luxembourg	3.43%	31.6
20	Slovakia	2.98%	27.5
21	Spain	2.13%	19.8
22	Romania	1.06%	10.0
	Croatia	n/a	n/a
	Cyprus	n/a	n/a
	Estonia	n/a	n/a
	Latvia	n/a	n/a
	Lithuania	n/a	n/a
	Malta	n/a	n/a

Sources: Eurostat, spintan.net (Lisbon Council calculations)

Chart 1. Investment in Intangible Assets Across Member States as a Percentage of Gross Value Added (2013-2015 and 2016-2018)

Data on investment in intangible assets is not available for Cyprus and Croatia



Source: Eurostat

Minimum Wage: The Angels are in the Details

European Commission President-Elect Ursula von der Leyen is coming to office with many concrete plans and proposals. Among them are a pledge that every worker in the European Union will have a "fair minimum wage" and a "European Unemployment Benefit Reinsurance" scheme within the first 100 days of her term.

These are, *prima facie*, policies which can and will have an effect on the European labour market. And not necessarily a negative one, as some will surely claim. Despite having one of the most vaunted redistribution systems in the world, income inequality in the European Union is still relatively high. In 2017, according to Eurostat, the top 20% of the European population earned five times more than the lowest-earning 20%. Minimum wage policies can do a lot to redistribute income in positive ways – putting more money into the pockets of consumers, where it will be spent, and helping to pull millions out of the poverty traps into which uneven income spreads have doomed them.

What's more, the notion of more reliable publicly-guaranteed unemployment insurance is a "new-economy" favourite. In the past, benefits were tied closely to previous employment and "...

…”

were sometimes seen as an effort to maintain situations that had simply become unsustainable. In the future, benefits will be something individuals pay into and carry with them regardless of their employment status (full-time, part-time, temporary or gig). The state will, *prima facie*, play a more important role in setting the terms – guaranteeing that adequate insurance and access to training are there for an ever-growing field of freelancers, part-timers and the like. But the account will be connected to the individual worker – and will be there for her or him at those moments in life when she or he needs it most. European policy can surely play a role both in ensuring that this transition takes place and that when it does, the assistance will be both effective and equitable.

The challenge will lie in the way in which any minimum wage is conceived and structured. Efforts to impose, say, a German minimum wage on a Romanian worker are destined to fail – the entire economic history of Europe in the 1970s is basically a story where an excessively high minimum wage created massive pools of long-term unemployment – especially for the lower skilled – and drove much of their work into the black market, where workers enjoyed even fewer rights than they would have received in low-paying jobs that were otherwise fully regulated. Another risk – one that arises when social partners are given the sole power to set wages in their sector – is that the insiders, i.e., those with jobs, use that power to neutralise or restrain outsiders, i.e., those without jobs. This is a very real and very important risk. From day one, policymakers thinking about a European minimum wage must consider the effect of any policy they might embrace on outsiders as well as those who don’t yet have a foot on the ladder.

Put simply, the most effective policy seems to be not only a minimum wage, but a combination of policies that encourage employment, offer access to training and serve as a “social safety net” for workers in times of transition. The Government of Denmark, under Socialist Prime Minister Poul Nyrup Rasmussen, demonstrated the utility of this approach with the famous flexicurity programme in the 1990s. Contrary to popular opinion, Prime Minister Rasmussen’s government did not cut unemployment benefits; to the contrary, the amounts and duration on offer were extended considerably. But the assistance now came with tougher requirements to pursue training or deliver demonstrable proof that you were looking for a job. The rules regarding firing workers were relaxed as well – taking much of the burden of supporting former workers off the backs of companies but responding with dramatically increased state assistance. This had an amazing effect. Much as theory would predict, it became easier (and less risky) for companies to hire workers – and they did. Unemployment in Denmark fell to 2.4%, down from 12.4% when Prime Minister Rasmussen took over.

Another interesting case is the United Kingdom Labour Government under Prime Minister Tony Blair. He and Chancellor of the Exchequer Gordon Brown came to power with an arsenal of reforms, including central-bank independence, a minimum wage and an income tax credit scheme (which incentivised work at the low-end of the pay scale by offering tax rebates to those in low-earning jobs). At the onset, business associations cried foul. But the evidence of success was unequivocal. Today, the minimum wage in the UK is considered one of the Labour Government’s greatest achievements. Together with the income tax credit and the economic boom brought by sound, non-ideological economic administration, the Labour Government was able to lift some two million people out of poverty, half of them children. No party has ever called for or proposed its repeal – including the Tories. A recent government-led assessment showed that over a two decade-period more than 30% of the UK workforce had been affected by the change – with low-pay rising faster than other wage category for the first time in British history.

Source: Low Pay Commission, *Twenty Years of the National Minimum Wage: A History of the UK Minimum Wage and Its Effect* (London: Low Pay Commission, 2019)

Chapter III

Transition Effectiveness

Table 19. Transition Effectiveness – Ranking

Rank	Country	Score
1	Sweden	90.44
2	Finland	89.80
3	Denmark	86.45
4	Estonia	82.96
5	The Netherlands	74.14
6	Luxembourg	73.31
7	United Kingdom	62.98
8	Slovenia	62.14
9	Cyprus	61.16
10	Ireland	60.99
11	Spain	60.75
12	Malta	59.68
13	Portugal	59.03
14	Austria	57.12
	EU Average	55.47
15	Germany	54.76
16	Latvia	54.63
17	Hungary	52.64
18	Czech Republic	52.45
19	Belgium	52.20
20	Lithuania	50.58
21	Poland	47.39
22	France	47.24
23	Romania	42.78
24	Croatia	39.09
25	Slovakia	37.89
26	Italy	36.90
27	Bulgaria	32.42
28	Greece	28.99

Sources: European Commission, Eurostat, OECD, World Bank (Lisbon Council calculations)

Human beings crave stability – which is a natural instinct, given the sheer level of chaos that confronts us in a fast-changing world, but one which often sets us at odds with our environment. The truth is, no matter how much we fear disruption in our lives, change is the only thing we can count on. Successful countries – like successful people – are those that prepare the best for it. This means several things in practice: first and foremost, it means access to quality education and training at all stages of life: early childhood, adult, employed and unemployed. This is a policy challenge – as well as an individual one. It means that societies must strive to put the most number of educational opportunities in front of people. It means the state needs to be there – with the proper tools and right advice – at key moments in a person's life. And, if prosperity and social inclusion are the ultimate goals, it means the economy itself must perform well on the cutting-edge of the global value chain, offering a wide range of jobs to people in transition – with a broadly competitive economy and a social system that supports transition behind it.

The **Transition Effectiveness** indicator is a composite indicator that ranks countries based on labour-market robustness and flexibility – including the key question of whether social policy is being effectively used to aid economic transition (and not just as a lever to reinforce the power of insiders and economic incumbents). The Transition Effectiveness indicator ranks countries on an average of four sub-indicators: III.1. **Speed of Finding a New Job**; III.2. **Percentage of Active Workforce Engaged in Training and Lifelong Learning**; III.3. **Access to Social Security Benefits and Transitions Assistance for the Self-Employed and Workers Other Than Full-Time, Long-Term Employees**, and III.4. **Access: Labour and Product Market Openness** [which is composed of three sub-indicators: III.4.1. **Access to Licensed Professions** sub-indicator, III.4.2. **Ease of Becoming an Entrepreneur** sub-indicator and III.4.3. **Product Market Openness** sub-indicator].

Among the key findings:

1. The Nordic trio – with their famous devotion to the three pillars of the European social model: the economic, social and environmental – are also Europe's best prepared for the ongoing economic and social transition. **Sweden** (No. 1) is the best performer – with the second-largest workforce engaged in training as a percentage of the overall workforce (see Table 22) and relatively high marks on access to benefits for self-employed workers (No. 2). However, the labour market is not as resilient as it could be. Sweden comes No. 5 on the speed of finding a new job and No. 4 for ease of entry to the labour market.
2. **Finland** is a strong No. 2. Its strength comes from the short waiting time for finding a new job if you lose your old one (see Table 20) and from having the largest workforce engaged in training, where it is No. 1. The benefit system works well for the self-employed (No. 4). But labour and product markets remain highly regulated and relatively restricted; Finland is only No. 8 on this indicator.
3. **Denmark** (No. 3) is another top performer. It is No. 3 on the labour-market accessibility category. And scores a strong No. 3 position for speed of finding a job (behind only Finland and Estonia) and No. 3 for active engagement in life-long learning.
4. **Estonia** (No. 4) has one of Europe's healthiest labour markets, with the second shortest wait for finding a new job and the second easiest administrative system for becoming an entrepreneur (see Table 26).
5. Lagging are **Croatia** (No. 24), **Slovakia** (No. 25), **Italy** (No. 26), **Bulgaria** (No. 27) and **Greece** (No. 28).

'The economy itself is more open and less forgiving than it used to be – partly as a result of globalisation, but also thanks to the ever higher value-added content of work, particularly in the so-called "developed economies."'

III.1. Speed of Finding a New Job

Table 20. Speed of Finding a New Job – Ranking

Rank	Country	Share of Short-Term Unemployment in Total Unemployment	Score
1	Finland	46.3%	100.00
2	Estonia	42.2%	89.85
3	Denmark	41.9%	89.19
4	Malta	41.1%	87.25
5	Sweden	40.3%	85.34
6	United Kingdom	39.1%	82.26
7	Luxembourg	37.3%	78.07
8	Austria	34.4%	70.97
9	Poland	33.0%	67.37
10	Ireland	32.1%	65.37
11	The Netherlands	31.3%	63.39
12	Czech Republic	30.9%	62.24
13	Cyprus	30.6%	61.60
14	Germany	29.1%	57.98
15	Spain	28.8%	57.26
16	Hungary	27.7%	54.41
17	Lithuania	27.1%	53.08
18	Portugal	25.7%	49.74
	EU Average	25.4%	48.95
19	Romania	25.0%	47.97
20	Slovenia	24.4%	46.54
21	Belgium	23.2%	43.56
22	France	23.1%	43.31
23	Latvia	22.5%	41.89
24	Croatia	18.8%	32.87
25	Italy	13.6%	20.08
26	Slovakia	13.0%	18.58
27	Bulgaria	12.8%	18.03
28	Greece	9.5%	10.00

Source: Eurostat (Lisbon Council calculations)

It is often said that the best social policy is a healthy economy – especially when the benefits are diffused among the many and not confined to the few. This is particularly true for the labour market, where the difference between a good life and a bad life, between fulfilment and stress, is so clearly determined. Put simply, countries with healthy labour markets – offering a plethora of jobs, full and part-time, well-paid and casual – are also the ones who provide their citizens with the most important social safety net of all – the opportunity to take part in and add to society. A means of earning your living is much more than a pay check and an employer social contribution. It is also a place in society, a step on the social-mobility ladder, an entry point for personal development and an important component of self-esteem.

But jobs don't last forever. And, these days, the speed with which one can move from one job or profession to another is an increasingly important determinant of social cohesion and popular satisfaction. To measure this, we looked closely at Eurostat's inner-European calculation on the speed of finding a new job after an old one is lost.

Among the key findings:

1. **Finland** (No. 1), **Estonia** (No. 2) and **Denmark** (No. 3) lead. **Malta** (No. 4), **Sweden** (No. 5) and the **United Kingdom** (No. 6) finish well above the **EU Average**.
2. **France** (No. 22) and **Italy** (No. 25) show their social weakness in this area. Both countries are well below the **EU Average**.
3. **Croatia** (No. 24) also does badly. But the country has relatively good access to benefits for the self-employed (see Table 23).
4. **Slovakia** (No. 26), **Bulgaria** (No. 27) and **Greece** (No. 28) bottom out the ranking.

Table 21. Long-term Unemployment as Percentage of Total Unemployment (2018)

Rank	Country	Percentage in Total Unemployment
1	Sweden	18.6%
2	Denmark	21.1%
3	Finland	21.8%
4	Estonia	24.7%
5	Luxembourg	24.7%
6	United Kingdom	26.2%
7	Malta	26.7%
8	Poland	26.9%
9	Austria	28.9%
10	Czech Republic	30.5%
11	Cyprus	32.0%
12	Lithuania	32.3%
13	Ireland	36.3%
14	The Netherlands	36.6%
15	Hungary	38.6%
16	Croatia	40.2%
17	Germany	40.9%
18	France	41.6%
19	Latvia	41.6%
20	Spain	41.7%
21	Slovenia	43.0%
	EU Average	43.2%
22	Portugal	43.7%
23	Romania	44.1%
24	Belgium	48.7%
25	Italy	58.1%
26	Bulgaria	58.4%
27	Slovakia	61.8%
28	Greece	70.3%

Source: Eurostat (Lisbon Council calculations)

III.2. Training and Lifelong Learning

Table 22. Percentage of Active Workforce Engaged in Training and Lifelong Learning – Ranking

Rank	Country	Share of Active Workforce	Score
1	Finland	31.4%	100.00
2	Sweden	30.2%	96.44
3	Denmark	27.5%	88.42
4	The Netherlands	26.0%	83.96
5	Estonia	23.1%	75.35
6	Luxembourg	21.9%	71.78
7	France	21.5%	70.59
8	Austria	18.3%	61.09
9	United Kingdom	18.0%	60.20
10	Ireland	15.7%	53.37
11	Slovenia	14.8%	50.69
12	Malta	14.5%	49.80
	EU Average	13.8%	47.72
13	Spain	12.2%	42.97
14	Germany	11.9%	42.08
15	Portugal	11.3%	40.30
16	Belgium	10.0%	36.44
17	Czech Republic	9.7%	35.54
18	Lithuania	9.3%	34.36
19	Italy	8.6%	32.28
20	Latvia	8.0%	30.50
–	Poland	8.0%	30.50
22	Cyprus	7.5%	29.01
23	Hungary	6.9%	27.23
24	Greece	5.0%	21.58
25	Slovakia	4.6%	20.40
26	Croatia	3.3%	16.53
27	Bulgaria	2.5%	14.16
28	Romania	1.1%	10.00

Source: Eurostat

'Fully 42% of all active Europeans now work on contracts that are not full-time and open-ended.'

A person is born a *tabula rasa*, in the famous words of philosopher John Locke. A "blank page" which we all must fill, from the moment of birth, with experience and learning. This categorical formulation may or may not be true, but, in the knowledge economy, we are not just what we know. We are also what we learn. Gainful employment may well be the first rung on the social ladder; but education and training are its eternal handmaiden. And the dynamics of the knowledge economy mean that access to on-the-job training and learning is not just an advantage for some; it's a requirement for all.

To measure this, we looked at Eurostat's indicator for active workforce engaged in training and lifelong learning.

Among the key findings:

1. As in the overall findings, **Finland** (No. 1), **Sweden** (No. 2) and **Denmark** (No. 3) lead the ranking.
2. **France** (No. 7), **Austria** (No. 8) and the **United Kingdom** (No. 9) all do relatively well, coming in above the **EU Average**.
3. **Germany** (No. 14), despite one of Europe's most advanced apprenticeship schemes, still records relatively little training beyond the apprentice years. Its No. 14 finish is below **Spain** (No. 13) and the **EU Average**.
4. **Italy** (No. 19) fares badly among Europe's major economies.
5. **Croatia** (No. 26), **Bulgaria** (No. 27) and **Romania** (No. 28) bottom out the list.

'If you are high-skilled, globalisation has probably been a boon for you. But if you are under-skilled and expensive – like many European workers – and you're not able or ready to retrain to work with modern tools and methods, you are probably in big trouble.'

New Systems: Individual Accounts and the Role of the State

For nearly 100 years, social policy has followed one simple principle: the employer pays. To be sure, this commitment has yielded a dramatic improvement in working conditions – including limitations on legal working hours, guarantees that employers pay careful attention to employee health and the certainty of frequent paid holidays and often generous company-funded pensions.

But the system has become very expensive over the years, putting increasingly heavy burdens on employers. In the meantime, European employers have themselves come under pressure, as relatively inexpensive goods from the developing world entered the global supply chain and proved successful in the global economy. The result is an awkward clash in goals and expectations. Even now, the social debate in many European Union member states is not over whether employees should enjoy more benefits; it's about how to get companies to pay for more of them. But it's also about how much additional cost Europe-based companies can reasonably afford.

Lately, policymakers have begun addressing the problem with new, more modern tools – often granting employees more say in how their benefits are spent and filling in with stronger state-funded guarantees and more generous assistance. Individuals, in turn, are being offered to play a larger role in how those transitions are managed – and sometimes even given cash up front to do so.

A good example is SkillsFuture, a Singapore-based initiative. Introduced in 2014, this S$413.9 million [€259.9 million] programme puts S$500 [€310] in the hands of every citizen above the age of 25 – where she or he can use the money to invest in life-long learning and upskilling at their discretion. Accredited courses have been drawn up in consultation with employers, trade unions and professional bodies, and more than 10,000 are available, including Data Science Dojo bootcamp and Massive Open Online Courses (MOOCs) from Udemy, Coursera and edX. A special programme – SkillsFuture for the Digital Workplace – offers an 18-hour crash course on digital skills (25,000 people have enrolled). Another – SkillsFuture Mid-Career Enhanced Study – is available for Ministry of Education-approved diplomas and advanced degree courses (170,000 people have signed up). Overall, more than 465,000 Singaporeans from 12,000 enterprises have benefitted from the programme, according to a 2018 report.

The long-term impact of policies and programmes like these is unclear, but the direction of travel isn't. Going forward, the state will need to play a larger role in the granting and provisioning of access to education, social insurance, job counselling and other key knots in the social safety net, stepping in to provide the long-term relationship that nimble, fast-evolving companies cannot. And workers themselves will play a larger role in managing how their career (including training) unfolds and how they can best use the benefits they receive to answer their pressing social needs.

Source: SkillsFuture Singapore, *Celebrating a Nation of Lifelong Learners and Skills Masters: Annual Report 2017/2018* (Singapore: Ministry of Education, 2019)

III.3. Social Security Benefits and Transition Assistance

Table 23. Access to Social Security Benefits and Transitions Assistance for the Self-Employed and Workers Other Than Full-Time, Long-Term Employees (2017 data) – Ranking

EU is as the simple average of member states' scores

Rank	Country	Value	Statutory Access Values		Score
			Self-Employed	Workers Other Than Full-Time, Long-Term Employees	
1	Luxembourg	100.00	100.0	100.0	100.00
2	Sweden	99.29	95.5	100.0	97.78
3	Croatia	97.12	95.5	97.7	90.96
4	Finland	97.12	95.5	97.7	90.94
5	Slovakia	95.70	90.9	100.0	86.48
6	Slovenia	95.45	95.5	95.5	85.71
7	Germany	95.43	68.2	100.0	85.64
8	Denmark	95.00	95.0	95.0	84.29
9	Hungary	94.67	97.7	93.2	83.25
10	The Netherlands	94.64	81.8	97.7	83.15
11	Estonia	94.01	81.8	100.0	81.17
12	Cyprus	93.59	81.8	100.0	79.86
13	Portugal	93.33	84.1	97.7	79.04
14	Spain	92.10	95.5	90.9	75.16
15	Czech Republic	91.01	97.7	84.1	71.75
16	Romania	90.58	90.9	84.1	70.40
17	Ireland	90.31	68.2	100.0	69.53
18	Belgium	90.09	61.4	100.0	68.87
19	Latvia	89.70	86.4	93.2	67.64
	EU Average	89.68	85.3	91.6	67.56
20	Austria	87.17	100.0	84.1	59.68
21	Poland	84.55	95.5	77.3	51.44
22	Bulgaria	83.77	81.8	86.4	48.98
23	Malta	82.52	90.9	77.3	45.07
24	Lithuania	80.55	79.5	81.8	38.87
25	Italy	79.51	72.7	84.1	35.59
26	Greece	77.52	68.2	95.5	29.36
27	United Kingdom	74.88	61.4	81.8	21.06
28	France	71.36	75.0	70.5	10.00

Sources: European Commission, Eurostat (Lisbon Council calculations)

Reform offers countries a way of catching up. After all, it doesn't take a No. 1 finish on a key economic indicator to give governments a mandate to put in place measures that improve the economic security of the population or offer pathways back to work for those who need them. This is seen most clearly in a novel reform that some countries have undertaken: improving benefits not just for those in "standard employment" as labour economists call it, but also for the many participants in the knowledge economy who work independently or started their own business. Curiously, this indicator presents some of the most surprising outcomes. The pace with which countries are dealing with the multi-faceted nature of modern work – and the way many traditional jobs still have maximum benefits while some others have essentially none – varies widely from country to country. What's more, there are a range of instruments that countries have applied, ranging from the personal accounts option to an increase in state-supported benefits for the self-employed.

Among the key findings:

1. **Luxembourg** (No. 1) comes out on top with a very integrated social system, comprehensive for both employees and self-employed, that is also financially stable. Self-employment is closely linked to entrepreneurship. There are several government initiatives in place to promote self-employment as a way to facilitate the transition from unemployment to employment.
2. **Sweden** (No. 2) is another top performer, with a universal welfare programme that covers all labour market participants.
3. Perhaps the most worrisome is not the top of this list but the bottom – the countries that have done the least to make benefits available to working men and women whose job description falls short of "full-time." **France** (No. 28) has special need to worry; its finish at the bottom of the league table is a tribute to the long lag of labour market reforms in this leading European economy. France does get points for labour market accessibility; its No. 13 finish puts it above the **EU Average** (see Table 24 on page 54 for more). But it lags the EU on product market openness. And reforms are too recent to have a visible impact on the gaping divide between salaried professionals and freelancers or the massive advantages the French system gives to workers inside the system over those who tragically fall out.
4. **Italy** (No. 25), **Greece** (No. 26) and the **United Kingdom** (No. 27) also do badly.

'The massive economic upturn of the last six years has seen an unprecedented surge in job creation: more than 13.2 million people have joined the workforce in Europe since 2013.'

III.4. Access: Labour and Product Market Openness

Table 24. Access: Labour and Product Market Openness – Ranking

Rank	Country	Score
1	United Kingdom	88.40
2	Estonia	85.48
3	Denmark	83.92
4	Sweden	82.20
5	Latvia	78.50
6	Lithuania	76.02
7	Cyprus	74.16
8	Finland	68.26
9	Spain	67.62
10	Portugal	67.05
11	The Netherlands	66.06
12	Slovenia	65.62
13	France	65.07
14	Belgium	59.96
15	Italy	59.66
	EU Average	57.65
16	Malta	56.58
17	Ireland	55.71
18	Greece	55.02
19	Bulgaria	48.50
20	Hungary	45.65
21	Luxembourg	43.38
22	Romania	42.76
23	Czech Republic	40.25
–	Poland	40.25
25	Austria	36.75
26	Germany	33.34
27	Slovakia	26.10
28	Croatia	15.99

Sources: European Commission, OECD, World Bank (Lisbon Council calculations)

Social systems aren't only made up of protection and benefit schemes. Indeed, their success or failure often lies just as much in the fairness they deliver and the opportunity they provide. If the labour market is closed, how can traditional outsiders ever get a job? If the incentive structures are geared against self-employment and entrepreneurship, why would anyone want to be self-employed or an entrepreneur? And most famously, if licensed professions and product markets are overly protected, how can an outsider with a new idea or innovative service ever break into the arenas where innovation really counts?

These are difficult questions to ask – and even more difficult ones to measure. But one of the key arguments of this policy brief is that – despite very good intentions – the European social model has sometimes delivered too little in the area of openness, opportunity and non-discrimination. This, in Europe, may in many ways be a legacy of the feudal era – a time when nobles were nobles and the rest of us were expected just to know where we belong. But the modern economy has little time or respect for that. If, as we have argued, success now depends on individual ability and the capacity to learn, then surely society has an obligation to help us learn as much as we can so we can someday pay that society back in kind. But how can those obligations realistically be paid if the economy remains subtly rigged against the newcomers, the innovative, part-time workers, the artisan class, immigrants and more?

Given the difficulty of measuring this, we devised **Access: Labour and Product Market Openness** indicator, a three-part measure made up of three sub-indicators: 1) the relative size of licensed professions in the labour market, 2) the ease of becoming an entrepreneur, and 3) product-market openness. We believe success in the modern era will by definition entail important reforms in these three areas. To be sure, professional licensing and safety standards have an important role to play and a high percentage of workers in licensed professions is not *per se* a sign of an excessively closed labour market.[44] But the challenge comes in making sure those standards are protecting the population – and not just incumbent workers or interest groups that have grown powerful beyond society's reach. Getting the balance right is an open debate which will surely occupy society in the months and years to come. But the debate might well begin – and benefit from – an effort to measure the starting point and to ask the central questions: are our professions open enough? Do the standards we maintain exist to protect the public? Or have the standards themselves come to serve as little more than a wall intended to keep the public out?

The main findings:

1. The **United Kingdom** (No. 1), **Estonia** (No. 2), **Denmark** (No. 3) and **Sweden** (No. 4) top the ranking. These relatively open economies have labour markets that are relatively open as well. Denmark seems to have the most accessible labour market with only 14% of workers in restricted professions (see Table 25).
2. Pre-Brexit **United Kingdom** comes in at No. 1 on product-market openness, followed by **Denmark** (No. 2) and **Spain** (No. 3). See Table 27.
3. **Estonia** has the second easiest environment for becoming an entrepreneur (behind **Ireland** at No. 1). See Table 26.
4. **Germany** (No. 26) finishes near the bottom. Product markets are reasonably open, with Germany weighing in at No. 4 in this area, above the **EU Average**. But Europe's strongest economy has one of the most closed labour markets – Germany is dead last on opening up licensed professions to newcomers – with almost one-third of the workforce in a protected category.

44 Given the not-quite-precise nature of this proxy, we chose to look at three indicators – the relative size of licensed professions, the ease of becoming an entrepreneur and product-market openness – believing that success in all three would be a strong indicator of which countries are the most open to entrepreneurs and new entrants, including the professions.

Table 25. Access to Licensed Professions (2015 data)

Rank	Country	Share of Workers in Licensed Professions in Total Employment	Score
1	Denmark	14.0%	100.0
2	Latvia	15.1%	94.8
3	Sweden	15.3%	93.8
4	France	16.0%	90.5
5	Portugal	16.5%	88.1
6	Belgium	16.6%	87.6
–	Spain	16.6%	87.6
8	Finland	16.7%	87.1
9	Malta	17.2%	84.8
10	Lithuania	17.5%	83.3
11	Cyprus	18.5%	78.6
12	Estonia	19.2%	75.2
13	Italy	19.3%	74.8
14	United Kingdom	19.5%	73.8
15	Slovenia	20.2%	70.5
16	Poland	20.5%	69.0
	EU Average	20.8%	67.7
17	Luxembourg	21.0%	66.7
18	Bulgaria	21.3%	65.2
19	Romania	21.7%	63.3
20	Greece	21.8%	62.9
21	Austria	22.2%	61.0
22	Czech Republic	24.4%	50.5
23	The Netherlands	24.6%	49.5
24	Hungary	26.2%	41.9
25	Slovakia	26.8%	39.0
26	Ireland	29.3%	27.1
27	Croatia	31.2%	18.1
28	Germany	32.9%	10.0

Source: European Commission

'Knowledge work will be the way of the future, even as manufacturing remains very important and services themselves come to be an increasingly important part of the process we used to think of uniquely as "manufacturing."'

Table 26. Ease of Becoming an Entrepreneur (2019 data)

Rank	Country	Value	Score
1	Ireland	95.9	100.0
2	Estonia	95.3	95.7
3	Sweden	94.7	92.1
4	United Kingdom	94.6	91.4
5	The Netherlands	94.3	89.6
6	Latvia	94.1	88.5
7	France	93.3	82.9
8	Lithuania	93.2	82.3
9	Belgium	93.0	81.3
10	Slovenia	92.9	80.4
11	Denmark	92.5	78.0
12	Finland	92.4	77.5
13	Greece	92.4	77.2
14	Cyprus	91.2	69.7
15	Portugal	90.9	67.5
16	Italy	89.5	58.5
	EU Average	89.5	58.4
17	Luxembourg	88.7	53.5
18	Hungary	87.9	48.0
19	Spain	86.9	41.7
20	Bulgaria	85.4	31.8
21	Malta	84.9	28.4
22	Romania	83.9	22.2
23	Germany	83.6	20.1
24	Czech Republic	83.6	20.0
25	Austria	83.2	17.7
26	Poland	82.9	15.4
27	Croatia	82.6	13.9
28	Slovakia	82.0	10.0

Source: World Bank

Table 27. Product Market Openness

EU is the simple average of the available scores for the member states

Rank	Country	Value	Score
1	United Kingdom	0.80	100.00
2	Denmark	1.07	73.71
3	Spain	1.07	73.54
4	Germany	1.11	69.91
5	Lithuania	1.18	62.42
6	Sweden	1.20	60.69
7	The Netherlands	1.22	59.03
8	Latvia	1.29	52.26
9	Czech Republic	1.31	50.30
10	Hungary	1.34	47.02
	EU Average	1.34	46.88
11	Slovenia	1.35	46.01
12	Italy	1.35	45.75
13	Portugal	1.36	45.59
14	Finland	1.41	40.19
15	Ireland	1.41	39.98
16	Poland	1.45	36.31
17	Austria	1.50	31.60
18	Slovakia	1.52	29.25
19	Greece	1.57	25.01
20	France	1.60	21.83
21	Belgium	1.71	10.91
22	Luxembourg	1.72	10.00
	Bulgaria	n/a	n/a
	Croatia	n/a	n/a
	Cyprus	n/a	n/a
	Estonia	n/a	n/a
	Malta	n/a	n/a
	Romania	n/a	n/a

Source: OECD

'It is time we find a better way of referring to this work – and legislating for it – than dismissing it as "non-standard."'

Lifelong Learning: If Training is the Answer, What is the Question?

Education and training are often touted as easy-to-reach low-hanging fruit for closing the skills gap in Europe. What is often overlooked is that most training goes to people who need it least. Many European workers understand – correctly – that perpetual learning is the way ahead, a fact which makes it much more likely to find high-skilled workers among those being "trained" than an unemployed or digitally unskilled worker being lifted up. This hard-to-reverse reality has large implications for skills and skills-acquisition policy, going forward.

Taken together, EU countries have an average 13.8% of active workers in training – see the table on page 60 for a country by country breakdown, ranked from highest to lowest. But in the typical EU country, 19.5% of high-skilled workers will be found in training; but only 9.6% of the low-skilled. Twelve countries fare slightly better than the **EU Average**. **Finland** and **Sweden** are true stand outs. Each boasts more than 30% of their active workers in training.

Some countries fight this trend with active social policy, and there are pockets of success – as the second table in this box shows. **Austria, Belgium, Cyprus, Denmark, Estonia, Germany, Ireland, Luxembourg, The Netherlands, Poland, Portugal, Romania, Spain** and **Sweden** all manage to train more unemployed workers than employed ones – but Sweden stands out again. More than half of the unemployed in Sweden are in some form of training, an achievement no other European country comes close to matching. It sets a new benchmark on what is possible to achieve in an advanced, industrialised economy.

Social policy is tough work. An analysis of how access to training could be broadened and democratised is beyond the scope of this policy brief. But it should not be beyond the scope of today's policymakers. Put simply, Europe needs to find a better way of lifting the low-skilled out of the traps they are in. Convening conferences where participants agree that "skills" is something Europe needs to tackle urgently is go-home-and-feel-good policymaking of the cheapest sort. Skills and skills acquisition urgently needs to become a hard-budget policy area with real money, real programmes and a skilled civil service behind it. It also needs a concerted outreach to ensure that – if we are going to base our social policy on the premise that no boat will be left behind – we reach out to the unemployed and unskilled and offer them actionable and realistic pathways ahead. Those pathways themselves must be robust and effective – an outcome that will only come if progress is monitored closely and programmes are evaluated on performance as sharply as the indicators presented in this policy brief do.

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Participation in Education and Training by Education Level (2018)

Rank	Country	Active Workforce	High Skilled	Medium Skilled	Low Skilled
1	Finland	31.4%	33.9%	26.7%	22.3%
2	Sweden	30.2%	36.7%	26.2%	27.4%
3	Denmark	27.5%	29.0%	25.2%	26.3%
4	The Netherlands	26.0%	26.1%	26.2%	16.1%
5	Estonia	23.1%	26.8%	18.4%	17.5%
6	Luxembourg	21.9%	26.3%	20.1%	14.7%
7	France	21.5%	29.7%	21.5%	8.7%
8	Austria	18.3%	26.8%	15.1%	12.0%
9	United Kingdom	18.0%	21.1%	19.5%	7.5%
10	Ireland	15.7%	18.7%	19.7%	8.8%
11	Slovenia	14.8%	20.1%	14.1%	12.8%
12	Malta	14.5%	23.6%	22.0%	4.1%
	EU Average	13.8%	19.5%	15.0%	9.6%
13	Spain	12.2%	18.6%	23.7%	6.1%
14	Germany	11.9%	12.0%	11.8%	18.6%
15	Portugal	11.3%	22.2%	22.9%	6.5%
16	Belgium	10.0%	15.4%	15.1%	10.3%
17	Czech Republic	9.7%	17.6%	10.1%	23.8%
18	Lithuania	9.3%	11.5%	10.5%	27.8%
19	Italy	8.6%	19.3%	14.6%	5.5%
20	Latvia	8.0%	10.6%	8.4%	15.9%
21	Poland	8.0%	13.5%	7.2%	18.6%
22	Cyprus	7.5%	11.5%	12.0%	4.2%
23	Hungary	6.9%	10.8%	9.8%	9.7%
24	Greece	5.0%	7.4%	15.3%	2.8%
25	Slovakia	4.6%	11.1%	6.5%	18.8%
26	Croatia	3.3%	7.4%	8.6%	6.2%
27	Bulgaria	2.5%	4.5%	8.2%	6.1%
28	Romania	1.1%	3.3%	6.7%	5.6%

Source: Eurostat

“...

…”

Participation in Education and Training by Labour-Market Status (2018)

Rank	Country	Active Workforce	Employed	Unemployed	Inactive
1	Finland	31.4%	31.5%	31.0%	22.7%
2	Sweden	30.2%	28.9%	50.5%	31.0%
3	Denmark	27.5%	27.2%	34.6%	25.0%
4	The Netherlands	26.0%	25.9%	28.8%	16.7%
5	Estonia	23.1%	23.0%	24.5%	16.4%
6	Luxembourg	21.9%	21.3%	32.3%	20.5%
7	France	21.5%	22.0%	16.4%	20.7%
8	Austria	18.3%	18.2%	20.8%	17.4%
9	United Kingdom	18.0%	18.0%	17.8%	14.2%
10	Ireland	15.7%	15.4%	20.8%	19.7%
11	Slovenia	14.8%	14.9%	14.4%	17.2%
12	Malta	14.5%	14.5%	13.0%	12.0%
	EU Average	13.8%	13.8%	13.6%	17.1%
13	Spain	12.2%	11.5%	16.1%	18.9%
14	Germany	11.9%	11.9%	12.1%	15.7%
15	Portugal	11.3%	11.0%	16.2%	20.3%
16	Belgium	10.0%	9.7%	15.1%	20.6%
17	Czech Republic	9.7%	9.8%	7.2%	21.7%
18	Lithuania	9.3%	9.6%	5.5%	20.2%
19	Italy	8.6%	8.9%	5.8%	15.9%
20	Latvia	8.0%	8.1%	7.5%	15.1%
21	Poland	8.0%	8.0%	8.4%	13.9%
22	Cyprus	7.5%	7.5%	8.4%	16.4%
23	Hungary	6.9%	7.1%	3.7%	15.6%
24	Greece	5.0%	5.1%	4.8%	16.4%
25	Slovakia	4.6%	4.8%	1.9%	17.6%
26	Croatia	3.3%	3.4%	2.4%	14.8%
27	Bulgaria	2.5%	2.5%	n/a	14.6%
28	Romania	1.1%	1.0%	2.6%	14.1%

Source: Eurostat

‘Politics and policymaking in the modern age are in many ways a matter of preparing for and managing change.’

Select Country Profiles

Europe is a large, heterogeneous economic area. Social policy, for the most part, is devised and administered nationally, in the European Union's 28 member states. For that reason, we wanted to look deeply at the national experience of countries, understanding better how well some countries are faring in some areas and how much better they might be able to do in others. We wanted to draw on the wealth of concrete experience in Europe, too, highlighting best practice in successful reform countries and using Europe as a laboratory where every country within it – and even those outside of it – could learn from one another.

Future editions of this study will include 27 comprehensive country reviews – showing how each of the European Union's member states ranks on each of the 16 Future of Work Index indicators. For this edition, we dive deep into eight countries.

Select Country Profiles

Belgium

Belgium is No. 17. This €405 billion economy scores reasonably well on digital industry and skills (No. 8) but is lagging behind on transition effectiveness (No. 19). However, Belgium's performance on workforce inclusion is catastrophic – No. 23. The country needs to offer more opportunity and inclusion to traditionally marginalised people. Policy is still too rigid, offering too few benefits and opportunities to traditionally excluded workers.

Rank: **17**
Score: **50.67**

		Rank	Score	Figures
I.	**MODERN WORKFORCE**	**23**	**36.23**	
I.1.	Women Employment Rate	21	54.71	52.62%
I.2.	Immigrant Population Employment Rate (Foreign-Born Citizens)	24	22.98	53.67%
I.3.	Youth Employment Rate (age 15-29)	22	39.42	43.38%
I.4.	Active Older Adults Employment Rate (age 55-74)	23	27.80	30.33%
II.	**NEW JOBS AND NEW TOOLS**	**8**	**63.58**	
II.1.	Digital and Creative-Economy Skills	8	74.17	
II.1.1.	Percentage of Population (16-74 Years Old) Who Can Use the Internet and Do So At Least Once a Week	8	76.77	87.00%
II.1.2.	Problem Solving in Technology-Rich Environment (Percentage of Adult Population Scoring Above Proficiency Level 2)	7	71.57	34.51%
II.2.	Digital Industry	7	72.98	
II.2.1.	Adoption of Digital Technology (Digitisation and e-Commerce) by Businesses	5	86.10	54.56%
II.2.2.	Share of the Data Economy in Gross Domestic Product	13	59.85	1.99%
II.3.	Investment in Intangible Assets	9	43.61	
II.3.1.	Average Investment in Intangibles as a Percentage of Gross Fixed Capital Formation (GFCF)	9	33.89	18.18%
II.3.2.	Average Public Investment in Intangibles as a Percentage of Gross Fixed Capital Formation (GFCF)	7	53.33	5.80%
III.	**TRANSITION EFFECTIVENESS**	**19**	**52.20**	
III.1.	Speed of Finding a New Job	21	43.56	23.21%
III.2.	Percentage of Active Workforce Engaged in Training and Lifelong Learning	16	36.44	10.00%
III.3.	Access to Social Security Benefits and Transition Assistance for the Self-Employed and Workers Other Than Full-Time, Long-Term Employees	18	68.87	90.09
III.4.	Access: Labour and Product Market Openness	14	59.96	
III.4.1.	Access to Licensed Professions	6	87.62	16.60%
III.4.2.	Ease of Becoming an Entrepreneur	9	81.34	93.03
III.4.3.	Product Market Openness	21	10.91	1.71

Notes: OECD Programme for International Assessment of Adult Competencies (PIAAC) data is available for only 16 EU member states. Public investments in intangible assets are available for only 22 EU member states.

'The workforce must be mobilised and integrated; economies that exclude workers on the basis of age, nationality or sex are doing themselves no favours. To the contrary, a modern knowledge economy can and does rely on the participation of everyone.'

Belgium scores reasonably well on education and skills, where its No. 8 spot is slightly above the EU Average. Most Belgian residents and citizens (87%) can use the Internet. And business itself has gone fairly digital (54.56%), enough to earn a No. 5 spot on this sub-indicator. But low employment rates for women (52.62%), immigrants (53.67%), young people (43.48%) and especially older adults (30.33%) point to major issues with social inclusion and drag the country's overall performance down. Access to education and training is relatively low, too, with only 10% of the workforce participating in at least some training, a No. 16 finish.

The labour market is too sclerotic. Belgium comes out No. 21 on speed of finding a new job, with an average wait of 18.7 months. Long-term unemployment – which is not measured in this index – is 48.7%, up 4.5% since 2013 (one of Europe's worst levels, only ahead of Bulgaria, Greece, Italy and Slovakia). The social protection system is well developed and ensures access to social benefits for all workers, including part-time, temporary and the self-employed. However, the self-employed face some limits; they are excluded, for example, from access to state-sponsored unemployment and occupational-injury assistance. Also, workers are not entitled to benefits covering self-employed work that is not part of their principal contract. Belgium has slightly more favourable conditions for becoming an entrepreneur (No. 9) and a relatively low share of workers in restricted professions (No. 6). However, product markets (No. 21) – even in the age of the European single market – remain relatively inaccessible according to OECD data.

IN FOCUS

Supplementary Pension Scheme for the Self-Employed

Many self-employed people opt for non-compulsory private insurance schemes in Belgium. These schemes complement public sickness benefits and old-age pensions (the first pension pillar) with additional payments. For instance, a guaranteed income insurance provides against the loss of income in case of sickness and invalidity. Furthermore, a voluntary supplementary pension scheme for the self-employed allows workers to save for a more generous pension than they would have had otherwise. Some 46% of the self-employed in Belgium have opted into one of these non-compulsory private insurance schemes.

Source: Frederic De Wispelaere and Jozef Pacolet, *ESPN Thematic Report on Access to Social Protection of People Working as Self-Employed or on Non-Standard Contracts: Belgium* (Brussels: European Commission and ESPN, 2017)

Estonia

Estonia is No. 6. This €25.7 billion economy ranks No. 2 on modern workforce and No. 4 on transition effectiveness. But its ranking on digital economy (No. 13) – with a business adoption rate of only 37% – is low despite the country having one of the most digital governments in the world. Investment in intangible assets – the area where most digital business is conducted – is among Europe's lowest (No. 24).

Rank: **6**
Score: **70.73**

		Rank	Score	Figures
I.	**MODERN WORKFORCE**	**2**	**78.50**	
I.1.	Women Employment Rate	2	92.78	64.14%
I.2.	Immigrant Population Employment Rate (Foreign-Born Citizens)	14	49.04	62.43%
I.3.	Youth Employment Rate (age 15-29)	8	72.19	58.27%
I.4.	Active Older Adults Employment Rate (age 55-74)	1	100.00	50.61%
II.	**NEW JOBS AND NEW TOOLS**	**13**	**50.72**	
II.1.	Digital and Creative-Economy Skills	14	63.73	
II.1.1.	Percentage of Population (16-74 Years Old) Who Can Use the Internet and Do So At Least Once a Week	9	76.77	87.00%
II.1.2.	Problem Solving in Technology-Rich Environment (Percentage of Adult Population Scoring Above Proficiency Level 2)	10	50.69	27.56%
II.2.	Digital Industry	8	71.53	
II.2.1.	Adoption of Digital Technology (Digitisation and e-Commerce) by Businesses	19	49.92	37.06%
II.2.2.	Share of the Data Economy in Gross Domestic Product	2	93.13	2.77%
II.3.	Investment in Intangible Assets	24	16.89	
II.3.1.	Average Investment in Intangibles as a Percentage of Gross Fixed Capital Formation (GFCF)	21	16.89	9.95%
II.3.2.	Average Public Investment in Intangibles as a Percentage of Gross Fixed Capital Formation (GFCF)		n/a	n/a
III.	**TRANSITION EFFECTIVENESS**	**4**	**82.96**	
III.1.	Speed of Finding a New Job	2	89.85	42.18%
III.2.	Percentage of Active Workforce Engaged in Training and Lifelong Learning	5	75.35	23.10%
III.3.	Access to Social Security Benefits and Transition Assistance for the Self-Employed and Workers Other Than Full-Time, Long-Term Employees	11	81.17	94.01
III.4.	Access: Labour and Product Market Openness	2	85.48	
III.4.1.	Access to Licensed Professions	12	75.24	19.20%
III.4.2.	Ease of Becoming an Entrepreneur	2	95.72	95.25
III.4.3.	Product Market Openness		n/a	n/a

Notes: OECD Programme for International Assessment of Adult Competencies (PIAAC) data is available for only 16 EU member states. Public investments in intangible assets are available for only 22 EU member states.

'Many of the advances for which Estonia is world famous have taken place in the public sector. The private sector remains small and underdeveloped. Seen from this perspective, the country is still essentially in the "catch-up" phase of other post-Soviet economies.'

Estonia is No. 1 in Europe on mobilising and offering opportunity to older workers (aged 55-74), more than half of whom remain active. Digital skills are good – with 87% of the population able to use the Internet. But the country lags a bit when benchmarked against Europe's league leaders: Denmark, Finland, Germany, Luxembourg, The Netherlands, Sweden and the United Kingdom. Estonia comes in the middle of the pack – No. 10 – on advanced problem-solving skills.

The socio-economic environment is dynamic and well-adjusted to help people face labour market challenges. 42% of unemployed find a new job in less than three months and long-term unemployment accounts for just 25% of total unemployment, down 21% since 2013. In general, the social protection system offers good access to benefits for flexible workers, but the coverage and adequacy of benefits varies depending on the status. It is very easy to become an entrepreneur – with Estonia taking the No. 2 spot on this indicator. But the share of workers in restricted professions is still relatively high (No. 12).

IN FOCUS

Improving Tax Collection and Simplifying Reporting

The Estonian Tax and Custom Board (ETCB) has been working with Uber Technologies Inc. in Estonia to pilot a collaborative project which brings greater transparency to revenue collection and greater simplicity for tax payers. Under the system, Uber reports all financial transactions between customers and drivers directly to tax authorities. The information is also shared with the customers and drivers. And, eventually, the tax authorities can use the information to "pre-fill" a form for tax payers. The pilot was successful and the ETCB are developing other e-services for online platforms and their customers to facilitate the declaration of income.

Source: Matthew Taylor, Greg Marsh, Diane Nicol and Paul Broadbent, *Good Work: The Taylor Review of Modern Working Practices* (London: HM Government, 2018)

Finland

Finland is No. 4. This €232 billion economy's workforce is a particular source of strength; only Sweden does better on workers who can "solve problems" in a technology rich environment. Industry is highly digitised (No. 2). But workforce inclusion is an issue. The country scores noticeably lower on broad measures of workforce participation rates than its Nordic colleagues, with particular weakness on immigrant inclusion (No. 20).

Rank: **4**
Score: **74.58**

		Rank	Score	Figures
I.	**MODERN WORKFORCE**	**15**	**58.58**	
I.1.	Women Employment Rate	10	77.89	59.64%
I.2.	Immigrant Population Employment Rate (Foreign-Born Citizens)	20	31.46	56.52%
I.3.	Youth Employment Rate (age 15-29)	9	66.04	55.47%
I.4.	Active Older Adults Employment Rate (age 55-74)	12	58.95	39.08%
II.	**NEW JOBS AND NEW TOOLS**	**5**	**75.35**	
II.1.	Digital and Creative-Economy Skills	3	93.46	
II.1.1.	Percentage of Population (16-74 Years Old) Who Can Use the Internet and Do So At Least Once a Week	4	94.19	93.00%
II.1.2.	Problem Solving in Technology-Rich Environment (Percentage of Adult Population Scoring Above Proficiency Level 2)	2	92.74	41.56%
II.2.	Digital Industry	2	84.43	
II.2.1.	Adoption of Digital Technology (Digitisation and e-Commerce) by Businesses	2	99.16	60.88%
II.2.2.	Share of the Data Economy in Gross Domestic Product	7	69.70	2.22%
II.3.	Investment in Intangible Assets	6	48.17	
II.3.1.	Average Investment in Intangibles as a Percentage of Gross Fixed Capital Formation (GFCF)	10	33.82	18.15%
II.3.2.	Average Public Investment in Intangibles as a Percentage of Gross Fixed Capital Formation (GFCF)	3	62.52	6.81%
III.	**TRANSITION EFFECTIVENESS**	**2**	**89.80**	
III.1.	Speed of Finding a New Job	1	100.00	46.33%
III.2.	Percentage of Active Workforce Engaged in Training and Lifelong Learning	1	100.00	31.40%
III.3.	Access to Social Security Benefits and Transition Assistance for the Self-Employed and Workers Other Than Full-Time, Long-Term Employees	4	90.94	97.12
III.4.	Access: Labour and Product Market Openness	8	68.26	
III.4.1.	Access to Licensed Professions	8	87.14	16.70%
III.4.2.	Ease of Becoming an Entrepreneur	12	77.45	92.43
III.4.3.	Product Market Openness	14	40.19	1.41

Notes: OECD Programme for International Assessment of Adult Competencies (PIAAC) data is available for only 16 EU member states. Public investments in intangible assets are available for only 22 EU member states.

'Our contention is that – well beyond the effects of automation on the workforce – old-fashioned social change has driven more disruption than any computer will ever create.'

Overall, Finland does very well, scoring in the heady top of the league tables with strong performances on skilled labour, digitisation of industry, transition effectiveness, access to training and the speed of finding a job. But workforce inclusion is the Achilles heel. Youth employment at 55.47% gives a disappointing No. 9 position in European league tables; older adults account for 31.5% of the population, but only 39% are active (No. 12). And only 56.52% of foreign-born citizens – who make up 3.5% of the population – are active (No. 20).

The population has high digital and creative skills (No. 3) and the active population has the highest engagement in reskilling and upskilling activities across Europe (No. 1); 31.4% of the active workforce are engaged in training and reskilling. Digital business is another strength; 61% of businesses have already adopted digital technologies (No. 2), up 16% since 2014. The data economy is growing, too, contributing €5 billion to Finnish GDP in 2017, an 18.5% increase on the previous year.

The country's socio-economic environment is good, too. 46% of the unemployed find a new job in less than three months – Europe's best performance (No. 1). Long-term unemployment accounts for only 22% of total unemployment, up one percent since 2013. Finland has an open labour market with a relatively low share of workers in restricted profession (16.7%). However, becoming an entrepreneur is not always easy. It still takes too much time to finalise the process, giving Finland a middle-of-the-pack finish at No. 12.

IN FOCUS

Family Benefits for Part-Time Workers

Finland provides home care allowance for parents that have part-time employment. What's more, care allowance can be paid to a parent caring for a child under three years of age and who works no more than 30 hours per week.

Source: European Commission, *Commission Staff Working Document: Impact Assessment, Accompanying the Document; Proposal for a Council Recommendation on Access to Social Protection for Workers and the Self-Employed* (Brussels: European Commission, 2018)

Greece

Greece is No. 28. Workplace inclusion is a particularly problem area for this €184.7 billion economy with the lowest scores in Europe in all non-male employment categories except immigration, where it is No. 26. Transition effectiveness – which measures the ability of policy to prepare the population for modern challenges – is another weakness. The country performs slightly better (No. 26) on the digital economy.

Rank: **28**
Score: **21.31**

		Rank	Score	Figures
I.	**MODERN WORKFORCE**	**28**	**10.76**	
I.1.	Women Employment Rate	28	10.00	39.10%
I.2.	Immigrant Population Employment Rate (Foreign-Born Citizens)	26	13.06	50.34%
I.3.	Youth Employment Rate (age 15-29)	28	10.00	30.02%
I.4.	Active Older Adults Employment Rate (age 55-74)	28	10.00	25.33%
II.	**NEW JOBS AND NEW TOOLS**	**26**	**24.19**	
II.1.	Digital and Creative-Economy Skills	27	18.71	
II.1.1.	Percentage of Population (16-74 Years Old) Who Can Use the Internet and Do So At Least Once a Week	26	27.42	70.00%
II.1.2.	Problem Solving in Technology-Rich Environment (Percentage of Adult Population Scoring Above Proficiency Level 2)	16	10.00	14.00%
II.2.	Digital Industry	27	19.49	
II.2.1.	Adoption of Digital Technology (Digitisation and e-Commerce) by Businesses	24	28.99	26.94%
II.2.2.	Share of the Data Economy in Gross Domestic Product	28	10.00	0.82%
II.3.	Investment in Intangible Assets	13	34.36	
II.3.1.	Average Investment in Intangibles as a Percentage of Gross Fixed Capital Formation (GFCF)	17	24.02	13.40%
II.3.2.	Average Public Investment in Intangibles as a Percentage of Gross Fixed Capital Formation (GFCF)	12	44.70	4.86%
III.	**TRANSITION EFFECTIVENESS**	**28**	**28.99**	
III.1.	Speed of Finding a New Job	28	10.00	9.46%
III.2.	Percentage of Active Workforce Engaged in Training and Lifelong Learning	24	21.58	5.00%
III.3.	Access to Social Security Benefits and Transition Assistance for the Self-Employed and Workers Other Than Full-Time, Long-Term Employees	26	29.36	77.52
III.4.	Access: Labour and Product Market Openness	18	55.02	
III.4.1.	Access to Licensed Professions	20	62.86	21.80%
III.4.2.	Ease of Becoming an Entrepreneur	13	77.19	92.39
III.4.3.	Product Market Openness	19	25.01	1.57

Notes: OECD Programme for International Assessment of Adult Competencies (PIAAC) data is available for only 16 EU member states. Public investments in intangible assets are available for only 22 EU member states.

'Convening conferences where participants agree that "skills" is something Europe needs to tackle urgently is go-home-and-feel-good policymaking of the cheapest sort.'

After being severely hit by the economic crisis, Greece is far from a full recovery. Older workers make up 32% of the Greek population, accounting for more than 2.5 million persons. But only a quarter of them are in active employment. Foreign-born citizens seem to have slightly better labour market engagement (No. 26), but they only account for 5% of the population.

The population has very low digital and creative skills (No. 27) and the active workforce has low participation rates in reskilling and upskilling activities (No. 24). Businesses are slow in adopting digital technology (No. 24), an increase of only 4.7% in 2014-2018 when the rest of the world was rushing to adopt. Greece has a slightly better performance on investments in the intangible economy (No. 13).

The country is ill-prepared for future challenges. Only one out of 10 unemployed finds a new job in less than three months (No. 28) and long-term unemployment makes up 70% of total unemployment, up 6% since 2013. Greece has a highly fragmented social protection system that provides access to benefits for temporary and part-time workers but much lower access for the self-employed. In 2017, a new scheme that brings together all the separate schemes was introduced aiming at addressing the current gaps. Greece has a high share of workers in restricted professions and the product market is more restrictive than the EU Average. On the other hand, the ease of becoming an entrepreneur is close to the EU Average (No. 13).

IN FOCUS

Extending Social Protection for the Self-Employed

Greece has implemented paradigmatic reform in order to extend social security for the self-employed. The gradual implementation, since May 2016, of the recent reform is expected, among other things, to ease further the remaining gaps and differences in the provision of social protection benefits between the self-employed and employees, as well as among the different types of self-employed and those in other forms of employment. In particular, a new pension system (introduced in 2017) brings together several social insurance funds into one unified pension fund. The establishment of this fund implies the application of uniform rules for contributions and benefits to all salaried workers and the self-employed. Additionally, the income assessment base was calculated until the end of 2016 as a percentage of so-called "imputed income," which is a fictitious value (i.e., not the actual income). From 01 January 2017, contributions from the self-employed have been calculated as a percentage of their net taxable income of the previous year, to be paid in 12 monthly instalments. Importantly, unemployment insurance has been extended to the self-employed, too. The conditions of retirement are the same for employees and the self-employed since 2015.

Source: European Commission, *Commission Staff Working Document: Impact Assessment, Accompanying the Document; Proposal for a Council Recommendation on Access to Social Protection for Workers and the Self-Employed (Brussels: European* Commission, 2018)

Italy

Italy is No. 24. Workforce inclusion in this €1.7 trillion economy is a particular weakness; its female participation rate (42.7%) and youth employment rate (30.8%) are Europe's second lowest (No. 27) in both categories. The speed of finding a new job is another problem area; Italy is No. 25. On overall transition effectiveness, it is No. 26. With only 36.82% of industry fully digitised, Italy ranks low (No. 20) on this indicator as well.

Rank: **24**
Score: **35.79**

		Rank	Score	Figures
I.	**MODERN WORKFORCE**	**26**	**28.69**	
I.1.	Women Employment Rate	27	21.89	42.69%
I.2.	Immigrant Population Employment Rate (Foreign-Born Citizens)	18	42.73	60.30%
I.3.	Youth Employment Rate (age 15-29)	27	11.72	30.80%
I.4.	Active Older Adults Employment Rate (age 55-74)	17	38.44	33.32%
II.	**NEW JOBS AND NEW TOOLS**	**17**	**41.79**	
II.1.	Digital and Creative-Economy Skills	24	33.23	
II.1.1.	Percentage of Population (16-74 Years Old) Who Can Use the Internet and Do So At Least Once a Week	24	33.23	72.00%
II.1.2.	Problem Solving in Technology-Rich Environment (Percentage of Adult Population Scoring Above Proficiency Level 2)		n/a	n/a
II.2.	Digital Industry	17	48.82	
II.2.1.	Adoption of Digital Technology (Digitisation and e-Commerce) by Businesses	20	49.42	36.82%
II.2.2.	Share of the Data Economy in Gross Domestic Product	15	48.23	1.72%
II.3.	Investment in Intangible Assets	10	43.31	
II.3.1.	Average Investment in Intangibles as a Percentage of Gross Fixed Capital Formation (GFCF)	11	32.53	17.53%
II.3.2.	Average Public Investment in Intangibles as a Percentage of Gross Fixed Capital Formation (GFCF)	6	54.09	5.89%
III.	**TRANSITION EFFECTIVENESS**	**26**	**36.90**	
III.1.	Speed of Finding a New Job	25	20.08	13.59%
III.2.	Percentage of Active Workforce Engaged in Training and Lifelong Learning	19	32.28	8.60%
III.3.	Access to Social Security Benefits and Transition Assistance for the Self-Employed and Workers Other Than Full-Time, Long-Term Employees	25	35.59	79.51
III.4.	Access: Labour and Product Market Openness	15	59.66	
III.4.1.	Access to Licensed Professions	13	74.76	19.30%
III.4.2.	Ease of Becoming an Entrepreneur	16	58.47	89.50
III.4.3.	Product Market Openness	12	45.75	1.35

Notes: OECD Programme for International Assessment of Adult Competencies (PIAAC) data is available for only 16 EU member states. Public investments in intangible assets are available for only 22 EU member states.

'With an annual gross domestic product of €1.7 trillion and a population of 61 million, Italy will have to do better if Europe is to do better.'

Italy's economic performance is strongly influenced by the poor integration of its labour force. The low performance (No. 27) on integrating women in the labour market points to real policy gaps in a country where women account for more than 22 million (50.5% of the population). With 32.5% of the population over 55 years old (14,670,400 people) and only one third still in active employment, Italy is No. 17, far below potential.

The population has low digital skills (No. 24) and workforce engagement in reskilling and upskilling activities remains low (No. 19). With only 36.8% of businesses using digital technologies, Italy remains a low performer (No. 20) on this indicator.

The socio-economic environment could do more to improve the challenges of the labour market. Only one out of eight unemployed finds a new job in less than three months and long-term unemployment make up 58% of total unemployment, up 2.4% since 2013. Italy is No. 15 on labour market accessibility; 19.3% of workers are in restricted professions. Several reforms were taken to encourage entrepreneurial activity, however becoming an entrepreneur is not that easy.

IN FOCUS

Liberalising Regulated Professions

The reforms overseen by Economy Minister Pier Luigi Bersani in 2006 lifted the ban on commercial advertising and contingent fees (forbidden until then to members of most professional associations) and liberalised the market for over-the-counter drugs, allowing supermarkets to enter a highly-regulated market in direct competition with pharmacists. Results show that the reform brought new entrants into the market for over-the-counter drugs, increasing demand for pharmacists and leading to higher earnings of young pharmacists and their higher overall employment. Evidence also shows that the reform had little or no impact on the labour market for legal professions, possibly due to the lack of sufficient transposition of the new provisions into the codes of the affected professions.

Source: Mario Pagliero, *The Effects of Recent Reforms Liberalizing Regulated Professions in Italy* (Turin: University of Turin and Carlo Alberto College, 2015)

Romania

Romania is No. 25. This €202 billion economy scores particularly badly on new jobs and new tools, where it is a league-lagging No. 28. Adoption of digital technologies by businesses (No. 28) is extremely slow, improving only 3.4% since 2014. Moreover, the country does not fare much better in transition policies (No. 23) or workforce inclusiveness (No. 20).

Rank: **25**
Score: **34.61**

		Rank	Score	Figures
I.	**MODERN WORKFORCE**	**20**	**45.42**	
I.1.	Women Employment Rate	24	45.60	49.87%
I.2.	Immigrant Population Employment Rate (Foreign-Born Citizens)	7	61.66	66.67%
I.3.	Youth Employment Rate (age 15-29)	23	38.63	43.02%
I.4.	Active Older Adults Employment Rate (age 55-74)	18	35.80	32.58%
II.	**NEW JOBS AND NEW TOOLS**	**28**	**15.63**	
II.1.	Digital and Creative-Economy Skills	26	21.61	
II.1.1.	Percentage of Population (16-74 Years Old) Who Can Use the Internet and Do So At Least Once a Week	27	21.61	68.00%
II.1.2.	Problem Solving in Technology-Rich Environment (Percentage of Adult Population Scoring Above Proficiency Level 2)		n/a	n/a
II.2.	Digital Industry	28	15.27	
II.2.1.	Adoption of Digital Technology (Digitisation and e-Commerce) by Businesses	28	10.00	17.76%
II.2.2.	Share of the Data Economy in Gross Domestic Product	25	20.55	1.07%
II.3.	Investment in Intangible Assets	26	10.00	
II.3.1.	Average Investment in Intangibles as a Percentage of Gross Fixed Capital Formation (GFCF)	26	10.00	6.62%
II.3.2.	Average Public Investment in Intangibles as a Percentage of Gross Fixed Capital Formation (GFCF)	22	10.00	1.06%
III.	**TRANSITION EFFECTIVENESS**	**23**	**42.78**	
III.1.	Speed of Finding a New Job	19	47.97	25.02%
III.2.	Percentage of Active Workforce Engaged in Training and Lifelong Learning	28	10.00	1.10%
III.3.	Access to Social Security Benefits and Transition Assistance for the Self-Employed and Workers Other Than Full-Time, Long-Term Employees	16	70.40	90.58
III.4.	Access: Labour and Product Market Openness	22	42.76	
III.4.1.	Access to Licensed Professions	19	63.33	21.70%
III.4.2.	Ease of Becoming an Entrepreneur	22	22.18	83.90
III.4.3.	Product Market Openness		n/a	n/a

Notes: OECD Programme for International Assessment of Adult Competencies (PIAAC) data is available for only 16 EU member states. Public investments in intangible assets are available for only 22 EU member states.

'The truth is, no matter how much we fear disruption in our lives, change is the only thing we can count on. Successful countries – like successful people – are those that prepare the best for it.'

Romania does well on integrating its foreign-born population (No. 7). However, the 14,400 people that make up 0.1% of the population are a drop in the overall workforce. When it comes to women (No. 24) and youth employment (No. 23), the low performances signal important weaknesses as well.

The population has very low digital skills (No. 27) and Romania is No. 28 on active workforce participating in reskilling and upskilling activities. Investment in the intangible economy does not seem to be a priority for the Romanian economy or the public sector.

The socio-economic environment is not sufficiently adjusted to respond to labour market challenges, either. Only one out of four unemployed people finds a new job in less than three months and long-term unemployment remains high at 44% of total unemployment, up 3% since 2013. The social protection system ensures good access to benefits for flexible workers. However, some of the categories of employment participants have partial or no access to certain benefits, such as sickness, pensions and unemployment benefits. Romania has a relatively high share of workers in restricted professions (No. 19) and becoming an entrepreneur is a long and complex process (No. 22).

IN FOCUS

Social Protection for 'Dependent' Self-Employed

In Romania, dependent self-employed workers (defined as self-employed people who have only one client) benefit from compulsory pension and health insurance. For "independent" self-employed people, access to benefits is conditional on a certain level of income. The level of social contributions paid by the employer for the self-employed is equivalent to that for a salaried worker, and the beneficiary of the work is required to pay contributions equivalent to those of an employer as well. Yet, compared to a salaried worker, the dependent self-employed do not have mandatory insurance against unemployment, and, unlike salaried workers, their job stability is not guaranteed.

Source: European Commission, *Commission Staff Working Document: Impact Assessment, Accompanying the Document; Proposal for a Council Recommendation on Access to Social Protection for Workers and the Self-Employed* (Brussels: European Commission, 2018)

Sweden

When it comes to digital industry and transition policies, Sweden is No. 1. But this €466.9 billion economy's relatively low ranking (No. 5) on modern workforce points to an important weakness. Sweden's 622,600 foreign-born citizens make up 8.35% of the population. But Sweden is doing a relatively poor job of integrating them.

Rank: **1**
Score: **81.29**

		Rank	Score	Figures
I.	**MODERN WORKFORCE**	**5**	**73.78**	
I.1.	Women Employment Rate	1	100.00	66.32%
I.2.	Immigrant Population Employment Rate (Foreign-Born Citizens)	22	30.70	56.26%
I.3.	Youth Employment Rate (age 15-29)	7	73.16	58.71%
I.4.	Active Older Adults Employment Rate (age 55-74)	2	91.25	48.15%
II.	**NEW JOBS AND NEW TOOLS**	**1**	**79.64**	
II.1.	Digital and Creative-Economy Skills	2	94.19	
II.1.1.	Percentage of Population (16-74 Years Old) Who Can Use the Internet and Do So At Least Once a Week	6	88.39	91.00%
II.1.2.	Problem Solving in Technology-Rich Environment (Percentage of Adult Population Scoring Above Proficiency Level 2)	1	100.00	43.98%
II.2.	Digital Industry	6	77.44	
II.2.1.	Adoption of Digital Technology (Digitisation and e-Commerce) by Businesses	4	89.83	56.37%
II.2.2.	Share of the Data Economy in Gross Domestic Product	9	65.04	2.12%
II.3.	Investment in Intangible Assets	3	67.28	
II.3.1.	Average Investment in Intangibles as a Percentage of Gross Fixed Capital Formation (GFCF)	2	49.84	25.91%
II.3.2.	Average Public Investment in Intangibles as a Percentage of Gross Fixed Capital Formation (GFCF)	2	84.73	9.24%
III.	**TRANSITION EFFECTIVENESS**	**1**	**90.44**	
III.1.	Speed of Finding a New Job	5	85.34	40.33%
III.2.	Percentage of Active Workforce Engaged in Training and Lifelong Learning	2	96.44	30.20%
III.3.	Access to Social Security Benefits and Transition Assistance for the Self-Employed and Workers Other Than Full-Time, Long-Term Employees	2	97.78	99.29
III.4.	Access: Labour and Product Market Openness	4	82.20	
III.4.1.	Access to Licensed Professions	3	93.81	15.30%
III.4.2.	Ease of Becoming an Entrepreneur	3	92.10	94.69
III.4.3.	Product Market Openness	6	60.69	1.20

Notes: OECD Programme for International Assessment of Adult Competencies (PIAAC) data is available for only 16 EU member states. Public investments in intangible assets are available for only 22 EU member states.

'In the typical EU country, 19.5% of high-skilled workers will be found in training; but only 9.6% of the low-skilled. Finland and Sweden are true stand outs. Each boasts more than 30% of their active workers in training.'

Older workers make up 30% of Sweden's workforce, which makes its strong performance (No. 2) on employing 55-74 years olds particularly important. Youth employment, at 58.71%, is less impressive but above the EU Average.

The Swedish population has a high level of digital and creative-economy skills (No. 2) and the second highest participation rate in reskilling and upskilling activities (No. 2). Half of the unemployed participate in training activities and 30% of employed people do too. Swedish business is also adopting new technology quickly; Sweden is No. 4 on this key indicator, with adoption of technology by business showing 14% growth since 2014. The data economy has grown, too, up 19% compared to 2016. In 2017, it contributed €10 billion to Swedish GDP, €1.6 billion more than in 2016.

The socio-economic environment is dynamic and well adjusted. Two out of five unemployed persons find a new job in less than three months, and long-term unemployment account for only 19% of total unemployment (this figure is up 2% since 2013). The social security system ensures very good access to social benefits for flexible contract workers, but the self-employed have only partial access to unemployment benefits. The country has relatively few workers in restricted professions and becoming an entrepreneur is easy.

IN FOCUS

Benefits for the Self-Employed

Sweden is among the countries that pay benefits to the self-employed, including mechanisms that allow a person to include contributions from previous employment in the calculation of unemployment benefits. Unemployment benefits for the self-employed are based on the average income according to the most recent tax statement, or on the average income from the last two tax statements, depending on which alternative is most favourable to the self-employed. For those who have been self-employed for less than 24 months, special rules apply where compensation can be based on previous earnings before the start-up of the business.

Source: European Commission, *Commission Staff Working Document: Impact Assessment, Accompanying the Document; Proposal for a Council Recommendation on Access to Social Protection for Workers and the Self-Employed* (Brussels: European Commission, 2018)

United Kingdom

United Kingdom is No. 5. This €2.3 trillion economy scores well on modern workforce (No. 1) and new jobs and new tools (No. 3). And its transition effectiveness ranking, at No. 7, is above the EU Average. Weak points include adoption of digital technology by business (No. 14) and access to benefits for self-employed workers (No. 27).

Rank: **5**
Score: **73.18**

		Rank	Score	Figures
I.	**MODERN WORKFORCE**	**1**	**79.65**	
I.1.	Women Employment Rate	7	86.22	62.16%
I.2.	Immigrant Population Employment Rate (Foreign-Born Citizens)	3	77.43	71.96%
I.3.	Youth Employment Rate (age 15-29)	5	81.74	62.61%
I.4.	Active Older Adults Employment Rate (age 55-74)	6	73.19	43.08%
II.	**NEW JOBS AND NEW TOOLS**	**3**	**76.92**	
II.1.	Digital and Creative-Economy Skills	6	85.04	
II.1.1.	Percentage of Population (16-74 Years Old) Who Can Use the Internet and Do So At Least Once a Week	3	97.10	94.00%
II.1.2.	Problem Solving in Technology-Rich Environment (Percentage of Adult Population Scoring Above Proficiency Level 2)	6	72.97	34.98%
II.2.	Digital Industry	5	77.96	
II.2.1.	Adoption of Digital Technology (Digitisation and e-Commerce) by Businesses	14	55.91	39.96%
II.2.2.	Share of the Data Economy in Gross Domestic Product	1	100.00	2.93%
II.3.	Investment in Intangible Assets	2	67.76	
II.3.1.	Average Investment in Intangibles as a Percentage of Gross Fixed Capital Formation (GFCF)	7	35.52	18.97%
II.3.2.	Average Public Investment in Intangibles as a Percentage of Gross Fixed Capital Formation (GFCF)	1	100.00	10.92%
III.	**TRANSITION EFFECTIVENESS**	**7**	**62.98**	
III.1.	Speed of Finding a New Job	6	82.26	39.07%
III.2.	Percentage of Active Workforce Engaged in Training and Lifelong Learning	9	60.20	18.00%
III.3.	Access to Social Security Benefits and Transition Assistance for the Self-Employed and Workers Other Than Full-Time, Long-Term Employees	27	21.06	74.88
III.4.	Access: Labour and Product Market Openness	1	88.40	
III.4.1.	Access to Licensed Professions	14	73.81	19.50%
III.4.2.	Ease of Becoming an Entrepreneur	4	91.38	94.58
III.4.3.	Product Market Openness	1	100.00	0.80

Notes: OECD Programme for International Assessment of Adult Competencies (PIAAC) data is available for only 16 EU member states. Public investments in intangible assets are available for only 22 EU member states.

'Long before immigration became a flashpoint in the Brexit debate, the United Kingdom had one of the highest success rates of employing immigrants in the economy.'

Numbering 4,895,400 people, the United Kingdom has a relatively large foreign-born population, accounting for 10% of the population. Still, despite the complaints of the Brexiteers, the country has done well at integrating them; the United Kingdom scores No. 3 on foreign-born workers, with a highly impressive 71.96 employment rate for this usually marginalised group.

The population is relatively well skilled, with good levels of digital and creative problem-solving skills (No. 6) and the active workforce has good participation in reskilling and upskilling activities (No. 9). But businesses are slow in transitioning to digital technologies. When it comes to the data economy, the country is No. 1 in Europe. In 2017, the data economy contributed €68.6 billion to country's GDP, up 9% (€5.8 billion) on the 2016 figure. It has the second best performance (No. 2) for investing in intangible assets, behind only league leader Ireland.

The socio-economic environment is dynamic and well-adjusted. Two out of five unemployed find a new job in less than three months (No. 6) and long-term unemployment accounts for only 26% of total unemployment, down 7% since 2013. The social protection system provides decent access to social benefits for some self-employed and flexible contracts workers, but low-earners among the self-employed and employed are a sore spot; they are not covered by social protection if their earning are below the National Insurance Contribution threshold (the total earnings from multiple low-paid jobs is not considered when workers are matched to the threshold; each earning is taken separately). The United Kingdom has a relative high share of workers in restricted professions (No. 14). However, the country has a very open product market (No. 1) and becoming an entrepreneur is easy (No. 4).

IN FOCUS

Rethinking National Insurance Contributions (NICs) for the Self-Employed

In 2017, looking for a simplification of the system, the Chancellor of the Exchequer announced the abolishment of class 2 National Insurance Contributions (which were flat-rate weekly contributions of the self-employed) from 2018 onwards. Previously, during the 2017 Spring Budget, the government had said that class 4 NICs (a profit-based levy on the self-employed) would rise to 10% in April 2018 and to 11% in April 2019. However, on 15 March 2017, the Chancellor announced that the government would not go forward with the hike.

Source: European Commission, *Labour Market Reform Database*, last accessed 11 June 2019

Methodology

Most of the data analysed in **The 2019 Future of Work Index** comes from public sources. We are particularly grateful to the European Commission, the European Foundation for the Improvement of Living and Working Conditions (Eurofound), Eurostat, the Freelancers Union, the International Labour Organisation (ILO) and the Organisation for Economic Co-operation and Development (OECD) for the outstanding work that they do. Were it not for the excellent foundation they lay – and maintain to the highest standard of robustness – studies of this type would not be possible.

Unless otherwise noted, the data we used is for 2018. This is to provide for internal consistency and robustness. For aggregation purposes, a normalisation method min-max is used to standardise indicator values (the range for normalisation is 10 to 100). For 14 of the 16 indicators, the highest value corresponds to the best performance (100 points), while the lowest values is considered the worst performance (10 points). In the case of the other two indicators, III.4.1. **Access to Licensed Professions** and III.4.3. **Product Market Openness**, the method is reversed: the lowest value gets the highest score (100 points) and the highest value gets the lowest one (10 points).

Notes on the methodological assumptions and robustness testing conducted for each of the 16 indicators follows:

Chapter I
Modern Workforce

This is a composite indicator that captures the emergence and integration in the labour market of new participants such as women, young people, immigrants and older adults.

The indicator has in its composition four sub-indicators:

I.1. Women Employment Rate;

I.2. Immigrant Population Employment Rate (Foreign-Born Citizens);

I.3. Youth Employment Rate (aged 15-29) and

I.4. Active Older Adults Employment Rate (aged 55-74).

The composite indicator is calculated as the simple average of the four sub-indicators. The source is Eurostat Labour Force Survey data.

I.1. Women Employment Rate Indicator

This is calculated as the share of women employed in the total women population aged 15-74 years old. It aims at measuring the level at which women participate in the labour market. The source is Eurostat Labour Force Survey data.

I.2. Immigrant Population Employment Rate Indicator

This is calculated as the share of foreign-born citizens employed in total foreign-born population aged 15-74 years. It measures the level at which the immigrant population (defined as the foreign-born population of a country) participate in the labour market. The source is Eurostat Labour Force Survey data.

I.3. Youth Employment Rate Indicator

This is calculated as the share of young people employed in the total youth population aged 15-29. The indicator provides information on youth integration in the labour market. The source is Eurostat Labour Force Survey data.

I.4. Active Older Adults Employment Rate Indicator

This is calculated as the share of older adults (aged 55-74) employed in total adult population aged over 55 years. The indicator provides information on labour market active lives of workers aged over 55 years, aiming to capture the importance of longer active work-life in the context of an increased share of the aging population in the labour force. The Source is Eurostat Labour Force Survey data.

The four indicators show good correlations with much lower values in the case of immigrant population employment. They are also well represented within the sub-pillar composition (correlations higher than 0.5 are marked in bold).

Correlation Matrix of New Workforce Indicators

	I.1.	I.2.	I.3.	I.4.	I.
I.1. Women Employment Rate	1	0.26	**0.79**	**0.80**	**0.91**
I.2. Immigrant Population Employment Rate	0.26	1	0.39	0.15	**0.56**
I.3. Youth Employment Rate	**0.79**	0.39	1	**0.54**	**0.86**
I.4. Active Older Adults Employment Rate	**0.80**	0.15	**0.54**	1	**0.81**

Chapter II
New Jobs and New Tools Indicator

This is a composite indicator that measures the readiness of the workforce and economy for digital-era jobs – and the robustness with which the new technology is being accepted and diffused. Concretely, it measures the level of digital skills of the population (both basic and advanced), assesses the level of adoption of digital technologies by businesses and evaluates the investment attitude towards intangible assets (a key area of value added in the new economy) in surveyed countries.

The indicator is composed of six sub indicators grouped in three sub-pillars:

II.1. Digital and Creative-Economy Skills [composed of II.1.1. **Population (16-74 Years Old) Who Can Use the Internet and Do So At Least Once a Week as a Percentage of the Overall Population** and II.1.2. **Problem Solving in Technology-Rich Environment (Percentage of Adult Population Scoring Above Proficiency Level 2)**];

II.2. Digital Industry [composed of II.2.1. **Adoption of Digital Technology (Digitisation and e-Commerce) by Businesses** and II.2.2. **Share of the Data Economy as a Percentage of Gross Domestic Product**] and

II.3. Investment in Intangible Assets [composed of II.3.1. **Investment in Intangibles as a Percentage of Gross Fixed Capital Formation (GFCF)** and II.3.2. **Average Public Investments in Intangibles as a Percentage of Gross Fixed Capital Formation**].

The data sources used were from the European Commission, Eurostat, OECD, spintan.net, International Data Corporation and the Lisbon Council.

II.1. Digital and Creative-Economy Skills Indicator

This is a composite indicator that looks at the level of digital skills of the population in surveyed countries (both basic and advanced). The indicator is built as the simple average of two sub-indicators:

II.1.1. Percentage of Population (16-74 Years Old) Who Can Use the Internet and Do So At Least Once a Week and

II.1.2. Problem Solving in Technology-Rich Environment (Percentage of Adult Population Scoring Above Proficiency Level 2).

The data sources are Eurostat and OECD.

II.1.1. Percentage of Population (16-74 Years Old) Who Can Use the Internet and Do So At Least Once a Week Indicator

This is calculated as the percentage of individuals who use the internet every week (at least once) in the total population aged 16 to 74 years old. Data are collected through the Eurostat ICT survey, which is conducted on an annual basis. The data source is the ICT usage in households and by individuals survey data from Eurostat.

II.1.2. Problem Solving in Technology-Rich Environment (Percentage of Adult Population Scoring Above Proficiency Level 2) Indicator

This measures the proficiency of the adult population in problem solving in technology-rich environments. The problem solving is the ability to use digital technology, communication tools and networks to acquire and evaluate information, communicate with others, and perform practical tasks. The survey took place in two rounds and covers only 16 of the EU member states [*Round 1 (2008-2013)*: Austria, Belgium (Flanders), Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, The Netherlands, Poland, Slovak Republic, Spain, Sweden, United Kingdom (England and Northern Ireland). *Round 2 (2012-2016)*: Greece, Lithuania, Slovenia]. The values for United Kingdom refer only to England, while the values for Belgium refer only to Flanders. Cyprus, France, Italy and Spain did not participate into the problem solving in technology-rich environments module. The data source is the OECD's Survey of Adult Skills. Data is available for two years 2012 and 2015.

The two indicators are highly correlated as can be seen in the table below. Their high correlation is also reflected in high level of variance of the Digital and Creative-Economy Skills indicator that they explain. They are also well represented within the sub-pillar composition. Correlations higher than 0.5 are marked in bold.

Correlation Matrix of the Digital and Creative-Economy Skills Indicators

	II.1.1.	II.1.2.	II.1.	II.
II.1.1. Percentage of Population (16-74 Years Old) Who Can Use the Internet and Do So At Least Once a Week	1	**0.926**	**0.981**	**0.859**
II.1.2. Problem Solving in Technology-Rich Environment (Percentage of Adult Population Scoring Above Proficiency Level 2)	**0.926**	1	**0.985**	**0.879**

II.2. Digital Industry Indicator

This is a composite indicator that looks at the level of digitisation of industry in the surveyed country. The indicator is the simple average of two sub-indicators:

II.2.1. Adoption of Digital Technology (Digitisation and e-Commerce) by Businesses sub-indicator and

II.2.2. Share of the Data Economy in the GDP sub-indicator.

The data sources used were the European Commission, Eurostat, International Data Corporation and the Lisbon Council.

II.2.1. Adoption of Digital Technology (Digitisation and e-Commerce) by Businesses Indicator

This measures the digitisation of businesses and e-commerce. It is the fourth pillar of the Digital Economy and Society Index, developed by European Commission. The indicator is calculated as the simple average of two composite indicators "business digitisation" and "e-commerce." The "business digitisation" component includes five indicators (the percentage of all firms using electronic information sharing, Radio Frequency Identification (RFID), social media, e-invoicing and cloud solutions. The "e-commerce" component has three indicators: the percentage of small- and medium-sized enterprises (SMEs) selling online, e-commerce turnover as a percentage of total turnover of SMEs and the percentage of SMEs selling online cross-border. The source is the Digital Economy and Society Index (DESI) developed by the European Commission. For more, visit https://ec.europa.eu/digital-single-market/en/desi.

II.2.2. Share of the Data Economy in GDP Indicator

This looks at the size of the data economy within EU member-state economies, and it is calculated as the share of the data economy (in millions of euros) in total GDP. The data economy measures the overall impacts of the data market (i.e., the marketplace where digital data is exchanged as "products" or "services" as a result of the elaboration of raw data) on the economy as a whole. Information technology captures a wider reality as it apprehends the value and wealth generated in the economy as a whole (not just across businesses) through data. The sources are Eurostat as well as International Data Corporation and the Lisbon Council, *First Report on Facts and Figures: Updating the European Data Market Study Monitoring Tool* (Brussels: European Commission, 2018).

The two indicators have good correlation between each other and are well correlated with the Digital Economy indicator. They are also well represented within the sub-pillar composition. Correlations higher than 0.5 are marked in bold.

Correlation Matrix of the Digital Industry Indicators

	II.2.1.	II.2.2.	II.2.	II.
II.2.1. Adoption of Digital Technology (Digitisation and e-Commerce) by Businesses Indicator	1	**0.603**	**0.883**	**0.850**
II.2.2. Share of the Data Economy in GDP Indicator	**0.603**	1	**0.906**	**0.813**

II.3. Investment in Intangible Assets

This is a composite indicator that looks at the investment in intangible of member states (captured by national accounts) and the investments undertaken by the public sector. The indicator is the simple average of two sub-indicators:

II.3.1. Average Investment in Intangibles as a Percentage of Gross Fixed Capital Formation and

II.3.2. Average Public Investments in Intangibles as a Percentage of Gross Fixed Capital Formation.

The sources are Eurostat and spintan.net. See especially Carol Corrado, Kirsten Jäger and Cecilia Jona-Lasinio, *Measuring Intangible Capital in the Public Sector: A Manual* (Brussels: European Commission, 2016).

II.3.1. Average Investment in Intangibles as a Percentage of Gross Fixed Capital Formation Indicator

This is calculated as the three-year average of gross investment in intangible assets as a percentage of the gross fixed capital formation (the latest year available is 2018; the data refers to the period 2016-2018). Data are available in national accounts statistics. The intangible assets registered by the national accounts statistics, under the intellectual property assets, are research and development, mineral exploration and evaluation, computer software and databases, entertainment, literary or artistic originals and other intellectual property products. The source is the National Accounts statistics from Eurostat.

II.3.2. Average Public Investments in Intangibles as Percentage of Gross Fixed Capital Formation Indicator

This is calculated as the three-year average of public investment in intangibles as a percentage of gross fixed capital formation (the latest year available is 2015; the data refers to the period 2012-2015). The intangible assets are organisational capital, design, advertising, market research, training, research and development and software. The data sources are Eurostat and spintan.net (although spintan.net covers only 22 countries out of 28 EU member states).

The two indicators have an average correlation between each other and are well correlated with the Intangible Assets Investments indicator. They are also well represented within the sub-pillar composition, which is slightly lower than the previous indicators. Correlations higher than 0.5 are marked in bold.

Correlation Matrix of the Intangible Assets Investments Indicators

	II.3.1.	II.3.2.	II.3.	II.
II.3.1. Average Investment in Intangibles as a Percentage of GFCF Indicator	1	**0.527**	**0.876**	**0.686**
II.3.2. Average Public Investments in Intangibles as Percentage of GFCF Indicator	**0.527**	1	**0.878**	**0.707**

At the sub-pillar level, the three indicators show good correlation level between them; the **Intangible Assets Investments** indicator has weaker correlation with the **Digital and Creative-Economy Skills** indicator. The indicators are well represented within the sub-pillar structure. Correlations higher than 0.5 are marked in bold.

Correlation Matrix of the New Jobs and New Tools Indicators

	II.1.	II.2.	II.3.	II.
II.1. Digital and Creative-Economy Skills Indicator	1	**0.695**	0.420	**0.861**
II.2. Digital Industry Indicator	**0.695**	1	**0.674**	**0.920**
II.3. Investment in Intangible Assets Indicator	0.420	**0.674**	1	**0.773**

Chapter III
Transition Effectiveness Indicator

This is a composite indicator that looks at countries labour market robustness and flexibility. It also includes the key question of whether social policy is being effectively used to aid economic transition (and not just as a lever to reinforce the power of insiders and economic incumbents).

The indicator is the simple average of four sub-indicators (three simple ones and a composite):

III.1. Speed of Finding a New Job;

III.2. Percentage of Active Workforce Engaged in Training and Lifelong Learning;

III.3. Access to Social Security Benefits and Transitions Assistance for the Self-Employed and Workers Other Than Full-Time, Long-Term Employees and

III.4. Access: Labour and Product Market Openness [composed of III.4.1. **Access to Licensed Professions** sub-indicator, III.4.2. **Ease of Becoming an Entrepreneur** sub-indicator and III.4.3. **Product Market Openness** sub-indicator].

The sources are the European Commission, Eurostat, OECD, the Lisbon Council and the World Bank.

III.1. Speed of Finding a New Job Indicator

This measures the time spent in unemployment before finding a new job. The indicator is constructed as the share of short-term unemployment (i.e. people in unemployment for less than three months) in total unemployment. The indicator provides information on the short-term unemployment occurrence within countries' labour markets. The data source is the Eurostat Labour Force Survey data.

III.2. Percentage of Active Workforce Engaged in Training and Lifelong Learning Indicator

This measures the participation level in upskilling and reskilling activities of the active population. The active population is composed from both employed and unemployed persons of a country. The indicator is calculated as the percentage of active population participating in formal and/or informal education and training activities in the last four weeks in total active population (aged 16 to 74 years). The source is the Eurostat Labour Force Survey data.

III.3. Access to Social Security Benefits and Transitions Assistance for the Self-Employed and Workers Other Than Full-Time, Long-Term Employees Indicator

This looks at the degree of flexibility and adaptability of the social protection system in EU member states to fit labour market changes and developments. The indicator is a composite indicator that aims at measuring the access to social protection for workers not having a full-time, long-term employment contract (two separate categories are discussed: self-employed and workers on temporary and part-time employment contracts).

The national social protection systems in EU member states cover 11 types of benefits: healthcare, sickness benefits, maternity/paternity benefits in kind, old-age pensions, survivors' pensions, unemployment benefits, social assistance, long-term care, invalidity benefits, accidents at work and occupational injuries benefits and family benefits. The benefits can be insurance-based, related to any gainful employment, or non-contributory schemes, set-up by some countries. The indicator looks at the level of statutory access to social protection benefits for self-employed and workers other than full-time, long-term employees, i.e., on short-term, part-time or other country specific types of employment contracts.

The indicator is constructed using the results of an assessment of statutory access to social benefits performed by a group of national experts for the European Commission. Following this assessment, the experts gave each type of benefit an overall value: full access, partial access, no access and voluntary opt-in in case of insurance-based schemes. Often, the assessment is accompanied by some exceptions applied to particular categories of workers. These exceptions can either widen or narrow the statutory access to the benefits for these workers. For example, in Belgium all self-employed have statutory access to healthcare benefits. When the self-employment is considered a complementary activity, the self-employed have no access to these benefits. This exception seems to narrow the statutory access to healthcare benefits for self-employed. See especially Slavina Spasova, Denis Bouget, Dalila Ghailani and Bart Vanhercke, *Access to Social Protection for People Working on Non-Standard Contracts and as Self-Employed in Europe: A Study of National Policies* (Brussels: European Commission and European Social Policy Network, 2017).

The assessment of statutory access to social protection benefits cover separately the two type of workers: self-employed and other flexible contracts workers. To build an indicator that reflects the statutory access to social protection for the self-employed and flexible contracts workers, the previous qualitative assessment was translated into a quantitative score: 100 points for full access and voluntary opt-in, 50 points for partial access and no points for no access. Several member states offer the possibility of voluntary opt-in for an insurance-based scheme. Often this is an option available for the self-employed to access insurance-based schemes. In the case of voluntary opt-in, workers can participate in the respective scheme(s) and therefore they can benefit from similar rights as full access participants. In this context, the voluntary opt-in was assimilated to the full access category. To account also for exceptions, we considered adding or deducting 25 points when an exception is found (adding if the exception widens the original previsions result and deducting if the exception restricts it).

For example, looking again at the Belgium case, for the statutory access to healthcare benefits the country receive 100 points. However, there is an exception attached to health benefits access, which says that the persons in self-employment as complementary activity are not eligible for these benefits. In this case, a deduction of 25 points is applied, and the final score allocated for Belgium for healthcare benefits is of 75 points.

It has to be mentioned that adding or deducting points is more linked to the theoretical impact of an exception (it widens or narrows the statutory access of the participants to the social security systems) rather than to the effective impact of the measure.

The overall statutory access to social protection benefits score for each type of flexible worker (self-employed and other less-than-full-time employment contracts) is calculated as the simple average of the scores attributed for each of the 11 categories of benefits. The results of all the above-mentioned assumptions are presented in the tables below.

Statutory Access to Social Protection Benefits for the Self-Employed

	Healthcare	Sickness Benefits	Maternity/Paternity Benefits in Kind	Old-Age Pensions	Survivors' Pensions	Unemployment Benefits	Social Assistance	Long-Term Care	Invalidity Benefits	Accidents at Work and Occupational Injuries Benefits	Family Benefits	Score
Belgium	75	75	75	75	75	0	75	75	75	0	75	**61.4**
Bulgaria	100	100	100	100	100	0	100	100	100	0	100	**81.8**
Czech Republic	100	100	75	100	100	100	100	100	100	100	100	**97.7**
Denmark	100	100	100	100	–	50	100	100	100	100	100	**95.0**
Germany	100	50	50	50	50	0	100	100	50	100	100	**68.2**
Estonia	100	100	50	100	100	50	50	100	100	50	100	**81.8**
Ireland	50	50	100	100	100	50	100	100	0	0	100	**68.2**
Greece	75	25	50	75	75	50	100	75	75	50	100	**68.2**
Spain	100	100	100	50	100	100	100	100	100	100	100	**95.5**
France	100	50	50	100	100	0	100	100	100	25	100	**75.0**
Croatia	100	100	100	100	100	100	100	100	50	100	100	**95.5**
Italy	100	25	100	100	100	25	100	50	50	100	50	**72.7**
Cyprus	100	100	100	100	100	0	100	100	100	0	100	**81.8**
Latvia	100	100	100	100	100	25	100	100	100	25	100	**86.4**
Lithuania	100	75	75	100	100	25	100	100	100	0	100	**79.5**
Luxembourg	100	100	100	100	100	100	100	100	100	100	100	**100.0**
Hungary	75	100	100	100	100	100	100	100	100	100	100	**97.7**
Malta	100	100	100	100	100	0	100	100	100	100	100	**90.9**
The Netherlands	100	100	50	50	100	0	100	100	100	100	100	**81.8**
Austria	100	100	100	100	100	100	100	100	100	100	100	**100.0**
Poland	100	100	100	100	100	50	100	100	100	100	100	**95.5**
Portugal	100	50	100	100	100	75	100	50	100	100	50	**84.1**
Romania	100	100	75	75	75	100	100	100	75	100	100	**90.9**
Slovenia	100	50	100	100	100	100	100	100	100	100	100	**95.5**
Slovakia	100	100	100	100	100	100	100	100	100	0	100	**90.9**
Finland	100	100	100	100	100	50	100	100	100	100	100	**95.5**
Sweden	100	100	100	100	100	50	100	100	100	100	100	**95.5**
United Kingdom	100	50	50	50	50	50	75	100	50	0	100	**61.4**

Statutory Access to Social Protection Benefits for the Workers Other than Full-Time, Long-Term Employees

	Healthcare	Sickness Benefits	Maternity/Paternity Benefits in Kind	Old-Age Pensions	Survivors' Pensions	Unemployment Benefits	Social Assistance	Long-Term Care	Invalidity Benefits	Accidents at Work and Occupational Injuries Benefits	Family Benefits	Score
Belgium	100	100	100	100	100	100	100	100	100	100	100	**100**
Bulgaria	75	75	75	75	100	75	100	100	100	75	100	**86**
Czech Republic	75	75	75	75	100	75	100	100	75	75	100	**84**
Denmark	100	100	100	100	–	75	100	100	100	75	100	**95**
Germany	100	100	100	100	100	100	100	100	100	100	100	**100**
Estonia	100	100	100	100	100	100	100	100	100	100	100	**100**
Ireland	100	100	100	100	100	100	100	100	100	100	100	**100**
Greece	100	100	100	100	100	50	100	100	100	100	100	**95**
Spain	100	75	75	100	100	75	100	100	100	75	100	**91**
France	100	25	25	75	75	25	100	100	75	75	100	**70**
Croatia	100	100	100	100	100	100	100	100	100	75	100	**98**
Italy	100	75	100	100	100	50	50	100	100	100	50	**84**
Cyprus	100	100	100	100	100	100	100	100	100	100	100	**100**
Latvia	100	100	100	100	100	100	100	100	75	75	75	**93**
Lithuania	100	75	75	75	75	75	100	75	75	75	100	**82**
Luxembourg	100	100	100	100	100	100	100	100	100	100	100	**100**
Hungary	75	75	75	100	100	100	100	100	100	100	100	**93**
Malta	100	75	75	75	75	75	75	75	75	75	75	**77**
The Netherlands	100	100	100	75	100	100	100	100	100	100	100	**98**
Austria	75	75	75	75	75	75	100	100	75	100	100	**84**
Poland	75	75	75	75	75	75	75	75	75	75	100	**77**
Portugal	100	100	100	100	100	100	100	100	75	100	100	**98**
Romania	75	100	75	75	75	75	100	100	75	75	100	**84**
Slovenia	75	75	100	100	100	100	100	100	100	100	100	**95**
Slovakia	100	100	100	100	100	100	100	100	100	100	100	**100**
Finland	100	100	100	100	100	75	100	100	100	100	100	**98**
Sweden	100	100	100	100	100	100	100	100	100	100	100	**100**
United Kingdom	100	75	75	75	75	75	75	100	75	75	100	**82**

The overall aggregate, III.3. **Access to Social Security Benefits and Transitions Assistance for the Self-Employed and Workers Other Than Full-Time, Long-Term Employees** indicator, is calculated as the weighted average of the two scores calculated for self-employed and other flexible contract workers. The weights considered are the shares of each flexible category of workers in the total employment and they are country specific. The sources are European Commission and Eurostat Labour Force Survey data.

III.4. Access: Labour and Product Market Openness

This is a composite indicator that looks at different aspects of the access to the labour market.

The indicator is the simple average of three sub-indicators:

III.4.1. Access to Licensed Professions;

III.4.2. Ease of Becoming an Entrepreneur and

III.4.3. Product Market Openness.

The sources are European Commission, Organisation for Economic Co-operation and Development (OECD) and World Bank data.

III.4.1. Access to Licensed Professions Indicator

This measures the degree to which professional licensing enables or hinders access to the labour markets for both individuals and businesses. The indicator used is the share of workers in licensed professions in total employment. The indicator was developed to examine the prevalence and labour market impact of occupational regulation in the EU using the recent European Survey on Regulated Occupations. Data was only available for 2015. The source is European Commission data. See especially Maria Koumenta and Mario Pagliero, *Measuring Prevalence and Labour Market Impacts of Occupational Regulation in the EU* (Brussels: European Commission, 2016).

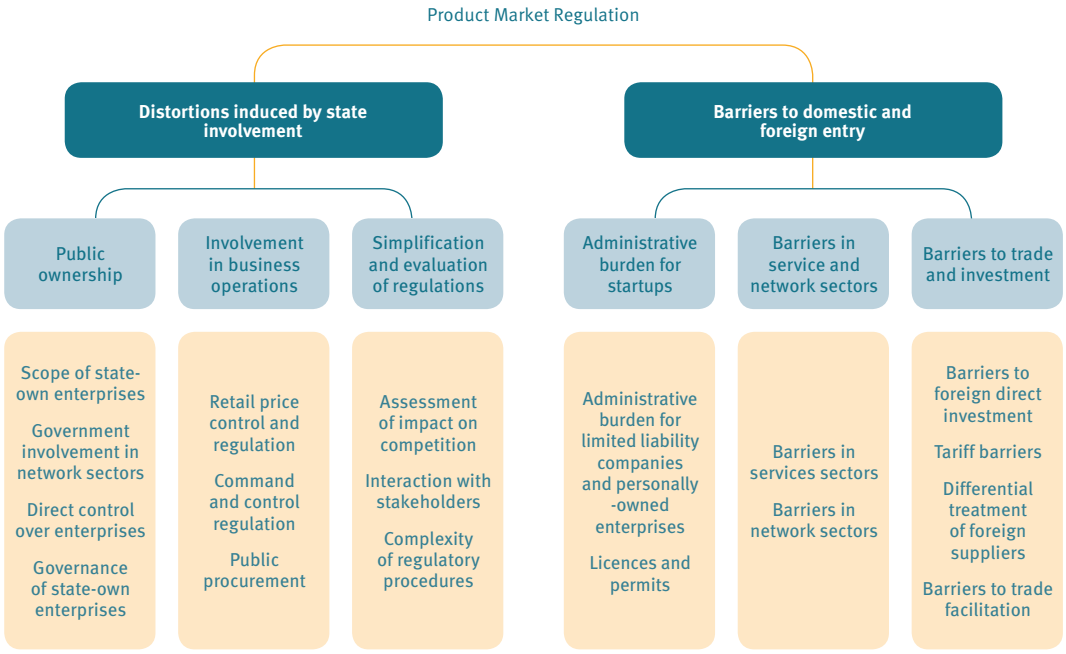
III.4.2. Ease of Becoming an Entrepreneur Indicator

This provides information on the degree of complexity to establish and operate a business within an economy. The indicator used is ease of starting a business, one of the components of the ease of doing business indicator developed by the World Bank. It looks at all procedures officially required, or commonly done in practice, for an entrepreneur to start up and formally operate a business, as well as the time and cost of the entire process, including the paid-in minimum capital requirement. These procedures include the processes entrepreneurs undergo when obtaining all necessary approvals, licences, permits and completing any required notifications, verifications or inscriptions for the company and employees with relevant authorities. The ranking of economies on the ease of starting a business is determined by sorting their scores for starting a business. These scores are the simple average of the scores for each of the component indicators. The source is World Bank, *Doing Business 2019: Training for Reform* (Washington: World Bank, 2018).

III.4.3. Product Market Openness Indicator

This measures businesses' access to product markets from a competitiveness perspective. The indicator used to reflect this is the aggregated score of the OECD indicator developed on product market regulation (PMR). The economy-wide PMR indicators measure the regulatory barriers to firm entry and competition in a broad range of key policy areas, ranging from licensing and public procurement, to governance of state-owned enterprises, price controls, evaluation of new and existing regulations and foreign trade. The indicators are updated every five years with available series for the years 1998, 2003, 2008, 2013 and 2018. The information reflected in each refers to the status of laws and regulations on 01 January of the relevant year. The series between 1998 to 2013 are comparable, however the methodology considerably changed in 2018 and at present past vintages cannot be compared with the 2018 PMR indicators. See especially Cristiana Vitale et al., *2018 Update of the OECD PMR Indicators and Database - Policy Insights for OECD Countries* (Paris: OECD, forthcoming); and Isabell Koske, Isabelle Wanner, Rosamaria Bitetti and Omar Barbiero, *The 2013 Update of the OECD's Database on Product Market Regulation: Policy Insights for OECD and non-OECD Countries* (Paris: OECD, 2015).

Product Market Regulation (2019)



Source: OECD

In 2018, the PMR indicators look at the distortions introduced by state involvement in the market regulations (public ownership, involvement in business operations, simplification and evaluation of regulations) and the barriers to domestic and foreign entry on the market (administrative burden on startups, barriers in service and network sectors and barriers to trade and investment). The source is OECD.

The indicators have weak correlations between them, but show good correlation at the aggregation level. However, they are less well reflected within the sub-pillar structure, with correlations below 0.5. Correlations higher than 0.5 are marked in bold.

Correlation Matrix of Access: Labour and Product Market Openness Indicators

	III.4.1.	III.4.2.	III.4.3.	III.4.	III.
III.4.1. Access to Licensed Professions	1	0.462	0.039	**0.741**	0.361
III.4.2. Ease of Becoming an Entrepreneur	0.462	1	0.150	**0.837**	0.491
III.4.3. Product Market Openness	0.039	0.150	1	**0.515**	0.315

At the sub-pillar level, the composing indicators show a mixed picture. The correlations vary from very good (**Percentage of Active Workforce Engaged in Training and Lifelong Learning** with both **Speed of Finding a New Job** indicator and **Access: Labour and Product Market Openness**) to very week (and even negative) for the **Access to Social Security** indicator.

Correlation Matrix of Transition Effectiveness Indicators

	III.1.	III.2.	III.3.	III.4.	III.
III.1. Speed of Finding a New Job	1	**0.755**	0.298	0.413	**0.874**
III.2. Percentage of Active Workforce Engaged in Training and Lifelong Learning	**0.755**	1	0.226	**0.522**	**0.885**
III.3. Access to Social Security Benefits and Transitions Assistance for the Self-Employed and Workers Other Than Full-Time, Long-Term Employees	0.298	0.226	1	-0.166	**0.507**
III.4. Access: Labour and Product Market Openness	0.413	**0.522**	-0.166	1	**0.574**

The sub-pillars have good correlation level between them and are well reflected within the index structure.

Correlation Matrix of Future of Work Index Indicators

	I.	II.	III.	Future of Work Index
I. Modern Workforce	1	**0.564**	**0.665**	**0.849**
II. New Tools and New Jobs	**0.564**	1	**0.732**	**0.877**
III. Transition Effectiveness	**0.665**	**0.732**	1	**0.904**

Overall, the composing indicators have good correlations with the Future of Work Index. There are some exceptions, and some indicators have weaker impact on the index performance. Correlations higher than 0.5 are marked in bold.

Correlation Table of the Future of Work Index with Composing Indicators

Indicator	Future of Work Index
I.1. Women Employment Rate	**0.847**
I.2. Immigrant Population Employment Rate (Foreign-Born Citizens)	0.320
I.3. Youth Employment Rate (age 15-29)	**0.821**
I.4. Active Older Adults Employment Rate (age 55-74)	**0.681**
II.1. Digital and Creative-Economy Skills Indicator	**0.834**
II.1.1. Percentage of Population (16-74 Years Old) Who Can Use the Internet and Do So At Least Once a Week	**0.856**
II.1.2. Problem Solving in Technology-Rich Environment (Percentage of Adult Population Scoring Above Proficiency Level 2)	**0.820**
II.2. Digital Industry Indicator	**0.832**
II.2.1. Adoption of Digital Technology (Digitisation and e-Commerce) by Businesses	**0.718**
II.2.2. Share of the Data Economy in Gross Domestic Product	**0.755**
II.3. Investment in Intangible Assets	**0.543**
II.3.1. Average Investment in Intangibles as Percentage of Gross Fixed Capital Formation	0.489
II.3.2. Average Public Investment in Intangibles as Percentage of Gross Fixed Capital Formation	**0.610**
III.1. Speed of Finding a New Job	**0.835**
III.2. Percentage of Active Workforce Engaged in Training and Lifelong Learning	**0.835**
III.3. Access to Social Security Benefits and Transition Assistance for the Self-Employed and Workers Other Than Full-Time, Long-Term Employees	0.358
III.4. Access: Labour and Product Market Openness	**0.545**
III.4.1. Access to Licensed Professions	0.205
III.4.2. Ease of Becoming an Entrepreneur	0.468
III.4.3. Product Market Openness	0.491

Sensitivity Analysis

In order to test the robustness of **The 2019 Future of Work Index**, we conducted an extensive sensitivity analysis. The examination helped us understand the deviations in country rankings that might result from variations in data and model input. Concretely, we looked at how different methodologies might impact country results – and compared those findings with the results from our model. And we analysed the impact of performance variation in each indicator within the model on each country.

Overall Setting: The 2019 Future of Work Index uses equal weights and arithmetic mean as an aggregation method. The normalisation used is the min-max normalisation within the range 10 to 100. To create points of comparison and assess the robustness, we developed alternative outcomes based on changes in the normalisation, weighting and aggregation methods used in the model. For this, we relied on a composite-indicator tool developed by the Competence Centre on Composite Indicators and Scoreboards (COIN) of the European Commission's Joint Research Centre. The tool included a series of scenarios to test the impact of different parameters.

The parameters used within these scenarios were:

1. The normalisation method used: z-score and min-max;
2. The aggregation methods applied: arithmetic mean and geometric mean;
3. The weighting schemes applied: equal weights, random weight, different type of weights resulted based on different assumptions ("new weights").

In the case of "new weights", the following schemes used were:

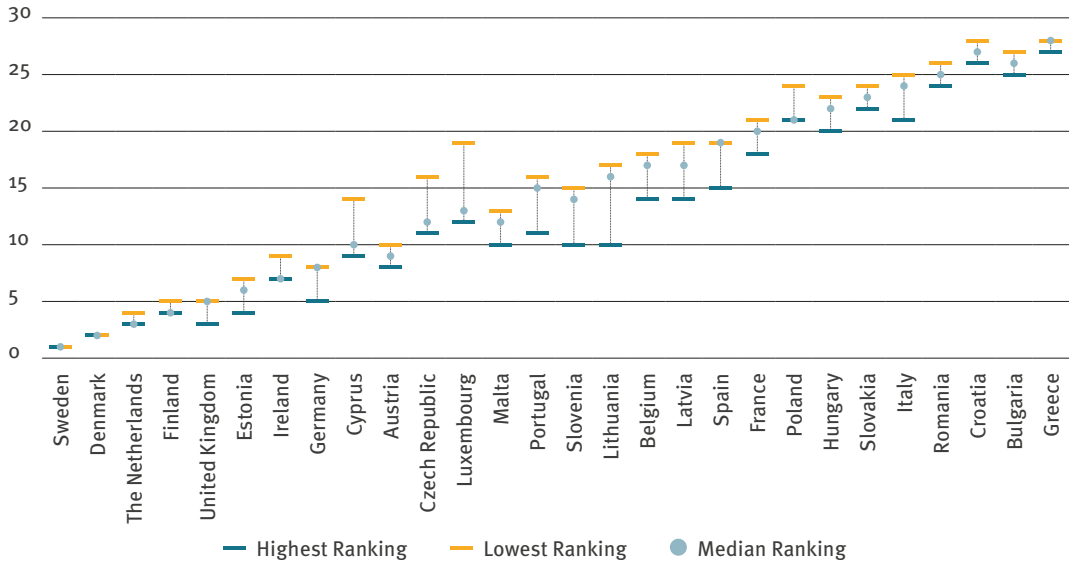
1. Pillar weights vectors: (2,1,1), (1,2,1), (1,1,2), (2,1,2), (1,2,2), (2,2,1), (3,2,1); sub-pillars and indicator weights remain unchanged (value = 1).
2. Sub-pillar weights vectors: (2,(1,1,1),(1,1,1,1)), (1,(2,1,1),(1,1,1,1)), (1,(1,2,1),(1,1,1,1)), (1,(1,1,2),(1,1,1,1)), (1,(1,1,1),(2,1,1,1)), (1,(1,1,1),(1,2,1,1)), (1,(1,1,1),(1,1,2,1)), (1,(1,1,1),(1,1,1,2)), (1,(2,2,1),(1,1,1,1)), (1,(2,1,2),(1,1,1,1)), (1,(1,2,2),(1,1,1,1)), (1,(3,1,2),(1,1,1,1)), (1,(1,1,1),(2,2,1,1)), (1,(1,1,1),(2,1,2,1)), (1,(1,1,1),(2,1,1,2)), (1,(1,1,1),(1,2,1,2)), (1,(1,1,1),(1,1,2,2)), (1,(1,1,1),(1,2,2,1)), (1,(1,1,1),(2,2,2,1)), (1,(1,1,1),(2,1,2,2)), (1,(1,1,1),(1,2,2,2)), (1,(1,1,1),(1,2,3,2)), (1,(1,1,1),(1,2,3,4)), (1,(1,1,1),(1,3,2,4)), (1,(1,1,1),(1,3,4,2)), (1,(1,1,1),(1,4,2,3)), (1,(1,1,1),(1,4,3,2)), (1,(1,1,1),(1,2,4,3)), (2,(2,1,3),(1,2,4,3)); pillars and indicators weights remained unchanged.

In the examples above, the vectors (e.g., (p_1, p_2, p_3) and $(p_{11}, (p_{21}, p_{22}, p_{23}), (p_{31}, p_{32}, p_{33}))$ with $i = 1:3$ and $j = 1:4$) account more for the importance allocated to one pillar or sub-pillar within the composite index.

There are 15 scenarios built within the tool with the following alternatives: six scenarios using the z-score normalisation, combining different types of weights (equal, random and specific weights) with geometric and arithmetic aggregation methods, six scenarios using min-max normalisation with the same combinations of parameters (also includes the base model), two Borda models (with equal weights and specific ones) and a Copeland model. The tool also includes the median and the average rankings across all indicators for all the countries.

The overall impact of all changes mentioned above on countries' rankings is summarised in the chart and the table below.

Country Ranking Variations



Country Ranking Variations (Highest, Lowest, Median) and Variation Ranges

Rank	Country	Highest Ranking	Lowest Ranking	Median Ranking	Range Variation	Change (Median Ranking vs Rank)
1	Sweden	1	1	1	0	0
2	Denmark	2	2	2	0	0
3	The Netherlands	3	4	3	1	0
4	Finland	4	5	4	1	0
5	United Kingdom	3	5	5	2	0
6	Estonia	4	7	6	3	0
7	Ireland	7	9	7	2	0
8	Germany	5	8	8	3	0
9	Cyprus	9	14	10	5	1
10	Austria	8	10	9	2	-1
11	Czech Republic	11	16	12	5	1
12	Luxembourg	12	19	13	7	1
13	Malta	10	13	12	3	-1
14	Portugal	11	16	15	5	1
15	Slovenia	10	15	14	5	-1
16	Lithuania	10	17	16	7	0
17	Belgium	14	18	17	4	0
18	Latvia	14	19	17	5	-1
19	Spain	15	19	19	4	0
20	France	18	21	20	3	0
21	Poland	21	24	21	3	0
22	Hungary	20	23	22	3	0
23	Slovakia	22	24	23	2	-1
24	Italy	21	25	24	4	0
25	Romania	24	26	25	2	0
26	Croatia	26	28	27	2	1
27	Bulgaria	25	27	26	2	-1
28	Greece	27	28	28	1	0

Note: "+1": the country loses one place; "-1": the country gains one place

When it comes to range variation, the results show that:

1. Two countries are unaffected: Denmark and Sweden.
2. There is a small impact on Finland, Greece and The Netherlands (only one place variation).
3. For 16 countries the variation of rankings goes up two to four places and for seven countries the range of variation is at least five ranks.
4. The widest ranking range is seen for two countries, Lithuania and Luxembourg, and is of seven places.

However, the median ranking of countries (across all simulations) shows a more stable performance of countries compared to the original ranking. Differences are seen in the case of 11 countries: for five countries the median ranking is one position lower than the original ranking (Croatia, Cyprus, Czech Republic, Luxembourg and Portugal). For the other six countries, the median ranking is one position higher (Austria, Bulgaria, Latvia, Malta, Slovenia and Slovakia).

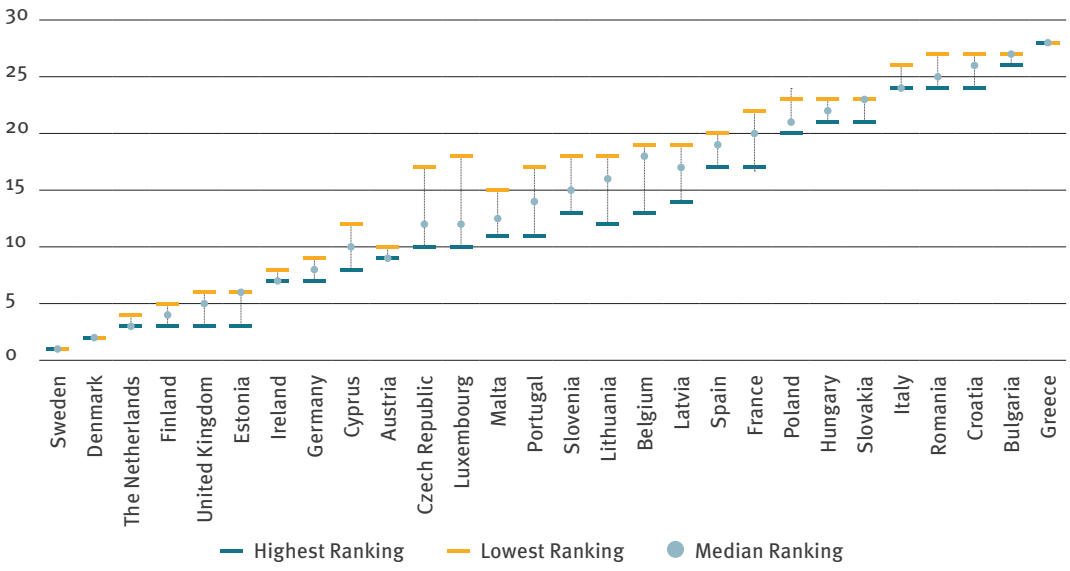
Based on the results obtained across the different scenarios and the fact that the countries' performances remain relatively stable, the model constructed is stable and well-developed.

Robustness with Single Indicator Variation

The model used for simulations was the basic one. The scenarios aimed to assess how changes in one single indicator's performance would affect a country's ranking when all the other indicators values remain constant.

In the first simulation, 27 new cases were generated for each member by varying the country's performance on one indicator comparable to each of the other countries' score on that indicator and re-calculating The 2019 Future of Work Index result. The method was applied for each of the 16 indicators that compose the Future of Work Index. 432 new cases were generated. Then, the median and the variation range were calculated. The overall impact on countries' rankings is summarised in the chart and the table below.

Simulation 1: Country Ranking Variations



Scenario 1: Country Rankings (Highest, Lowest, Median) and Variation Ranges

Rank	Country	Highest Ranking	Lowest Ranking	Median Ranking	Range Variation	Change (Median Ranking vs Rank)
1	Sweden	1	1	1	0	0
2	Denmark	2	2	2	0	0
3	The Netherlands	3	4	3	1	0
4	Finland	3	5	4	2	0
5	United Kingdom	3	6	5	3	0
6	Estonia	3	6	6	3	0
7	Ireland	7	8	7	1	0
8	Germany	7	9	8	2	0
9	Cyprus	8	12	10	4	1
10	Austria	9	10	9	1	-1
11	Czech Republic	10	17	12	7	1
12	Luxembourg	10	16	12	6	0
13	Malta	11	15	12.5	4	-1
14	Portugal	11	17	14	6	0
15	Slovenia	13	18	15	5	0
16	Lithuania	12	18	16	6	0
17	Belgium	13	19	18	6	1
18	Latvia	14	19	17	5	-1
19	Spain	17	20	19	3	0
20	France	17	22	20	5	0
21	Poland	20	23	21	3	0
22	Hungary	21	23	22	2	0
23	Slovakia	21	23	23	2	0
24	Italy	24	26	24	2	0
25	Romania	24	27	25	3	0
26	Croatia	24	27	26	3	0
27	Bulgaria	26	27	27	1	0
28	Greece	28	28	28	0	0

Note: "+1": the country loses one place; "-1": the country gains one place

When it comes to range variation, the results show that:

1. Three countries are unaffected: Denmark, Greece and Sweden.
2. There is small impact on four countries: Austria, Bulgaria, The Netherlands and Ireland.
3. For 13 countries, the variation of rankings goes up two to four places and for eight countries the range of variation is at least five ranks.
4. The widest variation of ranking is seven places and Czech Republic is the only country with this kind of variation.

However, the median ranking shows a more stable performance of countries compared to the original ranking. Differences are seen in the case of six countries: for three countries the median ranking is one position lower than the original ranking (Belgium, Cyprus and Czech Republic). For the other three, the median ranking is one position higher (Austria, Latvia and Malta).

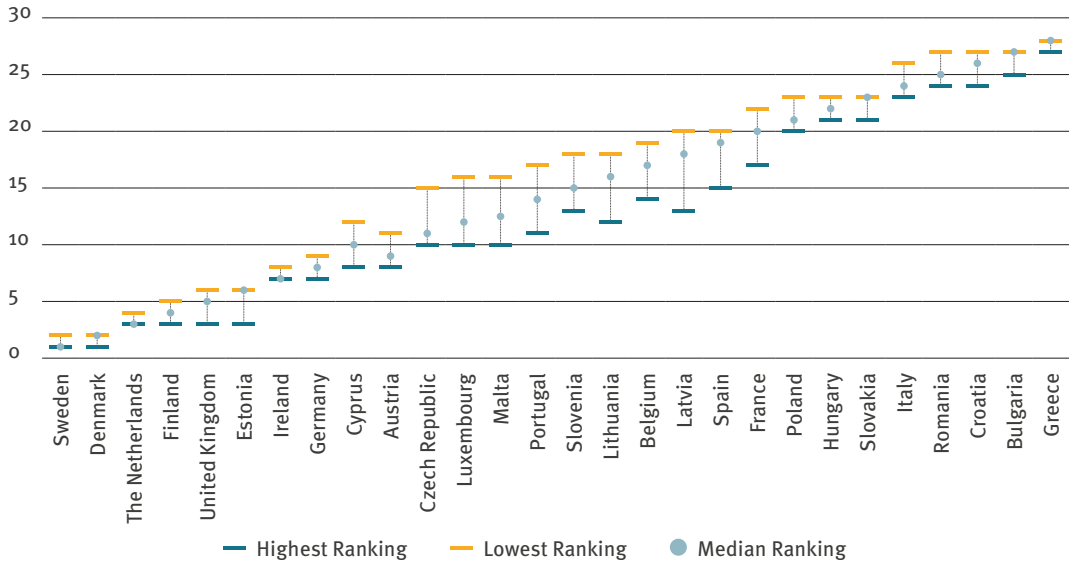
In the second simulation, 28 new cases were generated for each member state by varying the country's performance on one indicator with randomly generated values (within the normalisation range 10 to 100) and re-calculating the result. The method was applied for each of the 16 indicators that compose The Future of Work Index. 448 new cases were generated. Then the median and the variation range were calculated. The overall impact on countries' rankings is summarised in the chart and table below.

Scenario 2: Country Rankings (Highest, Lowest, Median) and Variation Ranges

Rank	Country	Highest Ranking	Lowest Ranking	Median Ranking	Range Variation	Change (Median Ranking vs Rank)
1	Sweden	1	2	1	1	0
2	Denmark	1	2	2	1	0
3	The Netherlands	3	4	3	1	0
4	Finland	3	5	4	2	0
5	United Kingdom	3	6	5	3	0
6	Estonia	3	6	6	3	0
7	Ireland	7	8	7	1	0
8	Germany	7	9	8	2	0
9	Cyprus	8	12	10	4	1
10	Austria	8	11	9	3	-1
11	Czech Republic	10	15	11	5	0
12	Luxembourg	10	16	12	6	0
13	Malta	10	16	12.5	6	-1
14	Portugal	11	17	14	6	0
15	Slovenia	13	18	15	5	0
16	Lithuania	12	18	16	6	0
17	Belgium	14	19	17	5	0
18	Latvia	13	20	18	7	0
19	Spain	15	20	19	5	0
20	France	17	22	20	5	0
21	Poland	20	23	21	3	0
22	Hungary	21	23	22	2	0
23	Slovakia	21	23	23	2	0
24	Italy	23	26	24	3	0
25	Romania	24	27	25	3	0
26	Croatia	24	27	26	3	0
27	Bulgaria	25	27	27	2	0
28	Greece	27	28	28	1	0

Note: "+1": the country loses one place; "-1": the country gains one place

Simulation 2: Country Ranking Variations



When it comes to range variation, the results show that:

1. There is small impact on five countries: Denmark, Greece, Ireland, The Netherlands and Sweden.
2. For 13 countries, the variation of rankings goes up two to four places and for 10 countries the range of variation is at least five ranks.
3. The widest variation of ranking is seven places and Latvia is the only country with this level of variation.

However, the median ranking shows a more stable performance of countries compared to the original ranking. Differences are seen only in the case of three countries: in one country the median ranking is lower one position than the original ranking (Cyprus), for the other two the median ranking is higher one position (Austria and Malta).

Sensitivity Analysis Conclusions

The tests results show that the model developed is robust and country performances do not vary significantly across different scenarios. Overall, the biggest variation range is of seven places between the highest and the lowest rankings, while the most frequent is between two and four places. When it comes to the median ranking, it only varies one position compared to the model ranking.

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FUTURE OF WORK LABORATORY

About the Future of Work Laboratory

The Future of Work Laboratory is a multi-disciplinary research hub and high-level community committed to exploring how the world of work is changing – and the way policy needs to change along with it. The Laboratory is housed in and managed by the Lisbon Council, a Brussels-based think tank.

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