

Automation and the changing nature of work

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Abstract:

This study identifies the job attributes, and in particular skills and abilities, which predict the likelihood a job is recently automatable drawing on the Josten and Lordan (2020) classification of automatability, EU labour force survey data and a machine learning regression approach. We find that skills and abilities which relate to non-linear abstract thinking are those that are the safest from automation. We also find that jobs that require ‘people’ engagement interacted with ‘brains’ are also less likely to be automated. The skills that are required for these jobs include soft skills. Finally, we find that jobs that require physically making objects or physicality more generally are most likely to be automated unless they involve interaction with ‘brains’ and/or ‘people’.

Keywords: Work, Automatability, Job skills, job abilities EU Labour Force Survey

1. Introduction

Research on the automation and the future of work has brought with it a range of research contributions which seek to determine which occupations will be lost to automation. For example, Frey and Osborne [1] estimate the susceptibility of occupations to computerisation and find that 47% of US occupations are at risk of automation, and point to service jobs as being susceptible to automation. Many other contributions in the automation literature rely on defining automatable work through measures of the tasks associated with a particular occupation rather than the occupation overall. One of the most prominent is owed to Autor and Dorn [2] and Autor et al. [3] who define a job as automatable if it is high in routine task-intensity. Specifically, routine task-intensity is defined based on how high a job ranks on

routine content, and how low it ranks on abstract and manual content. Information on the routine, abstract and manual task content of each respective occupation comes from the US *Dictionary of Occupation Titles* where incumbents are asked to grade their occupation with respect to particular attributes. A job is then defined as automatable if it is in the top third of the distribution of routine task-intensity. This measure of automatable work has followed the big movements in the occupation distribution accurately over the last decades – namely the hollowing out of the middle of the occupational distribution [4]. To this end the types of occupations available have become more polarized, with the majority of occupations falling into high and low skill categories, and mid skill jobs disappearing in numbers [5].

While much of the automation literature relies on past employment data, the rapid progress on robotics, artificial intelligence (AI) and automation technologies has also motivated predicting automation developments in the near future [6,7]. The importance of this exercise is belied in Lordan [8] and Lordan and Neumark [9] who suggest that new jobs are now being automated; particularly jobs traditionally at the bottom of the occupation distribution. Further, advances in AI and in particular machine learning will likely affect at least some tasks in most occupations and will hence also disrupt jobs at the top of the income distribution [10].

Concretely, Webb [5] studies the impact of automation on occupational tasks and matches information on job tasks to patents issued for robots, software and AI to identify which tasks can be automated by different technologies to derive an exposure to automation score. Using Google patents data, the O*NET database of occupations and tasks¹ and US census data, he first analyses the impact of his ‘exposure to automation score on employment using historical

¹ O*NET is a database of occupations and tasks published by the US Department of Labor that provides detailed descriptions of a large number of occupations and has been used frequently in the literature studying the impact of automation and technical innovation on employment [2,3,5,24].

data on robots and software patents and job descriptions and then repeats this exercise using patents on AI to predict future employment effects. AI is studied with respect to future developments as it is a relatively new phenomenon as compared to software and robotic innovations. While innovation on robots and software has mainly affected low skill and low wage occupations in the past, he finds that AI is increasingly predicted to disrupt high-skill occupations. Building on this work, Tolan et al. [11] link research intensity in AI to abilities required for specific job tasks using European survey data, O*NET data and AI benchmarking platforms. They find that jobs that were originally classified as non-automatable are increasingly affected by automation such as medical doctors. They find that abilities particularly affected by automation are abilities for idea creation while people abilities are less affected.

Lordan and Josten's [6] study is also forward-looking and takes the occupations classified by Autor and Dorn (2013) as given while reclassifying the remaining occupations as automatable depending on the number of patents recently available for each specific occupation thereby also predicting which jobs will be automated in the near future. They try to capture the most recent wave of automation by using patent developments in artificial intelligence, robots and automation more broadly as a proxy for technology that will be on the market shortly. If for any given occupation the authors find a large number of patents and find that successful patent pilots have been covered by the media, this occupation is classified as being on track to become automatable.² This study builds on and uses the classification by Lordan and Josten [6] to analyse which job attributes and requirements predict the likelihood that a job is reclassified as automatable under their new definition. It thereby speaks to the literature on the automatability of tasks, skills and abilities.

² A full list of the occupations classified as automatable by Lordan and Josten [6] can be found in S1 Table.

In particular we use the automatability indicator by Lordan and Josten [6] matched with employment data from the European Labor Force Survey (EU-LFS)³ and with data on the skills and abilities required on the job from O*NET. We then regress the automatability indicator on the skills and abilities respectively to analyse which skills and which abilities required in different occupations are susceptible to automation. This is then further linked to work by Lordan and Pischke [12] who capture the ‘people’, ‘brains’ and ‘brawn’ content of occupations with different risk of being automated; i.e. the extent to which an occupation involves people interaction, cognitive thinking skills or physicality respectively.

Identifying future job requirements by occupations is crucial to be able to quantify changes in demand for skills and abilities resulting from automation [13]. First, this information is relevant to policymakers and companies interested in the future of work. In particular, it informs on the skills and abilities required of workers in the near future as well as the activities they will likely be engaged in. Second, these findings further help conversations surrounding the re-organisation of education and other development activities to ensure the stock and flow of the relevant skills for the 4th industrial revolution. The returns to education are constantly increasing with the rise in technological progress with specific skills such as digital and non-cognitive skills becoming particularly important [14]. Third, this information also helps to gain a more nuanced understanding of the exact aspects of the occupations at risk of automation and hence addresses criticism by Arntz et al. [15], among others, who find that focusing on the automatability of occupations rather than job tasks overstates the risk of automation and omits important aspects of the automation developments.

³ The EU-LFS covers employment statistics of households from EU member countries, Switzerland, Sweden and the UK quarterly.

2. Data

Job Level Abilities and Skills Proxies

To capture the abilities and skills required by occupations at the three-digit occupation level we draw on O*NET version 15. O*NET is an occupational database by the US Department of Labor that narrowly defines occupations with respect to the tasks and activities and the skills and abilities required on the job. This database has been used frequently in the automation literature both in the US and the UK (2,3,5,15). The difference in task content of occupations in the US versus the UK has been shown to be small, further justifying using this resource to classify occupation attributes using UK data [16,17].

Specifically, O*NET offers 80 distinct items in the abilities classification. The first column of Table 2 lists each of these items and column (2) provides a brief description of the item. The third column of Table 2 documents the secondary category a specific ability is in, while column (4) provides an overall category. In addition to abilities, O*NET offers 40 distinct items in the skills classification. Again the first column of Table 3 lists each of these items and column (2) provides a brief description each item. The third column documents the secondary category a specific ability is in, while column (4) provides an overall category. Given the large number of abilities (80) and skills (40) items, the secondary and overall category in columns (3) and (4) from Tables 2 and 3 will be utilised respectively for the interpretation of the analysis.

EU LFS and Lordan and Josten

Our analysis relies on data from Lordan and Josten [6] who match data from the European Labour Force Survey (EU-LFS) between 2013-2016 to their automation classification. The EU-LFS is conducted across all Member States of the European Union, Iceland, Norway,

Switzerland and the United Kingdom and consists of quarterly collected household data on employment. We include all countries that have data in the years we analysis, in additional to 3-digit occupation codes. A full list of the countries we include can be found in Table 1.

Lordan and Josten [6] match their definition of recently automatable jobs based on patents at the 3-digit code occupation level to the EU-LFS using crosswalks provided by Lordan and Pischke [12]. To derive the automation classification, Lordan and Josten [6] revise 216 occupations that have been classified as non-automatable by Autor and Dorn [3] and search for the occupation name together with either the term “robot”, “automation,” or “artificial intelligence” in Google patents and then also in Google News. Depending on the number of patents and/or news articles, an occupation is then classified as either fully automatable, polarized automatable (i.e. partially automatable) or non-automatable.

Table 1 shows the shares of automatable employment (i.e. polarised and fully automatable) by EU-LFS country. We first note that the Lordan and Josten [6] classifications suggest that a large share of jobs in every country is recently automatable. Specifically, Finland is the country that has the lowest share of jobs that are classified as recently automatable (approximately 21%). For the remaining Scandinavian countries (Norway, Sweden and Denmark), Table 1 suggests that about 37% of the jobs are automatable, similar to the shares for the Netherlands and Iceland. In contrast, for Croatia, Czech Republic, Italy and Latvia more than 50% of the jobs are recently automatable. Overall, Table 1 highlights that there is large variation in the share of occupations that can be automated across EU-LFS countries.

3. Methodology

The main analysis in this work relies on EU-LFS data. Our main analysis relies on an indicator

variable that is equal to 1 if an occupation is newly automatable under the Lordan and Josten [6] classification and 0 otherwise. Jobs that are denoted as automatable by Author and Dorn [2] are excluded from the analysis given that these jobs were classified as automatable based on O*NET occupation attributes (i.e. routine, manual and abstract tasks), so it would be mechanical that they relate to the O*NET attributes. In addition, this exclusion allows us to clarify the differences in skills and abilities between non-automatable jobs and newly automatable jobs. If these jobs were included this delineation would not be possible.

We proceed by regressing the indicator variable on each set of job attributes and skills respectively as provided by O*NET. We control for differences across country with a set of country fixed effects and for differences across time with a set of year fixed effects. We have two main sets of regressions. The first, regresses the automation indicator variable on the 80 ability domains and the second regresses it on the 40 skills domains. We apply Lasso regression analysis, a shrinkage and variable selection method for linear regression models. This approach is chosen as we wish to reduce the dimensionality of the abilities and skills variables under consideration. The goal of a lasso regression is to obtain the subset of predictors that minimizes prediction error for a quantitative response variable. The lasso does this by imposing a constraint on the model parameters that causes regression coefficients for some variables to shrink toward zero. Variables with a regression coefficient equal to zero after the shrinkage process are excluded from the model. That is, these variables do not explain variation in the propensity for a job to be recently automatable and will be shown with a value of zero in the results tables. The remaining variables with a negative sign are those that describe the core skills and abilities that are most likely to become redundant because of the most recent wave of automation. In contrast, the remaining variables with a positive sign describe the core skills and abilities that are most likely to become more valuable. All non-zero variables are

significant at the 1% significant level.

When estimating the lasso for the abilities attributes we include 60 abilities attributes, in addition to country and year fixed effects. Country fixed effects control for location specific factors that are time invariant. Given the small-time window we do not expect that time varying factors will distort our results.

4. Results

Abilities

The results from the pooled country analysis for abilities are documented in Table 2. We first note that the regression considering abilities explains 97% of the variation in the Lordan and Josten [6] automation indicator. That is, we can explain almost all of the variation in the indicator variable with these measures of ability. Second, if we take columns (3) and column (4) there is no single secondary or overall ability category that persistently has negative or positive signs. Rather, within each of these categories there are abilities that are becoming less important and others that are becoming more important. For example, arm-hand steadiness is a fine manipulative psychomotor ability (e.g. the ability to keep your hand and arm steady while moving your arm) that is highly unlikely to be automated given the estimates. In contrast, finger dexterity which is also a fine manipulative psychomotor ability (i.e. the ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects) is likely to be automated. Similarly, fluency of ideas is an idea generation and reasoning ability which relates to the ability to come up with a number of ideas about a topic (i.e. the number of ideas is important, not their quality, correctness, or creativity) which is highly unlikely to be automated. In contrast, problem sensitivity (i.e. recognizing that

there is a problem but not solving the problem) in the same category is highly likely to be automated.

Although it may seem counter-intuitive that within the same ability category there are pairs of abilities that are both automatable and non-automatable, the description of each item (see column (2) Table 2) highlights a logical theme. In general, an ability is automatable if it entails an underlying action that is repeatable or follows some logic. For example, control precision relies on adjusting controls quickly and repeatedly. The repetitive nature of this ability implies it is easily codifiable and machines have a comparative advantage in speed of execution. In contrast, speech recognition, which involves understanding spoken language, is unlikely to be automated. This finding is intuitive as it is difficult to predict what someone will say unless it entails common conversations such as those in telephone customer care. For example, customer care in banking now frequently utilise artificial intelligence to direct calls or provide bank balances but it is human operators that deal with complaints and other issues.

The overall conclusion from studying Table 2 is that jobs that are high on ‘brains’ (i.e. involve abstract thinking) are far less likely to be automated. In this case, ‘brains’ is short-hand for thinking and can involve reacting to other individuals (e.g. in caring or teaching professions), performing a service (e.g. as mechanic or fine dining waiter) or engaging in agile or creative thinking (e.g. in a leadership or knowledge worker role). Occupations that are predicted to be automated are low on ‘brains’ and high in routine contents. The abilities analysis is hence largely in line with the work by Autor and Dorn [3] who predict that jobs that involve routine tasks will be automated. However, given that in this analysis we only focus on the occupations classified as non-automatable by Autor and Dorn [3] it further reiterates

that automation has continued to make progress automating jobs that are high in routine content.

Skills

The results from the pooled country analysis for skills are documented in Table 3. This regression explains 84% of the variation in the Lordan and Josten [6] automation indicator. Analysing columns (3) and (4) of Table 3, the results are consistent with the analysis of abilities in that there is again no secondary or overall skills category that has a persistent negative or positive effect on the automation indicator. In addition and also consistent with the abilities analysis, there is a pattern which suggests that ‘brains’ (i.e. thinking and reacting) is becoming more important while on the job as compared to routine work.

For example, within the overall category of basic skills (see column 4), the O*NET item active learning is a skill that is more likely to be automated. This is consistent with machines being able to process a large amount of information quickly. However, the O*NET items critical thinking and monitoring of performance, which essentially involve using information that is available to pass judgement and make decisions, are less likely to be automated. Likewise, within cross functional skills, skills that centre around identifying potential problems, setting rules and gathering information are most likely to be automated (for example the O*NET items of time management, troubleshooting, operation monitoring, systems evaluation and management of human resources). In contrast, those skills that require manual actions (e.g. equipment maintenance), communicating information (for example instructing), active decision making (e.g. judgment and decision making and quality control analysis), leadership (e.g. persuasion) and knowledge work (e.g. systems analysis and technology design) are less likely to be automated.

A second notable pattern emerges if we reconsider Table 3. In general, the skills that require active interactions with people (i.e. implying that there is at least a two-way dialogue where an employee is reacting to the other person(s)) are not automatable. In essence, these jobs are an interaction between ‘brains’ and ‘people’ skills. In Table 3, these include active listening, instructing, monitoring and persuasion. This observation seems to suggest that jobs that involve ‘people’ interacted with ‘brains’ skills are also less likely to be automated.

Conclusion from the skills and abilities analysis

From the estimates documented in Table 2 and Table 3 we make the following three conclusions:

1. We can explain almost all of the variation in the jobs that are newly defined as automatable by Lordan and Josten [6] using the O*NET items of abilities or skills .
2. Jobs that require ‘brains’ (i.e. abstract and non-linear thinking) are far less likely to be automated as compared to jobs which require linear and codifiable thinking skills and abilities. At the top of the income distribution, jobs that require non-linear thinking may need critical thinking, decision-making and creativity. Elsewhere in the income distribution these jobs require skills that have been traditionally delivered in apprenticeships, from mechanics and carpenters to florists and hairdressers.
3. Jobs that require ‘people’ engagement interacted with ‘brains’ are also less likely to be automated. These jobs include management across all levels, co-ordinators of all types, teachers, carers and medical practitioners (including nursing). The skills and abilities that are required for these jobs include soft skills. The value of these skills in terms of adult outcomes has become a topic of recent writings in economics (for example Heckman and Kautz (2013) [18]; Kautz et al., (2014) [19] and Lordan and

McGuire (2019) [20]) and has been recently noted specifically as skills that will be needed in the advent of the fourth industrial revolution [8,21].

Activities

To summarise further the conclusions described in conclusions 2. and 3. from the skills and abilities analysis (i.e. that jobs which require ‘brains’ and ‘people’ interacted with ‘brains’ are those that are the least likely to be automated) we consider a third analysis on work activities and context of a person’s occupation. This third analysis is a replication of Table 3 in Lordan and Josten [6]. We later go further than Lordan and Josten [6] and present these estimates separately for each country in our dataset to allow for cross country comparisons.

To replicate their work we first follow Lordan and Pischke [12] and create three factors that represent the ‘people’ ‘brains’ and ‘brawn’ content in each three-digit code occupation. That is:

1. ‘People’ is a variable which distils the information from many domains in activities and context that relate to having interactions with people on a day-to-day basis.
2. ‘Brains’ is a variable which distils the information from many domains in activities and context that relate to abstract thinking.
3. ‘Brawn’ is a variable which distils the information from many domains in activities and context that relate to interacting physically with objects, including making them on a daily basis.

We then regress (using ordinary least squares (OLS)) our dummy representing whether a job is automatable on the ‘people’, ‘brains’ and ‘brawn’ variables. Consistent with Lordan and Josten [6]) we also interact the three variables with each other, implying we also include in our

regression people*brains, people*brawn and brains*brawn. We again control for fixed country differences and yearly differences in the regression. The results from this analysis are documented in Table 4.

Turning to Table 4, we can explain 42% of the variation in our automatable employment indicator with the three latent factors. The size and significance of the negative coefficient on the ‘brain’ factor strongly implies that jobs which require thinking are those that are safe from the most recent wave of automation. In addition, the interaction between the ‘people’ and ‘brains’ factors is negative and significant. This highlights that jobs which require thinking and social interactions are safer in the most recent wave of automation as compared to those that simply involve people interactions (as evidenced by the positive and significant coefficient on the ‘people’ factor). We note that the estimates in Table 4 imply that jobs that are high on ‘brawn’ content are those that are most likely to be automated in the most recent wave of automation. These jobs include making objects and physically lifting items. Overall, these conclusions align well with those that came from the abilities and skills analyses in Table 2 and Table 3 respectively as they highlight the importance of abstract thinking and the combination of abstract thinking and people skills.

Country-level analysis

S2 Appendix contains the estimates from tables 2 through 4 by country including all EU-LFS countries as depicted in Table 1. The differences across these estimates is driven only by differences in the occupation distribution for each country, while the classification of whether a job is recently automatable is fixed across time and country. We note that the separate analyses of skills and abilities for each country allows us to draw similar conclusions to the pooled country estimates in Table 2 and Table 3. That is, the abilities and skills that are

becoming more important relate to the ability and skill to use ‘brains’ for abstract, strategic and creative thinking and the ability and skill to use ‘brains’ when interacting with ‘people’.

The ‘people’, ‘brains’ and ‘brawn’ categories allow us summarise the differences and commonalities across countries most succinctly. These are:

1. For all countries, jobs that are high on ‘brains’ are least likely to be automated in the most recent wave of automation.
2. For many countries the ‘people’ coefficient is also negative and significant, implying that jobs that are ‘people’ facing are relatively safe from automation, regardless of their interaction with ‘brains’ These countries are: Austria, Belgium, Cyprus, Czech Republic, Denmark, Germany, Estonia, Spain, France, Ireland, the Netherlands, Norway, Sweden.
3. For almost all countries there is a negative and significant relationship between the potential for automation and the ‘people’ and ‘brains’ interaction. The exceptions are Cyprus, Estonia, Ireland, Norway, Sweden and the UK. We note that for Estonia, Ireland, Norway and Sweden both the ‘people’ and ‘brains’ effects are independently negative and significant, highlighting that ‘people’ jobs in general are unlikely to disappear significantly. For Cyprus and the UK, the estimates suggest that ‘brains’ are the most important skills and abilities to develop given the current distribution of jobs.
4. In general, the brawn effect is positive and significant, implying that jobs that are high on ‘brawn’ content are at risk from automation. The exception of countries where this effect is negative are Cyprus, Czech Republic and Estonia.
5. The interaction effect between ‘people’ and ‘brawn’ is in general positive, significant but small in magnitude for just over half the countries in our study. In contrast, it is

negative and significant but small in magnitude for: Finland, France, Hungary, Ireland, Iceland, Latvia, Norway, Sweden, Slovakia and the UK. The difference seems to be driven by a relatively large number of jobs in these countries in the low end of the income distribution that require physical lifting and people (for example, cleaning and caring).

6. The interaction effect between ‘brains’ and ‘brawn’ is in general negative, significant but small in magnitude. There are only four exceptions. These are: Cyprus, Czech Republic and Ireland.

The differences in effects found at the country level likely reflect the fact that the structure of jobs and skills within country differ, coupled with each country being on a different trajectory with respect to automation. In addition, the policies that can protect jobs from automation also differ within country. A better understanding of such within country policies, coupled with their interaction with the labour market is an area for future research.

Conclusion

This study identifies the job attributes which predict the likelihood that a job is recently automatable. In particular, it looks at the i) abilities and ii) skills required on the job and how they link to automatability. A third analysis (iii) considers the ‘people’, ‘brains’ and ‘brawn’ content of an occupation, i.e. the extent to which an occupation involves people interactions, abstract thinking and physicality respectively. The three analyses are also done on a country level to see whether the impact of automatability on the labour market differs across countries.

Overall, we find that skills and abilities which relate to non-linear abstract thinking, which we term ‘brains’, are those that are the safest from automation. We also find that jobs that require ‘people’ engagement interacted with ‘brains’ are also less likely to be automated. The skills

and abilities that are required for these jobs include soft skills. Finally, we find that jobs that require physicality (e.g. creating objects manually) are most likely to be automated unless they involve interaction with ‘brains’ and/or ‘people’.

These findings are in line with the literature on the growing importance of cognitive and social skills for the future of work. In particular, Deming [21] finds that the interaction between cognitive and social skills has seen greater wage and employment growth, which is comparable to our finding of the importance of ‘brains’ alongside ‘people’ skills and abilities. It also matches findings of studies that link skills endowments or demand for skills to labour market outcomes and find that social and cognitive skills are increasingly rewarded and that there is a complementarity across those two dimension [22,23].

Information and knowledge on future job requirements by occupations and by country is essential when trying to predict the demand for skills and abilities and activities going forward. It is important knowledge for policymakers and companies who can adapt policies and organisational settings regarding the future of work accordingly and ensure that individuals are prepared for current developments and what is yet to come. In particular, it informs conversations surrounding the re-organisation of education and other development activities to ensure that the stock and flow of skills are ready for the 4th industrial revolution. The returns to education are constantly increasing with the rise in technological progress with specific skills such as digital and non-cognitive skills becoming particularly important [14]. And this information also helps to gain a more nuanced understanding of the exact aspects of the occupations at risk of automation rather than just predicting automation overall and hence extends previous work. While we summarise our findings at the ‘people’, ‘brains’ and ‘brawn’ level, we still show and have briefly discussed the results by each O*NET abilities and skills

item, which is informative to the reader interested in specific aspects of occupations and their automatability.

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Table 1: Lordan and Josten (2020) shares of employment in 2013-2016 by country

	Recently Automatable
Austria	0.516
Belgium	0.443
Croatia	0.565
Cyprus	0.512
Czech Republic	0.516
Denmark	0.370
Estonia	0.458
Finland	0.207
France	0.478
Germany	0.474
Greece	0.574
Hungary	0.544
Iceland	0.374
Ireland	0.481
Italy	0.508
Latvia	0.525
Lithuania	0.527
Luxembourg	0.442
Netherlands	0.374
Norway	0.363
Portugal	0.485
Spain	0.474
Sweden	0.378
Slovakia	0.513
UK	0.405

Table 2: Abilities estimates

(1)	(2)	(3)	(4)	(5)
ONET Item	Description	Secondary category	Overall category	Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-3.587
Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.	Auditory and speech abilities	Sensory Abilities	0.000
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-2.381
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	1.663
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-4.904
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	0.558
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	2.784
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	-0.256
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	0.555

Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	Physical Abilities	-2.347
Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-2.219
Finger Dexterity	Like	Fine manipulative abilities	Psychomotor abilities	2.169
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Perceptual Abilities	Cognitive abilities	0.000
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-2.830
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-3.635
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	0.266
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	0.000
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	-1.139
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0.000
Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0.000

Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	0.000
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	1.253
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	0.000
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	1.604
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	0.000
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	3.025
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	-1.817
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	Cognitive Abilities	0.000
Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	4.378
Originality				0.000
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-4.204

Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	0.713
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	2.190
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	3.112
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	2.509
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It includes the speed with which the correct response is started with the hand, foot, or other body part.	Control Movement Abilities	Psychomotor Abilities	-4.984
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	-0.963
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	-1.685
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	1.051
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	0.000
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	-2.099
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	5.164
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	-1.118

Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	0.557
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	0.679
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	Cognitive Abilities	2.796
Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	0.000
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	4.322
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	-0.752
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	-1.251
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	0.000
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	-0.295
R Squared = 0.97				2701297

Table 3: Skills estimates

(1)	(2)	(3)	(4)	(5)
ONET Item	Description	Secondary category	Overall category	Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	1.630
Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.	Content	Basic Skills	0.608
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-0.580
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-6.025
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-3.233
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	-0.504
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	0.000
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0.540
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-2.752

Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	2.775
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	0.000
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0.000
Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	-1.262
Management of Personnel Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	2.264
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0.000
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-4.676
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	1.967
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	1.831
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	0.000
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-1.091

Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-0.827
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	0.000
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	0.000
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	-2.474
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-0.935
Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	1.044
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	-0.854
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	0.000
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	1.235
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	-2.530
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	4.365

Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-2.203
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	4.214
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0.000
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	1.686
R squared = 0.84			N=	2701297

Table 4: ‘People’, ‘brains’ and ‘brawn’ estimates

Variable	Marginal effect
People	0.009*** (0.000)
Brains	-0.070*** (0.000)
Brawn	0.032*** (0.000)
People * Brains	-0.002*** (0.000)
People* Brawn	0.003*** (0.000)
Brains* Brawn	0.000*** (0.000)
N	2,698,151
R squared	42%

Notes *, **, *** denotes significance at the 10%, 5% and 1% levels respectively.

SUPPORTING INFORMATION

S1 Table: Occupations Classified by Josten and Lordan (2020) as automatable

S2 Appendix. Individual Country Analysis.

S1 Table: Occupations Classified by Josten and Lordan (2020) as automatable

Occupation	Lordan and Josten
Chief executives, public administrators, and legislators	Non- Automatable
Financial managers	Automatable
Human resources and labour relations managers	Automatable
Managers and specialists in marketing, advert., PR	Automatable
Managers in education and related fields	Non- Automatable
Managers of medicine and health occupations	Non- Automatable
Managers of properties and real estate	Non- Automatable
Funeral directors	Fully Automatable
Managers and administrators, n.e.c.	Non- Automatable
Accountants and auditors	Fully Automatable
Insurance underwriters	Fully Automatable
Other financial specialists	Fully Automatable
Management analysts	Non- Automatable
Personnel, HR, training, and labour rel. specialists	Automatable
Purchasing agents and buyers of farm products	Fully Automatable
Buyers, wholesale and retail trade	Non- Automatable
Purchasing managers, agents, and buyers, n.e.c.	Non- Automatable
Business and promotion agents	Non- Automatable
Construction inspectors	Non- Automatable
Inspectors and compliance officers, outside	Non- Automatable
Management support occupations	Automatable
Architects	Non- Automatable
Aerospace engineers	Non- Automatable
Metallurgical and materials engineers	Non- Automatable
Petroleum, mining, and geological engineers	Non- Automatable
Chemical engineers	Non- Automatable
Civil engineers	Non- Automatable
Electrical engineers	Non- Automatable
Industrial engineers	Non- Automatable
Mechanical engineers	Non- Automatable
Engineers and other professionals, n.e.c.	Non- Automatable
Computer systems analysts and computer scientists	Non- Automatable
Operations and systems researchers and analysts	Non- Automatable

Actuaries	Fully Automatable
Mathematicians and statisticians	Non- Automatable
Physicists and astronomers	Non- Automatable
Chemists	Non- Automatable
Atmospheric and space scientists	Non- Automatable
Geologists	Non- Automatable
Physical scientists, n.e.c.	Fully Automatable
Agricultural and food scientists	Non- Automatable
Biological scientists	Non- Automatable
Foresters and conservation scientists	Non- Automatable
Medical scientists	Non- Automatable
Physicians	Non- Automatable
Dentists	Non- Automatable
Veterinarians	Non- Automatable
Optometrists	Automatable
Podiatrists	Non- Automatable
Other health and therapy occupations	Non- Automatable
Registered nurses	Non- Automatable
Pharmacists	Automatable
Dieticians and nutritionists	Fully Automatable
Respiratory therapists	Non- Automatable
Occupational therapists	Non- Automatable
Physical therapists	Non- Automatable
Speech therapists	Automatable
Therapists, n.e.c.	Non- Automatable
Physicians' assistants	Automatable
Subject instructors, college	Non- Automatable
Kindergarten and earlier school teachers	Non- Automatable
Primary school teachers	Non- Automatable
Secondary school teachers	Non- Automatable
Special education teachers	Non- Automatable
Teachers, n.e.c.	Non- Automatable
Vocational and educational counselors	Non- Automatable
Librarians	Automatable
Archivists and curators	Non- Automatable
Economists, market and survey researchers	Non- Automatable

Psychologists	Non- Automatable
Social scientists and sociologists, n.e.c.	Non- Automatable
Urban and regional planners	Non- Automatable
Social workers	Non- Automatable
Clergy and religious workers	Non- Automatable
Welfare service workers	Non- Automatable
Lawyers and judges	Automatable
Writers and authors	Non- Automatable
Technical writers	Non- Automatable
Designers	Non- Automatable
Musicians and composers	Non- Automatable
Actors, directors, and producers	Non- Automatable
Painters, sculptors, craft-artists, and print-makers	Fully Automatable
Photographers	Fully Automatable
Dancers	Non- Automatable
Art/entertainment performers and related occs	Non- Automatable
Editors and reporters	Non- Automatable
Announcers	Non- Automatable
Athletes, sports instructors, and officials	Automatable
Clinical laboratory technologies and technicians	Fully Automatable
Dental hygienists	Fully Automatable
Health record technologists and technicians	Fully Automatable
Radiologic technologists and technicians	Fully Automatable
Licensed practical nurses	Non- Automatable
Health technologists and technicians, n.e.c.	Automatable
Engineering technicians	Non- Automatable
Drafters	Fully Automatable
Surveyors, cartographers, mapping scientists/techs	Automatable
Biological technicians	Automatable
Chemical technicians	Automatable
Other science technicians	Automatable
Airplane pilots and navigators	Automatable
Air traffic controllers	Fully Automatable
Broadcast equipment operators	Automatable
Computer software developers	Non- Automatable
Programmers of numerically controlled machine tools	Non- Automatable

Legal assistants and paralegals	Fully Automatable
Technicians, n.e.c.	Automatable
Sales supervisors and proprietors	Non- Automatable
Insurance sales occupations	Fully Automatable
Real estate sales occupations	Fully Automatable
Financial service sales occupations	Fully Automatable
Advertising and related sales jobs	Fully Automatable
Sales engineers	Non- Automatable
Salespersons, n.e.c.	Non- Automatable
Retail salespersons and sales clerks	Non- Automatable
Cashiers	Fully Automatable
Door-to-door sales, street sales, and news vendors	Non- Automatable
Sales demonstrators, promoters, and models	Automatable
Office supervisors	Fully Automatable
Computer and peripheral equipment operators	Non- Automatable
Secretaries and stenographers	Fully Automatable
Typists	Fully Automatable
Interviewers, enumerators, and surveyors	Non- Automatable
Hotel clerks	Fully Automatable
Transportation ticket and reservation agents	Fully Automatable
Receptionists and other information clerks	Fully Automatable
Correspondence and order clerks	Fully Automatable
Human resources clerks, excl payroll and timekeeping	Fully Automatable
Library assistants	Automatable
File clerks	Fully Automatable
Records clerks	Fully Automatable
Bookkeepers and accounting and auditing clerks	Fully Automatable
Payroll and timekeeping clerks	Fully Automatable
Billing clerks and related financial records processing	Fully Automatable
Mail and paper handlers	Fully Automatable
Office machine operators, n.e.c.	Fully Automatable
Telephone operators	Fully Automatable
Other telecom operators	Fully Automatable
Postal clerks, excludng mail carriers	Fully Automatable
Mail carriers for postal service	Fully Automatable
Mail clerks, outside of post office	Fully Automatable

Messengers	Fully Automatable
Dispatchers	Fully Automatable
Shipping and receiving clerks	Fully Automatable
Stock and inventory clerks	Fully Automatable
Meter readers	Fully Automatable
Weighers, measurers, and checkers	Fully Automatable
Material recording, sched., prod., plan., expediting cl.	Fully Automatable
Insurance adjusters, examiners, and investigators	Fully Automatable
Customer service reps, invest., adjusters, excl. insur.	Fully Automatable
Eligibility clerks for government prog., social welfare	Fully Automatable
Bill and account collectors	Fully Automatable
General office clerks	Fully Automatable
Bank tellers	Fully Automatable
Proofreaders	Fully Automatable
Data entry keyers	Fully Automatable
Statistical clerks	Fully Automatable
Teacher's aides	Automatable
Administrative support jobs, n.e.c.	Fully Automatable
Housekeepers, maids, butlers, and cleaners	Automatable
Laundry and dry cleaning workers	Fully Automatable
Supervisors of guards	Non- Automatable
Fire fighting, fire prevention, and fire inspection occs	Automatable
Police and detectives, public service	Non- Automatable
Sheriffs, bailiffs, correctional institution officers	Non- Automatable
Crossing guards	Non- Automatable
Guards and police, except public service	Fully Automatable
Protective service, n.e.c.	Automatable
Supervisors of food preparation and service	Non- Automatable
Bartenders	Automatable
Waiters and waitresses	Automatable
Cooks	Fully Automatable
Food preparation workers	Automatable
Miscellaneous food preparation and service workers	Automatable
Dental Assistants	Fully Automatable
Health and nursing aides	Non- Automatable
Supervisors of cleaning and building service	Non- Automatable

Superv. of landscaping, lawn service, groundskeeping	Automatable
Gardeners and groundskeepers	Automatable
Janitors	Automatable
Pest control occupations	Fully Automatable
Barbers	Non- Automatable
Hairdressers and cosmetologists	Non- Automatable
Recreation facility attendants	Automatable
Guides	Automatable
Ushers	Automatable
Baggage porters, bellhops and concierges	Automatable
Recreation and fitness workers	Automatable
Motion picture projectionists	Fully Automatable
Child care workers	Non- Automatable
Personal service occupations, n.e.c	Automatable
Supervisors of personal service jobs, n.e.c	Automatable
Public transportation attendants and inspectors	Automatable
Animal caretakers, except farm	Non- Automatable
Farmers (owners and tenants)	Fully Automatable
Farm managers	Fully Automatable
Farm workers, incl. nursery farming	Fully Automatable
Graders and sorters of agricultural products	Fully Automatable
Inspectors of agricultural products	Fully Automatable
Timber, logging, and forestry workers	Fully Automatable
Fishers, marine life cultivators, hunters, and kindred	Fully Automatable
Supervisors of mechanics and repairers	Non- Automatable
Automobile mechanics and repairers	Non- Automatable
Bus, truck, and stationary engine mechanics	Non- Automatable
Aircraft mechanics	Non- Automatable
Small engine repairers	Non- Automatable
Auto body repairers	Fully Automatable
Heavy equipment and farm equipment mechanics	Non- Automatable
Industrial machinery repairers	Non- Automatable
Machinery maintenance occupations	Fully Automatable
Repairers of industrial electrical equipment	Fully Automatable
Repairers of data processing equipment	Fully Automatable
Repairers of household appliances and power tools	Non- Automatable

Telecom and line installers and repairers	Non- Automatable
Repairers of electrical equipment, n.e.c.	Non- Automatable
Heating, air conditioning, and refrigeration mechanics	Non- Automatable
Precision makers, repairers, and smiths	Fully Automatable
Locksmiths and safe repairers	Automatable
Repairers of mechanical controls and valves	Non- Automatable
Elevator installers and repairers	Non- Automatable
Millwrights	Non- Automatable
Mechanics and repairers, n.e.c.	Non- Automatable
Supervisors of construction work	Non- Automatable
Masons, tilers, and carpet installers	Automatable
Carpenters	Non- Automatable
Drywall installers	Non- Automatable
Electricians	Non- Automatable
Electric power installers and repairers	Non- Automatable
Painters, construction and maintenance	Automatable
Paperhangers	Automatable
Plasterers	Automatable
Plumbers, pipe fitters, and steamfitters	Non- Automatable
Concrete and cement workers	Automatable
Glaziers	Non- Automatable
Insulation workers	Non- Automatable
Paving, surfacing, and tamping equipment operators	Non- Automatable
Roofers and slaters	Non- Automatable
Structural metal workers	Non- Automatable
Drillers of earth	Fully Automatable
Misc. construction and related occupations	Automatable
Drillers of oil wells	Fully Automatable
Explosives workers	Automatable
Miners	Automatable
Other mining occupations	Automatable
Production supervisors or foremen	Automatable
Tool and die makers and die setters	Fully Automatable
Machinists	Fully Automatable
Boilermakers	Fully Automatable
Precision grinders and fitters	Fully Automatable

Patternmakers and model makers	Fully Automatable
Engravers	Fully Automatable
Other metal and plastic workers	Automatable
Cabinetmakers and bench carpeters	Non- Automatable
Furniture/wood finishers, other prec. wood workers	Fully Automatable
Dressmakers, seamstresses, and tailors	Automatable
Upholsterers	Fully Automatable
Shoemakers, other prec. apparel and fabric workers	Fully Automatable
Hand molders and shapers, except jewelers	Fully Automatable
Optical goods workers	Fully Automatable
Dental laboratory and medical appliance technicians	Automatable
Bookbinders	Fully Automatable
Other precision and craft workers	Fully Automatable
Butchers and meat cutters	Fully Automatable
Bakers	Fully Automatable
Batch food makers	Fully Automatable
Water and sewage treatment plant operators	Automatable
Power plant operators	Fully Automatable
Plant and system operators, stationary engineers	Automatable
Other plant and system operators	Automatable
Lathe, milling, and turning machine operatives	Fully Automatable
Punching and stamping press operatives	Fully Automatable
Rollers, roll hands, and finishers of metal	Non- Automatable
Drilling and boring machine operators	Fully Automatable
Grinding, abrading, buffing, and polishing workers	Fully Automatable
Forge and hammer operators	Automatable
Molders and casting machine operators	Fully Automatable
Metal platers	Fully Automatable
Heat treating equipment operators	Automatable
Sawing machine operators and sawyers	Fully Automatable
Nail, tacking, shaping and joining mach ops (wood)	Fully Automatable
Other woodworking machine operators	Fully Automatable
Printing machine operators, n.e.c.	Fully Automatable
Typesetters and compositors	Fully Automatable
Winding and twisting textile and apparel operatives	Fully Automatable
Knitters, loopers, and toppers textile operatives	Fully Automatable

Textile cutting and dyeing machine operators	Fully Automatable
Textile sewing machine operators	Fully Automatable
Shoemaking machine operators	Fully Automatable
Clothing pressing machine operators	Automatable
Miscellaneous textile machine operators	Fully Automatable
Cementing and gluing machine operators	Fully Automatable
Packers, fillers, and wrappers	Fully Automatable
Extruding and forming machine operators	Fully Automatable
Mixing and blending machine operators	Fully Automatable
Separating, filtering, and clarifying machine operators	Non- Automatable
Food roasting and baking machine operators	Fully Automatable
Washing, cleaning, and pickling machine operators	Fully Automatable
Paper folding machine operators	Fully Automatable
Furnance, kiln, and oven operators, apart from food	Automatable
Slicing, cutting, crushing and grinding machine	Fully Automatable
Photographic process workers	Automatable
Machine operators, n.e.c.	Automatable
Welders, solderers, and metal cutters	Automatable
Assemblers of electrical equipment	Fully Automatable
Painting and decoration occupations	Automatable
Production checkers, graders, and sorters in manufacturing	Fully Automatable
Supervisors of motor vehicle transportation	Non- Automatable
Truck, delivery, and tractor drivers	Fully Automatable
Bus drivers	Fully Automatable
Taxi cab drivers and chauffeurs	Fully Automatable
Parking lot attendants	Automatable
Railroad conductors and yardmasters	Non- Automatable
Locomotive operators: engineers and firemen	Automatable
Railroad brake, coupler, and switch operators	Automatable
Ship crews and marine engineers	Non- Automatable
Miscellaneous transportation occupations	Automatable
Operating engineers of construction equipment	Non- Automatable
Crane, derrick, winch, hoist, longshore operators	Non- Automatable
Excavating and loading machine operators	Automatable
Stevedores and misc. material moving occupations	Automatable
Helpers, constructions	Automatable

Helpers, surveyors	Automatable
Construction laborers	Fully Automatable
Production helpers	Fully Automatable
Garbage and recyclable material collectors	Fully Automatable
Machine feeders and offbearers	Automatable
Garage and service station related occupations	Fully Automatable
Vehicle washers and equipment cleaners	Fully Automatable
Packers and packagers by hand	Fully Automatable
Laborers, freight, stock, and material handlers, n.e.c.	Automatable

S2 Appendix. Individual Country Analysis.

S3 Appendix. Individual country analysis Austria

Table A1 Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-4.05
Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.	Auditory and speech abilities	Sensory Abilities	0
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-1.687
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	1.577
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-6.859
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	0
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	3.084
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	-2.639
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	1.665

Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	Physical Abilities	-2.926
Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-3.724
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	3.201
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	0
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-4.157
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-2.581
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	0
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	-1.663
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0

Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	0
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	1.948
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	0
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	2.046
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	-1.889
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	0
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	-2.215
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	Cognitive Abilities	0
Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	5.3
Originality				0.489
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time	Perceptual Abilities	Cognitive Abilities	-4.268

	or one after the other. This ability also includes comparing a presented object with a remembered object.			
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	1.425
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	2.676
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	3.512
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It includes the speed with which the correct response is started with the hand, foot, or other body part.	Control Movement Abilities	Psychomotor Abilities	-3.375
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	0.837
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	-0.809
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	1.711
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	0
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	-1.291
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	5.619

Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	1.518
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	0.952
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	Cognitive Abilities	1.185
Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	0
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	4.615
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	-0.213
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	0
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	0
R Squared = 0.98				154692

Table A2 Austria Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	0.144
Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.	Content	Basic Skills	-0.805
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-3.301
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-6.276
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-3.403
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	0
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	2.149
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0.923

Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-2.239
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	6.807
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	0.184
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0.235
Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	-1.102
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	1.371
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-6.658
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	1.736
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	3.709
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	-0.903

Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-1.407
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	0
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	0
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-0.436
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	-2.055
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-2.826
Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0.755
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	-0.93
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	0
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	3.468
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	0

System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	3.193
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-3.514
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	3.156
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	1.854
R squared = 0.82			N=	154692

Table A3 Austria People, Brains, Brawn Analysis

	Austria – EU LFS
People	-0.016*** (0.001)
Brains	-0.073*** (0.001)
Brawn	0.038*** (0.001)
People * Brains	-0.006*** (0.000)
People* Brawn	0.025*** (0.000)
Brains* Brawn	-0.030*** (0.000)
N	154,547
R Squared	13%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S4 Appendix. Individual country analysis Belgium

Table B1 Belgium Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-3.704

Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.	Auditory and speech abilities	Sensory Abilities	0
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-1.494
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	1.515
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-7.242
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	0
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	2.57
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	-2.458
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	1.567
Extent Flexibility	The ability to bend, stretch, twist, or reach	Flexibility, balance and coordination	Physical Abilities	-2.691

	with your body, arms, and/or legs.			
Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-3.246
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	2.822
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	0
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-3.955
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-2.16
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	-0.145
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	-1.93
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0

Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	0
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	2.544
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	0
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	1.836
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	-1.694
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	0
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	-2.601
Oral Comprehension	The ability to listen to and understand information and ideas presented	Verbal Abilities	Cognitive Abilities	-1.365

	through spoken words and sentences.			
Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	6.102
Originality				0.378
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-4.276
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	1.66
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	3.406
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	3.284
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Response Orientation	The ability to choose quickly between two or more movements in response to two or more	Control Movement Abilities	Psychomotor Abilities	-3.23

	different signals (lights, sounds, pictures). It includes the speed with which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	0
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	-0.801
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	1.179
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	0
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	-1.451
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	5.39
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	1.245
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	1.293
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as	Attentiveness	Cognitive Abilities	1.282

	speech, sounds, touch, or other sources).			
Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	0
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	4.083
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	0.317
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	0
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	0
R Squared = 0.98			N= 72492	

Table B2 Belgian Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	0.488
Active Listening	Giving full attention to what other people are saying, taking time to understand the points	Content	Basic Skills	-1.757

	being made, asking questions as appropriate, and not interrupting at inappropriate times.			
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-2.427
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-4.999
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	0
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	-1.299
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	1.507
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0.04
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-1.824
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	4.357
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	0.877
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0

Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	0
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	0
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-6.741
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	2.591
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	2.707
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	0
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-0.836
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-1.59
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	0
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-1.535
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	0
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-0.8

Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0.342
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	0
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	-0.631
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	2.659
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	0.297
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	2.154
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-2.974
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	3.972
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0.519
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	0
R squared = 0.76			N=	72, 492

Table B3 Belgium People, Brains, Brawn Analysis

	Belgium – EU LFS
People	-0.046*** (0.001)
Brains	-0.089*** (0.001)
Brawn	0.016*** (0.001)
People * Brains	-0.005*** (0.000)
People* Brawn	0.000* (0.000)
Brains* Brawn	-0.003*** (0.000)
N	72,405
R Squared	13%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S5 Appendix. Individual country analysis Cyprus

Table C1 Cyprus Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-0.779

Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.	Auditory and speech abilities	Sensory Abilities	-0.998
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	-0.619
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	2.941
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	2.821
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	0
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	0.317
Extent Flexibility	The ability to bend, stretch, twist, or reach	Flexibility, balance and coordination	Physical Abilities	0

	with your body, arms, and/or legs.			
Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	0
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	0.403
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	0
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	0
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-2.514
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	-1.158
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	-1.65
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	0
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	-2.137

Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	0
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	0
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	3.282
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	0
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	2.659
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	2.05
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	-1.513
Oral Comprehension	The ability to listen to and understand information and ideas presented	Verbal Abilities	Cognitive Abilities	-4.977

	through spoken words and sentences.			
Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	4.577
Originality				0
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-2.952
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	0
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	2.6
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	4.01
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Response Orientation	The ability to choose quickly between two or more movements in response to two or more	Control Movement Abilities	Psychomotor Abilities	-1.86

	different signals (lights, sounds, pictures). It includes the speed with which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	0
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	-0.335
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	1.208
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	0
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	-2.376
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	2.328
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	-3.248
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	3.274
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	1.074
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as	Attentiveness	Cognitive Abilities	0

	speech, sounds, touch, or other sources).			
Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	-0.819
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	0
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	-0.93
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	2.319
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	-2.877
R Squared = 0.95			N= 30660	

Table C2 Cyprus Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	2.486
Active Listening	Giving full attention to what other people are saying, taking time to understand the points	Content	Basic Skills	-0.454

	being made, asking questions as appropriate, and not interrupting at inappropriate times.			
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-1.345
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-4.872
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	0
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	-0.34
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	0.662
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-2.963
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	0
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	0
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0

Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	0
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	1.858
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	-0.594
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-4.729
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	2.41
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	1.644
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	0
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-0.817
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-2.585
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	0
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-1.343
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	0
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-0.799

Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0.874
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	0
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	0
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	2.109
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	-3.062
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	5.083
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-1.835
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	2.513
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0.591
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	0
R squared = 0.87			N=	30660

Table C3 Cyprus People, Brains, Brawn Analysis

	Cyprus – EU LFS
People	-0.026*** (0.001)
Brains	-0.091*** (0.002)
Brawn	-0.003*** (0.001)
People * Brains	0.004*** (0.000)
People*Brawn	0.000*** (0.000)
Brains*Brawn	0.002*** (0.000)
N	30639
R Squared	14%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S6 Appendix. Individual country analysis Czech Republic

Table D1 Czech Republic Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	0

Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.	Auditory and speech abilities	Sensory Abilities	-0.152
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-0.692
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	0
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-5.674
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	0
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	4.142
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	-2.402
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	1.705
Extent Flexibility	The ability to bend, stretch, twist, or reach	Flexibility, balance and coordination	Physical Abilities	-1.758

	with your body, arms, and/or legs.			
Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-2.727
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	2.451
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	0
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-2.925
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-3.347
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	-0.079
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	0
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	-1.92
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0

Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	Idea Generation and Reasoning Abilities	Cognitive Abilities	-2.695
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	-1.786
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	2.496
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	0
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	2.123
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	0
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	2.058
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	-2.991
Oral Comprehension	The ability to listen to and understand information and ideas presented	Verbal Abilities	Cognitive Abilities	0

	through spoken words and sentences.			
Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	4.978
Originality				0.76
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-4.021
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	0
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	2.764
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	5.455
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Response Orientation	The ability to choose quickly between two or more movements in response to two or more	Control Movement Abilities	Psychomotor Abilities	-3.471

	different signals (lights, sounds, pictures). It includes the speed with which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	0
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	0.339
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	1.328
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	0
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	0
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	5.627
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	0.991
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	0.522
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	0
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as	Attentiveness	Cognitive Abilities	0

	speech, sounds, touch, or other sources).			
Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	-0.699
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	3.271
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	-0.465
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	0.621
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	-1.184
R Squared = 0.96			N= 30684	

Table D2 Czech Republic Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	0

Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.	Content	Basic Skills	-2.209
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-4.862
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-5.513
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-1.515
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	-2.926
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	2.91
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-4.382
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	4.755
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	3.037

Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0
Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	0
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	0.588
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-9.976
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	0.531
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	6.219
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	-1.811
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	0
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	0
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	0
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-1.5
Reading Comprehension	Understanding written sentences and paragraphs	Content	Basic Skills	1.326

	in work related documents.			
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	0
Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	2.727
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	-2.443
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	5.244
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	0.513
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	4.024
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-5.521
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	3.495
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	0

R squared = 0.85			N=	30,683
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Table D3 Czech Republic People, Brains, Brawn Analysis

	Czech Republic – EU LFS
People	-0.023*** (0.001)
Brains	-0.106*** (0.002)
Brawn	-0.036*** (0.002)
People * Brains	0.000** (0.000)
People*Brawn	0.002*** (0.000)
Brains*Brawn	0.007*** (0.001)
N	30666
R Squared	11%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S7 Appendix. Individual country Germany

Table E1 Germany Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-4.602
Auditory Attention	The ability to focus on a single source of sound in	Auditory and speech abilities	Sensory Abilities	0

	the presence of other distracting sounds.			
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-2.962
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	2.456
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-6.096
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	0.106
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	2.566
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	-1.233
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	1.086
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	Physical Abilities	-2.77

Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-3.366
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	3.151
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	0
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-3.635
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-2.578
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	0
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	-1.756
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0.888
Information Ordering	The ability to arrange things or actions in a	Idea Generation	Cognitive Abilities	0

	certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	and Reasoning Abilities		
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	0
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	0
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	0
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	2.158
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	-2.102
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	0
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	0
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	Cognitive Abilities	1.498

Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	4.621
Originality				0
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-4.519
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	1.408
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	1.37
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	2.629
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	2.536
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It	Control Movement Abilities	Psychomotor Abilities	-4.706

	includes the speed with which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	0
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	-1.063
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	0.717
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	0.298
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	-1.706
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	5.966
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	0
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	0.946
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	Cognitive Abilities	2.687

Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	0.469
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	5.545
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	-0.564
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	-1.85
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	0
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	-0.556
R Squared = 0.99			N= 367032	

Table E2 Germany Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	0
Active Listening	Giving full attention to what other people are saying, taking time to understand the points	Content	Basic Skills	-1.944

	being made, asking questions as appropriate, and not interrupting at inappropriate times.			
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-2.644
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-5.55
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	0
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	-0.421
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	2.101
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0.196
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-0.497
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	5.145
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	0
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0.628

Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	-0.614
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	0
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-7.947
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	2.073
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	2.201
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	0
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-0.975
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-1.115
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	-1.286
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-0.226
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	-2.418
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-2.501

Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0.529
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	-0.085
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	0
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	1.879
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	-0.879
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	3.191
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-2.316
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	3.221
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0.789
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	4.141
R squared = 0.78			N=	367032

Table E3 Germany People, Brains, Brawn Analysis

	Germany – EU LFS
People	-0.008*** (0.000)
Brains	-0.043*** (0.000)
Brawn	0.032*** (0.000)
People * Brains	-0.006*** (0.000)
People*Brawn	0.009*** (0.000)
Brains*Brawn	-0.000*** (0.000)
N	366327
R Squared	6%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S8 Appendix. Individual country Denmark

Table F1 Denmark Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-4.013
Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.	Auditory and speech abilities	Sensory Abilities	0

Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-2.185
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	1.516
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-6.421
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	0.077
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	2.487
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	-3.007
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	1.574
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	Physical Abilities	-3.465
Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-4.575

Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	3.933
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	-0.436
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-5.021
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-2.303
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	1.129
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	0
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	-1.832
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	1.618
Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific	Idea Generation and Reasoning Abilities	Cognitive Abilities	0

	rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).			
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	-0.968
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	0
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	0
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	3.026
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	0
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	-1.095
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	0
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	Cognitive Abilities	0

Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	4.234
Originality				0.713
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-3.909
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	1.925
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	2.932
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	4.161
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It includes the speed with	Control Movement Abilities	Psychomotor Abilities	-4.639

	which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	0
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	0
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	1.981
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	1.652
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	-1.95
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	6.196
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	0.944
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	0.326
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	0.915
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	Cognitive Abilities	0

Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	0.747
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	5.791
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	-0.98
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	-1.325
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	0
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	-1.281
R Squared = 0.97			N= 122324	

Table F2 Denmark Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	0.244
Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate,	Content	Basic Skills	-0.785

	and not interrupting at inappropriate times.			
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-4.186
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-4.075
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	0
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	0
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	0.422
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-2.398
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	4.495
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	0.608
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0.333

Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	0
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	1.581
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-6.518
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	0.971
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	2.406
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	-0.731
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-0.913
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-1.933
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	-0.781
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-0.843
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	0
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-1.338

Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0.659
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	-0.389
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	0
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	2.193
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	-1.55
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	3.743
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-1.921
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	2.396
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0.832
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	1.263
R squared = 0.73			N=	122324

Table F Denmark People, Brains, Brawn Analysis

	Denmark – EU LFS
People	-0.007*** (0.000)
Brains	-0.046*** (0.001)
Brawn	0.014*** (0.001)
People * Brains	-0.001*** (0.000)
People*Brawn	0.001*** (0.000)
Brains*Brawn	0.000*** (0.000)
N	122137
R Squared	7%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S9 Appendix. Individual country Estonia

Table G1 Estonia Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-3.599

Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.	Auditory and speech abilities	Sensory Abilities	0.794
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	2.644
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-8.479
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	-1.647
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	6.82
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	-1.164
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	0.543
Extent Flexibility	The ability to bend, stretch, twist, or reach	Flexibility, balance and coordination	Physical Abilities	-2.285

	with your body, arms, and/or legs.			
Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-3.274
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	0.988
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	0.526
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-5.548
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-1.489
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	1.37
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	0
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	0
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0

Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	Idea Generation and Reasoning Abilities	Cognitive Abilities	-2.993
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	0
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	1.922
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	0.016
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	0
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	0
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	-0.298
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	-0.371
Oral Comprehension	The ability to listen to and understand information and ideas presented	Verbal Abilities	Cognitive Abilities	1.838

	through spoken words and sentences.			
Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	2.239
Originality				1.124
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-6.342
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	0.947
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	3.415
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	2.162
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Response Orientation	The ability to choose quickly between two or more movements in response to two or more	Control Movement Abilities	Psychomotor Abilities	0

	different signals (lights, sounds, pictures). It includes the speed with which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	0
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	-1.219
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	0.892
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	0.761
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	0
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	5.895
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	0
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	0
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as	Attentiveness	Cognitive Abilities	1.877

	speech, sounds, touch, or other sources).			
Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	-0.773
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	4.178
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	0.405
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	0
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	0
R Squared = 0.97			N= 21645	

Table G2 Estonia Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	0
Active Listening	Giving full attention to what other people are saying, taking time to understand the points	Content	Basic Skills	-0.771

	being made, asking questions as appropriate, and not interrupting at inappropriate times.			
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	0
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-4.317
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-2.277
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	-0.188
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	1.296
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0.214
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-3.306
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	1.497
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	1.179
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0

Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	-0.505
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	0
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-5.397
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	1.887
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	2.895
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	-0.305
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-1.081
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	0
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	0
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-0.953
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	0
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-1.489

Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0.506
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	0
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	0
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	0
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	0
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	3.661
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-3.409
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	3.43
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	2.243
R squared = 0.85			N=	21645

Table G3 Estonia People, Brains, Brawn Analysis

	Estonia – EU LFS
People	-0.019*** (0.001)
Brains	-0.175*** (0.002)
Brawn	-0.009*** (0.002)
People * Brains	0.018*** (0.001)
People*Brawn	0.002*** (0.000)
Brains*Brawn	-0.030*** (0.001)
N	21615
R Squared	22%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S10 Appendix. Individual country Spain

Table H1 Spain Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-4.435

Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.	Auditory and speech abilities	Sensory Abilities	0
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-2.173
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	2.781
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-5.576
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	0.728
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	2.732
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	-0.619
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	0.267
Extent Flexibility	The ability to bend, stretch, twist, or reach	Flexibility, balance and coordination	Physical Abilities	-1.675

	with your body, arms, and/or legs.			
Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-2.498
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	2.178
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Perceptual Abilities	Cognitive abilities	0
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-3.008
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-2.323
Gross Body Coordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	0
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	-0.514
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0

Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	0
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	0
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	0
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	1.02
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	0
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	0
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	0
Oral Comprehension	The ability to listen to and understand information and ideas presented	Verbal Abilities	Cognitive Abilities	0

	through spoken words and sentences.			
Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	3.015
Originality				0
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-5.982
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	3.045
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	2.671
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	1.954
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	3.098
Response Orientation	The ability to choose quickly between two or more movements in response to two or more	Control Movement Abilities	Psychomotor Abilities	-4.497

	different signals (lights, sounds, pictures). It includes the speed with which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	0
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	-2.565
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	0.275
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	1.529
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	-3.306
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	5.823
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	-1.424
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	0.878
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	0.145
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as	Attentiveness	Cognitive Abilities	3.203

	speech, sounds, touch, or other sources).			
Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	0.036
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	5.341
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	-1.33
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	-1.56
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	0
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	-0.446
R Squared = 0.99			N= 75418	

Table H2 Spain Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	0
Active Listening	Giving full attention to what other people are saying, taking time to understand the points	Content	Basic Skills	-1.125

	being made, asking questions as appropriate, and not interrupting at inappropriate times.			
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-3.327
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-6.541
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-2.52
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	-1.578
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	3.176
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0.905
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-4.126
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	4.165
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	1.779
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0

Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	-0.655
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	1.042
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-8.229
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	1.016
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	4.51
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	-1.505
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-0.747
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	0
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	0
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-0.749
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	0
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-2.459

Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0.567
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	-0.651
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	0
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	5.976
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	-1.404
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	5.355
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-5.659
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	3.92
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	1.146
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	0
R squared = 0.87			N=	75418

H3 Spain People, Brains, Brawn Analysis

	Spain – EU LFS
People	-0.034*** (0.001)
Brains	-0.118*** (0.001)
Brawn	0.050*** (0.001)
People * Brains	-0.003*** (0.001)
People*Brawn	0.037*** (0.001)
Brains*Brawn	-0.039*** (0.001)
N	75403
R Squared	22%

S11 Appendix. Individual country Finland

Table I1 Finland Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	-3.927	-3.927
Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.	Auditory and speech abilities	0	0

Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	-2.306	-2.306
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	3.07	3.07
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	-6.724	-6.724
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	0	0
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	3.385	3.385
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	-2.021	-2.021
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	0.578	0.578
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	-1.365	-1.365
Far Vision	The ability to see details at a distance.	Visual Abilities	-3.07	-3.07

Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	2.681	2.681
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	0.288	0.288
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	-3.484	-3.484
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	-2.553	-2.553
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	0	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	0	0
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	0	0
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	0	0
Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific	Idea Generation and Reasoning Abilities	0	0

	rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).			
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	-0.829	-0.829
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	0.621	0.621
Memorization	Abilities related to the recall of available information	Quantitative Abilities	0	0
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	1.073	1.073
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	0	0
Night Vision	The ability to see under low light conditions	Near Vision	0	0
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	-0.155	-0.155
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	0	0

Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	4.527	4.527
Originality			0	0
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	-5.531	-5.531
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	3.391	3.391
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	2.349	2.349
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	2.422	2.422
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	2.546	2.546
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It includes the speed with	Control Movement Abilities	-4.612	-4.612

	which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	0	0
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	-3.091	-3.091
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	0.643	0.643
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	0.784	0.784
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	-1.664	-1.664
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	5.277	5.277
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	0	0
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	0.423	0.423
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	0.955	0.955
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	2.47	2.47

Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	0.127	0.127
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	4.892	4.892
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	-1.066	-1.066
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	-1.641	-1.641
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	0.716	0.716
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	-0.624	-0.624
R Squared = 0.98			N= 22360	

Table I2 Finland Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	0.794
Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.	Content	Basic Skills	-2.916
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-3.736
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-7.226
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-2.846
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	-3.306
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	2.111
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0.78
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-3.504
Judgement and Decision Making	Considering the relative costs and benefits of	Systems Skills	Cross Functional Skills	5.053

	potential actions to choose the most appropriate one.			
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	2.083
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0
Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	-0.678
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	1.651
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-8.509
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	1.244
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	5.044
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	-0.765
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	0
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	0
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	0

Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-1.557
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	0.897
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-0.34
Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	0
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	0
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	4.638
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	0
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	3.24
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-4.807
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	4.213

Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0.716
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	0
R squared = 0.80			N=	22360

Table I3 Finland People, Brains, Brawn Analysis

	Finland – EU LFS
People	0.006*** (0.001)
Brains	-0.058*** (0.001)
Brawn	0.022*** (0.001)
People * Brains	-0.001** (0.001)
People*Brawn	-0.004*** (0.000)
Brains*Brawn	-0.011*** (0.001)
N	22315
R Squared	16%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S12 Appendix. Individual country France

Table J1France Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	-3.075	Psychomotor abilities	-3.075
Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.	0	Sensory Abilities	0
Category Flexibility	The ability to generate or use different sets of rules for	-3.187	Cognitive Abilities	-3.187

	combining or grouping things in different ways.			
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	1.775	Psychomotor Abilities	1.775
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	-4.528	Cognitive Abilities	-4.528
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	0.61	Sensory Abilities	0.61
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	3.247	Physical Abilities	3.247
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	0	Physical Abilities	0
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	0.238	Physical Abilities	0.238
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	-1.55	Physical Abilities	-1.55
Far Vision	The ability to see details at a distance.	0	Sensory Abilities	0
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	1.799	Psychomotor abilities	1.799
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	0	Cognitive abilities	0

Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	- 1.445	Cognitive abilities	-1.445
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	- 4.373	Sensory abilities	-4.373
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	0	Physical Abilities	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	0	Physical Abilities	0
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	- 0.321	Sensory Abilities	-0.321
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	0.57	Cognitive Abilities	0.57
Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	0	Cognitive Abilities	0
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	- 0.164	Psychomotor Abilities	-0.164
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	1.56	Cognitive Abilities	1.56
Memorization	Abilities related to the recall of available information	0	Cognitive Abilities	0
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve	1.969	Psychomotor Abilities	1.969

	performing the activities while the whole body is in motion.			
Near Vision	The ability to see details at close range (within a few feet of the observer)	0	Visual Abilities	0
Night Vision	The ability to see under low light conditions	3.904	Visual Abilities	3.904
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	-1.656	Cognitive Abilities	-1.656
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	2.097	Cognitive Abilities	2.097
Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	1.942	Cognitive Abilities	1.942
Originality		0		0
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	-5.757	Cognitive Abilities	-5.757
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	0	Sensory Abilities	0
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	1.255	Cognitive Abilities	1.255
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	3.481	Psychomotor Abilities	3.481

Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	3.284	Psychomotor Abilities	3.284
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It includes the speed with which the correct response is started with the hand, foot, or other body part.	- 5.164	Psychomotor Abilities	-5.164
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	0	Cognitive Abilities	0
Sound Localisation	The ability to tell the direction from which a sound originated.	- 1.245	Sensory Abilities	-1.245
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	0.045	Cognitive Abilities	0.045
Speech Clarity	The ability to speak clearly so others can understand you.	0	Sensory Abilities	0
Speech Recognition	The ability to identify and understand the speech of another person.	- 3.058	Sensory Abilities	-3.058
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	5.115	Cognitive Abilities	5.115
Speed of Limb Movement	The ability to quickly move the arms and legs.	- 1.453	Psychomotor Abilities	-1.453
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	0.441	Physical Abilities	0.441
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	0.588	Physical Abilities	0.588
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	3.113	Cognitive Abilities	3.113

Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	- 0.406	Physical Abilities	-0.406
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	3.947	Sensory Abilities	3.947
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	- 1.684	Cognitive Abilities	-1.684
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	- 2.102	Psychomotor Abilities	-2.102
Written Comprehension	The ability to read and understand information and ideas presented in writing.	0	Cognitive Abilities	0
Written Expression	The ability to communicate information and ideas in writing so others will understand.	0	Cognitive Abilities	0
R Squared = 0.98			367079	

Table J2 France Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	2.585
Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.	Content	Basic Skills	1.72
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-1.043
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-5.876
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-3.085
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	0
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	0
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-3.466

Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	2.687
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	0
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0
Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	-0.712
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	2.68
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-3.585
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	1.64
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	2.251
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	-0.402
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-1.353
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-0.682

Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	-0.608
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	0
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	-3.358
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	0
Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	1.539
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	1.054
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	-2.404
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	0
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	-1.958
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	3.461
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-1.35

Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	4.13
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	-1.584
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	2.472
R squared = 0.83			N=	367079

Table J3 France People, Brains, Brawn Analysis

	France – EU LFS
People	-0.063*** (0.001)
Brains	-0.105*** (0.001)
Brawn	0.059*** (0.000)
People * Brains	-0.004*** (0.000)
People*Brawn	-0.013*** (0.000)
Brains*Brawn	-0.030*** (0.000)
N	366900
R Squared	21%

S13 Appendix. Individual country Greece

Table K1 Greece Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-0.294
Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.	Auditory and speech abilities	Sensory Abilities	-1.395

Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	0.058
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	2.633
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	4.544
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	0
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	0
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	Physical Abilities	0
Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	0

Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	0.563
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	0
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-1.846
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-2.368
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	-0.532
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	-1.323
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	0
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	-2.039
Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific	Idea Generation and Reasoning Abilities	Cognitive Abilities	0

	rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).			
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	0
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	-0.704
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	1.572
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	0
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	0
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	1.132
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	0
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	Cognitive Abilities	-2.091

Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	3.394
Originality				0
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-3.407
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	0
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	0.92
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	2.834
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	1.035
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It includes the speed with	Control Movement Abilities	Psychomotor Abilities	-1.42

	which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	0
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	0
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	1.103
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	0
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	-0.649
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	4.065
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	-4.254
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	2.122
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	1.106
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	Cognitive Abilities	0

Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	-1.004
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	0
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	-0.599
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	-0.197
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	0
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	0
R Squared = 0.97			N= 152074	

Table K2 Greece Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	2.127

Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.	Content	Basic Skills	0
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	0
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-4.671
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-1.523
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	-0.898
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	0.154
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	-0.228
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-3.095
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	0
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	0.452

Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0
Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	-0.762
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	1.493
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-4.5
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	3.851
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	1.152
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	0
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-0.872
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-2.221
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	0.456
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-1.015
Reading Comprehension	Understanding written sentences and paragraphs	Content	Basic Skills	-1.137

	in work related documents.			
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-0.238
Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	1.197
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	0
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	0
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	0
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	-3.122
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	4.379
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-2.618
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	3.711
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	1.485
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	1.43

R squared = 0.94			N=	152074
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Table K3 Greece People, Brains, Brawn Analysis

	Greece – EU LFS
People	0.021*** (0.000)
Brains	-0.167*** (0.001)
Brawn	0.139*** (0.001)
People * Brains	-0.002*** (0.000)
People*Brawn	0.001*** (0.000)
Brains*Brawn	-0.021*** (0.000)
N	151948
R Squared	37%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S14 Appendix. Individual country Hungary

Table L1 Hungary Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-4.599
Auditory Attention	The ability to focus on a single source of sound in	Auditory and speech abilities	Sensory Abilities	0

	the presence of other distracting sounds.			
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-1.448
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	2.007
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-6.082
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	0.497
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	3.006
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	-0.507
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	1.048
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	Physical Abilities	-2.208

Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-2.784
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	3.431
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	0
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-3.217
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-2.612
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	0
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	-1.104
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Information Ordering	The ability to arrange things or actions in a	Idea Generation	Cognitive Abilities	-2.258

	certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	and Reasoning Abilities		
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	0
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	0.501
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	0
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	1.04
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	-0.379
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	0
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	-0.615
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	Cognitive Abilities	1.606

Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	1.957
Originality				0
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-5.517
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	2.063
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	3.106
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	2.202
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	2.203
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It	Control Movement Abilities	Psychomotor Abilities	-3.674

	includes the speed with which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	0
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	-1.772
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	0.834
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	1.21
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	-3.15
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	5.905
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	0
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	0
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	Cognitive Abilities	3.609

Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	0
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	5.593
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	-1.139
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	-1.083
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	0
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	0
R Squared = 0.99			N= 164373	

Table L2 Hungary Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	0
Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate,	Content	Basic Skills	-2.731

	and not interrupting at inappropriate times.			
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-0.864
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-5.269
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-1.674
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	0
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	2.235
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0.393
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-3.135
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	2.713
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	1.179
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0

Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	-0.532
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	0
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-7.035
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	2.909
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	3.996
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	-1.365
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-1.566
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-0.827
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	0
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-0.62
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	0
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-2.27

Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0.778
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	0
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	-0.896
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	5.296
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	0
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	3.779
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-4.34
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	4.124
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	0
R squared = 0.86			N=	164373

Table L4 Hungary People, Brains, Brawn Analysis

	Hungary – EU LFS
People	0.053*** (0.000)
Brains	-0.171*** (0.001)
Brawn	0.064*** (0.001)
People * Brains	-0.020*** (0.000)
People*Brawn	-0.001*** (0.000)
Brains*Brawn	-0.084*** (0.001)
N	164214
R Squared	30%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S15 Appendix. Individual country Croatia

Table M1 Croatia Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-0.898
Auditory Attention	The ability to focus on a single source of sound in the presence	Auditory and speech abilities	Sensory Abilities	0

	of other distracting sounds.			
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	0.138
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-4.641
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	2.394
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	5.402
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	-0.974
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or	Physical Strength	Physical Abilities	0.415

	sprinting), or to throw an object.			
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	Physical Abilities	-0.761
Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-0.47
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	0.728
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	0
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-2.232
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-2.893
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	0

Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	0
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	0.699
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	0
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	2.035
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or	Control movement abilities	Psychomotor Abilities	0

	lying down. It does not involve performing the activities while the whole body is in motion.			
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	0
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	1.63
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	0
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	Cognitive Abilities	-2.136
Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	3.462
Originality				0
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-3.308

Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	0
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	1.917
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	2.446
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	1.034
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It includes the speed with which the correct response is started with the hand, foot, or other body part.	Control Movement Abilities	Psychomotor Abilities	-2.19
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	0

Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	0
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	1.356
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	0
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	-1.366
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	3.805
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	-3.13
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	1.371
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	0.601
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	Cognitive Abilities	0

Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	-1.535
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	0
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	-1.446
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	0
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	0
R Squared = 0.97			N= 174713	

Table M2 Croatia Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	0

Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.	Content	Basic Skills	-0.255
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-1.483
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-4.452
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	0
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	-0.573
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	0
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-3.273
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	1.187
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	1.744

Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0
Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	-0.522
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	2.008
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-5.153
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	3.384
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	2.632
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	-0.346
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-0.457
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-1.581
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	0.32
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-1.04
Reading Comprehension	Understanding written sentences and paragraphs	Content	Basic Skills	0

	in work related documents.			
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	0
Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	1.088
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	0.639
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	-1.748
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	0
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	-2.376
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	3.346
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-2.675
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	2.694
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	1.579

R squared = 0.86			N=	174713
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Table M3 Croatia People, Brains, Brawn Analysis

	Croatia – EU LFS
People	-0.022*** (0.000)
Brains	0.113*** (0.001)
Brawn	-0.149*** (0.001)
People * Brains	-0.022*** (0.000)
People*Brawn	0.113*** (0.001)
Brains*Brawn	-0.149*** (0.001)
N	174579
R Squared	29%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S16 Appendix. Individual country Ireland

Table N1 Ireland Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-4.654
Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.	Auditory and speech abilities	Sensory Abilities	0

Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-1.974
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	1.741
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-4.082
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	0
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	3.508
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	-0.79
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	0.334
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	Physical Abilities	-2.022
Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-1.285

Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	1.536
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	-0.375
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-3.347
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-1.496
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	1.37
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	-1.476
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	0
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific	Idea Generation and Reasoning Abilities	Cognitive Abilities	0

	rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).			
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	0
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	0
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	1.707
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	1.907
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	1.381
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	0
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	0
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	Cognitive Abilities	0

Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	4.061
Originality				-1.99
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-6.289
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	3.52
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	3.247
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	1.426
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	2.62
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It includes the speed with	Control Movement Abilities	Psychomotor Abilities	-4.214

	which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	-2.272
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	-2.465
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	0.759
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	0
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	-1.973
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	4.336
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	-2.001
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	1.651
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	0.446
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	Cognitive Abilities	3.184

Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	0
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	5.156
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	0
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	0
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	0
R Squared = 0.98			N= 123183	

Table N2 Ireland Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	4.753
Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate,	Content	Basic Skills	1.739

	and not interrupting at inappropriate times.			
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-4.003
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-5.012
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-3.262
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	-0.898
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	0
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-3.167
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	0
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	0
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0

Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	0
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	2.191
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-4.422
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	0
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	3.067
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	-0.944
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-0.572
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	0
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	0
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-1.942
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	0
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	0

Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	1.221
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	0.173
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	0
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	1.111
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	-3.218
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	4.759
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-2.178
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	2.551
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0.956
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	-0.405
R squared = 0.85			N=	122641

Table N3 Ireland People, Brains, Brawn Analysis

	Ireland – EU LFS
People	-0.019*** (0.001)
Brains	-0.120*** (0.001)
Brawn	-0.002* (0.001)
People * Brains	0.006*** (0.000)
People*Brawn	-0.008*** (0.000)
Brains*Brawn	0.010*** (0.000)
N	122849
R Squared	15%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S17 Appendix. Individual country Iceland

Table O1 Iceland Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-3.512
Auditory Attention	The ability to focus on a single source of sound in	Auditory and speech abilities	Sensory Abilities	0

	the presence of other distracting sounds.			
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-4.137
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	1.491
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-4.495
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	0
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	3.559
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	-0.745
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	1.156
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	Physical Abilities	-3.368

Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-2.679
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	2.018
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	-0.537
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-3.992
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-2.928
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	0
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	-1.421
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	1.139
Information Ordering	The ability to arrange things or actions in a	Idea Generation	Cognitive Abilities	0

	certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	and Reasoning Abilities		
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	0.27
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	0.515
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	0.698
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	1.736
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	-1.318
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	1.642
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	-0.657
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	Cognitive Abilities	1.054

Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	3.677
Originality				0.774
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-3.154
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	0
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	1.901
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	3.282
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	0.848
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It	Control Movement Abilities	Psychomotor Abilities	-3.731

	includes the speed with which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	0
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	0
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	1.15
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	0
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	-0.834
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	5.029
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	0.269
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	1.496
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	Cognitive Abilities	0

Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	0
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	4.736
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	0
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	-1.076
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	-0.781
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	0
R Squared = 0.98			N= 16286	

Table O2 Iceland Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	-0.856
Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking	Content	Basic Skills	0

	questions as appropriate, and not interrupting at inappropriate times.			
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-2.046
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-3.562
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-2.53
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	-1.105
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	1.136
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-2.028
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	3.687
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	1.37
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0

Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	0
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	0
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	-0.713
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-7.535
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	0
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	3.431
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	-0.438
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	0
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-0.827
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	-0.904
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	0.191
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	-0.707
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-1.118

Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	1.152
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	-1.313
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	2.367
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	-1.486
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	5.622
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-2.925
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	2.661
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	2.767
R squared = 0.80			N=	16286

Table O3 Iceland People, Brains, Brawn Analysis

	Iceland – EU LFS
People	0.017*** (0.001)
Brains	-0.067*** (0.002)
Brawn	0.014*** (0.002)
People * Brains	-0.006*** (0.001)
People*Brawn	-0.003*** (0.001)
Brains*Brawn	-0.001 (0.001)
N	16245
R Squared	15%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S18 Appendix. Individual country Italy

Table P1 Italy Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-1.455
Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.	Auditory and speech abilities	Sensory Abilities	-0.805

Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	0
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-7.702
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	2.498
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	4.932
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	-2.037
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	0.787
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	Physical Abilities	-1.298
Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-1.613

Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	0.94
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	0
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-1.148
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-2.648
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	0
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	0
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific	Idea Generation and Reasoning Abilities	Cognitive Abilities	0

	rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).			
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	1.354
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	2.864
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	1.211
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	0.494
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	-1.212
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	2.115
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	-2.786
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	Cognitive Abilities	-2.669

Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	6.286
Originality				0
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-3.147
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	-1.523
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	2.313
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	3.301
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	1.054
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It includes the speed with	Control Movement Abilities	Psychomotor Abilities	-2.881

	which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	0
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	0
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	1.621
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	0
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	-1.986
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	4.392
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	-2.839
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	2.058
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	0.329
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	Cognitive Abilities	1.801

Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	-1.148
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	0
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	-0.979
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	0.707
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	-1.431
R Squared = 0.96			N= 337066	

Table P2 Italy Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	1.666

Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.	Content	Basic Skills	-0.776
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	0
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-7.674
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-3.374
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	0
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	1.503
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0.844
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-2.769
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	1.905
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	0

Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0
Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	-1.098
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	1.727
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-5.162
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	1.831
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	2.984
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	-0.647
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-1.165
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-0.13
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	0
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-0.729
Reading Comprehension	Understanding written sentences and paragraphs	Content	Basic Skills	0

	in work related documents.			
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-2.24
Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0.436
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	-0.988
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	0
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	2.647
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	-2.856
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	5.888
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-3.437
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	4.727
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	0

R squared = 0.80			N=	337066
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Table P3 Italy People, Brains, Brawn Analysis

	Italy – EU LFS
People	0.027*** (0.000)
Brains	-0.054*** (0.000)
Brawn	0.066*** (0.001)
People * Brains	-0.004*** (0.000)
People*Brawn	0.005*** (0.000)
Brains*Brawn	-0.015*** (0.000)
N	336971
R Squared	11%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S19 Appendix. Individual country Luxembourg

Table Q1 Luxembourg Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-3.527
Auditory Attention	The ability to focus on a single source of sound in	Auditory and speech abilities	Sensory Abilities	0

	the presence of other distracting sounds.			
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-3.47
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	1.959
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-4.73
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	0
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	5.074
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	-1.391
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	0.89
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	Physical Abilities	-2.651

Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-2.614
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	1.965
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	0
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-2.728
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-3.102
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	-0.016
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	0
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Information Ordering	The ability to arrange things or actions in a	Idea Generation	Cognitive Abilities	0

	certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	and Reasoning Abilities		
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	0
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	0
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	0.373
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	1.1
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	0.053
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	0
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	0
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	Cognitive Abilities	1.854

Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	3.828
Originality				-0.48
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-4.04
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	0.948
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	1.572
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	3.985
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	1.288
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It	Control Movement Abilities	Psychomotor Abilities	-3.859

	includes the speed with which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	-0.58
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	0
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	1.291
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	0
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	0
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	4.811
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	0.473
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	1.374
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	Cognitive Abilities	0

Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	0
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	4.394
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	-0.671
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	-1.536
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	-0.359
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	0
R Squared = 0.97			N=17383	

Table Q2 Luxembourg Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	0
Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking	Content	Basic Skills	-1.051

	questions as appropriate, and not interrupting at inappropriate times.			
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-5.366
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-3.578
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-3.552
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	-0.889
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	0.33
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-1.957
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	4.94
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	1.248
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0.449

Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	0
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	0
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	-1.016
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-5.584
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	0.907
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	3.127
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	0
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	0
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	0
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	-0.442
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-1.321
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	0.992
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-0.575

Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0.838
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	-0.655
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	-1.296
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	1.859
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	-1.634
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	4.382
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-2.029
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	3.264
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0.448
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	1.578
R squared = 0.82			N=	17383

Table Q3 Luxembourg People, Brains, Brawn Analysis

	Luxembourg – EU LFS
People	0.012*** (0.001)
Brains	-0.051*** (0.001)
Brawn	0.029*** (0.001)
People * Brains	0.000*** (0.000)
People*Brawn	0.000*** (0.000)
Brains*Brawn	-0.000 (0.000)
N	18867
R Squared	8%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S20 Appendix. Individual country Latvia

Table R 1 Latvia Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-2.086

Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.	Auditory and speech abilities	Sensory Abilities	0.581
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-2.172
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	1.305
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	0.308
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	2.384
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	0
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	0
Extent Flexibility	The ability to bend, stretch, twist, or reach	Flexibility, balance and coordination	Physical Abilities	-1.981

	with your body, arms, and/or legs.			
Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-3.949
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	3.547
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	0
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-4.547
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-3.105
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	-1.106
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	-1.17
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	-0.957

Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	-2.368
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	0
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	0
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	1.119
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	0.812
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	1.643
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	-1.379
Oral Comprehension	The ability to listen to and understand information and ideas presented	Verbal Abilities	Cognitive Abilities	0

	through spoken words and sentences.			
Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	2.443
Originality				0
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-4.162
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	3.876
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	1.221
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	3.423
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Response Orientation	The ability to choose quickly between two or more movements in response to two or more	Control Movement Abilities	Psychomotor Abilities	-3.749

	different signals (lights, sounds, pictures). It includes the speed with which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	0.774
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	-2.89
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	1.797
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	0.837
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	0
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	5.165
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	-0.195
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	1.254
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	1.329
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as	Attentiveness	Cognitive Abilities	0

	speech, sounds, touch, or other sources).			
Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	0
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	5.061
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	-1.039
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	0.535
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	0
R Squared = 0.98			N=32177	

Table R2 Latvia Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	2.028
Active Listening	Giving full attention to what other people are saying, taking time to	Content	Basic Skills	-1.141

	understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.			
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-0.491
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-3.967
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-2.057
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	-0.332
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	1.593
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0.113
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-2.997
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	2.683
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	0
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0

Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	-0.336
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	0
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-3.267
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	3.268
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	2.202
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	0
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-1.318
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-1.673
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	0.642
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-1.817
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	-0.755

Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-1.102
Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0.767
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	0
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	0.349
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	0
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	0
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	2.696
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-2.982
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	3.779
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	0
R squared = 0.85			N=	32177

Table R3 Latvia People, Brains, Brawn Analysis

	Latvia – EU LFS
People	0.056*** (0.001)
Brains	-0.185*** (0.002)
Brawn	0.041*** (0.002)
People * Brains	-0.002*** (0.001)
People*Brawn	-0.010*** (0.001)
Brains*Brawn	-0.072*** (0.001)
N	32147
R Squared	36%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S21 Appendix. Individual country Netherlands

Table S1 Netherlands Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	-3.538	-3.538
Auditory Attention	The ability to focus on a single source of sound in	Auditory and speech abilities	0	0

	the presence of other distracting sounds.			
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	-2.003	-2.003
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	2.085	2.085
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	-6.952	-6.952
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	0	0
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	3.815	3.815
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	0	0
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	0	0
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	-3.051	-3.051

Far Vision	The ability to see details at a distance.	Visual Abilities	-2.721	-2.721
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	2.348	2.348
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	0.394	0.394
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	-2.165	-2.165
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	-2.364	-2.364
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	0	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	0	0
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	-1.262	-1.262
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	0.799	0.799
Information Ordering	The ability to arrange things or actions in a	Idea Generation	-2.949	-2.949

	certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	and Reasoning Abilities		
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	-0.847	-0.847
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	0.312	0.312
Memorization	Abilities related to the recall of available information	Quantitative Abilities	-0.613	-0.613
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	1.775	1.775
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	0	0
Night Vision	The ability to see under low light conditions	Near Vision	0	0
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	0	0
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	0.94	0.94

Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	5.475	5.475
Originality			-1.725	-1.725
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	-5.52	-5.52
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	1.025	1.025
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	1.452	1.452
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	2.359	2.359
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	3.241	3.241
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It	Control Movement Abilities	-4.197	-4.197

	includes the speed with which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	0	0
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	-0.625	-0.625
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	0.417	0.417
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	0	0
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	-1.336	-1.336
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	6.411	6.411
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	-1.055	-1.055
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	0	0
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	0.692	0.692
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	3.631	3.631

Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	0.813	0.813
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	4.987	4.987
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	0	0
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	-1.383	-1.383
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	1.368	1.368
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	-1.285	-1.285
R Squared = 0.98			N=74745	

Table S2 Netherlands Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	0

Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.	Content	Basic Skills	-1.513
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-2.967
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-6.469
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	0
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	-2.464
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	1.287
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-3.833
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	6.711
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	1.403

Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	-0.462
Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	0
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	2.952
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	-0.24
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-8.961
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	1.889
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	3.602
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	-0.467
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-0.601
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-2.004
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	-1.354
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-0.514
Reading Comprehension	Understanding written sentences and paragraphs	Content	Basic Skills	0

	in work related documents.			
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	0.112
Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	0.955
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	-1.569
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	3.656
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	0
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	2.682
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-2.594
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	2.315
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	1.473

R squared = 0.75			N=	78745
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Table S3 Netherlands People, Brains, Brawn Analysis

	Netherlands – EU LFS
People	-0.014*** (0.001)
Brains	-0.071*** (0.001)
Brawn	0.039*** (0.001)
People * Brains	-0.001*** (0.000)
People*Brawn	0.001*** (0.000)
Brains*Brawn	-0.009*** (0.000)
N	74842
R Squared	12%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S22 Appendix. Individual country Norway

Table T1 Norway Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-3.267
Auditory Attention	The ability to focus on a single source of sound in	Auditory and speech abilities	Sensory Abilities	0.191

	the presence of other distracting sounds.			
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-0.559
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	2.538
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-9.808
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	-0.719
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	7.725
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	-3.661
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	1.096
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	Physical Abilities	-1.212

Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-2.393
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	0
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	1.019
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-6.883
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-1.185
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	0
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	0
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Information Ordering	The ability to arrange things or actions in a	Idea Generation	Cognitive Abilities	0

	certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	and Reasoning Abilities		
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	0
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	1.992
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	0.747
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	0.559
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	0.603
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	-1.855
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	0
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	Cognitive Abilities	-0.953

Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	2.907
Originality				3.551
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-7.266
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	1.934
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	4.762
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	2.369
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It	Control Movement Abilities	Psychomotor Abilities	0

	includes the speed with which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	0
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	0
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	0
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	0.516
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	-0.739
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	5.534
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	1.761
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	0
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	Cognitive Abilities	0

Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	-0.547
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	3.802
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	-0.719
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	0.723
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	0
R Squared = 0.93			N=25624	

Table T2 Norway Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	Auto
Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking	Content	Basic Skills	0

	questions as appropriate, and not interrupting at inappropriate times.			
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	0
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-0.849
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-3.075
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	-2.241
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	-1.883
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	1.612
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	0.073
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	-2.641
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	3.924
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	1.635

Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	0.524
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	-0.79
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	0
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	-8.077
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	2.389
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	2.356
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	0
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-0.905
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	-1.294
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-0.751
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	-0.871
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-1.907

Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	-1.063
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	0.588
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	0
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	0
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	0
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	0.966
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	2.025
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	-3.365
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	2.172
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	1.649
R squared = 0.78			N=	25624

Table T3 Norway People, Brains, Brawn Analysis

	Norway – EU LFS
People	-0.010*** (0.001)
Brains	-0.086*** (0.002)
Brawn	-0.006*** (0.001)
People * Brains	0.004*** (0.001)
People*Brawn	-0.006*** (0.001)
Brains*Brawn	-0.003*** (0.001)
N	25247
R Squared	12%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S23 Appendix. Individual country Portugal

Table U1 Portugal Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-4.663
Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.	Auditory and speech abilities	Sensory Abilities	0

Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-1.474
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	3.058
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-6.413
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	0
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	3.108
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	-0.954
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	0.383
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	Physical Abilities	-1.87
Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-2.329

Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	1.85
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	0
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-3.597
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-2.289
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	0
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	0
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific	Idea Generation and Reasoning Abilities	Cognitive Abilities	0

	rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).			
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	0
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	0
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	0.65
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	1.052
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	0
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	0
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	0
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	Cognitive Abilities	0

Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	3.962
Originality				0
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-5.847
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	3.416
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	2.731
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	1.406
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	3.2
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It includes the speed with	Control Movement Abilities	Psychomotor Abilities	-4.826

	which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	-0.28
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	-2.585
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	0.881
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	0
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	-2.608
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	5.069
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	-1.231
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	1.536
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	0
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	Cognitive Abilities	3.328

Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	0
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	5.319
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	-1.384
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	-0.773
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	0.762
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	-0.237
R Squared = 0.99			N=108643	

Table U2 Portugal Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	2.492
Active Listening	Giving full attention to what other people are	Content	Basic Skills	0

	saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.			
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-1.798
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-6.175
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-4.707
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	0
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	1.659
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-3.77
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	2.079
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	0.619
Management of Financial Resources	Determining how money will be spent to get the	Resource Management Skills	Cross functional Skills	0

	work done, and accounting for these expenditures.			
Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	-0.524
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	0.943
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	-0.928
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-6.467
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	1.511
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	3.836
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	-1.301
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-0.902
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-1.078
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	0
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	0
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	0

Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-2.023
Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0.94
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	0
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	0
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	5.152
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	-2.078
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	6.524
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-3.691
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	3.527
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	-1.226
R squared = 0.88			N=	108643

Table U3 Portugal People, Brains, Brawn Analysis

	Portugal – EU LFS
People	0.006*** (0.001)
Brains	-0.107*** (0.001)
Brawn	0.042*** (0.001)
People * Brains	-0.028*** (0.000)
People*Brawn	0.001*** (0.000)
Brains*Brawn	-0.030*** (0.000)
N	108567
R Squared	16%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S24 Appendix. Individual country Sweden

Table V1 Sweden Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	-4.574	-4.574
Auditory Attention	The ability to focus on a single source of sound in the presence of other distracting sounds.	Auditory and speech abilities	0.832	0.832

Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	-2.515	-2.515
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	2.133	2.133
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	-6.99	-6.99
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	0	0
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	4	4
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	-2.253	-2.253
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	0.654	0.654
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	-2.58	-2.58
Far Vision	The ability to see details at a distance.	Visual Abilities	-3.289	-3.289

Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	3.215	3.215
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	0	0
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	-3.908	-3.908
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	-3.234	-3.234
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	0	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	0	0
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	-1.882	-1.882
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	0	0
Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific	Idea Generation and Reasoning Abilities	0	0

	rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).			
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	0	0
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	0.318	0.318
Memorization	Abilities related to the recall of available information	Quantitative Abilities	0	0
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	1.897	1.897
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	0	0
Night Vision	The ability to see under low light conditions	Near Vision	0	0
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	0	0
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	0	0

Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	3.548	3.548
Originality			0	0
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	-5.404	-5.404
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	2.771	2.771
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	3.361	3.361
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	2.833	2.833
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	2.024	2.024
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It includes the speed with	Control Movement Abilities	-4.621	-4.621

	which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	-1.029	-1.029
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	-1.048	-1.048
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	1.188	1.188
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	0.865	0.865
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	-1.968	-1.968
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	5.997	5.997
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	0	0
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	1.279	1.279
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	0.649	0.649
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	2.238	2.238

Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	0.367	0.367
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	5.053	5.053
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	-0.515	-0.515
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	-1.032	-1.032
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	1.139	1.139
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	0	0
R Squared = 0.98			N=282220	

Table V2 Sweden Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	0
Active Listening	Giving full attention to what other people are	Content	Basic Skills	-1.817

	saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.			
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-1.359
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-5.734
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-2.063
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	0
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	2.507
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0.253
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-3.45
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	3.773
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	1.669
Management of Financial Resources	Determining how money will be spent to get the	Resource Management Skills	Cross functional Skills	-0.469

	work done, and accounting for these expenditures.			
Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	0
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	0.299
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	-0.766
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-10.242
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	3.187
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	4.413
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	-1.546
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-0.225
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-2.033
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	-1.131
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	0
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	0

Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-3.345
Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0.253
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	0.725
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	0
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	4.215
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	0
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	4.553
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-4.3
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	2.211
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	0.918
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	2.032
R squared = 0.82			N=	282220

Table V3 Sweden People, Brains, Brawn Analysis

	Sweden – EU LFS
People	-0.017*** (0.000)
Brains	-0.113*** (0.001)
Brawn	0.014*** (0.000)
People * Brains	0.018*** (0.000)
People*Brawn	-0.001*** (0.000)
Brains*Brawn	-0.019*** (0.000)
N	281782
R Squared	17%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S25 Appendix. Individual country Slovakia

Table W1 Slovakia Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	Psychomotor abilities	-3.847
Auditory Attention	The ability to focus on a single source of sound in	Auditory and speech abilities	Sensory Abilities	0

	the presence of other distracting sounds.			
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-0.904
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	Psychomotor Abilities	1.338
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	Cognitive Abilities	-7.165
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	Sensory Abilities	0
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	Physical Abilities	3.091
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	Physical Abilities	-1.343
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	Physical Abilities	1.284
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	Physical Abilities	-2.69

Far Vision	The ability to see details at a distance.	Visual Abilities	Sensory Abilities	-2.691
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	Psychomotor abilities	3.525
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	Cognitive abilities	-0.052
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	Cognitive abilities	-2.92
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	Sensory abilities	-2.412
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	Physical Abilities	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	Physical Abilities	0
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	Sensory Abilities	-1.299
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	Cognitive Abilities	0
Information Ordering	The ability to arrange things or actions in a	Idea Generation	Cognitive Abilities	-1.637

	certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	and Reasoning Abilities		
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	Psychomotor Abilities	0
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	Cognitive Abilities	2.084
Memorization	Abilities related to the recall of available information	Quantitative Abilities	Cognitive Abilities	0
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	Psychomotor Abilities	1.475
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	Visual Abilities	-0.562
Night Vision	The ability to see under low light conditions	Near Vision	Visual Abilities	0
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	Cognitive Abilities	-1.982
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	Cognitive Abilities	0

Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	Cognitive Abilities	3.214
Originality				0
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	Cognitive Abilities	-4.478
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	Sensory Abilities	0.74
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	Cognitive Abilities	3.432
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	Psychomotor Abilities	2.903
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It	Control Movement Abilities	Psychomotor Abilities	-2.404

	includes the speed with which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	Cognitive Abilities	0
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	Sensory Abilities	-0.307
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	Cognitive Abilities	1.682
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	Sensory Abilities	1.371
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	Sensory Abilities	-2.602
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	Cognitive Abilities	5.444
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	Psychomotor Abilities	-0.419
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	Physical Abilities	1.249
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	Physical Abilities	0
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	Cognitive Abilities	2.685

Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	Physical Abilities	0
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	Sensory Abilities	4.027
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	Cognitive Abilities	-0.526
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	Psychomotor Abilities	0
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	Cognitive Abilities	0.543
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	Cognitive Abilities	-0.852
R Squared = 0.98			N=66551	

Table W2 Slovakia Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	0
Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking	Content	Basic Skills	-1.927

	questions as appropriate, and not interrupting at inappropriate times.			
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-3.572
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-4.154
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	0
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	0
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	2.262
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	0.171
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-2.917
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	4.844
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	1.611
Management of Financial Resources	Determining how money will be spent to get the work done, and accounting for these expenditures.	Resource Management Skills	Cross functional Skills	0

Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	-0.463
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	0
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	-0.219
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-8.341
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	1.003
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	4.521
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	-1.103
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-0.812
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-0.888
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	0
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	0
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	0
Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	-2.096

Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	-0.057
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	2.44
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	-2.539
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	5.083
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	0
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	3.692
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-4.003
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	3.849
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	-1.045
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	0
R squared = 0.88			N=	66551

Table W3 Slovakia People, Brains, Brawn Analysis

	Slovakia – EU LFS
People	0.092*** (0.001)
Brains	-0.134*** (0.001)
Brawn	0.049*** (0.001)
People * Brains	-0.026*** (0.000)
People*Brawn	-0.013*** (0.000)
Brains*Brawn	-0.029*** (0.001)
N	66509
R Squared	37%

***, **, * denotes significance at the 1%, 5% and 10% levels respectively

S26 Appendix. Individual country UK

Table X.1 UK Ability Lasso Analysis

ONET Item	Description			Coefficient
Arm-Hand Steadiness	The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.	Fine manipulative abilities	-3.019	-3.019
Auditory Attention	The ability to focus on a single source of sound in	Auditory and speech abilities	0	0

	the presence of other distracting sounds.			
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	Idea Generation and Reasoning Abilities	-3.02	-3.02
Control Precision	The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Control Movement Abilities	0.503	0.503
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	Idea Generation and Reasoning Abilities	-3.313	-3.313
Depth Perception	The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.	Visual Abilities	0	0
Dynamic Flexibility	The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.	Flexibility, Balance and Coordination	3.213	3.213
Dynamic Strength	The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.	Physical Strength	0	0
Explosive Strength	The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.	Physical Strength	0.9	0.9
Extent Flexibility	The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.	Flexibility, balance and coordination	-2.451	-2.451

Far Vision	The ability to see details at a distance.	Visual Abilities	0	0
Finger Dexterity	The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Fine manipulative abilities	1.78	1.78
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	Percptual Abilities	-0.888	-0.888
Fluency of ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	Ideas generation and reasoning abilities	-2.243	-2.243
Glare sensitivity	The ability to see objects in the presence of glare or bright lighting.	Visual abilities	-2.756	-2.756
Gross Body Co-ordination	The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.	Flexibility, Balance and Coordination	0	0
Gross Body Equilibrium	The ability to keep or regain your body balance or stay upright when in an unstable position.	Flexibility, Balance and Coordination	-0.688	-0.688
Hearing Sensitivity	The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Auditory and Speech abilities	-1.301	-1.301
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	Idea Generation and Reasoning Abilities	0	0
Information Ordering	The ability to arrange things or actions in a	Idea Generation	0	0

	certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	and Reasoning Abilities		
Manual Dexterity	The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Fine Manipulative Abilities	0	0
Math Reasoning	The ability to choose the right mathematical methods or formulas to solve a problem.	Quantitative Abilities	1.891	1.891
Memorization	Abilities related to the recall of available information	Quantitative Abilities	0.897	0.897
Multi Limb Co-ordination	The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.	Control movement abilities	2.378	2.378
Near Vision	The ability to see details at close range (within a few feet of the observer)	Near Vision	1.043	1.043
Night Vision	The ability to see under low light conditions	Near Vision	2.809	2.809
Number Facility	The ability to add, subtract, multiply, or divide quickly and correctly.	Quantitative Abilities	-2.138	-2.138
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	Verbal Abilities	-0.798	-0.798

Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	Verbal Abilities	3.675	3.675
Originality			0	0
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	Perceptual Abilities	-4.412	-4.412
Perceptual Vision	The ability to see objects or movement of objects to one's side when the eyes are looking ahead.	Visual Abilities	0	0
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	Idea generation and Reasoning Abilities	3.375	3.375
Rate Control	The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.	Control Movement Abilities	4.072	4.072
Reaction Time	The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.	Reaction Time and Speed Abilities	0	0
Response Orientation	The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It	Control Movement Abilities	-2.821	-2.821

	includes the speed with which the correct response is started with the hand, foot, or other body part.			
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	Attentiveness	0	0
Sound Localisation	The ability to tell the direction from which a sound originated.	Auditory and Speech Abilities	0	0
Spatial Orientation	The ability to know your location in relation to the environment or to know where other objects are in relation to you.	Spatial Abilities	0	0
Speech Clarity	The ability to speak clearly so others can understand you.	Auditory and Speech Abilities	-0.25	-0.25
Speech Recognition	The ability to identify and understand the speech of another person.	Auditory and Speech Abilities	-2.622	-2.622
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	Perceptual Abilities	4.591	4.591
Speed of Limb Movement	The ability to quickly move the arms and legs.	Reaction Time and Speed Abilities	-1.457	-1.457
Stamina	The ability to exert yourself physically over long periods of time without getting winded or out of breath.	Endurance	0.948	0.948
Static Strength	The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical Strength Abilities	1.268	1.268
Time Sharing	The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).	Attentiveness	0	0

Trunk Strength	The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.	Physical Strength Abilities	0	0
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	Visual Abilities	3.629	3.629
Visualisation	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	Spatial Abilities	0	0
Wrist-Finger Speed	The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.	Reaction Time and Speed Abilities	-0.738	-0.738
Written Comprehension	The ability to read and understand information and ideas presented in writing.	Verbal Abilities	-0.845	-0.845
Written Expression	The ability to communicate information and ideas in writing so others will understand.	Verbal Abilities	0	0
R Squared = 0.96			N=59723	

Table X2 UK Skills Lasso Analysis

ONET Item	Description			Coefficient
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	Process	Basic Skills	3.207
Active Listening	Giving full attention to what other people are	Content	Basic Skills	0

	saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.			
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	Complex Problem Solving	Cross Functional Skills	-1.933
Coordination	Adjusting actions in relation to others' actions.	Social Skills	Cross Functional Skills	-4.467
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	Process	Basic Skills	-1.821
Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	Technical Skills	Cross Functional Skills	-1.532
Equipment Selection	Determining the kind of tools and equipment needed to do a job.	Technical Skills	Cross Functional Skills	0.927
Installation	Installing equipment, machines, wiring, or programs to meet specifications.	Technical Skills	Cross Functional Skills	-0.609
Instructing	Teaching others how to do something.	Social Skills	Cross Functional Skills	-1.512
Judgement and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	Systems Skills	Cross Functional Skills	0
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.	Systems Skills	Cross Functional Skills	-0.324
Management of Financial Resources	Determining how money will be spent to get the	Resource Management Skills	Cross functional Skills	0

	work done, and accounting for these expenditures.			
Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.	Resource Management Skills	Cross functional Skills	0
Management of Personell Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.	Resource Management Skills	Cross functional Skills	0
Mathematics	Using mathematics to solve problems.	Content	Basic Skills	0
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	Process	Basic Skills	-5.989
Negotiation	Bringing others together and trying to reconcile differences.	Social Skills	Cross functional Skills	1.972
Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.	Technical Skills	Cross Functional Skills	2.377
Operation and Control	Controlling operations of equipment or systems.	Technical Skills	Cross Functional Skills	-0.834
Operations Analysis	Analyzing needs and product requirements to create a design.	Technical Skills	Cross Functional Skills	-0.534
Persuasion	Persuading others to change their minds or behavior.	Social Skills	Cross functional Skills	-1.766
Programming	Writing computer programs for various purposes.	Technical Skills	Cross functional Skills	-0.558
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.	Technical Skills	Cross functional Skills	-1.525
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	Content	Basic Skills	0

Repairing	Repairing machines or systems using the needed tools.	Technical Skills	Cross Functional Skills	0
Science	Using scientific rules and methods to solve problems.	Content	Basic Skills	0.721
Service Orientation	Actively looking for ways to help people.	Social Skills	Cross Functional Skills	0.356
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	Social Skills	Cross Functional Skills	0
Speaking	Talking to others to convey information effectively.	Content	Basic Skills	2.306
System Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.	Systems Skills	Cross Functional Skills	-2.76
System Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.	Systems Skills	Cross Functional Skills	5.182
Technology Design	Generating or adapting equipment and technology to serve user needs.	Technical Skills	Cross Functional Skills	-2.603
Time Management	Managing one's own time and the time of others.	Resource Management Skills	Cross Functional Skills	3.48
Troubleshooting	Determining causes of operating errors and deciding what to do about it.	Technical Skills	Cross Functional Skills	1.72
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	Content	Basic Skills	0
R squared = 0.80			N=	59723

Table X3 UK People, Brains, Brawn Analysis

	UK – EU LFS
People	0.006*** (0.001)
Brains	-0.100*** (0.001)
Brawn	0.007*** (0.001)
People * Brains	0.005*** (0.001)
People*Brawn	-0.001*** (0.000)
Brains*Brawn	-0.003*** (0.001)
N	59575
R Squared	13%

***, **, * denotes significance at the 1%, 5% and 10% levels

respectively

