OECD SME and Entrepreneurship Papers No. 34

Changes in the working environments of the self-employed: A European perspective

OECD

https://dx.doi.org/10.1787/ece3a6d6-en

OECD

OECD SME and Entrepreneurship Paper

Changes in the Working Environments of the Self-Employed: A European Perspective

This paper analyses changes in the quality of the working environment in fifteen European Union countries between 1995 and 2015, using self-reported data from the European Working and Living Conditions Survey. It finds that, although in 1995, the self-employed reported inferior working conditions compared with employees, twenty years later this difference had almost disappeared. This "catch-up" on the part of the self-employed is not limited to narrow groups; instead it is found among self-employed workers with highly diverse educational and sectoral work experience. Two major policy implications are drawn. First, policy makers should no longer expect there to be a working environment penalty from self-employment policies. Second, policy makers should distinguish between different groups within the self-employed population, with better targeted policies, rather than treating the self-employed as a single category. The paper sets out a number of avenues for further work when data for 2021 become available.

JEL codes: L26 L53 J08 J28
Keywords: Entrepreneurship, Self-Employment, Job Quality

ABOUT THE OECD

The OECD is a multi-disciplinary inter-governmental organisation of 38 member countries which engages in its work an increasing number of non-members from all regions of the world. The Organisation's core mission today is to help governments work together towards a stronger, cleaner, fairer global economy. Through its network of 250 specialised committees and working groups, the OECD provides a setting where governments compare policy experiences, seek answers to common problems, identify good practice, and co-ordinate domestic and international policies. More information available: www.oecd.org.

ABOUT THE SME AND ENTREPRENEURSHIP PAPERS

The series provides comparative evidence and analysis on SME and entrepreneurship performance and trends and on a broad range of policy areas, including SME financing, innovation, productivity, skills, internationalisation, and others.

This paper was approved for publication by the Committee for SMEs and Entrepreneurship and the Local Economic and Employment Development Committee on 22 July 2022 (CFE/LEED/SME(2022)1). The opinions expressed and the arguments employed herein do not necessarily reflect the official views of OECD member countries.

This paper was authorised for publication by Lamia Kamal-Chaoui, Director, Centre for Entrepreneurship, SMEs, Regions and Cities, OECD.

This publication was produced with the financial support of the European Union. Its contents are the sole responsibility of the OECD and do not necessarily reflect the views of the European Union.

Acknowledgements

This paper is an output of the Centre for Entrepreneurship, SMEs, Regions and Cities (CFE) of the Organisation for Economic Co-operation and Development (OECD), led by Lamia Kamal-Chaoui, Director. It is part of a grant agreement on policies for inclusive and social entrepreneurship between the OECD and the Directorate-General for Employment, Social Affairs and Inclusion of the European Commission (DG EMPL) and contributes to the work of the OECD Committee for SMEs and Entrepreneurship (CSMEE) and the OECD Local Employment and Economic Development (LEED) Committee. The paper was approved for publication by the CSMEE and the LEED Committee in August 2022 under written procedure (CFE/LEED/SME(2022)1).

The report is based on expert papers prepared by Dr. Steven A. Brieger, University of Sussex, United Kingdom; Dr. Stefan Kruse, Leuphana University of Lüneberg, Germany; and Prof. David Storey, University of Sussex. The project was led by Dr. Jonathan Potter, Head of the Entrepreneurship Policy and Analysis Unit, CFE, OECD.

The opinions expressed and arguments employed herein do not necessarily reflect the official views of the OECD member countries or the European Union.

Table of contents

FIGURES

TABLES

Executive summary

This report examines changes in the quality of the working environments of self-employed workers in EU-15 countries over the twenty years from 1995 to 2015. It addresses the notion that policies supporting growth in self-employment might create jobs but at the expense of poorer quality working environments. The key findings are that:

- The quality of working environments improved for self-employed workers in each of the EU-15 countries over the twenty years 1995-2015.
- Working environment quality converged between the self-employed and the employed. In 1995, self-employed workers experienced significantly poorer working environments than the employed, but by 2015 increases in the quality of self-employment had almost entirely closed this gap.
- There was not a reduction in the quality of working environments of the self-employed overall, despite substantial increases in the volume of self-employment in various countries and groups of the self-employed.
- Overall, the evidence does not indicate that policies for the promotion of entrepreneurship – as proxied by better business environments for entrepreneurship – undermine the quality of the working environments of the self-employed.
- However, policy makers need to recognise substantial diversity in the working environment experiences of different groups of the self-employed. The improvement in working environments in self-employment was more characteristic of some types of work and some types of individuals. Working conditions and their improvement over time also varied by country and sector.

Study approach and content

The report uses successive waves of the European Working Conditions Survey (EWCS) to explore trends in the quality of the working environments of the self-employed. It develops a set of indices to measure working environment quality. This involves indexes for five dimensions – physical environment, work intensity, working time quality, social environment and work complexity and autonomy – and an overall index of working environment quality. The analysis focuses on the EU-15 countries, since they participated both in the 1995 survey and in all the subsequent surveys: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

Changes in the quality of the self-employment working environment 1995-2015

Between 1995 and 2015, working environments improved for self-employed workers across all EU-15 countries in all dimensions of the quality of the working environment. Overall improvements were strongest in Portugal (+25.6) and weakest in Luxembourg (+10.8) and Sweden (+11.0). At the same time, the average quality of working conditions in self-employment in 2015 was highest in Denmark (76.7) and the Netherlands (79.0), and lowest in Greece (53.8) and France (56.0). Working environments of the self-employed improved most with regard to the quality of the physical environment and the quality of the social environment (based on more social support and less exposure to adverse social behaviour by colleagues and superiors at the workplace).

Over time, the working environments of the self-employed improved significantly relative to the employed. Differences in the quality of the working environment between self-employed and employed workers decreased particularly with regard to the social environment and working time arrangements.

Diversity in the experience of self-employment

Although the overall quality of working conditions of the self-employed improved regardless of sex, age, education, sector, and size of workplace, there is substantial variation in levels of working environment quality across different groups of the self-employed population. For example, the average quality of working conditions of the self-employed in 2015 was better in Denmark and the Netherlands than Greece and France. Conditions were better for women than men, for the higher educated than the low educated, and for those in large workplaces than the solo self-employed. Working conditions were also better for the self-employed in finance and public administration than for those in hotels and restaurants, infrastructure and agriculture. There are also important differences in working conditions quality between the self-employed with and without employees.

In addition, there was some diversity in changes in working environment quality overall experienced by different groups of the self-employed, particularly by level of education and income, and further differences in the change in working environment quality in specific working environment dimensions across different groups of the self-employed.

This report therefore makes the central case that self-employed workers are a highly diverse group of individuals working in diverse contexts, with different experiences of working environment quality. This diversity calls for entrepreneurship policy makers to unpack the broad self-employed category into more homogenous sub-groupings when considering the possible strengths and weaknesses of various policy interventions aimed at self-employment. This would enable better-targeted policies to be formulated and delivered.

Relationship between the quantity and quality of self-employment

The paper tests the hypothesis that recent growth in self-employment may be creating low quality jobs as people move into more marginal activities. This could include both an increase in the poorest quality jobs, such as platform-based delivery work, as self-employment expands, and a potential worsening of conditions on the margin across all types of existing self-employment activities.

There are a number of statistically significant negative correlations between the volume of self-employment and the overall quality of working environment index in terms of levels of quantity and quality across countries at any point in time. Notably, there is a statistically significant negative correlation between the volume of own-account self-employment and the overall quality of working environment index across countries. These negative correlations are largely explained by differences in sector composition and socio-demographic characteristics of the self-employed between countries. The negative correlations reflect the fact that countries with large shares of self-employment tend to have large shares of their self-employed populations in agriculture and industry and high shares of male, middle-aged and medium-skilled self-employed workers. All of these groups tend to have lower working environment quality, bringing down the average quality of self-employed working environments in these countries.

However, the key concern for policy makers, at least with respect to working environment considerations, is whether increasing the volume of self-employment within a country will lead to a reduction in its quality. Looking within countries, the results indicate that an increase in self-employment leads neither to an improvement nor to a deterioration of working environments for the self-employed.

Therefore, although some caution is needed in interpreting findings due to sample sizes, the time series evidence is that despite some relatively significant increases in the prevalence of self-employment in a number of countries between 1995 and 2015, there was no reduction in the quality of their working conditions overall. The implication is that policy makers no longer need to be concerned about a potential negative working conditions penalty from entrepreneurship policies that increase the share of self-employment in a country.

Link between enterprise policies and the quality of the working environment in self-employment

It is clear that government motivations for entrepreneurship policies in general, and self-employment in particular, are driven by a range of factors such as job creation and innovation. However, if there were clear evidence that such policies lead to these new jobs being of low quality, this would make them considerably less attractive to policy makers. This report examines this issue by taking three different measures of the quality of the business environment for entrepreneurship as proxies for the intensity of policies adopted by governments for facilitating entrepreneurship and self-employment. It also examines the impact of the scale of active labour market expenditures on business start-up support.

The analysis finds mixed evidence on the correlation between enterprise policies and the quality of self-employment, and no systematic negative relationships overall. The conclusion that can be drawn from this is that policy aimed at promoting self-employment does not come with the downside of reducing working environment quality. Indeed, there is some evidence of an association between more facilitative regulatory environments for start-ups, greater business freedom and higher-quality entrepreneurial ecosystems and better working conditions quality among the self-employed, notably in work complexity and autonomy. Furthermore, there is no evidence that a strengthening of entrepreneurship policies over time led to a reduction in average working environment quality for the self-employed. The weight of evidence suggests that entrepreneurship policy makers should have no need to be concerned about potential negative working environment penalties from policies to support self-employment, even if this may have been a concern in the past.

Policy recommendations

- In 1995, the large differences in the quality of the working environment between the self-employed and employees raised concerns among entrepreneurship policy makers. With these gaps closing, the evidence suggests this should no longer be a concern.
- Instead, the prime issue for policy makers is to recognise the wider implications of the self-employed being a very diverse group – including by socio-demographic group, sector of activity, and whether or not they have employees. Different parts of the self-employed population have very different experiences of working environment conditions. When policy decisions are made about the target populations of programmes to promote self-employment, such as entrepreneurship advice, finance and training programmes, and when wider decisions are made about people's legal form choices and their tax implications, these decisions need to recognise the diversity of populations and their experiences. For example, the category includes lorry drivers, freelance IT specialists, farmers, and gig workers, but also company directors employing others. This diversity questions the value of classifying the self-employed as a single group for policy – one which is distinct from employees – a distinction which is nonetheless currently used widely for tax and entrepreneurship policy purposes.

Future research

The latest data available for this research are from the 6th Wave of the EWCS in 2015. The 7th Wave was administered in 2021 and is expected to be available for analysis from 2022. Analysing Wave 7 and making comparisons with previous waves would shed more light on the following key questions:

- Does the trend of improved working conditions in self-employment in the EU-15 continue during the most recent period?
- Do the working environments of the self-employed and employed workers continue to converge?
- How does the quality of self-employment change over time, when taking account of individuals' pay in addition to the working environment indicators assessed in this paper?
- Does the quality of non-wage related working conditions differ between the self-employed with lower versus those with higher pay?
- What have been the impacts of COVID-19 and COVID-19 policy responses on the quality of self-employment?
- Do social protection and labour market policies affect the prevalence and quality of self-employment in the EU?
- Can the patterns of changes in self-employed job quality identified for the EU-15 be generalised to the countries of the EU-27?
- Is there variation in the patterns of sectoral and socio-demographic differences in the quality of self-employment between old and new European Member States?
- Can more homogenous groups within the self-employed population be developed using statistical sources on the quality of the working environment to make them more identifiable for policy purposes?

1 Introduction

The self-employed currently account for approximately 12% of the workforce in European Union (EU) countries (OECD 2021) and this share has grown over the last two decades in several EU countries. Although self-employment is appreciated for its contribution to providing jobs, there is also an increasing interest in its nature and quality (Henley 2022). Some argue that self-employment is associated with poor quality jobs, since the self-employed often report having lower pay, longer working hours, and more stress at work than employees (Brieger et al. 2019; Hamilton et al. 2019; Stephan 2018). These negative aspects of self-employment could become more important when the quantity of self-employment increases, especially if people are attracted to self-employment for lack of other employment options. On the other hand, the self-employed overall also tend to be more satisfied with their work and overall life quality than employed workers (Benz and Frey 2004; Stephan 2018). This is generally explained by their greater job autonomy and independence (Berger et al. 2019; Lange 2012).

This report assesses trends in the quality of the working environments of the self-employed in European Union (EU) countries between 1995 and 2015, taking into account the type of self-employment (contrasting the self-employed with employees to those without employees). Consistent with previous work (see OECD, 2021, 17-18), “self-employment” is defined as an economic activity where a person works for oneself (as opposed to being hired), either with or without employees. In line with previous job quality research, the analysis of the working conditions of the self-employed is structured by examining five different dimensions of the quality of the working environment: physical environment, work intensity, working time quality, social environment and work complexity and autonomy, as well as working environment quality overall. The analysis is based on successive waves of the European Working Conditions Survey (EWCS), which enables the exploration of time trends in working conditions. EWCS data have been collected and published every five years from early 1990 onwards, with the latest 7th Wave to be released in late 2022. Each wave is based on representative country samples of citizens older than 15 years and in employment.

This analysis focuses on the EU-15 countries, since they participated both in 1995 and in all the subsequent surveys: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom. In aggregate, the analysis is based on more than 94 000 individuals, allowing examination of long-term trends in the quality of working environments across groups of different sex, age, education and income status, firm-level characteristics and across countries. Nonetheless, caution is needed in interpreting some findings where sample sizes are relatively small.

The report is structured as follows:

- Chapter 2 introduces the concept of job quality and documents the operationalisation of the concept for examining the quality of the working environment in this study.
- Chapter 3 describes how the quality of working environments of the self-employed have changed over the period 1995-2015 and explores individual- and country-level differences in working conditions amongst the self-employed.
- Chapter 4 explores the relationship between the quantity and the quality of self-employment, and distinguishes between the "Self-Employed with Employees" (SEWE) and "Own-Account Self-Employed" (OASE).

- Chapter 5 investigates whether changes in the working conditions of the self-employed are associated with entrepreneurship policies – as measured by indicators of the institutional environment for entrepreneurship using data from the Heritage Foundation, the World Bank, and the Global Entrepreneurship Monitor.
- Finally, Chapter 6 discusses the policy implications of the findings and discusses next steps for research and policy analysis on this subject.

2 Measuring the quality of working environments

The concept of job quality

Job quality is defined by the objective characteristics of jobs that are expected to be related to the health and well-being of workers (Eurofound 2012). Governments increasingly recognise job quality as an important policy issue. The OECD new Jobs Strategy makes a series of recommendations to governments on how to promote job quality. This includes advice on job quality for self-employment, by balancing considerations of job quality with considerations of innovation, entrepreneurship and flexibility in the economy, including balancing incentives, addressing worker classification, regulating platform work, improving working conditions, strengthening social protection, seeking fair taxation, strengthening labour relations and workers voice and promoting investment in skills (OECD 2018). Similarly, one of the current political priorities of the European Commission is an economy that works for people, including the creation of decent and safe working conditions. Similarly, the International Labour Organization (ILO) promotes “decent work”, which integrates job creation, rights at work, social protection and social dialogue (ILO 2022).

The OECD emphasises three key dimensions of job quality: earnings quality, labour market security, and the quality of the working environment (OECD 2014, ch. 3). *Earnings quality* refers to "the extent to which the earnings received by workers in their jobs contribute to their well-being”. *Labour market security* captures aspects of “economic security that are related to the probability of job loss and its economic cost for workers”. The *quality of the working environment* takes into account “non-economic aspects of job quality and includes factors that relate to the nature and content of work performed, working-time arrangements and workplace relationships” (OECD 2014, p. 80).

In 2013, the European Union’s Employment Committee (EMCO) agreed a four-dimensional concept of job quality – each comprising ten sub-dimensions. These include (1) socio-economic security (including adequate earnings and job and career security), (2) education and training (including skills development through life-long learning and employability), (3) working conditions (including health and safety at work, work intensity, autonomy and working practices, as well as collective interest representation), and (4) work-life and gender balance (EU 2015, pp. 138-139).

Attempts to bring about improvements in job quality have been, at least in part, constrained by poor data. To address this, the European Foundation for the Improvement of Living and Working Conditions (Eurofound) has been gathering data since the 1990s that facilitates the comparison of the quality of self-employment in EU countries. The key dimensions of job quality identified by Eurofound include earnings, career prospects, intrinsic job quality and working time quality (Eurofound 2017a, ch. 3, Eurofound 2012, ch. 1, European Union 2015, p. 139).

Figure 2.1 summarises the different frameworks to measure job quality that have been developed by the OECD, European Union and Eurofound. The frameworks strongly overlap in the identified dimensions of job quality. Three elements are common: (1) earnings; (2) job stability, i.e. risk of

unemployment and coverage by unemployment insurance; and (3) the working conditions, i.e. hours worked, health and safety, and training and development.

The focus of this study is on long-term trends in the quality of self-employment. It is important to point out that the coverage of data on earnings and job stability does not allow a long-term trend analysis over the period 1995-2015. Hence, this study focuses exclusively on the other job quality dimensions, namely changes in the quality of the working environment among the self-employed. Future work will be able to make use of new data points on variations in earnings and career prospects over time, to extend the analysis to overall job quality, integrating these equally important characteristics of job quality.

Table 2.1. Different frameworks for measuring job quality

Job quality dimension	OECD	European Union	Eurofound
Earnings	Earnings quality	Adequate earnings	Earnings
Job stability	Labour market security	Job and career security	Prospects
Working conditions	Health and safety risks	Employability	Physical environment
	Time pressures	Health and safety at work	Work intensity
	Work autonomy	Work intensity	Skills and discretion
	Learning opportunities	Autonomy	Working time quality
	Workplace intimidation and social support at work	Work-life balance	Social environment
		Gender balance	
		Collective interest representation	

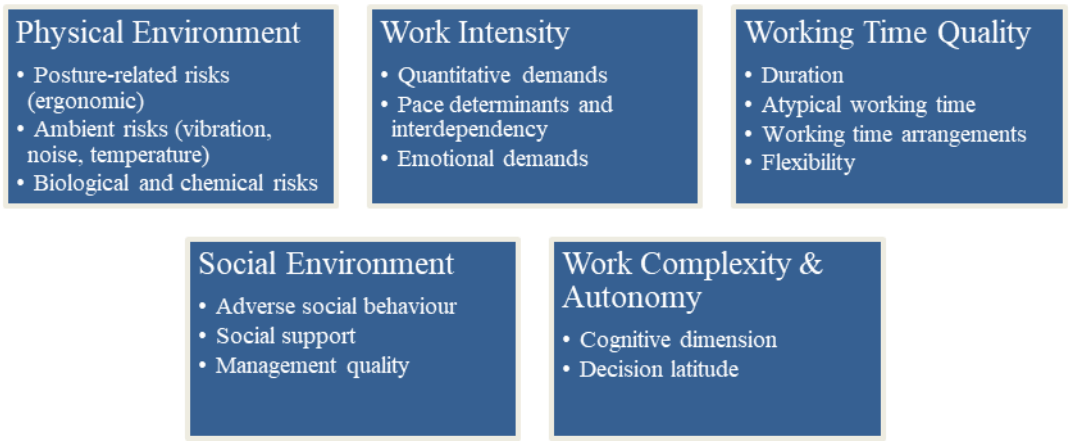
Source: OECD/European Union (2017, p. 111); Eurofound (2017, ch. 3); Eurofound (2012, ch. 1), European Union (2015, p. 139).

Measuring the quality of working environments

To measure the Quality of the Working Environment (QWE) among the self-employed, this report builds on the job quality frameworks introduced by the OECD (Cazes, Hijzen, and Saint-Martin 2015) and Eurofound (2017b). The operationalisation is based on data from Wave 2 to 6 of the European Working Conditions Survey. Following the methodology suggested by Eurofound (2017b), our QWE indices differ from previous measurement approaches by relying exclusively on items that are available throughout 1995 and more recent years.

We create a set of indices that measure the quality of the working environment in five key domains, covering the physical environment, work intensity, working time quality, social environment, and the extent of learning opportunities and work autonomy. Each QWE index is based on several indicators that are given equal weight when calculating the five QWE indices. Additionally, we further summarise the five QWE indices into an overall index of the quality of the working environment. The overall QWE index is the simple average of the five QWE indices. For ease of interpretation, each index is transformed into a 0–100 scale, with higher values indicating higher quality of the working environment. The following section describes the index construction in further detail (Figure 2.1).

Figure 2.1 Indices of the Quality of the Working Environment (QWE)



The Physical Environment index captures the extent to which physical hazards such as air and noise pollution pose a risk to health and well-being. The index combines three subindices: (1) ambient risks index, (2) biological and chemical risks index, and (3) posture-related (ergonomic) risks. The extent of physical risks in self-employment is captured by the specified indicators, each measuring the proportion of self-employed respondents that are *exposed one-quarter of the time or more* to physical hazards, biological and chemical hazards as well as posture-related issues. The Physical Environment index is calculated as the unweighted average across all indicators. For ease of interpretation we rescale the resulting physical environment index into a 0–100 scale with higher values indicating higher quality of the physical working environment.

Table 2.2 documents the components of the Physical Environment index.

Table 2.2. Composition of the Physical Environment index

Single items	Sub-dimension	Index
Vibrations from hand tools, machinery Noise so loud that you would have to raise your voice to talk to people High temperatures which make you perspire even when not working Low temperatures whether indoors or outdoors	Ambient risks (% of workers exposed one-quarter of the time or more)	Physical Environment index
Breathing in smoke, fumes (such as welding or exhaust fumes), powder or dust (such as wood dust or mineral dust) Breathing in vapours, such as solvents and thinners Handling or being in skin contact with chemical products or substances Tobacco smoke from other people Handling or being in direct contact with materials which could be infectious, such as waste, bodily fluids, laboratory materials, etc.	Biological and chemical risks (% of workers exposed one-quarter of the time or more)	
Tiring or painful positions Lifting or moving people Carrying or moving heavy loads Repetitive hand or arm movements	Posture-related (ergonomic) risks (% of workers exposed one-quarter of the time or more)	

Note: The Physical Environment index is calculated by averaging the single items and rescaling the resulting score into a 0–100 scale: higher values indicate higher quality of the working environment.

The Work Intensity index captures quantitative time demands and work-pace independence. Table 2.3 presents the components of the Work Intensity index. The extent of quantitative demands is captured by the specified indicators, each measuring the proportion of self-employed respondents that *three-quarters of the time or more* work at very high speed and under tight deadlines, *never or rarely* have enough time to get their job done, and *very often* suffer from disruptive interruptions. The extent to which the self-employed can independently determine their pace of work is captured by a set of indicators that measure the share of respondents whose work depends on each of the following external factors: work done by colleagues, demands from customers, performance targets, machines or the direct demands from superiors. In addition to these five binary variables we calculate the proportion of respondents who are exposed to three or more of these external factors.

The Work Intensity index is calculated as the unweighted average across all indicators. For ease of interpretation we rescale the resulting working intensity index into a 0–100 scale: higher values indicate lower work intensity and thus higher quality of the working environment.

Table 2.3. Composition of the Work Intensity index

Single items	Sub-dimension	Index
Working at very high speed (three-quarters of the time or more), in % Working to tight deadlines (three-quarters of the time or more), in % Enough time to get the job done ("Never" or "Rarely"), in % Frequent disruptive interruptions ("Very often"), in %	Quantitative demands	Work Intensity index
Work pace dependent on: ... the work done by colleagues, in % ... direct demands from people such as customers, pupils, patients, etc., in % ... numerical production targets or performance targets, in % ... automatic speed of a machine or movement of a product, in % ... direct control of your boss, Yes in % Interdependency: % of respondents with three or more pace determinants	Pace determinance and interdependence	

Note: The Work Intensity index is calculated by averaging the single items and rescaling the resulting score into a 0–100 scale: higher values indicate higher quality of the working environment.

The Working Time Quality index captures the absence of overtime work and atypical working time arrangements. Overtime work is measured by the share of respondents that work 48 hours or more per week. Atypical working time arrangements are measured by the proportion of respondents that work at night or at the weekends (Table 2.4). Working time is an essential aspect of job quality and directly affects workers' health and well-being (Kivimäki et al. 2015; Theorell et al. 2016; Theorell et al. 2015).

The Working Time Quality index is calculated as the unweighted average across the four indicators. For ease of interpretation we rescale the resulting index into a 0–100 scale: higher values indicate lower working time quality and thus higher quality of the working environment.

Table 2.4. Composition of the Working Time Quality index

Single items	Sub-dimension	Index
Long working hours (48 hours or more a week), in %	Duration	Working Time Quality index
Night work, in % Saturday work, in % Sunday work, in %	Atypical working time	

Note: The Working Time Quality index is calculated by averaging the single items and rescaling the resulting score into a 0–100 scale: higher values indicate higher quality of the working environment.

The Social Environment index captures collegial support and the absence of adverse social behaviour. Collegial support is measured by the proportion of self-employed respondents reporting that they experience help and support from their colleagues. Adverse social behaviour measures the proportion of respondents reporting that they were subject to unwanted sexual attention at the workplace in the last month.

The Social Environment index is calculated as the unweighted average across both indicators. For ease of interpretation we rescale the resulting index into a 0–100 scale: higher values indicate more social support and less adverse social behaviour, and hence, higher quality of the social environment. Table 2.5 documents the composition of the index.

Table 2.5. Composition of the Social Environment index

Single items	Sub-dimension	Index
Experiencing no help and support from colleagues in %	No social support	Social Environment index
Subjected to unwanted sexual attention in the last month in %	Adverse social behaviour	

Note: The Social Environment index is calculated by averaging the single items and rescaling the resulting score into a 0–100 scale: higher values indicate higher quality of the working environment.

The Work Complexity & Autonomy index captures the complexity of job tasks, the presence of learning opportunities and the level of autonomy at the workplace. The extent of learning opportunities and work complexity is captured by the proportion of self-employed respondents reporting that their main job involves solving unforeseen problems, learning new things, dealing with complex tasks, and implies working with computers *at least one-quarter of the time.* Work place autonomy is operationalised by a set of indicators that measure the share of respondents reporting that they can freely choose or change the speed, order and method of work (Table 2.6).

The Work Complexity & Autonomy index is calculated as the unweighted average across all indicators. For ease of interpretation we rescale the resulting index into a 0–100 scale: higher values indicate higher work complexity with more learning opportunities and more autonomous decision-making, and thus higher quality of the working environment.

Table 2.6. Composition of the Work Complexity & Autonomy index

Single items	Sub-dimension	Index
Generally, does your main paid job involve: Solving unforeseen problems, in % Complex tasks, in % Learning new things, in % Working with computers, laptops, smartphones (at least a quarter of the time), in %	Learning opportunities and work complexity	Work Complexity & Autonomy index
Are you able to choose or change: Your speed or rate of work, in % Your order of tasks, in % Your methods of work, in %	Autonomy	

Note: The Work Complexity & Autonomy index is calculated by averaging the single items and rescaling the resulting score into a 0–100 scale: higher values indicate higher quality in the working environment.

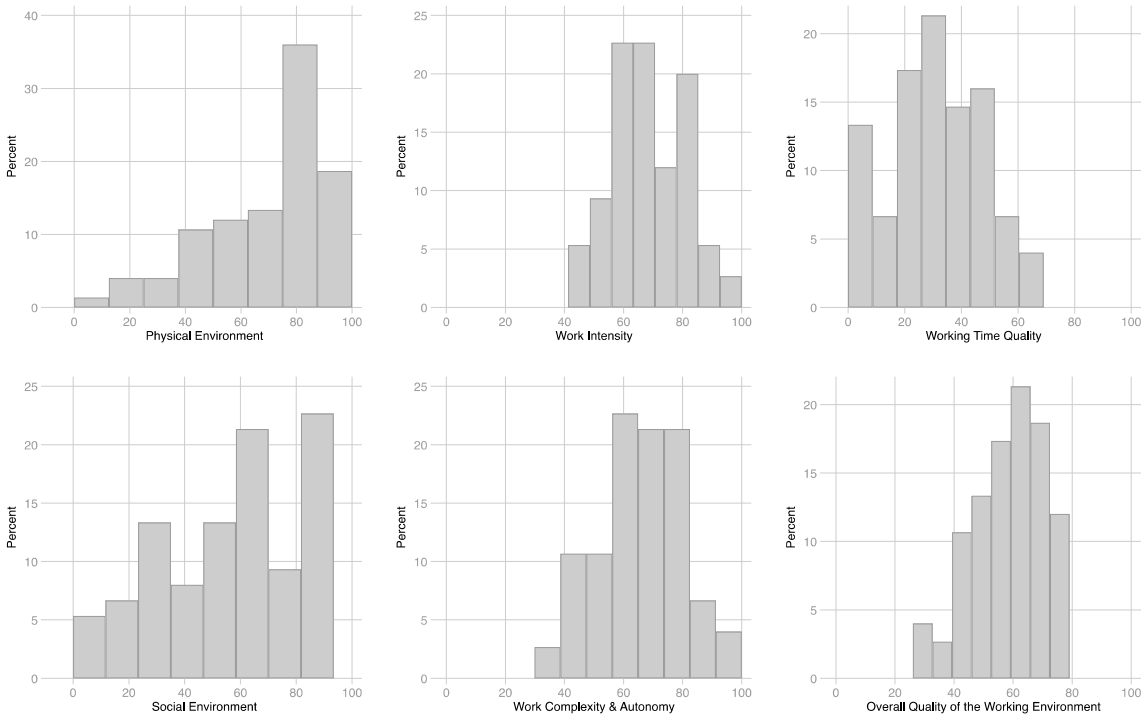
Describing the quality of working environments

Figure 2.2 shows the distribution of the five single indices and the overall QWE index for self-employed workers in the EU-15 over the entire period from 1995 to 2015. This involves the use of five cross-sectional data sets from the EWCS – namely the surveys for 1995, 2000, 2005, 2010 and 2015.

The indices tend to be left skewed, with the Physical Environment index and the Social Environment index bunching more toward the top end of the scale (the higher quality end). Only the Working Time Quality index distribution is more right skewed, reflecting the higher degree of flexibility, atypical work arrangements, and unfavourable working time arrangements of the self-employed. Notes: Figures show the distribution of QWE indices across the EU-15 countries and the period 1995-2015.

Table 2.7 reports the average distribution of the QWE indices in the EU-15 countries. The highest scores are found for the Physical Environment index, the Work Intensity index, and the Social Environment index. Working time quality among the self-employed is rated the lowest. At the same time, there is substantial variation among the self-employed with regard to the self-rated quality of the physical and social environment.

Figure 2.2: The distribution of the QWE indices across EU-15 countries, 1995-2015



Notes: Figures show the distribution of QWE indices across the EU-15 countries and the period 1995-2015.

Table 2.7: Summary statistics of QWE indices across EU-15 countries, 1995-2015

Index	Mean	SD	Min	Max
Physical Environment index	69.25	22.52	0.00	100.00
Work Intensity index	68.38	12.83	41.27	100.00
Working Time Quality index	31.78	17.13	0.00	69.04
Social Environment index	56.17	24.79	0.00	93.37
Work Complexity & Autonomy index	65.93	14.25	29.87	100.00
Overall QWE index	**58.30**	**12.25**	**26.07**	**79.09**

Note: N = 75

Table 2.8 reports the correlations between the individual working conditions indices. Overall, there are few significant correlations between the different QWE indicators. This suggests that each indicator reflects unique variations in the quality of the working environment among the self-employed. Hence, it is appropriate to assess each working condition dimension separately andcapture their combined contributions to the overall QWE index.

Table 2.8: Correlations between QWE-Indices across EU-15 countries, 1995-2015

Year	Index	1.	2.	3.	4.	5.
1995	1. Physical Environment index	1				
	2. Work Intensity index	0.45	1			
	3. Working Time Quality index	0.49+	0.18	1		
	4. Social Environment index	-0.13	-0.34	0.14	1	
	5. Work Complexity & Autonomy index	0.26	0.16	0.04	0.27	1
2000	1. Physical Environment index	1				
	2. Work Intensity index	0.59*	1			
	3. Working Time Quality index	0.40	0.53*	1		
	4. Social Environment index	0.41	-0.09	0.15	1	
	5. Work Complexity & Autonomy index	0.37	-0.00	-0.23	0.55*	1
2005	1. Physical Environment index	1				
	2. Work Intensity index	0.43	1			
	3. Working Time Quality index	0.30	0.27	1		
	4. Social Environment index	0.13	-0.26	0.25	1	
	5. Work Complexity & Autonomy index	0.41	-0.28	-0.23	0.22	1
2010	1. Physical Environment index	1				
	2. Work Intensity index	0.62*	1			
	3. Working Time Quality index	0.10	0.35	1		
	4. Social Environment index	-0.10	0.25	0.05	1	
	5. Work Complexity & Autonomy index	0.44	-0.19	-0.24	-0.21	1
2015	1. Physical Environment index	1				
	2. Work Intensity index	0.25	1			
	3. Working Time Quality index	0.38	0.56*	1		
	4. Social Environment index	-0.14	-0.34	-0.58*	1	
	5. Work Complexity & Autonomy index	0.38	-0.22	-0.52*	0.29	1

Notes: N = 15. + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001.
Source: EWCS.

Table 2.9 reports the correlations between each QWE index and the extent to which the self-employed report being satisfied or very satisfied with their working conditions. Each of the QWE indices correlates (strongly) positively with respondents' self-reported satisfaction with working conditions. This provides further verification and adds external validity to our measurement approach.

Table 2.9: Correlations between self-employed workers' satisfaction with working conditions and the QWE indices

	Physical Environment index	Work Intensity index	Working Time Quality index	Social Environment index	Work Complexity & Autonomy index	Overall Working Environment index
% Very/ Satisfied with working conditions	0.45***	0.49***	0.22	0.38***	0.58***	0.58***

Notes: N = 75. + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001.
Source: EWCS.

3 Changes over time in the quality of the working environment

This section describes changes in the quality of working environments of the self-employed, across countries, between 1995 and 2015. It covers the changes overall; by country; by age, sex, education, and income; and by size of workplace and sector of the self-employed. It also compares changes in the quality of working conditions between the self-employed and the employed.

Improvement of working environments in self-employment overall

Table 3.1 reports the level of job quality in self-employment between 1995 and 2015, averaged across all EU-15 countries. This provides a first picture of the extent, and the overall direction, of changes in the quality of self-employment. All indices have substantially improved over the two decades between 1995 and 2015.

The largest improvements occurred in the quality of the physical environment and the quality of the social environment. Specifically, the Physical Environment index and the Social Environment index rose by 22.76 and 32.13 points, respectively. The Work Intensity index, Working Time Quality index and Work Complexity & Autonomy index rose by 14.48, 11.01, and 13.30 points, respectively.

Table 3.1: The quality of working environments in self-employment, 1995-2015

Index	1995	2000	2005	2010	2015	Δ 1995-2015	
Physical Environment index	56.91	59.62	74.72	75.32	79.67	+22.76	↑
Work Intensity index	59.74	65.49	67.08	75.39	74.22	+14.48	↑
Working Time Quality index	23.47	32.37	31.59	36.97	34.48	+11.01	↑
Social Environment index	44.14	29.48	50.65	80.31	76.27	+32.13	↑
Work Complexity & Autonomy index	60.25	58.40	66.17	71.30	73.55	+13.30	↑
Overall QWE index	**48.90**	**49.07**	**58.04**	**67.86**	**67.64**	**+18.74**	↑

Notes: The table shows averages across EU-15 countries. Directional arrows record the pattern of change between 1995 and 2015. A directional arrow records a "substantive" change, that is, at least 3 percentage points in the average level.
Source: EWCS.

Changes in working environments by country

There are substantial variations in both the levels of, and changes over time in, the working conditions of the self-employed in EU-15 countries (Table 3.2 and Figure A1). Table 3.2 shows that the average quality of working conditions in self-employment in 2015 was rated highest in Denmark (76.7) and the Netherlands (79.0), and lowest in Greece (53.8) and France (56.0). Likewise, Table 3.2 shows that while the overall quality of working conditions improved in each of the EU-15 countries, these range from moderate improvements as in Luxembourg (+10.8) to strong improvements as in Portugal (+25.6).

Table 3.2: The quality of working environments in self-employment by country, 1995-2015

Index	1995	2000	2005	2010	2015	Δ 1995-2015	
Overall QWE index							
Austria	45.29	52.23	55.74	69.96	66.33	+21.04	↑
Belgium	51.48	48.72	48.36	71.97	68.95	+17.47	↑
Denmark	63.36	61.53	53.23	73.55	76.74	+13.38	↑
Finland	40.35	28.88	52.82	59.19	62.38	+22.03	↑
France	34.84	40.20	52.35	55.32	56.09	+21.24	↑
Germany	52.64	55.71	60.32	66.37	73.11	+20.47	↑
Greece	31.43	26.07	36.80	51.32	53.80	+22.37	↑
Ireland	42.59	46.04	64.53	65.89	65.11	+22.52	↑
Italy	54.71	55.63	60.31	71.15	68.52	+13.81	↑
Luxembourg	59.34	57.90	62.85	63.59	70.12	+10.78	↑
Netherlands	59.47	69.59	69.90	75.30	79.09	+19.63	↑
Portugal	46.71	52.29	54.81	75.22	72.29	+25.58	↑
Spain	45.31	45.75	59.25	77.00	63.78	+18.47	↑
Sweden	61.50	50.77	76.16	71.56	72.50	+11.00	↑
United Kingdom	44.49	44.75	63.20	70.48	65.74	+21.25	↑
Physical Environment index							
Austria	61.14	79.35	77.35	77.98	85.24	+24.10	↑
Belgium	90.88	78.97	73.48	82.01	98.17	+7.29	↑
Denmark	83.53	93.45	85.47	94.10	100.00	+16.47	↑
Finland	12.55	0.00	46.12	63.68	52.68	+40.13	↑
France	36.92	46.59	55.71	41.62	58.03	+21.11	↑
Germany	76.84	73.95	79.00	83.40	91.09	+14.25	↑
Greece	12.72	16.41	33.46	44.55	49.87	+37.15	↑
Ireland	40.26	44.54	88.46	76.22	67.79	+27.53	↑
Italy	78.33	78.04	83.71	89.16	88.55	+10.22	↑
Luxembourg	82.15	80.60	87.41	80.58	97.80	+15.65	↑
Netherlands	81.09	79.15	94.78	97.68	96.16	+15.07	↑
Portugal	55.21	73.35	65.12	69.21	87.43	+32.22	↑
Spain	62.20	57.93	78.79	78.51	67.09	+4.89	↑
Sweden	53.68	53.79	87.83	72.69	86.65	+32.97	↑
United Kingdom	26.22	38.14	84.04	78.41	68.47	+42.25	↑

Index	1995	2000	2005	2010	2015	Δ 1995-2015	
Work Intensity index							
Austria	53.40	61.77	76.76	84.00	76.74	+23.34	↑
Belgium	67.86	69.42	57.37	72.22	65.89	-1.97	
Denmark	64.28	73.57	64.67	76.17	78.25	+13.97	↑
Finland	62.45	52.94	53.75	64.91	78.69	+16.24	↑
France	62.57	70.31	57.41	41.33	59.53	-3.04	↓
Germany	59.32	71.37	59.11	80.29	84.28	+24.96	↑
Greece	46.91	57.03	50.79	63.97	58.95	+12.04	↑
Ireland	59.97	62.40	91.25	69.38	78.10	+18.13	↑
Italy	63.05	67.37	80.30	79.49	80.27	+17.22	↑
Luxembourg	66.20	56.73	41.27	68.70	46.48	-19.72	↓
Netherlands	50.85	81.17	71.05	88.69	86.45	+35.60	↑
Portugal	66.22	82.83	79.65	100.00	98.89	+32.67	↑
Spain	61.02	65.02	77.50	91.05	64.66	+3.64	↑
Sweden	61.21	50.97	66.60	67.04	83.60	+22.39	↑
United Kingdom	50.74	59.39	78.77	83.55	72.52	+21.78	↑
Working Time Quality index							
Austria	9.95	11.94	4.06	30.88	33.44	+23.49	↑
Belgium	4.83	17.38	0.00	42.14	22.26	+17.43	↑
Denmark	23.64	32.80	13.18	21.01	21.89	-1.75	
Finland	3.90	5.28	32.67	33.14	15.81	+11.91	↑
France	5.47	16.61	42.09	49.84	19.97	+14.50	↑
Germany	26.50	33.91	26.10	20.44	51.62	+25.12	↑
Greece	4.60	27.05	4.32	6.87	21.55	+16.95	↑
Ireland	4.69	22.27	22.47	27.40	21.48	+16.79	↑
Italy	34.00	51.68	49.93	53.35	55.95	+21.95	↑
Luxembourg	44.28	29.58	37.49	24.20	31.36	-12.92	↓
Netherlands	42.98	63.43	40.56	40.38	42.41	-0.57	
Portugal	38.11	49.77	43.44	58.06	69.04	+30.93	↑
Spain	39.06	51.18	46.75	67.34	33.86	-5.20	↓
Sweden	52.73	30.90	50.77	35.42	30.20	-22.53	↓
United Kingdom	17.27	41.83	60.02	44.13	46.35	+29.08	↓

Index	1995	2000	2005	2010	2015	Δ 1995-2015	
Social Environment index							
Austria	31.43	27.68	42.30	78.65	61.12	+29.69	↑
Belgium	29.93	17.38	37.97	89.50	84.69	+54.76	↑
Denmark	68.92	44.44	17.29	84.44	83.55	+14.63	↑
Finland	56.29	21.47	65.52	62.45	88.05	+31.76	↑
France	11.20	7.13	39.62	73.41	60.54	+49.34	↑
Germany	31.46	33.73	67.11	83.10	64.08	+32.62	↑
Greece	57.09	0.00	51.36	89.70	86.04	+28.95	↑
Ireland	50.71	46.00	59.12	86.06	84.66	+33.95	↑
Italy	37.70	26.67	30.36	72.35	56.95	+19.25	↑
Luxembourg	54.30	62.34	70.05	62.48	85.30	+31.00	↑
Netherlands	62.78	49.79	65.10	69.77	86.52	+23.74	↑
Portugal	27.92	15.65	29.84	93.06	61.67	+33.75	↑
Spain	18.21	7.81	48.62	87.82	87.53	+69.32	↑
Sweden	61.20	49.73	84.13	93.37	76.35	+15.15	↑
United Kingdom	62.88	32.37	51.42	78.47	76.98	+14.10	↑
Work Complexity & Autonomy index							
Austria	70.53	80.41	78.23	78.28	75.10	+4.57	↑
Belgium	63.89	60.48	72.98	73.97	73.73	+9.84	↑
Denmark	76.44	63.39	85.52	92.05	100.00	+23.56	↑
Finland	66.56	64.72	66.04	71.79	76.67	+10.11	↑
France	58.05	60.35	66.94	70.40	82.37	+24.32	↑
Germany	69.08	65.57	70.29	64.62	74.48	+5.40	↑
Greece	35.83	29.87	44.09	51.50	52.61	+16.78	↑
Ireland	57.31	55.00	61.35	70.37	73.50	+16.19	↑
Italy	60.47	54.40	57.28	61.41	60.89	+0.42	
Luxembourg	49.79	60.27	78.03	81.97	89.65	+39.86	↑
Netherlands	59.63	74.39	78.00	80.00	83.93	+24.30	↑
Portugal	46.11	39.85	56.01	55.78	44.43	-1.68	
Spain	46.09	46.84	44.57	60.27	65.78	+19.69	↑
Sweden	78.66	68.44	91.47	89.26	85.69	7.03	↑
United Kingdom	65.33	52.04	41.73	67.85	64.39	-0.94	

Notes: Directional arrows record the direction of change between 1995 and 2015. A directional arrow records a "substantive" change, that is, at least 3 percentage points in the average level.
Source: EWCS.

With regard to the quality of the physical environment, the risk to the health and safety of self-employed workers due to air and noise pollution improved substantially between 1995 and 2015 in most countries. Nevertheless, despite these improvements, many self-employed workers continued to experience substantial ergonomic risks through carrying heavy loads, tiring positions and executing repetitive tasks. In 2015, Denmark, Belgium and Luxembourg showed the highest scores in the quality of the physical

environment while the ratings were lowest in Finland and Greece. The UK and Finland experienced the largest improvements during the 1995-2015 period.

Changes in work intensity among the self-employed also varied considerably between countries. For instance, Portugal and the Netherlands experienced significant improvements between 1995 and 2015. The Work Intensity index rose by 32.67 points for Portugal and 35.60 points for the Netherlands. Major improvements also took place in Austria, Germany, Sweden and the United Kingdom, where the Work Intensity index of self-employed workers increased by more than 20 points. In contrast, the self-employed in Luxembourg reported a significant decline in this job quality dimension, while Spain, Belgium and France experienced only minor changes compared with 1995.

There were also substantial differences in the quality of self-employment between EU-15 countries with regard to overtime work and atypical working time. The self-employed in Portugal, Italy and Germany scored highest on the Working Time Quality index, while the self-employed in France and Finland scored lowest. The duration and organisation of working time among the self-employed in Europe improved over the 20-year period in several respects. These included reduced overtime working and atypical working time arrangements and a perception that workers had sufficient time to complete their tasks. Portugal and the United Kingdom had the largest improvements in working time quality ratings.

The experience of the quality of social support and cooperation among self-employed workers also varied considerably between EU-15 countries. In 1995 quality ratings of the social environment were lowest in France (11.2), and highest in Denmark (68.9) but, over time, there is evidence of catch-up. In 2015, social environment ratings were lowest in Italy (57.0), and highest in Finland (88.1). Belgium, France and Spain experienced the largest improvements since 1995. There was convergence among countries in the quality of the social environment for the self-employed between 1995 and 2015.

Changes in the quality of self-employment with regard to work complexity and autonomy also varied across countries. In 2015, Denmark, Luxembourg, and Sweden showed the highest scores in the Work Complexity & Autonomy index, while Portugal and Greece scored lowest. Over the period 1995-2015, Work Complexity & Autonomy index levels improved in most countries, but most notably in Luxembourg, France, the Netherlands, and Denmark. By contrast, the Work Complexity & Autonomy index remained more or less stable in Portugal, Italy and the UK, compared with 1995.

Changes in working environments by sex, age, education and income

Table 3.3 presents changes in the average quality of the working environments among self-employed men and women for the different QWE indices. Although there are differences in job quality rankings between women and men at any point in time, the improvements in working conditions observed over the two decades are shared fairly evenly between women and men. For instance, although the overall QWE ratings are higher among self-employed women than self-employed men, the quality of the working environment increased substantially for both sexes between 1995 and 2015, with similar percentage point gains for both groups.

Self-employed women reported experiencing better physical working environments than men. While both sexes experienced substantial improvements between 1995 and 2015, physical working conditions improved more for self-employed men.

Self-employed women reported higher scores than men on the Work Intensity index and the Working Time Quality index. This indicates that self-employed women are less likely than men to have to work at a very high speed and under tight deadlines, or to be exposed to overtime work and atypical time arrangements. Both sexes benefited from improvements in these job quality dimensions between 1995 and 2015.

Self-employed men reported higher scores on the Social Environment and the Work Complexity & Autonomy index. Both women and men reported substantial improvements in their social environment and, to a lesser extent, in the complexity and autonomy of their work.

Table 3.3: The quality of working environments in self-employment by sex, 1995-2015

Index	1995	2000	2005	2010	2015	Δ 1995-2015	
Overall QWE index							
Male	48.30	49.20	57.01	63.75	63.38	+15.08	↑
Female	57.25	55.08	61.67	71.37	71.70	+14.45	↑
Physical Environment index							
Male	48.39	50.89	65.66	63.81	66.96	+18.57	↑
Female	70.89	70.41	76.85	80.03	84.66	+13.77	↑
Work Intensity index							
Male	52.72	59.03	59.36	65.95	64.06	+11.34	↑
Female	69.70	70.63	73.30	78.82	79.35	+9.65	↑
Working Time Quality index							
Male	21.97	30.64	28.54	32.10	29.02	+7.05	↑
Female	46.93	49.73	51.30	55.31	53.70	+6.77	↑
Social Environment index							
Male	56.39	44.24	62.89	85.56	82.36	+25.97	↑
Female	44.98	33.89	49.46	76.98	74.09	+29.11	↑
Work Complexity & Autonomy index							
Male	62.03	61.19	68.59	71.31	74.51	+12.48	↑
Female	53.73	50.76	57.44	65.71	66.72	+12.99	↑

Notes: The table shows averages across EU-15 countries. Directional arrows record the pattern of change between 1995 and 2015. A directional arrow records a "substantive" change, that is, at least 3 percentage points in the average level.
Source: EWCS.

There are only minor differences in changes in the quality of the working environment between the self-employed of different ages. Table 3.4 shows that the overall QWE index increased by 12.4, 10.0 and 10.2 points for the younger (15-24), middle-aged (25-49) and older (50-65) self-employed workers, respectively. With regards to work complexity and autonomy and (to a minor extent) the social environment, improvements in job quality have been mainly experienced by the youngest self-employed. By contrast, quality improvements with regard to work intensity and the physical environment are slightly more pronounced among older self-employed.

Table 3.4: The quality of working environments in self-employment by age, 1995-2015

Index	1995	2000	2005	2010	2015	Δ 1995-2015	
Overall QWE index							
15-24	56.64	60.96	63.91	63.30	69.06	+12.41	↑
25-49	58.12	58.35	62.89	68.46	68.16	+10.03	↑
50-65	59.38	56.87	63.54	70.12	69.54	+10.16	↑
Physical Environment index							
15-24	65.35	66.49	73.38	63.13	68.20	+2.85	
25-49	63.17	63.90	70.29	70.48	71.65	+8.48	↑
50-65	63.17	64.81	71.03	72.87	74.23	+11.06	↑
Work Intensity index							
15-24	57.04	56.09	45.73	55.73	61.51	+4.47	↑
25-49	53.84	58.57	60.04	63.16	60.49	+6.65	↑
50-65	63.04	64.61	64.62	70.71	70.59	+7.55	↑
Working Time Quality index							
15-24	45.89	58.97	52.56	50.47	52.87	+6.98	↑
25-49	46.04	50.39	49.42	52.81	50.71	+4.67	↑
50-65	50.46	52.04	52.75	53.22	53.47	+3.01	↑
Social Environment index							
15-24	66.23	64.29	80.12	81.99	93.17	+26.94	↑
25-49	64.37	56.04	67.33	86.25	84.27	+19.90	↑
50-65	60.97	48.68	66.70	84.33	80.80	+19.83	↑
Work Complexity & Autonomy index							
15-24	48.70	58.94	67.76	65.18	69.54	+20.84	↑
25-49	63.18	62.83	67.40	69.62	73.65	+10.47	↑
50-65	59.25	54.19	62.60	69.46	68.63	+9.38	↑

Notes: The table shows averages across EU-15 countries. Directional arrows record the pattern of change between 1995 and 2015. A directional arrow records a "substantive" change, that is, at least 3 percentage points in the average level.
Source: EWCS.

Table 3.5 shows that, amongst the self-employed, those with higher levels of education were more likely to report having higher levels of work autonomy and complexity and a better physical and social environment than those with low educational attainment. For instance, self-employed workers with tertiary education (89.9) scored about 15 points higher in the quality of physical environment than those with secondary education levels (74.9). Differences with regard to working time arrangements and work intensity were smaller. Interestingly, there is an indication that the least educated self-employed reported higher levels of job quality with regard to work intensity.

Furthermore, there was substantial variation in changes in the quality of the working environment among self-employed workers with different levels of qualifications (data are not available before the year 2005). For instance, the self-employed with primary education only reported the largest improvements in job quality related to work intensity and the social environment. At the same time, they also experienced the largest declines in job quality with regard to working time arrangements and work complexity and autonomy.

Table 3.5: The quality of working environments in self-employment by education, 2005-2015

Index	1995	2000	2005	2010	2015	Δ 2005-2015	
Overall Working Environment index							
Primary education	–	–	58.09	67.25	62.34	+4.25	↑
Secondary education	–	–	64.63	70.02	69.29	+4.66	↑
Tertiary education	–	–	71.22	76.79	76.10	+4.88	↑
Physical Environment index							
Primary education	–	–	66.65	66.94	69.04	+2.39	
Secondary education	–	–	73.82	73.30	74.90	+1.08	
Tertiary education	–	–	87.77	89.37	89.85	+2.08	
Work Intensity index							
Primary education	–	–	64.05	62.17	71.52	+7.47	↑
Secondary education	–	–	60.16	65.07	62.79	+2.63	
Tertiary education	–	–	59.21	62.18	62.93	+3.72	↑
Working Time Quality index							
Primary education	–	–	52.93	61.96	49.32	-3.61	↓
Secondary education	–	–	50.61	51.92	51.18	+0.57	
Tertiary education	–	–	50.90	55.96	52.91	+2.01	
Social Environment index							
Primary education	–	–	45.32	80.46	65.81	+20.49	↑
Secondary education	–	–	67.02	85.51	82.11	+15.09	↑
Tertiary education	–	–	72.87	88.84	87.19	+14.32	↑
Work Complexity & Autonomy index							
Primary education	–	–	61.49	64.72	56.00	-5.49	↓
Secondary education	–	–	71.54	74.32	75.47	+3.93	↑
Tertiary education	–	–	85.34	87.62	87.62	+2.28	

Notes: The table shows average across EU-15 countries. Directional arrows record the pattern of change between 2005 and 2015. A directional arrow records a "substantive" change, that is, at least 3 percentage points in the average level.
Source: EWCS.

Table 3.6 reports the average level of working environment quality across low, middle and high-income groups for 2010 and 2015. Prior to 2010, this information was not collected. It shows there were some substantial variations between income groups. Those with higher incomes scored lowest on quality measures related to work intensity and working time arrangements, but highest with regard to work complexity and autonomy and the social environment.

During 2010-2015, overall working conditions quality for the low-income self-employed improved more strongly than for the high and middle-income self-employed. Working conditions for low-income self-employed workers improved in particular with regard to the social and physical environment. Middle-income self-employed experienced substantial improvements in physical working conditions, yet declines in the social environment and working time arrangements. Higher-income groups experienced declines in the quality of self-employment with regard to work intensity, working time arrangements, and social environment.

Table 3.6: The quality of working environments in self-employment by income, 2010-2015

Index	1995	2000	2005	2010	2015	Δ 2010-2015	
Overall Working Enivonment index							
Low	–	–	–	60.53	63.58	+3.05	↑
Middle	–	–	–	60.23	60.25	+0.03	
High	–	–	–	62.93	60.18	-2.75	
Physical Environment index							
Low	–	–	–	50.42	55.04	+4.62	↑
Middle	–	–	–	38.94	48.33	+9.39	↑
High	–	–	–	52.17	53.25	+1.08	
Work Intensity index							
Low	–	–	–	71.38	73.24	+1.86	
Middle	–	–	–	60.38	56.86	-3.52	↓
High	–	–	–	53.37	45.64	-7.73	↓
Working Time Quality index							
Low	–	–	–	49.26	46.94	-2.32	
Middle	–	–	–	40.08	33.61	-6.47	↓
High	–	–	–	30.62	27.56	-3.06	↓
Social Environment index							
Low	–	–	–	65.39	73.59	+8.20	↑
Middle	–	–	–	88.54	83.40	-5.14	↓
High	–	–	–	93.19	90.04	-3.15	↓
Work Complexity & Autonomy index							
Low	–	–	–	66.19	69.09	+2.90	
Middle	–	–	–	73.18	79.06	+5.88	↑
High	–	–	–	85.30	84.42	-0.88	

Notes: The table shows averages across EU-15 countries. Directional arrows record the pattern of change between 2010 and 2015. A directional arrow records a "substantive" change, that is, at least 3 percentage points in the average level.
Source: EWCS.

Changes in working environments by size of workplace and sector

Table 3.7 presents data on variations in changes in job quality in self-employment by workplace size. Here, a key distinction is made between the solo self-employed (who work on their own) and the self-employed who work in larger workplaces, ranging from micro (2-9 employees), medium (10-49 employees), and large (50+ employees) sized workplaces.

The solo self-employed report the lowest overall levels of job quality and scored lowest on the physical and social environment yet the highest with regard to work intensity. Overall job quality among self-employed was highest in larger workplaces with more than 50 workers.

Between 2000 and 2015, overall job quality improved for the self-employed in all workplace size bands, although the improvement for the solo self-employed was slightly more than for other groups. The solo self-employed, for example, experienced particularly large improvements in the quality of their social

environment. By contrast, self-employed workers in large workplaces experienced much sharper declines in working time quality.

Table 3.7: The quality of working environments in self-employment by size of workplace, 2000-2015

Index	1995	2000	2005	2010	2015	Δ 2000-2015	
Overall Working Environment index							
1	–	53.77	59.85	63.85	61.44	+7.67	↑
2-9	–	57.38	62.18	66.34	64.89	+7.51	↑
10-49	–	59.82	63.35	69.11	66.89	+7.08	↑
>50	–	65.06	67.67	67.62	70.29	+5.23	↑
Physical Environment index							
1	–	49.23	59.41	58.53	52.76	+3.53	↑
2-9	–	43.31	53.65	54.38	57.44	+14.13	↑
10-49	–	54.54	59.19	66.66	70.69	+16.15	↑
>50	–	60.03	67.28	69.09	74.83	+14.80	↑
Work Intensity index							
1	–	65.58	66.24	68.04	62.42	-3.16	↓
2-9	–	49.24	51.36	56.76	54.01	+4.77	↑
10-49	–	32.97	41.87	47.76	42.81	+9.84	↑
>50	–	51.27	53.01	48.05	58.44	+7.17	↑
Working Time Quality index							
1	–	51.45	52.39	53.76	48.96	-2.49	
2-9	–	47.91	47.31	50.90	43.36	-4.55	↓
10-49	–	56.35	55.57	57.60	59.58	+3.23	↑
>50	–	65.21	57.91	60.97	43.75	-21.46	↓
Social Environment index							
1	–	39.88	51.49	67.20	69.43	+29.55	↑
2-9	–	81.85	89.32	95.93	93.61	+11.76	↑
10-49	–	87.00	90.60	96.98	92.46	+5.46	↑
>50	–	84.02	94.68	88.56	99.23	+15.21	↑
Work Complexity & Autonomy index							
1	–	62.73	69.72	71.70	73.61	+10.88	↑
2-9	–	64.59	69.24	73.73	76.02	+11.43	↑
10-49	–	68.22	69.51	76.56	68.92	+0.70	
>50	–	64.76	65.47	71.43	75.19	+10.43	↑

Notes: The table shows averages across EU-15 countries. Directional arrows record the pattern of change between 2000 and 2015. A directional arrow records a "substantive" change, that is, at least 3 percentage points in the average level.
Source: EWCS.

Table 3.8 reports the average overall job quality of the self-employed by their sector of activity. More detail is provided in Table A.1 in Annex A. The public administration, finance, and real estate sectors

show the highest overall job quality scores. Agriculture, hotels and restaurants, and infrastructure have the lowest overall job quality scores.

Specifically, self-employed workers in the agricultural sector assess the quality of working time arrangements and the physical environment as the lowest for any sector, although the quality of their social environment is highest. In contrast, in public administration, the quality of self-employment is rated lowest with regard to work intensity but highest in terms of the social environment. Overall, the quality of self-employment improved across all sectors except the electricity, gas and water supply sector.

Table 3.8: The quality of working environments in self-employment by sector, 1995-2015

Index	1995	2000	2005	2010	2015	Δ 1995-2015	
Overall Working Environment index							
Agriculture	55.54	58.59	61.99	67.70	66.12	+10.57	↑
Manufacturing	64.08	62.47	66.21	71.41	72.91	+8.83	↑
Electricity, gas and water	70.06	68.20	72.89	77.25	68.83	-1.23	
Construction	62.11	60.66	69.32	70.54	68.52	+6.41	↑
Wholesale and retail trade	63.38	62.80	65.72	74.22	74.87	+11.49	↑
Hotels and restaurants	53.95	55.73	61.45	62.37	64.26	+10.30	↑
Infrastructure	57.93	57.36	63.66	65.12	65.12	+7.19	↑
Finance	72.03	73.96	79.88	83.45	82.10	+10.07	↑
Real estate activities	69.83	67.49	70.13	76.02	77.62	+7.79	↑
Public administration	71.18	78.27	77.52	79.95	80.43	+9.25	↑
Other services	66.08	64.47	69.66	74.70	74.11	+8.03	↑

Notes: The table shows averages across EU-15 countries. Directional arrows record the pattern of change between 1995 and 2015. A directional arrow records a "substantive" change, that is, at least 3 percentage points in the average level.
Source: EWCS.

Comparing working environments of the self-employed and the employed

Table 3.9 reports the differences in job quality ratings between self-employed and employed workers and how these evolved over the two decades. Positive values indicate that the self-employed rated the quality of their working conditions higher than employed workers. A positive difference indicates that over time the job quality of the self-employed compared to the employed improved.

The central result is shown in the top line of the table. It is that, although in 1995 the Overall Working Environment index was lower for the self-employed than for employees, this difference had virtually disappeared twenty years later. Over the following two decades the self-employed showed a 9 percentage point improvement in the relative Overall Working Environment index. This change was found in four out of the five quality measures, although there are differences in the scale and nature of these changes. For example, the scores of the self-employed, relative to the employed, improved particularly on the social environment index, where the relative improvement was 24 percentage points. There was also a significant relative improvement for the self-employed on the working time quality index. However, their job quality scored marginally lower than the employed on the Physical Environment index.

Over time, there were substantial improvements in work environment quality for the self-employed relative to the employed overall, with a 9 percentage point improvement in the relative QWE index. The

scores of the self-employed relative to the employed improved particularly on the social environment index, where the relative improvement amounted to 24 percentage points. There was also a significant relative improvement for the self-employed versus the employed on the working time quality index.

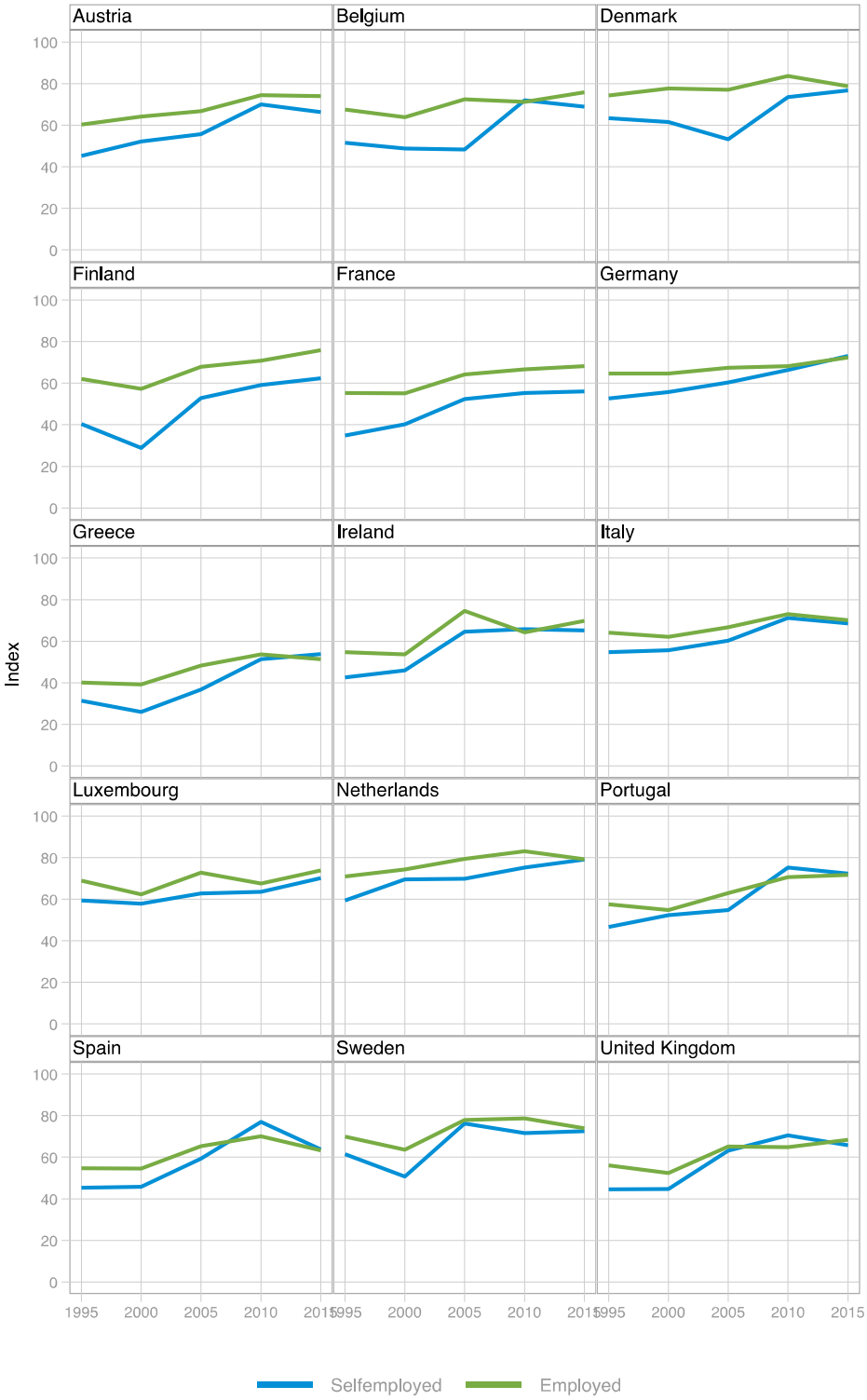
Table 3.9: The quality of working environments of the self-employed compared with employees, 1995-2015

Index	1995	2000	2005	2010	2015	Δ Difference	
Overall Working Environment index	**-12.51**	**-10.91**	**-10.55**	**-2.86**	**-3.48**	**+9.03**	↑
Physical Environment index	-7.18	-1.76	-3.33	-3.08	-1.61	+5.57	↑
Work Intensity index	27.71	32.21	26.28	29.52	29.42	+1.72	
Working Time Quality index	-62.19	-56.78	-59.77	-54.43	-52.17	+10.02	↑
Social Environment index	-42.05	-51.42	-38.69	-14.58	-18.50	+23.55	↑
Work Complexity & Autonomy index	21.18	23.21	22.75	28.27	25.47	+4.30	↑

Notes: The table reports the average difference (across the EU-15) between the working environment quality rating of self-employed and employed workers. Thus, positive values indicate that the self-employed rated the quality of their working conditions higher than employed workers. Directional arrows record the pattern of change between 1995 and 2015. A directional arrow records a "substantive" change, that is, at least 3 percentage points in the average level.
Source: EWCS.

Figure 3.1 displays the changes in the overall QWE index by country. It shows that, in 1995, the average level of working environment quality among the self-employed, in all EU-15 countries, was lower than that of employed workers. However, over time, working conditions among the self-employed improved, so reducing these differences. Thus, while the self-employed experienced substantially lower levels of job quality in 1995, this difference closed across many countries and was eliminated in Belgium, Greece, Denmark, Germany and the United Kingdom.

Figure 3.1: Differences in the quality of working conditions between self-employed and employed workers by country, 1995-2015



Notes: The figure shows how the overall working conditions among the self-employed and employed workers have developed in each country over the period 1995-2015.

4 Is the prevalence of self-employment linked to self-employed working environment quality?

It has been argued that self-employment is increasingly linked to poor working conditions, particularly given the rise of subcontractors in the so-called “gig economy” (Henley 2022). This would act as a disincentive to entrepreneurship policies aimed at promoting self-employment. Against this backdrop, this section examines whether the quantity or prevalence of self-employment is associated with the quality of the working environment amongst the self-employed in the EU-15 countries. It pays particular attention to the distinction between own account self-employed, with no employees, and the self-employed with employees.

At first sight, the evidence from the analysis suggests that the quality levels of certain working conditions are lower in countries where there are more self-employed workers. This might indicate that policies to promote self-employment could have a working environment quality penalty. Nonetheless, large numbers of self-employed workers in a country tend to correspond with more self-employment in agriculture and industry, which both tend to produce inferior working conditions for the self-employed, and this can help explain this pattern.

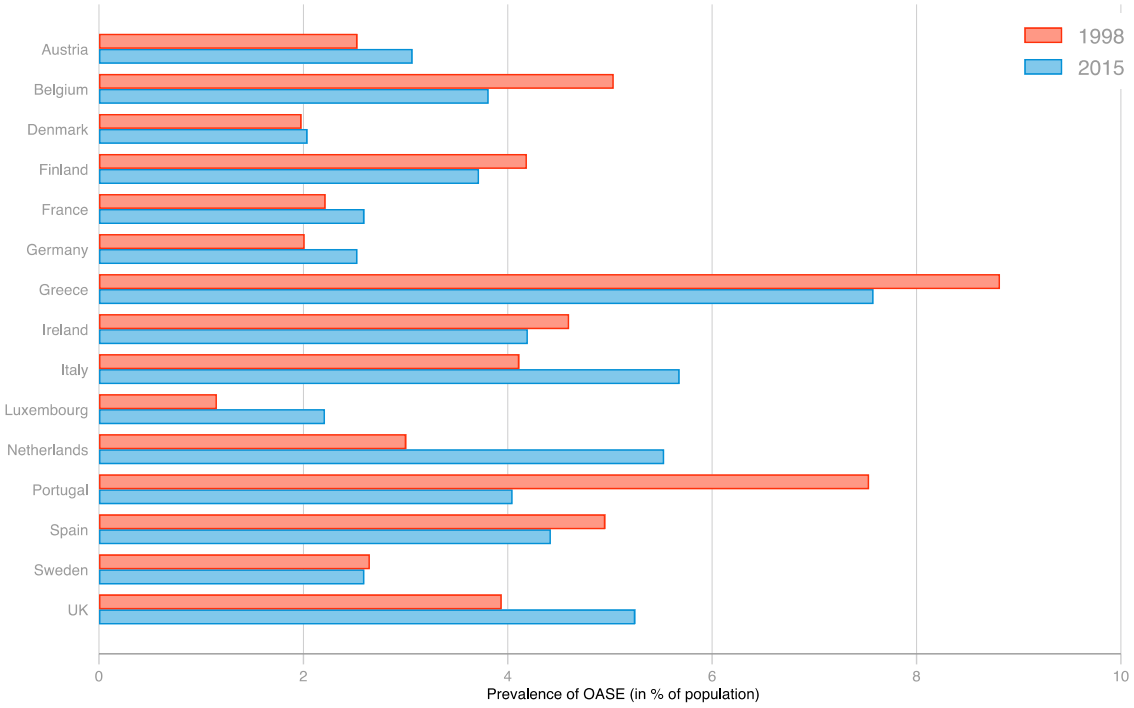
Looking in more detail, the analysis shows that within countries, *changes* in the prevalence of self-employment are unrelated to *changes* in working conditions ratings. This would tend to suggest that policy measures to increase the scale of self-employment should not be expected to lead to poorer working conditions overall.

The prevalence of the self-employed with and without employees

Among the EU-15 countries, the prevalence of own-account self-employment (OASE) in 2015 ranged from about two percent of the population in Denmark to about eight percent in Greece. Similarly, the prevalence of the self-employed with employees in 2015 ranged from about one percent in the United Kingdom to about 2.5 percent in Italy. Overall, the prevalence of OASE exceeded the share of the employed with employees (SEWE) across all EU-15 countries.

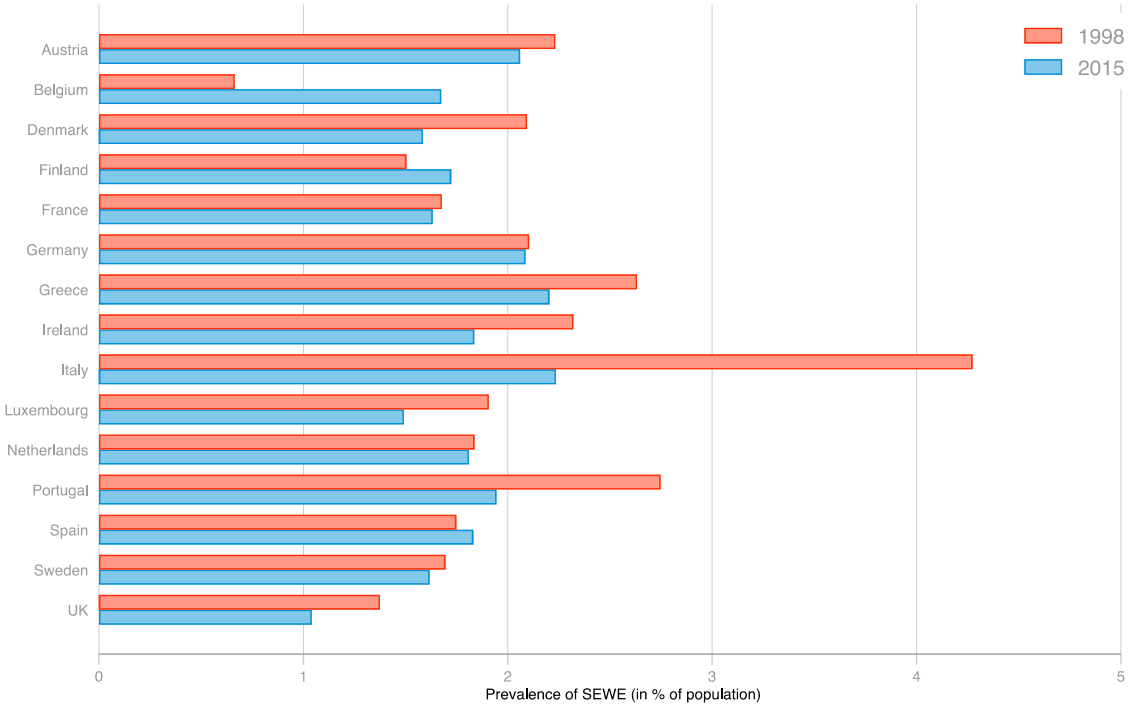
Over the period 1998-2015, the prevalence of OASE increased in about half of the countries, in particular in the UK, the Netherlands, and Italy as well as, to a lesser extent, in Austria, Germany and France (Figure 4.1). However, it decreased substantially in Portugal, Greece, and Belgium. The prevalence of SEWE declined in most EU-15 countries and decreased strongest in Italy and Portugal as well as Greece, Ireland and Denmark. By contrast, Belgium, Finland and Spain experienced increases in the prevalence of SEWE over the same period (Figure 4.2).

Figure 4.1: Prevalence of Own-Account Self-Employment (OASE)



Notes: The figure shows the prevalence of Own-Account Self-Employed (in % of total population) in 1998 and 2015 by country.
Source: Eurostat 2021 [lfsa_esgais].

Figure 4.2: Prevalence of Self-Employment with Employees (SEWE)



Notes: The figure shows the prevalence of Self-Employed with Employees (in % of total population) in 1998 and 2015 by country. Source: Eurostat 2021 [lfsa_esgais].

Tables 4.1 to 4.3 provide further information on changes in the prevalence of self-employment by country and year, and broken down between the self-employed with and without employees.

Table 4.1: Prevalence of total self-employment by country, 1998-2015

Index	1998	2000	2005	2010	2015
Austria	4.76	4.70	5.08	5.31	5.13
Belgium	5.70	5.40	5.22	5.29	5.49
Denmark	4.08	3.99	3.77	3.85	3.63
Finland	5.69	5.67	5.28	5.48	5.44
France	3.90	3.76	3.81	4.22	4.23
Germany	4.12	4.24	4.69	4.78	4.62
Greece	11.45	11.62	11.49	11.32	9.78
Ireland	6.92	7.14	7.06	6.24	6.03
Italy	8.39	8.56	9.14	8.51	7.92
Luxembourg	3.06	3.46	3.12	2.96	3.70
Netherlands	4.84	4.91	5.88	6.77	7.34
Portugal	10.28	9.25	9.05	7.62	5.99
Spain	6.70	6.71	7.05	6.22	6.25
Sweden	4.35	4.42	4.50	4.59	4.21
UK	5.32	5.21	5.69	5.85	6.29

Notes: The table reports the prevalence of total self-employment (in % of total population) over the period 1998-2015 by country.
Source: Eurostat 2021 [lfsa_esgais].

Table 4.2: Prevalence of own-account self-employment (OASE) by country, 1998-2015

Index	1998	2000	2005	2010	2015
Austria	2.53	2.49	3.03	3.17	3.07
Belgium	5.04	3.66	3.41	3.52	3.81
Denmark	1.98	1.88	2.01	2.19	2.04
Finland	4.19	3.77	3.62	3.66	3.72
France	2.22	2.15	2.13	2.49	2.60
Germany	2.01	2.12	2.64	2.67	2.53
Greece	8.82	8.70	8.43	8.34	7.58
Ireland	4.60	4.68	4.55	4.24	4.20
Italy	4.11	4.03	6.51	6.12	5.68
Luxembourg	1.15	1.03	2.04	1.74	2.21
Netherlands	3.01	3.36	3.98	4.88	5.53
Portugal	7.54	6.46	6.42	5.45	4.05
Spain	4.95	4.62	4.88	4.07	4.42
Sweden	2.65	2.65	2.68	2.82	2.60
UK	3.94	3.80	4.36	4.72	5.25

Notes: The table reports the prevalence of own-account self-employment (in % of total population) over the period 1998-2015 by country.
Source: Eurostat 2021 [lfsa_esgais].

Table 4.3: Prevalence of self-employment with employees (SEWE) by country, 1998-2015

Index	1998	2000	2005	2010	2015
Austria	2.23	2.21	2.04	2.14	2.06
Belgium	0.66	1.75	1.80	1.78	1.67
Denmark	2.09	2.10	1.76	1.66	1.59
Finland	1.50	1.89	1.66	1.82	1.72
France	1.68	1.61	1.68	1.73	1.63
Germany	2.10	2.12	2.05	2.11	2.09
Greece	2.63	2.92	3.06	2.97	2.20
Ireland	2.32	2.47	2.51	2.00	1.84
Italy	4.27	4.53	2.63	2.39	2.24
Luxembourg	1.91	2.43	1.07	1.22	1.49
Netherlands	1.84	1.55	1.89	1.90	1.81
Portugal	2.75	2.79	2.63	2.18	1.95
Spain	1.75	2.09	2.17	2.15	1.83
Sweden	1.69	1.76	1.81	1.77	1.62
UK	1.37	1.41	1.33	1.13	1.04

Notes: The table reports the prevalence of self-employment with employees (in % of total population) over the period 1998-2015 by country.
Source: Eurostat 2021 [lfsa_esgais].

Relationship between the quantity of self-employment and working environment quality

Table 4.4 and Table 4.5 report the correlations between the prevalence of self-employment ("quantity") and the quality of the working environments of the self-employed ("quality"), for OASE and SEWE, respectively. Despite the small number of observations, there is some indication that the quality of self-employment is lower in countries with more self-employment. However, given the small number of observations, the correlation results must be interpreted with caution.

In particular, Table 4.4 shows a statistically significant negative correlation (at less than 1% probability) between the volume of own-account self-employment and the overall QWE index (r=-0.28). Similarly, larger volumes of OASE are associated with lower quality related to the physical environment (r=-0.36) and work complexity and autonomy (r= -0.62).

These patterns are largely replicated in the relationships between group-specific prevalence of self-employment and the different working conditions indices. Specifically, higher prevalence is negatively correlated with overall working conditions for male, middle-aged, low educated, and medium skilled own-account self-employed workers. Similarly, these negative associations are replicated with regard to the physical environment and work complexity and autonomy.

However, despite the overall negative correlations between the prevalence of OASE and the quality of the working environment, there are two important exceptions: first, countries with larger shares of highly educated OASEs are characterised by higher social environment quality scores (r=0.45); and second, countries with larger shares of low skilled OASEs are characterised by better working conditions with regard to working time (r= 0.44) and work intensity (r= 0.26).

Regarding the prevalence of SEWEs, we also find a negative correlation with a country's overall quality of working conditions (r= -0.21) (at the 10 % level of statistical significance), which results from a negative correlation with the quality of social environment (r=-0.24) and work complexity and autonomy (r=-0.42).

With respect to the group-specific prevalence of SEWE, there are statistically significant negative correlations between the volume of self-employment and the overall QWE index for males, the middle aged, but also for middle and highly skilled self-employed with employees. These results are mainly driven by the negative correlations of the SEWE prevalence with the social environment index and the Work Complexity & Autonomy index, which affect both male and female, younger and mid-aged workers, the low educated and the mid and high skilled. Yet again, we find that countries with larger shares of highly educated SEWEs score higher in the quality of social environment (r=0.20) and work complexity and autonomy (r=0.22).

Table 4.5 shows how the quality of the working environment of the self-employed varies by sector. It suggests that countries with a larger share of self-employed in the agricultural and industrial sector have lower working conditions quality ratings, especially with regard to the physical and social environment as well as the work complexity and autonomy. A similar relationship is found for wholesale/ retail trade. By contrast, countries with a larger share of self-employed working in the public administration sector are characterised by better working conditions among the self-employed.

Table 4.4: Correlations between the prevalence of self-employment and the quality of working environments by socio-economic characteristics

		Quality of Working Environments among the Self-employed					
		Physical Environment index	Working Time Quality index	Work Intensity index	Social Environment index	Work Complexity & Autonomy index	Overall Working Environment index
Own-Account Self-employment (in % of total population)							
Total	Own-account self-employed (OASE)	-0.36**	0.01	0.10	-0.07	-0.62***	-0.28**
Sex	OASE (Female)	-0.20+	0.14	0.21+	-0.04	-0.49***	-0.12
	OASE (Male)	-0.41***	-0.06	0.03	-0.08	-0.63***	-0.34**
Age	OASE (15-24)	-0.06	0.19	0.12	-0.05	-0.36**	-0.05
	OASE (25-49)	-0.35**	-0.04	0.04	-0.13	-0.64***	-0.33**
	OASE (50-64)	-0.36**	0.06	0.16	0.04	-0.55***	-0.19+
Education	OASE (Low education)	-0.40***	0.07	0.03	-0.28*	-0.73***	-0.40***
	OASE (Middle education)	-0.21+	-0.18	0.00	0.19	-0.04	-0.06
	OASE (High education)	0.19	0.05	0.22+	0.45***	0.09	0.33**
Occupation	OASE (Low skilled)	-0.01	0.44***	0.26*	-0.18	-0.45***	-0.01
	OASE (Medium skilled)	-0.59***	-0.16	-0.08	-0.16	-0.63***	-0.49***
	OASE (High skilled)	-0.14	-0.03	0.08	-0.02	-0.36**	-0.14

		Physical Environment index	Working Time Quality index	Work Intensity index	Social Environment index	Work Complexity & Autonomy index	Overall Working Environment index
Self-employment with employees (in % of total population)							
Total	Self-employed with employees (SEWE)	-0.10	0.04	0.03	-0.24*	-0.42***	-0.21+
Sex	SEWE (Female)	-0.00	0.19	0.17	-0.11	-0.32**	-0.03
	SEWE (Male)	-0.13	-0.01	-0.01	-0.27*	-0.43***	-0.26*
Age	SEWE (15-24)	-0.09	0.14	-0.08	-0.22+	-0.35**	-0.18
	SEWE (25-49)	-0.14	-0.01	-0.04	-0.33**	-0.47***	-0.30**
	SEWE (50-64)	-0.00	0.15	0.20+	0.01	-0.22	0.04
Education	SEWE (Low education)	-0.16	0.27*	0.13	-0.32**	-0.60***	-0.22+
	SEWE (Middle education)	0.08	-0.20+	-0.15	-0.01	0.15	-0.03
	SEWE (High education)	0.17	-0.21+	0.03	0.20+	0.22+	0.14
Occupation	SEWE (Low skilled)	0.20	0.02	0.04	-0.14	0.09	0.04
	SEWE (Medium skilled)	-0.12	-0.03	-0.09	-0.21+	-0.34**	-0.24+
	SEWE (High skilled)	-0.20+	0.07	0.01	-0.36**	-0.50***	-0.32**

Notes: N = between 39 and 75, depending on data availability. + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001.
Source: Eurostat, EWCS.

Table 4.5: Correlations between the prevalence of self-employment and the quality of working environments by sector

		Quality of Working Environments among the Self-employed					
Self-employment (in % of total population)		**Physical Environment index**	**Working Time Quality index**	**Work Intensity index**	**Social Environment index**	**Work Complexity & Autonomy index**	**Overall Working Environment index**
Sector	Agriculture (% of total persons)	-0.42***	-0.20+	0.00	-0.24*	-0.29*	-0.37**
	Industry (% of total persons)	-0.35**	0.05	-0.01	-0.33**	-0.44***	-0.35**
	Construction (% of total persons)	-0.06	0.22+	0.13	0.10	-0.06	0.09
	Wholesale and retail trade (% of total persons)	-0.11	0.01	-0.24*	-0.18	-0.37**	-0.25*
	Financial and insurance activities (% of total persons)	0.15	-0.00	0.14	-0.10	-0.07	0.03
	Public administration (% of total persons)	0.26*	0.01	-0.08	0.20+	0.45***	0.27*

Notes: N = between 39 and 75, depending on data availability. + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001.
Source: Eurostat, EWCS.

Tables 4.6 and 4.7 then report the correlations between changes in the prevalence of self-employment and the changes in the working environments of the self-employed. Overall, there is no evidence that changes in self-employment rates lead to changes in working environment quality over time. There are only a few significant correlations. For instance, a positive change in the prevalence of highly-educated own-account workers is associated with a positive change in the Working Time Quality index (r=0.29), and a positive change in the prevalence of older aged (r=0.24) and medium skilled (r=0.23) own-account workers is positively associated with a positive change in work complexity and autonomy over time. Moreover, a positive change in self-employment in construction is associated with a positive change in job quality in terms of the physical environment (r=0.35) and work intensity (r=0.25). Also, a positive change in self-employment in public administration is linked to a positive change in work complexity and autonomy (r=0.24), but a negative change in the psychical environment (r=-0.21). Overall, however, the results indicate that an increase in self-employment leads neither to an improvement nor to a deterioration of working environments for the self-employed.

Table 4.6: Correlations between changes in self-employment and the quality of working environments by socio-economic characteristics

		Quality of Working Environments among the Self-employed					
		Physical Environment index	Working Time Quality index	Work Intensity index	Social Environment index	Work Complexity & Autonomy index	Overall Working Environment index
Own-Account Self-employment (in % of total population)							
Total	Own-account self-employed (OASE)	0.02	-0.21	-0.06	0.12	0.17	0.02
Sex	OASE (Female)	-0.08	-0.20	-0.13	0.10	0.23	-0.04
	OASE (Male)	0.09	-0.19	0.01	0.13	0.11	0.06
Age	OASE (15-24)	0.12	-0.06	-0.12	0.04	-0.07	-0.01
	OASE (25-49)	0.03	-0.20	-0.03	0.09	0.14	0.01
	OASE (50-64)	-0.04	-0.20	-0.07	0.17	0.24+	0.04
Education	OASE (Low education)	0.01	-0.18	0.02	0.19	0.18	0.09
	OASE (Middle education)	0.19	0.01	0.02	0.09	0.02	0.13
	OASE (High education)	-0.10	-0.29+	-0.20	0.00	0.09	-0.17
Occupation	OASE (Low skilled)	0.24	-0.04	0.19	0.22	-0.08	0.24
	OASE (Medium skilled)	-0.07	-0.21	-0.11	0.18	0.23+	0.02
	OASE (High skilled)	-0.03	0.01	-0.01	-0.17	-0.03	-0.12

		Physical Environment index	Working Time Quality index	Work Intensity index	Social Environment index	Work Complexity & Autonomy index	Overall Working Environment index
Self-employment with employees (in % of total population)							
Total	Self-employed with employees (SEWE)	-0.03	0.03	0.01	-0.10	-0.20	-0.10
Sex	SEWE (Female)	-0.08	0.04	-0.07	-0.03	-0.11	-0.07
	SEWE (Male)	-0.02	0.02	0.05	-0.13	-0.22	-0.10
Age	SEWE (15-24)	-0.04	0.02	-0.11	-0.14	-0.09	-0.14
	SEWE (25-49)	-0.03	0.01	0.06	-0.12	-0.23	-0.10
	SEWE (50-64)	-0.04	0.05	-0.06	-0.04	-0.09	-0.05
Education	SEWE (Low education)	0.00	0.07	0.12	-0.14	-0.14	-0.05
	SEWE (Middle education)	0.05	0.16	-0.00	-0.09	-0.21	-0.02
	SEWE (High education)	-0.16	-0.03	0.07	-0.19	-0.14	-0.18
Occupation	SEWE (Low skilled)	0.01	0.01	-0.13	0.01	-0.11	-0.06
	SEWE (Medium skilled)	0.06	-0.06	0.02	-0.04	-0.19	-0.06
	SEWE (High skilled)	0.04	0.22	0.04	-0.11	-0.05	0.03

Notes: N = between 39 and 75, depending on data availability. + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001.
Sources: Eurostat, EWCS.

Table 4.7: Correlations between changes in self-employment and the quality of working environments by sector

		Quality of Working Environments among the Self-employed					
Self-employment (in % of total population)		**Physical Environment index**	**Working Time Quality index**	**Work Intensity index**	**Social Environment index**	**Work Complexity & Autonomy index**	**Overall Working Environment index**
Sector	Agriculture (% of total persons)	-0.14	-0.08	0.06	0.13	0.05	0.03
	Industry (% of total persons)	-0.04	-0.08	-0.20	-0.19	0.12	-0.19
	Construction (% of total persons)	0.35**	0.20	0.25+	-0.09	-0.21	0.17
	Wholesale and retail trade (% of total persons)	0.13	0.08	-0.01	-0.07	-0.03	0.02
	Financial and insurance activities (% of total persons)	0.13	0.03	0.04	0.03	0.05	0.09
	Public administration (% of total persons)	-0.21+	-0.16	-0.11	-0.01	0.24+	-0.12

Notes: N = between 39 and 75, depending on data availability. + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001.
Sources: Eurostat, EWCS.

5 Entrepreneurship policies and the quality of self-employment

This section examines relationships between entrepreneurship policy settings in EU-15 countries and the working conditions of the self-employed. It seeks to examine the notion that if entrepreneurship policies expand the volume of self-employment, they could have negative side effects in terms of reducing the quality of working conditions in self-employment. It exploits data on the extent to which institutional business environments favour entrepreneurship within countries as proxies for the intensity of entrepreneurship policy at country level, given an absence of more direct entrepreneurship policy measures. It uses three different data sources for this purpose: (1) the World Bank's Doing Business indicators, (2) the Heritage Foundation's Economic Freedom data, and (3) the Global Entrepreneurship Monitor National Expert Survey database. However, it finds that stronger entrepreneurship policies are associated with better working conditions for the self-employed on many measures, with little evidence of any negative relationships.

In addition, the study examined the effect of active labour market policy (ALMP) expenditure on business start-up actions on the level of job quality among the self-employed. Table A2 shows no significant correlations between ALMP expenditures on start-up incentives and the quality of working conditions in self-employment.

Business entry regulations and the ease of starting a business

The number of procedures and costs incurred by a new business for it to operate legally is likely to influence aggregate rates of business creation and self-employment. Specifically, high costs and complex procedures can be expected to lower the rate of creation of enterprises, including businesses operated by the self-employed. It can therefore be hypothesised that reducing the burden of regulation on business entry may increase a country's quantity of self-employment. Through this channel stronger entrepreneurship policies could have the negative side effect of reducing the quality of working conditions in self-employment.

This section examines this notion using data taken from World Bank's Doing Business database on a country's regulation of the entry of start-up firms. The "Starting a Business" indicator records all procedures officially required, or commonly carried out in practice, for an entrepreneur to start up and formally operate an industrial or commercial business, as well as the time and cost to complete these procedures and the paid-in minimum capital requirement (DB 2020).[1]

[1] Accordingly, a country's Starting a Business score is based upon: the average number of procedures that must be completed, the median duration (time) that incorporation lawyers or notaries indicate is necessary in practice to complete a procedure with minimum follow-up with government agencies and no unofficial payments (in calendar days), costs including all official fees, and fees for legal or professional services if such services are required by law or are commonly used in practice (expressed as a percentage of the economy's income per capita), and the paid-in minimum capital requirement that the entrepreneur needs to deposit before registration (as a percentage of the economy's income per capita) (DB 2020).

Table 5.1 reports the correlations between the levels of the aggregate ease of starting a business (SB) score and its sub-indicators using data for the EU-15 countries averaged over 3 periods (2004-2009, 2010-2014, and 2015-2020) and levels of working environment quality. It shows that working conditions quality in self-employment is better in countries in which it is easier to start up a business. Specifically, there are strong, robust, positive relationships between the different ease of starting business indicators and the Social Environment index, and the Work Complexity & Autonomy index. The sign of the relationships with the other working conditions indices is mostly positive, although insignificant.

In sum, the reported evidence suggests that the quality of working conditions in self-employment on certain dimensions, notably work complexity and autonomy, tends to be better in countries with fewer business entry regulations (and higher ease of doing business). On the other hand, this finding is not replicated with regard to the physical working environment, work intensity or working time arrangements.

Table 5.1: Correlations between levels of business entry regulations and the quality of working environments of the self-employed

	Physical Environment index	Work Intensity index	Working Time Quality index	Social Environment index	Work Complexity & Autonomy index	Overall Working Environment index
SB Score	0.18	0.03	0.09	0.36*	0.47**	0.40**
SB Score – Procedures	0.16	-0.06	0.03	0.30*	0.53***	0.34*
SB Score – Time	0.17	0.06	0.04	0.31*	0.38*	0.34*
SB Score – Cost	0.12	0.01	-0.00	0.29+	0.51***	0.32*
SB Score – Paid-in Minimum capital	0.04	0.17	0.37*	0.26+	-0.07	0.29+

Notes: The table shows bivariate Pearson correlations between countries' levels of ease of starting a business and the quality of self-employment. Ease of Doing Business data is averaged over the following three periods 2004-2009, 2010-2014, and 2015-2019. N = 45. + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001.

Economic freedom

This section examines the effects of "economic freedom" on the quality of working conditions in self-employment using data on "economic freedom" from the Heritage Foundation. According to the underlying definition, economic freedom reflects the extent to which *"individuals are free to work, produce, consume, and invest in any way they please"* and *"governments allow labour, capital, and goods to move freely, and refrain from coercion or constraint of liberty beyond the extent necessary to protect and maintain liberty itself"* (Heritage Foundation 2021).[2]

The Economic Freedom index comprises four dimensions of enterprise and economic policy characteristics, based on nine sub-indicators: (1) Rule of law (property rights, and government integrity), (2) Government size (government spending, tax burden), (3) Regulatory efficiency (business freedom, monetary freedom), and (4) Market openness (trade freedom, investment freedom, financial freedom). Table A.3 in the Appendix describes the nine sub-indicators in further detail. A country's overall Economic Freedom index is derived by averaging the nine sub-indicators of economic freedoms, with equal weight being given to each.

Table 5.2 reports the correlations between the levels of the Economic Freedom index and its sub-indices and the six working conditions indices. The Economic Freedom index is positively correlated with the

[2] https://www.heritage.org/index/about?version=761, Heritage Foundation, (accessed 26.02.2022).

overall Quality of Working Environment index. The overall Economic Freedom index is also positively correlated with the Physical Environment, the Social Environment, and the Work Complexity & Autonomy indices. The sub-indices of business freedom, investment freedom and trade freedom show a strong and robust relationship with several working conditions indices. The results imply that there are better working conditions in certain domains among the self-employed in countries with more economic freedom, in particular trade and investment freedom. Nevertheless, most correlations are statistically insignificant.

Table 5.2: Correlations between levels of economic freedom and the quality of working environments of the self-employed

	Physical Environment index	Work Intensity index	Working Time Quality index	Social Environment index	Work Complexity & Autonomy index	Overall Working Environment index
Economic Freedom index	0.35**	0.16	0.03	0.31**	0.44***	0.40***
Government integrity	0.16	-0.07	-0.09	0.15	0.60***	0.22+
Property rights	0.26*	-0.02	-0.17	0.15	0.56***	0.24*
Government spending	-0.06	0.09	0.13	-0.05	-0.45***	-0.09
Tax burden	-0.19	0.14	0.10	0.27*	-0.30**	0.03
Labour freedom	0.30*	0.12	-0.25+	-0.16	0.29+	0.08
Monetary freedom	0.21	-0.01	-0.02	-0.17	0.28*	0.07
Business freedom	0.25*	0.21+	0.01	0.44***	0.37***	0.40***
Financial freedom	0.43***	0.07	0.14	0.27*	0.49***	0.44***
Investment freedom	0.59***	0.32**	0.17	0.50***	0.54***	0.66***
Trade freedom	0.50***	0.52***	0.28*	0.67***	0.42***	0.74***

Notes: The table shows bivariate Pearson correlations between countries' levels of economic policies and the quality of self-employment between 2000 and 2015. The Economic Freedom indices are averaged over the following five periods 1995-1999, 2000-2004, 2005-2009, 2010-2014, and 2015-2019. N = 75. + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001.

Entrepreneurial ecosystem conditions

A third test of the link between a country's institutional business environment, its quantity of self-employment and their working conditions, draws upon data from the Global Entrepreneurship Monitor (GEM) National Expert Survey. The GEM data capture the extent of entrepreneurship programmes, education and policies conducive to R&D as well as the legal and commercial infrastructure in a country based on twelve indicators (see Box below).

A correlation analysis assesses the relationship between the national entrepreneurial ecosystem conditions and working conditions quality in self-employment as measured by the EWCS between 2000 and 2015. A more detailed description of each index is provided in Table A.4 in the Appendix.

Box 1. GEM indexes on entrepreneurial ecosystem conditions

1. Financial environment
2. Government policies and support
3. Bureaucracy and taxes
4. Government programmes
5. Basic entrepreneurship education (at primary and secondary level)
6. Higher entrepreneurship education (at tertiary level)
7. R&D level of transference
8. Professional and commercial infrastructure
9. Internal market dynamics
10. Internal market burdens
11. Physical infrastructures and services access
12. Cultural and social norms

Table 5.3 reports the correlations between levels of the entrepreneurial ecosystem conditions and the working conditions indices. It shows that, in general, the self-employed reported greater job quality in countries with better entrepreneurial ecosystem conditions.

Table 5.3: Correlations between levels of entrepreneurial ecosystem conditions and the quality of working environments of the self-employed

	Physical Environment index	Work Intensity index	Working Time Quality index	Social Environment index	Work Complexity & Autonomy index	Overall Working Environment index
Financing for entrepreneurs	0.03	-0.03	-0.11	-0.19	0.22	-0.05
Governmental support and policies	0.08	-0.19	-0.27	0.03	0.41**	0.02
Taxes and bureaucracy	0.01	-0.08	-0.22	0.12	0.48***	0.08
Governmental programs	0.27+	0.04	-0.17	0.18	0.56***	0.27+
Basic entrepreneurial education	0.27*	0.15	-0.00	0.13	0.38**	0.27*
Higher entrepreneurial education	0.27*	0.07	-0.15	0.28*	0.49***	0.31*
R&D transfer	-0.02	-0.19	-0.39**	-0.09	0.34*	-0.12
Institutional infrastructure	0.24+	-0.05	-0.39**	0.15	0.51***	0.14
Internal market dynamics	0.06	0.14	0.06	0.36**	0.24+	0.28*
Internal market openness	0.26+	0.04	-0.12	-0.11	0.36**	0.10
Physical and services infrastructure	0.07	-0.04	-0.26+	0.27+	0.61***	0.20
Cultural and social norms	0.11	0.17	-0.00	0.09	0.13	0.15

Notes: The table shows bivariate Pearson correlations between countries' levels of enterprise ecosystem policies and the quality of self-employment between 2000 and 2015. The Global Entrepreneurship Monitor data is averaged over the following four periods 2000-2004, 2005-2009, 2010-2014, and 2015-2020. N = 53. + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001.

A range of entrepreneurial ecosystem conditions were positively correlated with the Work Complexity & Autonomy index. Furthermore, the extent to which entrepreneurial training is incorporated in lower and higher education seems to be associated with a higher quality of a diverse range of working environment

conditions for the self-employed, spanning the physical environment, social environment, and work complexity and autonomy. Counter-intuitively, however, the relationships with the Working Time Quality index are generally negative and significantly negative for R&D Transfer and Institutional infrastructure.

Summary across the measures

Overall, the findings show a similar mixed pattern across the three different measures of the institutional environment for entrepreneurship. On the one hand, there is some indication that certain aspects of the quality of working conditions for the self-employed, such as work complexity and autonomy, are better in countries where policy settings favour better entrepreneurial conditions. On the other hand, there is mixed evidence that better institutional conditions for entrepreneurship generally improve the quality of the working environment for the self-employed.

Tables A.5-A.7 in the Annex confirm the absence of a consistent relationship between changes in the strength of entrepreneurship policies on the three measures and changes in the quality of working conditions over time. Only a few significant correlations were found, and the signs point in both directions; thus, we find that positive changes in entrepreneurship policies can be accompanied by both positive and negative shifts in the quality of working conditions among the self-employed.

6 Conclusions

The key findings

This report has examined the job quality of self-employed workers in EU-15 countries over the 20 year period from 1995 to 2015 using data from the European Working Conditions Survey (EWCS).

Successive five-year waves of the EWCS now provide a reliable picture of changes in the non-wage dimensions of the working environment of employed and self-employed workers, subject to two provisos.

The first is an absence of data on earnings and the labour market security aspects of job quality. The second omission is data on "new" forms of self-employment – such as gig workers, although this will be addressed in the next wave of EWCS.

Against this backdrop, this study describes trends in the quality of working conditions for the self-employed overall and by different segments of the self-employed population covering age, sex, education, income, sector, size of workplace and whether they are own account workers or have employees. The main findings are summarised as follows:

- Over the period 1995-2015, the quality of the working environment in self-employment in each of the EU-15 countries improved significantly.
- Employees' working environments in 1995 were significantly better than those of the self-employed. However, increases in the quality of self-employment over the period 1995-2015 almost entirely closed this gap. The self-employed had, therefore, "caught up" with the employed.
- Although there was an overall improvement in the quality of the working environments of the self-employed, working conditions vary substantially by the sectoral and socio-economic characteristics of self-employment. Key aspects of diversity in the experience of self-employment include country, the worker's education, sex and age, whether they are own-account self-employed or self-employed with employees[3], the sector of the business activity and workplace size. Despite workers across all these categories being classified as self-employed, it is clear that the self-employed comprise highly diverse groupings, with this diversity being reflected in how they view the quality of their working environments.
- The share of self-employment in the population varies strongly across the EU-15 countries, from between 4% and 11% (compared with an average of some 6%) over the period 1995-2015. Across countries, the prevalence of self-employment tends to be negatively associated with certain dimensions of the quality of the working environment amongst the self-employed. However, not all the negative correlations are statistically significant and vary across different working environment

[3] The distinction between self-employed with employees (SEWEs) and own account self-employed (OASEs) was initially noted by Van Stel and De Vries (2015). Dvouletý et al. (2020, 2021) demonstrate how the two groups differ markedly in terms of both the personal characteristics of the individuals and their economic performance, in terms of earnings and job creation. Taking the perspective of economic policy-makers, Salas-Fumás et al. (2014) make the case that productivity in an economy is enhanced when SEWEs increase at the expense of OASEs. Policy-makers may therefore favour policies designed to promote SEWEs rather than OASEs. This illustrates the case for "unpacking" the self-employed.

indices and groups. Furthermore, the negative association overall is largely explained by compositional effects related to differences in sector and socio-demographic shares in self-employment in different countries. Countries with poorer working conditions tend to have larger shares of self-employment in the agricultural and industrial sectors and larger shares of male, middle-aged, and medium skilled self-employed workers, all of which are negatively correlated with overall working conditions. More tellingly, the evidence shows that, within countries, an increase in the volume of self-employment is not accompanied by declines in the quality of working environments.

- There is little evidence of a systematic association between policies affecting business environments for entrepreneurship and the quality of working environments, although given the small number of observations the correlation results have to be interpreted with caution. On the one hand, there is some indication that the absence of (governmental) business entry regulations is linked to higher self-employment quality, as characterised by more workplace autonomy and complexity.[4] On the other hand, most working environment indicators are not systematically related to differences in the business environment for entrepreneurship. There are also no substantial relationships between levels of Active Labour Market Policy (ALMP) expenditures for start-ups and working environment quality for the self-employed. Moreover, looking at changes in entrepreneurship policy settings and changes in working environment quality over time, the mixed pattern re-appears, with generally very few significant correlations.

Implications for policy

One of the two key policy messages of this report is that policies that seek to favour entrepreneurship and self-employment are not likely to undermine the quality of working environments overall. This is based on four pieces of evidence. First, working conditions improved for self-employed workers between 1995 and 2015. Second, the quality of working environments largely converged between the self-employed and the employed in this period. Third, increases in the volume of self-employment over time in countries did not reduce working environment quality. Fourth, policies that favour facilitative business environments for entrepreneurship do not reduce the quality of the working environments of the self-employed.

This appears to remove one previously valid disincentive for entrepreneurship policies. This conclusion has to be weighted on the other hand with some considerations of caution. This reflects some methodological limitations of the work, such as small sample sizes, a lack of control for potential confounding variables, restrictions with respect to the characteristics of the self-employed that could be examined (e.g., lack of data for a distinction between the self-employed who are dependent contractors or platform workers), and lack of information for the most recent years. In particular, certain forms of self-employment, such as (temporary) independent contractors and project-based workers, that is "gig workers", are less likely to appear in official surveys. Hence, the trends outlined in this study based on the self-employed respondents surveyed in the EWCS may systematically underrepresent the specific working conditions of an increasing share of the self-employed. For instance, the UK was estimated to employ 2.3 million gig workers in 2016 and is expected to employ 7.25 million in 2022 (Fennell, 2022). Similarly, Bracha and Burke (2021) estimate that *"The total amount of gig work performed by U.S. household heads in 2015 was equivalent to 3.77 million full-time jobs, of which 20 percent came from online work (...) over 15 percent of non-retired gig workers would get classified as not in the labor force, 5 percent would get classified as unemployed".* This requires us to take into account the fact that the composition of the self-employed has

[4] This is in line with Stephan et al. (2022). Their review of studies of happiness amongst entrepreneurs confirms that those working for themselves experience greater well-being than those working for someone else. They argue that a key institutional metric – the rule of law – is expected to enhance the well-being – and hence the attractiveness of self-employment – on the grounds that strong law enforcement reduces the uncertainty of self-employment since contractual disputes can be more swiftly and easily resolved.

changed in response to technological and social modernisation processes and this may have an effect on the observed linkages between the prevalence of self-employment and the business environment for entrepreneurship and the quality of self-employment.

Furthermore, this study does not account for the fact that the self-employed may be attracted to work for themselves because of the opportunity it provides for understating earnings. Such opportunities are likely to be considerably fewer in countries where the law is rigorously enforced – and where abiding by the law is central to social traditions – than where such norms are rare. So, whilst more individuals may consider becoming self-employed in countries with more facilitative regulatory conditions for business start-up, they may recognise that they also have less opportunity for under-reporting earnings in these countries.[5] Thus the proportions of the self-employed attracted by informal work may vary by country with potential impacts on the merits of self-employment promotion.

For all these reasons, recognising the diversity of the self-employed population is vitally important for policy development. Specifically, policy makers need to take into account distinctions between the quality of working environments by sector of economic activity of the self-employed, by the socio-demographic profiles of the self-employed (age, education, income etc.), and in particular between own-account workers (OASE) and self-employed with employees (SEWE). This will support better targeted and more effective entrepreneurship policies.

This paper shows that there are strong differences in the working environment experiences of the self-employed. A key implication is that when decisions are made about the target populations of programmes to promote self-employment for example with entrepreneurship advice, finance and training, and when wider decisions are made about legal form choices and their tax implications, these decisions need to recognise that they apply to a diverse group that includes, for example, lorry drivers, freelance IT specialists, farmers, and gig workers, but also company directors employing others.

Future research

It is important to recognise that most of the data used in this report cover the period 1995-2015, focusing on variables that were available for all of the period, or at minimum for at least one decade. Data from the 7th EWCS survey was collected in 2021 and is expected to become available for analysis in December 2022. It will enable further panel data to be established, giving time trend information for a wider range of countries and variables.

Furthermore, there have been important developments in the economy since 2015 that may have an important impact on the findings and policy conclusions. One of them is the rise of the so-called "Gig Economy"[6]. Another is the impact of COVID-19 on the numbers of the self-employed and their job quality.

The current report therefore concludes by providing a proposed work programme to exploit the new data from the EWCS 7th Wave and to capture the recent changes. This analysis would serve the following purposes:

1. An extended analysis would add further evidence on changes in working environment quality in self-employment in the EU-15. Analysing the most recent survey data would facilitate the tracking of the working conditions of the self-employed over almost three decades. This would provide

[5] Åstebro and Chen (2014, p. 96) say: "In general, adjusting for underreporting using observed differences in expenditures between entrepreneurs and employees lifts entrepreneurial mean earnings by between 10% and 40%."

[6] The term "gig economy" was used to characterise jobs that, rather than being permanent, had uncertain and short-term contracts. More recently it appears to have morphed into the "platform economy" which connects employers and employees via online digital platforms (Malik et al. 2021).

policy-makers with the answer to the question of whether the identified trend of increasing quality of working environments in self-employment continued during the most recent period and whether the quality of the working environments among the self-employed and employed workers continues to converge.

2. The analysis of Wave 7 would further provide information on whether the identified sectoral and socio-demographic differences in the quality of working environments in self-employment remain stable over the most recent period. Similarly, it would enable replication of the analyses on whether the quality of self-employment working conditions is systematically linked to a country's business environment for entrepreneurship (and the entrepreneurship policies that seek to influence it) and the (group) composition of the self-employed.
3. An extended analysis would further enable a comparison to be made between previous trends and the state of self-employment at a point in time where the labour markets in all countries, to varying degrees, were hit by the global COVID-19 pandemic. The 7th Wave EWCS Survey took place during the COVID-19 outbreak and provides an opportunity to examine the effects of the pandemic and government policies in support of the self-employed. This will help answer the question of the impact of COVID-19 and government COVID-19 policy responses on the quality of self-employment.
4. An extended analysis based on Wave 7 of the EWCS opens up the opportunity to explore long-term trends in the quality of self-employment that also take into account other dimensions of the OECD job quality framework, namely individual earnings and job security. Data on monthly earnings was only collected from Wave 5 (2010) onwards. Three measures of job security are available from Wage 4 (2005 onwards). Thus, the most recent data will enable an analysis of the trend in the quality of self-employment based on two additional dimensions of job quality over the periods 2010-2021 and 2005-2021.
5. Against this backdrop, an extended analysis would enable examination of whether the quality of non-wage related working conditions differs between the self-employed with lower pay (and low education levels) and the self-employed with higher pay (and better education). This would shed some light on the quality of self-employment among the most vulnerable group of self-employed workers including “gig workers” and provide insights to help policy-makers to better target the diverse set of self-employed workers.
6. An extended analysis would facilitate the analysis of new data on social protection for the self-employed and how aspects of social protection relate to the quantity and quality of the self-employed. Since 2017, some EU-27 countries have adopted important reforms to protect the self-employed. For example, countries such as Ireland, Spain, Denmark and Belgium have increased social protection for the self-employed in areas such as unemployment benefits, dental and optical care, disability benefits, family leave, sickness benefits, and pensions (European Commission, 2020). However, in many EU Member States, social protection remains limited, especially for non-standard workers and the self-employed who, for example, work on call, perform seasonal work, or have short-term fixed-term contracts and seasonal work. An analysis of new data on access to social protection by the self-employed would provide new insights into influences on the quantity and quality of self-employment in EU Member States.
7. An extended analysis opens up the opportunity to expand the sample of countries and examine all 27 EU countries (and certain others). Data for all current EU Member States is available since 2005. Including Wave 7 would give a sufficient time series (2005-2021) to assess long-term trends in the quality of self-employment in both new and old EU Member States. This would further permit testing of whether the observed trends in EU-15 countries are matched by the same trends in the newer EU countries, and whether the patterns of sectoral and sociodemographic differences in self-employment vary between the EU15 and the new Member States.

References

Astebro, T., and Chen, J. (2014). The entrepreneurial earnings puzzle: Mismeasurement or real? Journal of Business Venturing, 29.1, 88-105

Baumol, W. J., & Strom, R. J. (2007). Entrepreneurship and economic growth. Strategic Entrepreneurship Journal, 1(3-4), 233-237.

Benz, M., & Frey, B. S. (2004). Being independent raises happiness at work. Swedish Economic Policy Review, 11(2), 95-134.

Berger, T., Frey, C. B., Levin, G., & Danda, S. R. (2019). Uber happy? Work and well-being in the 'gig economy'. Economic Policy, 34(99), 429-477.

Bracha, A. & Burke, M.A. (2021). How Big Is the Gig? The Extensive Margin, The Intensive Margin, and The Hidden Margin. Labor Economics, 69, forthcoming.

Brieger, S. A., De Clercq, D., Hessels, J., & Pfeifer, C. (2019). Greater fit and a greater gap: how environmental support for entrepreneurship increases the life satisfaction gap between entrepreneurs and employees. International Journal of Entrepreneurial Behaviour and Research, 26(4), 561-594.

Dvouletý, O. (2018) 'Determinants of self-employment with and without employees: empirical findings from Europe', International Review of Entrepreneurship, 16(3), 405-426

Eurofound (2017a). Exploring self-employment in the European Union, Publications Office of the European Union, Luxembourg.

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

Eurofound (2012). Trends in job quality in Europe, Publications Office of the European Union, Luxembourg.

European Union (2015), Employment and Social Developments in Europe 2014, Luxembourg: Publications Office of the European Union.

European Commission (2020), Access to social protection for workers and the self-employed. doi:10.2767/846014

Eurostat (2018). Labour market policy [online]. Available: https://ec.europa.eu/employment_social/employment_analysis/lmp/lmp_esms.htm

Hamilton, B. H., Pande, N and Papageorge, N.W. (2019). The right stuff? Personality and entrepreneurship. Quantitative Economics, 10(2), 643-691.

Henley, A. (2022). Is rising self-employment associated with material deprivation in the UK? Work, Employment and Society. Online first.

International Labour Organization (2022). Decent work. Available: http://ilo.int/global/topics/decent-work/lang--en/index.htm.

Lange, T. (2012). Job satisfaction and self-employment: autonomy or personality? Small Business Economics, 38(2), 165-177.

Malik, R.; Visvizi, A.; Skrzek-Lubasinskaa (2021). The Gig Economy: Current Issues, the Debate, and the New Avenues of Research. Sustainability, 13, 5023.

Muñoz de Bustillo, R., Fernández-Macías, E., Esteve, F., & Antón, J. I. (2011). E pluribus unum? A critical survey of job quality indicators. Socio-Economic Review, 9(3), 447-475.

OECD/European Commission (2021), The Missing Entrepreneurs 2021. Policies for Inclusive

Entrepreneurship and Self-employment, OECD Publishing, Paris. https://doi.org/10.1787/71b7a9bb-en.

OECD (2018) Good Jobs for All in a Changing World of Work: The OECD Jobs Strategy, OECD Publishing, Paris. https://doi.org/10.1787/9789264308817-en.

OECD (2014), OECD Employment Outlook 2014. OECD Publishing, https://dx.doi.org/10.1787/empl_outlook-2014-en.

OECD/European Union (2017), The Missing Entrepreneurs 2017: Policies for Inclusive Entrepreneurship, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264283602-en.

Salas-Fumás, V., Sanchez-Asin, J.J. and Storey, D. J. (2013). Occupational choice, number of entrepreneurs and output: theory and empirical evidence with Spanish data. SERIEs, 5, 1-24.

Stephan, U. (2018). Entrepreneurs' mental health and well-being: A review and research agenda. Academy of Management Perspectives, 32(3), 290-322.

Stephan, U., Rauch, A., and Hatak, I. (2022). Happy Entrepreneurs? Everywhere? A meta-analysis of entrepreneurship and wellbeing across institutional contexts. Entrepreneurship Theory and Practice, Online first.

Storey, D. J., Saridakis, G., Sen-Gupta, S., Edwards, P.K. and Blackburn, R.A. (2010). Linking HR formality with employee job quality: The role of firm and workplace size. Human Resource Management, 49, 305-329.

Van Stel, A. and De Vries, N. (2015) The economic value of different types of solo self-employed: a review. International Review of Entrepreneurship, 13(3), 73-80.

Van Stel, A., & van der Zwan, P. (2020). Analyzing the changing education distributions of solo self-employed workers and employer entrepreneurs in Europe. Small Business Economics, 55(2), 429-445.

Wennekers, S., & Thurik, R. (1999). Linking entrepreneurship and economic growth. Small Business Economics, 13(1), 27-56.

Annex A. Additional data

Figure A.1. The quality of the working environment in self-employment by country

Notes: The figure shows how the quality of self-employment has developed in each country over the period 1995-2015.

Table A.1. The quality of the working environment in self-employment in EU-15 countries by sector, 1995-2015

Index	1995	2000	2005	2010	2015	Δ 1995-2015	
Physical Environment index							
Agriculture	46.41	50.95	60.87	62.08	65.37	+18.96	↑
Manufacturing	66.19	65.37	71.24	75.06	73.34	+7.15	↑
Electricity, gas and water	54.26	59.79	77.42	73.41	40.38	-13.88	↓
Construction	53.67	51.98	62.59	60.07	58.74	+5.07	↑
Wholesale and retail trade	74.80	76.29	78.85	79.54	81.64	+6.84	↑
Hotels and restaurants	70.46	68.91	74.76	72.96	80.13	+9.67	↑
Infrastructure	65.98	69.19	75.62	71.07	75.04	+9.06	↑
Finance	89.77	91.44	92.71	91.99	93.51	+3.74	↑
Real estate activities	84.99	84.42	84.76	85.83	88.92	+3.93	↑
Public administration	77.08	81.57	86.75	86.87	82.42	+5.34	↑
Other services	75.52	76.03	78.64	77.63	80.30	+4.78	↑
Work Intensity index							
Agriculture	69.50	73.73	75.68	81.05	72.77	+3.27	↑
Manufacturing	56.83	56.56	62.35	63.88	66.92	+10.09	↑
Electricity, gas and water	52.67	69.73	66.71	72.38	59.05	+6.38	↑
Construction	53.60	60.12	62.77	63.89	63.86	+10.26	↑
Wholesale and retail trade	67.44	71.09	69.01	72.93	73.87	+6.43	↑
Hotels and restaurants	58.91	66.34	68.08	59.04	60.01	+1.10	
Infrastructure	60.52	67.00	61.01	68.24	68.66	+8.14	↑
Finance	61.37	65.78	72.55	76.95	65.93	+4.56	↑
Real estate activities	60.42	64.98	66.64	66.36	69.47	+9.05	↑
Public administration	64.74	69.16	71.75	69.24	66.92	+2.18	
Other services	69.24	70.22	72.40	76.70	76.57	+7.33	↑
Working Time Quality index							
Agriculture	29.93	42.86	33.60	36.36	35.01	+5.08	↑
Manufacturing	52.58	57.78	55.20	51.91	49.96	-2.62	
Electricity, gas and water	68.47	59.52	49.77	58.93	52.08	-16.39	↓
Construction	54.19	58.70	64.36	62.14	61.04	+6.85	↑
Wholesale and retail trade	51.29	51.79	49.99	54.14	56.82	+5.53	↑
Hotels and restaurants	23.16	28.99	27.65	28.16	27.30	+4.14	↑
Infrastructure	39.02	45.31	44.11	35.15	37.76	-1.26	
Finance	50.62	53.85	65.73	68.37	67.23	+16.61	↑
Real estate activities	52.22	53.09	54.64	54.67	54.90	+2.68	
Public administration	51.62	78.98	61.11	65.63	76.79	+25.17	↑
Other services	57.92	61.41	59.71	65.07	62.36	+4.44	↑

Social Environment index							
Agriculture	67.95	58.91	74.89	89.59	85.11	+17.16	↑
Manufacturing	73.68	59.89	69.35	87.60	93.35	+19.67	↑
Electricity, gas and water	95.00	66.67	75.93	92.86	100.00	+5.00	↑
Construction	77.08	63.02	81.73	88.98	80.25	+3.17	↑
Wholesale and retail trade	55.85	50.18	61.41	90.38	83.42	+27.57	↑
Hotels and restaurants	61.01	57.93	73.23	86.26	84.99	+23.98	↑
Infrastructure	65.35	51.02	76.32	87.42	81.97	+16.62	↑
Finance	71.48	68.98	78.30	95.19	94.14	+22.66	↑
Real estate activities	69.87	53.03	61.78	84.71	87.68	+17.81	↑
Public administration	86.67	81.82	86.11	97.96	100.00	+13.33	↑
Other services	56.82	45.61	64.15	79.47	76.30	+19.48	↑
Work Complexity & Autonomy index							
Agriculture	63.92	66.5	64.91	69.39	72.31	+8.39	↑
Manufacturing	71.12	72.76	72.92	78.59	80.97	+9.85	↑
Electricity, gas and water	79.90	85.29	94.61	88.66	92.65	+12.75	↑
Construction	72.00	69.49	75.14	77.61	78.70	+6.70	↑
Wholesale and retail trade	67.52	64.67	69.34	74.11	78.58	+11.06	↑
Hotels and restaurants	56.21	56.49	63.53	65.45	68.86	+12.65	↑
Infrastructure	58.75	54.29	61.23	63.73	62.15	+3.40	↑
Finance	86.92	89.77	90.11	84.77	89.67	+2.75	
Real estate activities	81.66	81.94	82.84	88.55	87.15	+5.49	↑
Public administration	75.79	79.81	81.86	80.04	76.05	+0.26	
Other services	70.93	69.08	73.43	74.63	75.04	+4.11	↑

Notes: Directional arrows record the pattern of change between 1995 and 2015. A directional arrow records a "substantive" change, that is, at least 3 percentage points in the average level.
Source: EWCS.

Table A.2. Correlations between active labour market policies and the quality of the working environment of the self-employed

	Physical Environment index	Work Intensity index	Working Time Quality index	Social Environment index	Work Complexity & Autonomy index	Overall Working Environment index
ALMP expenditures on start-up incentives	-0.11	-0.10	0.11	0.15	-0.11	0.01

Notes: The table shows bivariate Pearson correlations between countries' levels of active labour market policies and the quality of self-employment between 2000 and 2015. LMP data is averaged over the following four periods 1998-2002, 2003-2007, 2008-2012, and 2013-2018. LMP Data is available for all EU countries, except the Netherlands. Likewise, data is missing for Denmark in the years 2005 onwards and the UK in 2015. N = 52. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A.3. Economic freedom variables descriptions

Variable	Description
Property rights	"The property rights component assesses the extent to which a country's legal framework allows individuals to acquire, hold, and utilize private property, secured by clear laws that the government enforces effectively. Relying on a mix of survey data and independent assessments, it provides a quantifiable measure of the degree to which a country's laws protect private property rights and the extent to which those laws are respected. It also assesses the likelihood of state expropriation of private property. The more effective the legal protection of property is, the higher a country's score will be. Similarly, the greater the chances of government expropriation of property are, the lower a country's score will be. The score for this component is derived by averaging scores for the following five sub-factors, all of which are weighted equally: Physical property rights, intellectual property rights, strength of investor protection, risk of expropriation, and quality of land administration."
Government integrity	"Corruption erodes economic freedom by introducing insecurity and coercion into economic relations. Of greatest concern is the systemic corruption of government institutions and decision-making by such practices as bribery, extortion, nepotism, cronyism, patronage, embezzlement, and graft. The lack of government integrity caused by such practices reduces public trust and economic vitality by increasing the costs of economic activity. The score for this component is derived by averaging scores for the following five sub-factors, all of which are weighted equally: Irregular payments and bribes, transparency of government policymaking, absence of corruption, perceptions of corruption, and governmental and civil service transparency."
Tax burden	"Tax burden is a composite measure that reflects marginal tax rates on both personal and corporate income and the overall level of taxation (including direct and indirect taxes imposed by all levels of government) as a percentage of gross domestic product (GDP). The component score is derived from three quantitative sub-factors: (1) the top marginal tax rate on individual income, (2) the top marginal tax rate on corporate income, and (3) the total tax burden as a percentage of GDP."
Government spending	"The government spending component captures the burden imposed by government expenditures, which includes consumption by the state and all transfer payments related to various entitlement programs. […] The equation used to compute a country's government spending score is: GEi = 100 – α (Expenditures)."
Business freedom	"The business freedom component measures the extent to which the regulatory and infrastructure environments constrain the efficient operation of businesses. The quantitative score is derived from an array of factors that affect the ease of starting, operating, and closing a business. The business freedom score for each country is a number between 0 and 100, with 100 indicating the freest business environment. The score is based on 13 sub-factors, all of which are weighted equally, using data from the World Bank's Doing Business report."
Monetary freedom	"Monetary freedom combines a measure of inflation with an assessment of various government activities that distort prices. Price stability without microeconomic intervention is the ideal state for the free market. The score for the monetary freedom component is based on two sub-factors: The weighted average inflation rate for the most recent three years and a qualitative judgment about the extent of government manipulation of prices through direct controls or subsidies."
Trade freedom	"Trade freedom is a composite measure of the extent of tariff and non-tariff barriers that affect imports and exports of goods and services. The trade freedom score is based on two inputs: The trade-weighted average tariff rate and a qualitative evaluation of non-tariff barriers (NTBs)."
Investment freedom	"In an economically free country, there would be no constraints on the flow of investment capital. Individuals and firms would be allowed to move their resources into and out of specific activities, both internally and across the country's borders, without restriction. Such an ideal country would receive a score of 100 on the investment freedom component of the Index."
Financial freedom	"Financial freedom is an indicator of banking efficiency as well as a measure of independence from government control and interference in the financial sector. State ownership of banks and other financial institutions such as insurers and capital markets reduce competition and generally lowers the level of access to credit. The Index scores an economy's financial freedom by looking at five broad areas: The extent of government regulation of financial services, the degree of state intervention in banks and other financial firms through direct and indirect ownership, government influence on the allocation of credit, the extent of financial and capital market development, and openness to foreign competition."

Notes: Variable descriptions are taken from www.heritage.org/index/pdf/2020/book/methodology.pdf.

Table A.4. GEM NES entrepreneurial ecosystem policies

Variable	Description
Financial environment	This index contains six items: (1) In my country, there is sufficient equity funding available for new and growing firms, (2) In my country, there is sufficient debt funding available for new and growing firms, (3) In my country, there are sufficient government subsidies available for new and growing firms, (4) In my country, there is sufficient funding available from private individuals (other than founders) for new and growing firms, (5) In my country, there is sufficient venture capitalist funding available for new and growing firms, (6) In my country, there is sufficient funding available through initial public offerings (IPOs) for new and growing firms.
Government policies and support	The government policies and support index includes three items: (1) In my country, government policies (e.g., public procurement) consistently favour new firms, (2) In my country, the support for new and growing firms is a high priority for policy at the national government level, and (3) In my country, the support for new and growing firms is a high priority for policy at the local government level.
Bureaucracy and taxes	The index is based on four items: (1) In my country, new firms can get most of the required permits and licenses in about a week, and (2) In my country, new firms can get most of the required permits and licenses in about a week, (3) In my country, taxes and other government regulations are applied to new and growing firms in a predictable and consistent way, and (4) In my country, coping with government bureaucracy, regulations and licensing requirements is not unduly difficult for new and growing firms
Government programmes	This index consists of six items: (1) In my country, a wide range of government assistance for new and growing firms can be obtained through contact with a single agency, (2) In my country, a wide range of government assistance for new and growing firms can be obtained through contact with a single agency, (3) In my country, there are an adequate number of government programs for new and growing businesses, (4) In my country, the people working for government agencies are competent and effective in supporting new and growing firms, (5) In my country, almost anyone who needs help from a government program for a new or growing business can find what they need, and (6) In my country, almost anyone who needs help from a government program for a new or growing business can find what they need.
Entrepreneurship education at school	This index is based on three items: (1) In my country, teaching in primary and secondary education encourages creativity, self-sufficiency and personal initiative, (2) In my country, teaching in primary and secondary education provides adequate instruction in market economic principles, and (3) In my country, teaching in primary and secondary education provides adequate attention to entrepreneurship and new firm creation.
Entrepreneurship education after school	This index includes two items: (1) In my country, colleges and universities provide good and adequate preparation for starting up and growing new firms, and (2) In my country, the level of business and management education provides good and adequate preparation for starting up and growing new firms
R&D level of transference	The R&D level of transference index contains six items: (1) In my country, new technology, science, and other knowledge are efficiently transferred from universities and public research centres to new and growing firms, (2) In my country, new and growing firms have just as much access to new research and technology as large, established firms, (3) In my country, new and growing firms can afford the latest technology, (4) In my country, there are adequate government subsidies for new and growing firms to acquire new technology, (5) In my country, the science and technology base efficiently supports the creation of world-class new technology-based ventures in at least one area, and (6) In my country, there is good support available for engineers and scientists to have their ideas commercialized through new and growing firms.
Professional & communications infrastructure access	This index is based on five items: (1) In my country, there are enough subcontractors, suppliers and consultants to support new and growing firms, (2) In my country, new and growing firms can afford the cost of using subcontractors, suppliers and consultants, (3) In my country, it is easy for new and growing firms to get good subcontractors, suppliers and consultants, (4) In my country, it is easy for new and growing firms to get good, professional legal and accounting services, and (5) In my country, it is easy for new and growing firms to get good banking services (checking accounts, foreign exchange transactions, letters of credit and the like)
Internal market dynamics	The internal market dynamics index contains two items: (1) In my country, the markets for consumer goods and services change dramatically from year to year, and (2) In my country, the markets for business-to-business goods and services change dramatically from year to year.
Internal market burdens	The internal market burdens index consists of four items: (1) In my country, new and growing firms can easily enter new markets, (2) In my country, the new and growing firms can afford the cost of market entry, and (3) In my country, new and growing firms can enter markets without being unfairly blocked by established firms, and (4) In my country, the anti-trust legislation is effective and well enforced.
Physical infrastructures & services access	The physical infrastructures and services access index consists of five items: (1) In my country, the physical infrastructure (roads, utilities, communications, waste disposal) provides good support for new and growing firms, (2) In my country, it is not too expensive for a new or growing firm to get good access to communications (phone, Internet, etc.), (3) In my country, a new or growing firm can get good access to communications (telephone, Internet, etc.) in about a week, (4) In my country, new and growing firms can afford the cost of basic utilities (gas, water, electricity, sewer), and (5) In my country, new or growing firms can get good access to utilities (gas, water, electricity, sewer) in about a month
Social norms & society support	The social norms and society support index contains five items: (1) In my country, the national culture is highly supportive of individual success achieved through own personal efforts, (2) In my country, the national culture

emphasizes self-sufficiency, autonomy and personal initiative, (3) In my country, the national culture encourages entrepreneurial risk-taking, (4) In my country, the national culture encourages creativity and innovativeness, and (5) In my country, the national culture emphasizes the responsibility that the individual (rather than the collective) has in managing his or her own life.

Table A.5. Correlations between changes in business entry regulations and the quality of working environments of the self-employed

	Physical Environment index	Work Intensity index	Working Time Quality index	Social Environment index	Work Complexity & Autonomy index	Overall Working Environment index
SB Score	-0.02	0.03	0.09	0.36*	0.47**	0.40**
SB Score – Procedures	-0.06	-0.15	0.08	0.13	-0.09	0.03
SB Score – Time	-0.08	0.19	0.21	0.39*	0.10	0.38*
SB Score – Cost	-0.07	0.06	0.14	0.11	-0.00	0.12
SB Score – Paid-in Minimum capital	0.23	0.13	0.12	0.12	-0.11	0.20

Notes: Table shows bivariate Pearson correlations between countries' changes in ease of starting a business and the quality of self-employment. Ease of Doing Business data is averaged over the following three periods 2004-2009, 2010-2014, and 2015-2019. N = 30. + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001.

Table A.6. Correlations between changes in economic freedom and the quality of working environments of the self-employed

	Physical Environment index	Work Intensity index	Working Time Quality index	Social Environment index	Work Complexity & Autonomy index	Overall Working Environment index
Economic Freedom index	-0.05	-0.02	0.04	-0.28*	-0.22+	-0.22+
Government integrity	-0.07	-0.12	-0.04	-0.11	-0.12	-0.16
Property rights	-0.08	-0.15	-0.13	-0.03	-0.13	-0.16
Government spending	-0.18	0.08	0.05	-0.39**	-0.24+	-0.29*
Tax burden	0.00	-0.16	0.05	0.21	0.08	0.11
Labour freedom	-0.07	-0.17	0.29	-0.27	-0.15	-0.15
Monetary freedom	-0.03	-0.12	0.03	-0.43***	-0.39**	-0.36**
Business freedom	0.26*	-0.04	0.00	0.31*	0.13	0.28*
Financial freedom	0.06	-0.06	0.06	-0.10	-0.24	-0.09
Investment freedom	0.04	0.09	-0.12	-0.00	0.05	0.00
Trade freedom	0.20	0.10	-0.01	0.36**	0.21	0.34**

Notes: Table shows bivariate Pearson correlations between countries' changes in economic policies and the quality of self-employment between 2000 and 2015. The Economic Freedom indices are averaged over the following five periods 1995-1999, 2000-2004, 2005-2009, 2010-2014, and 2015-2019. N = 60. + p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001.

Table A.7. Correlations between changes in entrepreneurial ecosystem conditions and the quality of working environments of the self-employed

	Physical Environment index	Work Intensity index	Working Time Quality index	Social Environment index	Work Complexity & Autonomy index	Overall Working Environment index
Financing for entrepreneurs	-0.21	-0.24	-0.22	-0.47**	-0.33*	-0.55***
Governmental support and policies	0.03	-0.31	-0.42*	-0.25	-0.01	-0.38*
Taxes and bureaucracy	-0.15	-0.24	-0.42*	-0.27	0.10	-0.42*
Governmental programs	-0.21	-0.28	-0.26	-0.11	-0.15	-0.34*
Basic entrepreneurial education	0.08	-0.03	-0.18	-0.29+	-0.15	-0.24
Higher entrepreneurial education	-0.09	-0.11	-0.44**	-0.07	0.00	-0.27
R&D transfer	-0.30+	-0.39*	-0.38*	-0.40*	-0.06	-0.60***
Institutional infrastructure	0.19	-0.15	-0.39*	-0.13	-0.03	-0.21
Internal market dynamics	-0.14	0.20	0.06	0.04	-0.02	0.06
Internal market openness	-0.17	-0.25	-0.05	-0.26	-0.18	-0.33+
Physical and services infrastructure	0.02	-0.06	-0.17	0.07	0.26	0.01
Cultural and social norms	0.00	-0.08	-0.30+	-0.49**	-0.12	-0.43*

Notes: Table shows bivariate Pearson correlations between countries' changes in enterprise ecosystem policies and the quality of self-employment between 2000 and 2015. The Global Entrepreneurship Monitor data is averaged over the following four periods 2000-2004, 2005-2009, 2010-2014, and 2015-2020. N = 35. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.