WORKING PAPER

Classifying self-employment and creating an empirical typology

Technical report related to the Eurofound report:
Exploring self-employment in the European Union

Contents

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General introduction

The general objective of our study was to compose nuanced classifications of self-employed in the EU member states, based on the data of the 2015 EWCS. This objective is achieved following two different research approaches. In a first approach (Task A) a tree-structured conceptual typology of self-employed is constructed using conceptual criteria routed in the current literature on self-employment and entrepreneurship. A second approach (Task C) applies a wider set of criteria determining the employment situation of self-employed in a data reduction technique (Latent Class Cluster Analysis) in order to derive an empirical typology of self-employed. In tasks B and D both the "conceptual typology" and the "empirical typology" are described according to a set of background characteristics (e.g. socio-demographics; socio-economic characteristics; job content and working conditions and relevant well-being-related outcomes). Moreover, both approaches are confronted with each other as a way to validate the results of both approaches.

The objectives of this study are related to current debates regarding self-employment. For both national and EU-policy makers, enhancing entrepreneurship – and the "self-employed" worker status – is crucial for an innovative and flexible economic environment, as well as economic and employment growth (Pärnänen & Sutela, 2016). Therefore, many policy makers see entrepreneurship and self-employment as something that should be stimulated and supported. In contrast, also questions have been raised with regard to the employment situation of some self-employed – more specifically regarding the economic viability of their activities, their degree of "real independency", their social protection and their working conditions and related health and safety (Pärnänen & Sutela, 2016).

Inevitably this endeavour brings upfront reflections about the demarcation line between "paid employment" and "self-employment", which can be blurred sometimes. According to ILO, the self-employed are those workers whose *'remuneration is directly dependent upon the profits (or the potential profits) derived from the goods and services produced (...)* (, while they are making) *the operational decisions affecting the enterprise, or delegate such decisions while retaining responsibility for the welfare of the enterprise'* (ILO, 2013). Workers in paid employment can be described as those workers holding '*... explicit (written or oral) or implicit employment contracts which give them a basic remuneration which is not directly dependent upon the revenue of the unit for which they work* (…) and for whom (…) *some or all of the tools, equipment, premises and so forth may be owned by others and* (…) who (…) *may work under the direction of, or according to strict guidelines set by, the owner or persons in the owner's employment.*' (ILO, 2013). Loosely following the recommendations made by Pärnänen & Sutela (2016), a number of criteria are guiding the objective of creating a nuanced classification of self-employed.

A first criterion informing typology is the respondents' self-perceived status in employment, which often coincides with (formal) distinctions between employees and (different types of) self-employed in the respondents' country. However, in some cases this "self-perceived" definition is contradicted by more objective features of (economic) independence usually associated with self-employment.

Therefore, indicators of (economic) independence constitute a second dimension guiding our classification. In the grey zone between "paid employment" and "self-employment" a number of "hybrid" situations exist, including contributing family workers and members of

producers' co-operatives, not to mention those partially or completely engaged in the informal economy (Muntaner et al., 2010). Of particular relevance in this context is the situation of "sham" ("bogus", "false", …) self-employment, where a high extent of economic dependency or even a de facto employment relationship exists between a formally self-employed worker and one or a few clients. This notion of "dependency" involves different sub-dimensions: (1) an (almost) exclusive relationship with one client; (2) low discretion over one's own work, the general work processes and/or strategic decision-making; (3) or a weak relation between the economic activity and the nature or level of income. In any typology of self-employed workers it seems particularly relevant to be able to isolate groups of "dependent self-employed". The different sub-dimensions of dependency imply that no clear dichotomy between "real self-employed" and "dependent (bogus, false, …) self-employed" exists. It certainly is a gradational matter, allowing for (empirically) determining "degrees of dependency".

Third, also the magnitude of the economic activity is a crucial criterion for determining the nature of the self-employed status. Often distinctions have been made between "large or medium sized business owners", "small employers" and "own account workers" (Urwin, 2011), mainly following two dimensions (1) the number of establishments involved in the economic activity under consideration and (2) the presence and the number of employees working in the business (co-)owned by the self-employed. (3) An obvious third criterion concerns the income derived from the self-employed activity. These criteria will be applied to the EWCS 2015 data in this study.

A fourth dimension concerns the economic sustainability of the self-employed activity. This dimension includes the pathway into employment (out of necessity or out of deliberate choice?), as well as factors related to economic stability and/or expansion. In Europe, basically two roads into self-employment have been described: (a) one out of economic necessity, where self-employment is seen in the first place as a way to avoid unemployment or exploitation in an environment of low labour market opportunities (González-González, Bretones, Zarco, & Rodríguez, 2011) and (b) as a deliberate choice to optimize one's innovation or investment potential under favourable market circumstances (Nykvist, 2008). Some authors have argued that the first road is more prevalent in lower income Southern and Eastern European countries, while the second road is more common in higher income North and Western European countries (Binder & Coad, 2013). Nevertheless, as pointed out by Pärnänen and Sutela (2016), the initial road into self-employment is not the only factor in this regard: later economic viability and future economic prospects may alter the initial motivation for becoming self-employed. Based on considerations regarding the "path into self-employment" and "future prospects" further sub-types of self-employed can be distinguished. A number of indicators referring to this dimension are included in the analyses performed under task C.

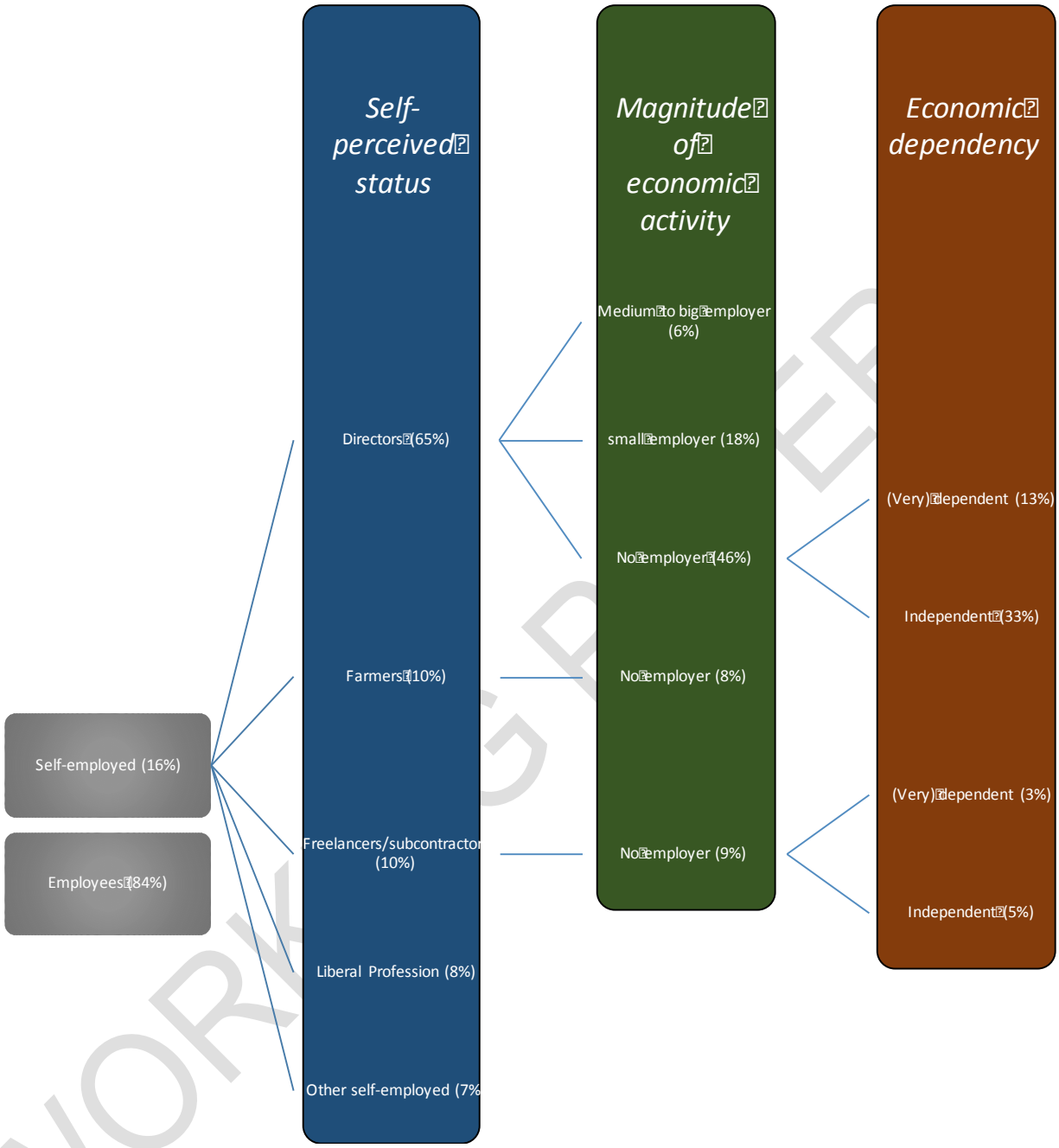
Finally, a number of other factors determining the nature of a self-employed activity can be identified. Some of these refer to the intrinsic nature of the work performed, like the specific content of the work task or several aspects of working conditions. These have been left out of the analysis as they are rather specific to certain occupations or sectors, rather than to a specific status in (self-)employment. On the other hand, characteristics referring to working times (number of working hours/days and discretion over working time) and to investments in human capital (receiving training/formation) have been included in the analyses for task C, as they may be crucial in determining the long-term quality of life of self-employed.

Task A: Constructing a classification of self-employed

A.1. Introduction: a quick overview of the most important classifications

In this first chapter a classification of several groups of self-employed in the EU28-countries is proposed on the basis of the EWCS 2015 questionnaire. Self-employment can be disentangled using at least four conceptual dimensions, outlined in the introduction of this report. These dimensions reflect insights from the literature on the criteria defining (different groups of) self-employed (e.g. Pärnänen & Sutela, 2016). The same dimensions are also clearly underlying the questions directed towards self-employed in the EWCS2015-questionnaire. In this work task, the self-employment indicator that is created is the result of combining information from three of these conceptual dimensions: 1) self-perceived status in employment (blue); (2) magnitude of the economic activity (green) and 3) economic independency (orange) (See Figure 1). The indicators of the fourth dimension will be used in analyses further in the report (Task C). This was done to avoid an overly complex typology of self-employment.

Figure A-1: Classification of self-employed[1]



Below we present the three indictors of self-employment based upon their respective dimension of self-employment (Table A-1, A-2 and A-3) and a final indicator combining the three dimensions (Table A-4). The frequencies of the tables represent the EU28-countries and are weighted results. In the remainder of this chapter we report on the indicator construction itself using the whole EWCS2015 sample (unweighted).

[1] Farmers and freelancers/subcontractors with employees were classified as directors: small employers.

Table A-1: Self-perceived status in employment in EU28 (weighted)

	Frequency	Percent	Valid Percent	Cumulative Percent
Directors	3699	10	65	65
Farmers	579	2	10	75
Freelancers/subcontractors	564	2	10	85
Liberal professions	455	1	8	93
Other	396	1	7	100
Total self-employed	5693	16	100	
Missing				
Employees	29884	84		
Unclear: wage	8	0		
Don't know or refusal	25	0		
Total	29918	84		
Total	35611	100		

Table A-2: Magnitude of economic activity

	Frequency	Percent	Valid Percent	Cumulative Percent
Director: medium to big employer	310	1	6	6
Director: small employer	1049	3	18	24
Director: no employer	2613	7	46	70
Farmer: no employer	439	1	8	78
Freelancer/subcontractor: no employer	495	1	9	86
Liberal profession	390	1	7	93
Other	396	1	7	100
Total self-employed	5693	16	100	
Missing				
Employees	29884	84		
Unclear: wage	8	0		
Don't know or refusal	25	0		
Total	29918	84		
Total	35611	100		

Table A-3: Economic independency

	Frequency	Percent	Valid Percent	Cumulative Percent
Very dependent	242	1	5	5
Dependent	1273	4	24	29
Independent	3736	11	71	100
Total	5251	15	100	
Missing				
Other: no answers on economic independence	400	1		
Freelancer/subcontractor with other or wage in Q8b: no answer on economic independence	7	0		
Employees	29884	84		
Unclear: wage	8	0		
Don't know or refusal	25	0		
Missing on Q9d (1 or more clients) and at least 1 indicator of economic independence	35	0		
Total	30360	85,3		
Total	35611	100,0		

Table A-4: Final classification

	Frequency	Percent	Valid Percent	Cumulative Percent
Director: medium to big employer	310	1	6	6
Director: small employer	1049	3	18	24
Own account worker, independent	1880	5	33	57
Own account worker, dependent	725	2	13	70
Farmer: no employer	439	1	8	77
Freelancer/subcontractor, independent	284	1	5	82
Freelancer/subcontractor, dependent	194	1	3	86
Liberal profession	390	1	7	93
Other	422	1	7	100,0
Total self-employed	5693	16	100	
Missing				
Employees	29884	84		
Unclear: wage	8	0		
Don't know or refusal	25	0		
Total	29918	84		
Total	35611	100		

A.2. Construction of indicators[2]

A.2.1. Self-perceived status of self-employment

A.2.1.1. Determining all self-employed of the EWCS 2015

The first goal was to make an overall indicator distinguishing the self-employed from the employed (*Self_empl_final*). We used question Q7 "Are you working as an employee or are you self-employed": answer options were "an employee" and "self-employed". Those who responded "Don't know" or "refusal" on Q7 were subsequently asked question Q8a "Are you paid a salary or a wage by an employer" (yes/no). Using question Q7, those who stated they are self-employed (n=7899) or an employee are categorised as such. Respondents who indicated "don't know" or "refusal" on Q7, are categorised using question Q8a: "yes" indicating to be an employee and "no" indicating to be self-employed (n=270). Those who responded "Don't know" or "refusal" on Q8a were categorised using question Q8b "Please select the category or categories which apply to your main paid job", answer options were (1) sole director of own business, (2) a partner in a business or a professional practice, (3) working for yourself, (4) working as a sub-contractor, (5) doing freelance work, (6) paid a salary or a wage by an agency and (7) other. Those who selected at least one category ranging from 1 to 5 were categorised as self-employed (n=48). Those solely indicating to be paid a salary or a wage by an agency (n=7) or other (n=0) were categorised as UNCLEAR. When cross-classifying the unclear with Question Q11 (kind of employment contract), 3 have no contract, 1 has a contract of unlimited duration, 1 of limited duration and 1 a temporary employment agency and 1 doesn't know. We decided to recode these cases to missing values, because of the limited amount of cases. Some cases (n=55) were impossible to categorise as they answered "don't know" or "refusal" on Q7, Q8a and Q8b. In the EWCS 2015, 8217 respondents can be categorised as self-employed (See Table A-5).

[2] In the remainder of this chapter we report on the indicator construction using the whole EWCS2015 sample (unweighted). As from chapter 2 we use data from only the EU28-countries.

Table A-5: self_empl_final

	Frequency	Percent	Valid Percent	Cumulative Percent
Employees	35571	81	81	81
Self-employed	8217	19	19	100
Total	43788	100	100	
Missing				
Unclear: paid a wage by agency	7	0		
Don't know or refusal on Q7 and Q8a and Q8b	55	0		
Total	62	0		
Total	43850	100.0		

A.2.1.2. Including the liberal professions

Historically, legally and sociologically it can be argued that liberal professions constitute a distinct category of self-employed. According to the European Economic and Social Committee, the liberal professions are characterised as follows: *providing a valuable intangible service that is distinctly intellectual in nature, based on advanced (academic) training; a service that is in the public interest; substantive and economic independence in executing tasks; provision of services in a personal capacity, on the provider's own responsibility and in a professionally independent manner; a particular relationship of trust between the client and the service provider; a focus on providing the best possible service rather than on maximising profit; and compliance with precise, strict professional regulations and codes of professional ethics* (Committee, 2014). The foremost problem with categorising the liberal professions is that a definition of liberal professions does not exist, and may vary between countries. The European Centre for Liberal Professions states that "due to openness of the concept and the differing emphasis on the term in the various Member States, a binding categorisation is not possible" (European Centre for Liberal Professions, 2014). In the classification of self-employed on the basis of the EWCS 2015, the focus will be on the main sub-groups of the liberal professions that are listed in the report of the European Centre for Liberal Professions, i.e. the health, legal and business advisory, engineering and architecture professions: lawyers, auditors, tax advisors, notaries, architects, engineers, dentists, pharmacists. We extended this list by adding liberal professions regarding the health sector (i.e. general medical practitioners, specialist medical practitioners, veterinarians, physiotherapist, nutritionist, audiologist & speech therapy, psychologists). In that sense, the choice of occupations belonging to the liberal professions is partly our own selection (See Table A-6).

Table A-6: SE_prof

	Frequency	Percent (of total)	Percent (among liberal)
Engineers	455	1	22
Architects	139	0	7
Generalist medical practitioners	125	0	6
Specialist medical practitioners	120	0	6
Veterinarians	37	0	2
Dentist	60	0	3
Pharmacist	104	0	5
Physiotherapist	88	0	4
Nutritionist	16	0	1
Audiologists & speech therapy	15	0	1
Optometrists	14	0	1
Accountants & financial and investment advisers	671	2	32
Lawyers & notaries	225	1	11
Psychologists	46	0	2
All liberal professions	2115	5	100
No liberal profession	41735	95	-
Total	43850	100.0	-

Using *SE_prof*, the previously constructed indicator *self_empl*_final is extended by a category including liberal professions (n=479) (See Table A-7*).*

Table A-7: SE_LP

	Frequency	Percent	Valid Percent	Cumulative Percent
Employees	35571	81	81	81
Self-employed: no liberal profession	7738	18	18	99
Self-employed: liberal profession	479	1	1	100
Unclear: paid a wage by agency (no liberal profession)	7	0	0	100
Total	43795	100	100	
Missing				
Don't know or refusal on Q7 and Q8a and Q8b	55	0		
Total	43850	100.0		

A.2.1.3. Self-perceived status in self-employment (using Q8b)

In this step, we further unravel those cases classified under 'self-employed no LP' in *SE_LP*. In order to do this, we use question Q8b "Please select the category or categories which apply to your main paid job", answer options were (1) sole director of own business, (2) a partner in a business or a professional practice, (3) working for yourself, (4) working as a sub-contractor, (5) doing freelance work, (6) paid a salary or a wage by an agency and (7) other.

Given the fact that multiple answers are possible on Q8b, we created an indicator listing all possible combinations of specific self-employed categories. In that way 42 categories of self-employed are present in the EWCS 2015 (See Appendix – Table *AutR_new_self_empl).* We reduce the amount of categories by categorising those cases stating they are sole directors (1), working for themselves (3) or a combination of both (11) as director-owner. Those respondents who stated they are a partner in a business (2), partners and sole directors (8), partners, sole directors + working for yourself (9) and partners working for yourself (16) are categorised as director-partners. The third category, referring to the freelancers, are those categories that include doing freelance work (for instance sole director + freelancer, wage + freelancer, partner + working for yourself + freelancer). Combinations in which both freelancer and subcontractor appear, were categorised as subcontractor. The fourth category, the subcontractors, are those respondents mentioned earlier and those who stated they worked as a subcontractor (for instance partner + subcontractor). Thus, all combinations in which subcontractor appear were included in this category. The fifth category are liberal professions which were adopted from SE_LP. All others were included in the *other* category, i.e. those who stated 'paid a wage', 'other' and 'paid a wage' or 'other' in combination with sole director, working for yourself or partner. Those who stated "Don't know" or "refusal" on question Q8b were also included in the category *other* (as they are also self-employed but did not answer Q8b). Table A-8 presents the categories with their respective subcategories.

Table A-8: Rec_new_self_empl

Category	n	%	Subcategories
Director-owner	5790	71	Sole director of own business
			Work for yourself
			Sole director +work for yourself
Director-partner	591	7	Partner
			Sole director + partner
			Sole director + partner + work for yourself
			Partner + working for yourself
Freelancer	649	8	Freelancer
			Sole director + freelancer
			Partner + freelancer
			Work for yourself + freelancer
			Freelancer + wage
			Freelancer + other
			Director + work for yourself + freelancer
			Partner + work for yourself + freelancer
			Partner + freelancer + wage
			Work for yourself + freelancer + wage
			Director + partner + work for yourself + freelancer
			Director + work for yourself + freelancer + wage
Subcontractor	169	2	Subcontractor
			Director + partner + work for yourself + subcontractor + freelancer
			Sole director + subcontractor
			Partner + subcontractor
			Work for yourself + subcontractor
			Subcontractor + freelancer
			Director + work for yourself + sub
			Partner + work for yourself + sub
			Partner + subcontractor + wage
			Work for yourself + subcontractor + freelancer
			Director + work for yourself + subcontractor + freelancer
			Director + work for yourself + subcontractor + other
			Work for yourself + subcontractor + freelancer + other
Liberal profession	479	6	Liberal profession
Other	539	7	Wage
			Other
			Sole director + wage
			Sole director + other
			Partner + other
			Work for yourself + wage

			Work for yourself + other
			Director + work for yourself + wage
			Director + work for yourself + other
			Self-employed: don't know on Q8B
			Self-employed: no answer on Q8B
Missing			
Employees	35571	81	
Unclear: wage	7	0	
Don't know/refusal	55	0	

A.2.1.4. Including farmers

A list of occupations in agriculture, forestry and fisheries is determined by the International Labour Organisation (ILO, n.d.), this list includes occupations of ISCO groups 1.3 and 6.1 till 6.3. Following this list, we define farmers as those director-owners or director-partners who in the ISCO 2008 are classified as:

1311: Agricultural and forestry production managers

6111: Field crop and vegetable growers

6112: Tree and shrub crop growers

6114: Mixed crop growers

6121: Livestock and dairy producers

6122: Poultry producers

6123: Apiarists and sericulturists

6129: Animal producers not elsewhere classified

6130: Mixed crop and animal producers

6221: Aquaculture workers (e.g. fish farmer)

6310: Subsistence crop farmers

6320: Subsistence livestock farmers

6330: Subsistence mixed crop and livestock farmers

Consequently, self-employed with one of these ISCO-codes that are not director-owners or director-partners are not considered 'farmers'. This excludes for example self-employed agricultural workers on freelance basis from this particular category of self-employed. In the EWCS 2015, 1409 of all self-employed can be classified as farmers (17,1%). Because a considerably large group of self-employed are farmers, this category of self-employed is included in the final classification.

Table A-9: Farmers in EWCS2015, all countries (unweighted)

	Frequency	Percent	Valid Percent	Cumulative Percent
Directors	4972	11	61	61
Farmers	1409	3	17	78
Freelancers/subcontractors	818	2	10	88
Liberal professions	479	1	6	93
Other	539	1	7	100
Total self-employed	8217	19	100	
Missing				
Employees	35571	81		
Unclear: wage	7	0		
Don't know or refusal	55	1		
Total	35633	81		
Total	43850	100		

A.2.1.5. Magnitude of economic activity

The magnitude of economic activity-dimension concerns the distinction that can be made between 'large or medium sized business owners', 'small employers' and 'no employer'. We have chosen to construct this classification using the following indicators: question Q9c "Have employees (working for you)?" (yes/no), question Q15b "Does your business have one site or have multiple establishments?" (One site only/more than one site) and question Q16b "How many employees in total work in your business?" (1/2-9/10-249/250+). However, Q15b is only asked to business directors and partners (i.e. director-owner and director-partner in Rec_new_self_empl). All others (i.e. freelancers, subcontractors and others in Rec_new_self_empl) were asked about the company they work at most often at the current time (question Q15a and Q16a). As the company for which is worked most often says little about the magnitude of the economic activity, these questions were not used to represent this dimension for freelancers, subcontractors and others. For freelancers/subcontractors only question Q9c "Do you have employees" (yes/no) is used to reflect the magnitude of economic activity.

Those directors with one site, reporting to work alone are classified as "directors: no employer". Those directors with one site, who report to have employees working for them and who employ 1-8 employees are classified as "small employers". Those directors with one site, who report to have employees working for them and who employ > 8 employees and those with more than one site and who report to have employees working for them are classified as "medium to big employers". Liberal professions who report to have employees working for them with more than one site or with one site with >8 employees are classified as "medium to big employers". Freelancers/subcontractors and farmers reporting to have employees were classified as "directors: small employers", all others were classified as "freelancers/subcontractors: no employer" and "farmers: no employer" respectively. All directors with missing values on Q15b and/or Q16b were classified as "others" (See Table A-10).

Table A-10: Magnitude of the economic activity in EWCS 2015, all countries (unweighted).

	Frequency	Percent	Valid Percent	Cumulative Percent
Director: medium to big employer	373	1	5	5
Director: small employer	1416	3	17	22
Own account worker, independent	3519	8	43	65
Own account worker, dependent	1217	3	15	79
Farmer: no employer	719	2	9	88
Freelancer/subcontractor, independent	430	1	5	93
Freelancer/subcontractor, dependent	543	1	7	100
Liberal profession	8217	19	100	
Other	373	1	5	5
Total self-employed	1416	3	17	22
Missing				
Employees	35571	81		
Unclear: wage	7	0		
Don't know or refusal	55	0		
Total	35633	81		
Total	43850	100		

A.2.2. Economic independency

Economic independency can be broken down in 3 sub-dimensions: an (almost) exclusive relationship with one client, low authority over the work process and/or strategic decision-making and a weak relation between the economic activity and the nature or level of income. To construct an economic independency indicator, only those indicators of the sub-dimension 'relationship with client' will be used. The other indicators will be used further on in the cluster analysis (Task C). We choose to use the relationship with clients to represent the economic dependency dimension amongst others as these indicators are very intuitive to interpret as economic independence[3].

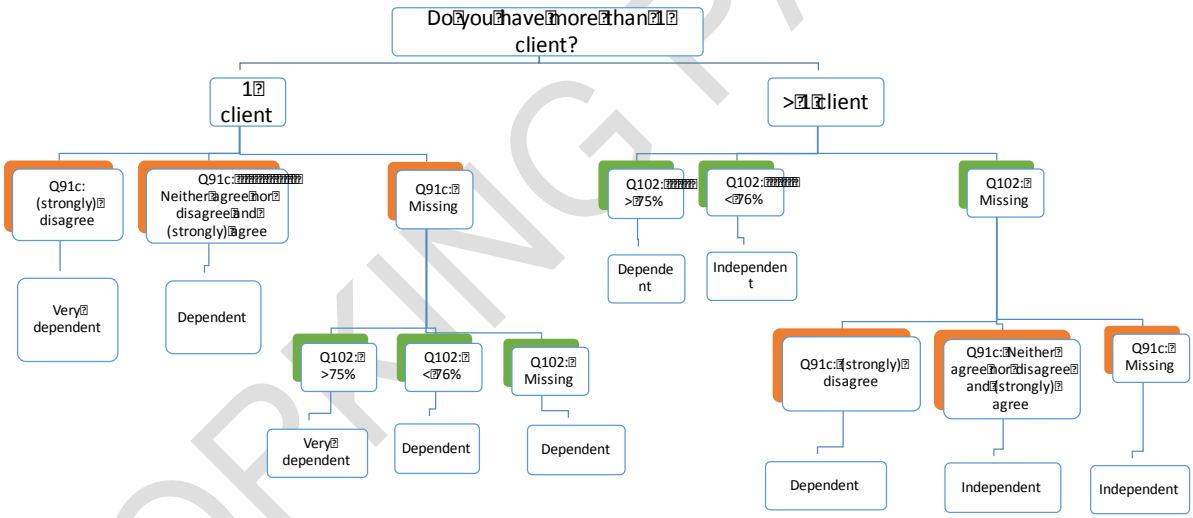
[3] The indicator for a weak relation between the economic activity and the nature or level of income was not included as the question (Q9b) used to represent this dimension can be interpreted in two ways. A positive answer to Question 9b "Get paid an agreed fee on a weekly or monthly basis? (Yes) can be interpreted as (1) dependent: a situation that resembles that of employees because the respondents' wage is determined in an agreement or as (2) independent: the respondent is sure to receive fee on a regular basis. This ambiguity was also noticed in exploratory cluster analyses as the favoured group of self-employed has a high probability of getting an agreed fee (See Appendix). In this exploratory cluster analyses, we also found that the probability of scoring high on the indictors of low authority is related to the probability of scoring high on the indicators of an (almost) exclusive relationship with one client. This is a prove that these indicators are measuring the same dimension.

To measure economic independence, we use three indicators:

- Question Q9d "Regarding your business, do you generally have more than one client or customer?" (yes/no).
- Question Q91c "It is easy for me to find new customers?" (5-point Likert scale ranging from "Strongly agree" to "Strongly disagree")
- Question Q102 "What proportion of revenue do you receive from your most important client?" (< 50%, 50-75 %, > 75%).

The classification of economic independency is represented in figure 2. Moreover, when there is a missing on question Q9d "Do you generally have more than one client or customer", we use the information given in questions Q102 and Q91c (given that there is no missing information on either of these questions). When a respondent mentions that he/she gets >75% of revenue from its most important client, this respondent is classified as dependent. When he/she gets <76% from its most important client and it is easy to find new costumer, the respondent is classified as 'independent'. When he/she gets <76% from its most important client and it is not easy to find new costumer, the respondent is classified as 'dependent'.

Figure A-2: The classification of economic independency using the EWCS2015-questionnaire



Thus, the economic independency indicator exists of three categories, ranging from very dependent to independent (see Table A-11).

Table A-11: Economic independency in EWCS2015, all countries (unweighted)

	Frequency	Percent	Valid Percent	Cumulative Percent
Very dependent	428	1	6	6
Dependent	2303	5	30	36
Independent	4883	11	64	100
Total	7614	17	100	
Missing				
Other: no answers on economic independence	543	1		
Freelancer/subcontractor with other or wage in Q8b: no answer on economic independence	13	0		
Employees	35571	81		
Unclear: wage	7	0		
Don't know or refusal	55	0		
Missing on Q9d (1 or more clients) and at least 1 indicator of economic independence	47	0		
Total	36236	83		
Total	43850	100		

A.2.3. Final classification

In order to create a final classification of self-employed, the 3-category indicator for economic independency was recoded into a two-category indicator: dependent (very dependent and dependent) and independent. Table A-12 represents the indicator *self_empl_magnitude* where alone working directors and freelancers/subcontractors are divided in a dependent and an independent group (based upon the indicator of economic dependency).

Table A-12: Final classification

	Frequency	Percent	Valid Percent	Cumulative Percent
Director: medium to big employer	373	1	5	5
Director: small employer	1416	3	17	22
Own account worker, independent	2308	5	28	50
Own account worker, dependent	1193	3	15	64
Farmer: no employer	1217	3	15	79
Freelancer/subcontractor, independent	395	1	5	84
Freelancer/subcontractor, dependent	301	1	4	88
Liberal profession	430	1	5	93
Other	584	1	7	100
Total self-employed	8217	19	100	
Missing				
Employees	35571	81		
Unclear: wage	7	0		
Don't know or refusal	55	0		
Total	35633	81		
Total	43850	100		

Task B: Describing the classification of self-employed

B.1. Introduction

In this chapter, the classifications of self-employed retained in part A (i.e. variable self_empl_detailed and self_empl_classification) will be described according to a number of individual and job quality characteristics. The results will be compared to employees. This descriptive overview consists of four main parts: socio-demographic background variables; economic sector and country-variation; intrinsic job quality indicators and indicators representing the employment conditions.

B.2. Short note on the methodology applied

Socio-demographic background characteristics are sex, age, composition of the household and education in three categories. Economic sectors and country-variations are represented by NACE-10 codes and a country-variable.

Intrinsic job characteristics consist of indicators determining the job content (i.e. learning opportunities, autonomy, discretion, low influence on decisions about work tasks and (no) complex tasks) and characteristics, which are commonly, described as working conditions. These working conditions can be of a rather physical (i.e. ergonomic demands, exposure to ambient risks, exposure to bio-chemical risks and to a bad physical environment) or a rather psychosocial nature (i.e. work speed, emotional demands, level of intensity, handling angry clients and exposure to any type of adverse social behaviour). Both employees and self-employed can be classified according to the same intrinsic job quality characteristics.

Eurofound has designed and operationalized job quality dimensions in the EWCS, in its report *Trends in Job Quality In Europe* (Eurofound ,2012). This operationalization of job quality will be used to study the job quality of self-employed. The job quality indices, however, are primarily aimed at the employee-population and might not always be applicable to the specific situation of self-employed. Therefore, the analysis will only include certain indicators of a job quality dimension if a job quality index cannot be applied to self-employed.

The determinants of employment quality cannot all be compared between self-employed and employees. Although both groups are included in the tables, when they cannot be compared this is mentioned in the table (using a "/"). The determinants of employment quality are: authority to dismiss employees, paid an agreed fee, easy to take time off, income quintiles, personal preference to be self-employed or had no alternatives, financially secure when having a long term sickness, working more than 47 hours a week, number of days a week worked, training opportunities, hard to bear the responsibility, doubting their role as boss-decision-maker, low work life balance and low job prospects.

Differences in the percentages of self-employed in terms of individual and job quality characteristics, are examined by a two-dimensional cross-tabulation with a test on significance by χ^2 ($p \leq 0.05$). All job quality characteristics were dichotomised so that an "acute category" (e.g. low job autonomy, defined as the lowest tertile of autonomy) could be contrasted and the prevalence of belonging to that acute category could be compared between the categories of self-employed and compared to the group of employees.

B.3. Description of the classification of self-employed

The categories of self-employed are represented using the final classification of self-employed constructed in part A. This is a nine-category variable including three dimensions: economic independency, self-perceived status in employment and magnitude of the economic activity. However, solely working directors and freelancers/subcontractors are divided in a dependent and an independent group (based upon the indicator of economic dependency). The category of employees is added to this variable.

The categories of self-employed are also represented using the indictor that is solely based on the respondent's self-perceived status in employment: Directors, farmers, subcontractors/freelancers, liberal professions and others. The category of employees is added to this variable too.

B.3.1. Socio-demographic background variables

In contrast to employees, more men than women are self-employed. The gender difference is the clearest in the category of medium to big employers. Self-employed are relatively older then employees – this is certainly the case for farmers and the category of "other" self-employed. Among dependent and independent freelancers there is a clear overrepresentation of the youngest age category (see Table B-1 and B-2).

Compared to employees, self-employed more frequently hold a diploma of tertiary education. This is most apparent in the group of liberal professions. Farmers more frequently hold a diploma of primary education, compared to the overall group of self-employed and compared to employees. In particular liberal professions and medium to big employers are highly educated (see Table B-1 and B-2).

According to the "life stage – household status-indicator", differences between self-employed and employees are rather limited. Also between the categories self-employed there is generally not so much variation according to life stage (see Table B-1 and B-2).

Table B-1: Percentages of categories of self-employed (self_empl_detailed) and employees by socio-demographic background variables in EWCS 2015, EU-28, weighted

	Medium to big employer	**Small employer**	**Own account worker, independent**	**Own account worker, dependent**	**Farmer**	**Freelancer/ subcontractor, independent**	**Freelancer/ subcontractor, dependent**	**Liberal profession**	**Other**	**Total self-employed**	**Employees**
Sex	***										
Men	76%	70%	60%	60%	61%	68%	65%	56 %	43%	62%	50%
Women	25%	30%	41%	40%	39%	32%	35%	45%	57%	39%	50%
Age	***										
Under 35	10%	13%	19%	16%	8%	31%	21%	12%	19%	16%	30%

35-49	53%	41%	39%	37%	35%	35%	31%	42%	24%	38%	40%
50+	37%	46%	42%	47%	57%	35%	47%	46%	57%	46%	30%
Education	***										
Primary	3%	5%	5%	9%	20%	4%	7%	1%	14%	7%	3%
Secondary	52%	73%	68%	64%	75%	68%	63%	6%	72%	64%	72%
Tertiary	45%	22%	27%	28%	5%	28%	31%	93%	14%	29%	14%
Life stage	***										
Single with parents (18-35 years)	0%	1%	1%	1%	1%	4%	1%	0%	2%	1%	2%
Single not with parents (<45 years)	3%	5%	5%	6%	3%	12%	9%	12%	7%	6%	9%
Couple without children (<45 years)	6%	9%	7%	5%	4%	11%	9%	9%	4%	7%	12%
Couple with children	59%	50%	44%	45%	32%	31%	28%	39%	24%	42%	40%
Couple without children (46-59 years)	9%	14%	11%	10%	11%	9%	7%	11%	13%	11%	10%
Couple without children (>60 years)	3%	3%	6%	6%	14%	6%	8%	10%	10%	7%	2%
Single without children (>50 years)	5%	6%	7%	8%	9%	9%	19%	6%	19%	8%	5%
Not classified	17%	12%	19%	18%	28%	19%	21%	15%	22%	18%	21%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Table B-2: Percentages of categories of self-employed (self_empl_classification) and employees by socio-demographic background variables in EWCS 2015, EU-28, weighted

	Directors	Farmers	Freelancers/ subcontractors	Liberal professions	Other
Sex	***				
Men	63%	62%	68%	58%	41%
Women	37%	38%	32%	42%	59%
Age	***				
Under 35	16%	7%	25%	11%	19%
35-49	40%	35%	35%	44%	24%
50+	43%	58%	40%	45%	57%

Education	***				
Primary	5%	19%	4%	1%	14%
Secondary	68%	72%	68%	8%	74%
Tertiary	27%	9%	28%	91%	12%
Life stage	***				
Single with parents (18-35 years)	1%	1%	3%	0%	2%
Single not with parents (<45 years)	5%	2%	11%	10%	6%
Couple without children (<45 years)	7%	4%	9%	9%	4%
Couple with children	46%	37%	33%	39%	25%
Couple without children (46-59 years)	11%	12%	9%	11%	11%
Couple without children (>60 years)	5%	12%	6%	8%	10%
Single without children (>50 years)	7%	9%	12%	6%	19%
Not classified	17%	24%	18%	17%	23%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

B.3.2. Economic sectors and countries

Using the NACE-classification, self-employed are clearly over-represented in agriculture, other services and construction. When looking at self-employed only, it becomes clear that the different categories of self-employed in our classification are not equally distributed across economic sectors. Dependent own account workers are more frequently found in other services and in the commerce and hospitality sector, compared to other sectors (see tables B-3 and B-4).

In the EU28-countries, self-employment is more frequent in the south (e.g. Greece, Italy, Portugal) and less frequent in the north (e.g. Sweden and Denmark). Also important differences among countries in the distribution of the different types of self-employed exist, showing for example, an over-representation of medium and big employers in Germany, a high presence of farmers in Portugal and Romania or many liberal professions among the self-employed in Luxembourg (see tables B-5 and B-6).

Table B-3: Percentages of categories of self-employed (self_empl_detailed) and employees by economic sector in EWCS 2015, EU-28, weighted

	Medium to big employer	**Small employer**	**Own account worker, independent**	**Own account worker, dependent**	**Farmer**	**Freelancer/ subcontractor, independent**	**Freelancer/ subcontractor, dependent**	**Liberal profession**	**Other**	**Total self-employed**	**Employees**
NACE	***										
Agriculture	2%	14%	3%	12%	93%	7%	8%	0%	19%	14%	2%
Industry	15%	13%	10%	8%	3%	9%	11%	2%	8%	9%	17%
Construction	17%	9%	11%	13%	0%	16%	10%	4%	5%	10%	5%
Commerce and hospitality	23%	37%	30%	16%	1%	13%	8%	6%	11%	22%	20%
Transport	4%	2%	4%	6%	0%	4%	7%	0%	1%	3%	5%
Financial services	8%	4%	5%	4%	0%	4%	1%	4%	4%	4%	4%
Public administration	0%	0%	1%	0%	0%	0%	0%	1%	1%	0%	7%
Education	2%	1%	4%	3%	0%	7%	7%	1%	5%	3%	10%
Health	11%	1%	5%	4%	0%	2%	5%	29%	6%	6%	13%
Other services	19%	18%	28%	36%	3%	38%	43%	54%	39%	28%	19%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Table B-4: Percentages of categories of self-employed (self_empl_classification) and employees by economic sector in EWCS 2015, EU-28, weighted

	Directors	Farmers	Freelancers/ subcontractors	Liberal professions	Other
NACE	***				
Agriculture	4%	92%	9%	0%	21%
Industry	11%	3%	9%	2%	8%
Construction	12%	0%	14%	4%	5%
Commerce and hospitality	30%	1%	12%	6%	12%
Transport	4%	0%	5%	0%	1%
Financial services	5%	0%	3%	5%	5%
Public administration	0%	0%	0%	1%	1%
Education	3%	0%	7%	1%	4%
Health	4%	0%	3%	31%	6%
Other services	27%	4%	38%	50%	39%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Table B-5: Percentages of categories of self-employed (self_empl_detailed) and employees by country in EWCS 2015, EU-28, weighted

	Medium to big employer	Small employer	Own account worker, independent	Own account worker, dependent	Farmer	Freelancer/ subcontractor, independent	Freelancer/ subcontractor, dependent	Li pro
EU28 countries	***							
Belgium	9%	23%	27%	11%	1%	3%	1%	
Bulgaria	8%	20%	31%	14%	12%	3%	1%	
Czech Republic	6%	19%	46%	7%	1%	3%	0%	
Denmark	9%	24%	33%	9%	5%	9%	0%	
Germany	12%	24%	21%	12%	0%	6%	5%	
Estonia	10%	30%	20%	10%	0%	10%	0%	
Greece	5%	19%	40%	13%	13%	1%	0%	
Spain	5%	18%	43%	12%	7%	4%	2%	
France	6%	28%	37%	11%	3%	3%	1%	
Ireland	11%	19%	31%	17%	11%	0%	2%	
Italy	3%	19%	37%	13%	4%	5%	2%	
Cyprus	0%	30%	40%	20%	0%	10%	0%	
Latvia	10%	25%	25%	15%	10%	0%	0%	
Lithuania	3%	27%	17%	17%	17%	3%	6%	
Luxembourg	0%	33%	33%	0%	0%	0%	0%	
Hungary	2%	18%	22%	20%	10%	1%	5%	
Malta	0%	33%	33%	33%	0%	0%	0%	
Netherlands	8%	15%	46%	14%	1%	1%	2%	
Austria	1%	22%	16%	9%	9%	11%	14%	
Poland	5%	15%	18%	15%	17%	3%	4%	
Portugal	5%	15%	25%	9%	36%	2%	1%	
Romania	1%	15%	5%	6%	34%	11%	12%	
Slovenia	5%	18%	22%	14%	14%	5%	5%	
Slovakia	2%	14%	35%	30%	2%	2%	2%	
Finland	9%	19%	25%	13%	14%	6%	2%	
Sweden	4%	24%	46%	1%	6%	9%	4%	
United Kingdom	5%	12%	40%	17%	3%	9%	5%	
Croatia	3%	16%	16%	8%	30%	3%	6%	

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Table B-6: Percentages of categories of self-employed (self_empl_classification) and employees by country in EWCS 2015, EU-28, weighted

	Directors	Farmers	Freelancers/ subcontractors	Liberal professions	Other	TOTAL (self-employed)	Self-employed	Employees
EU28 countries	***							
Belgium	70%	1%	6%	12%	10%	100%	15%	86%
Bulgaria	69%	13%	5%	9%	3%	100%	15%	85%
Czech Republic	70%	5%	7%	15%	3%	100%	15%	86%
Denmark	63%	13%	13%	5%	5%	100%	6%	94%
Germany	63%	1%	14%	15%	7%	100%	11%	89%
Estonia	70%	0%	20%	10%	0%	100%	11%	89%
Greece	71%	18%	2%	5%	3%	100%	37%	63%
Spain	73%	8%	8%	8%	3%	100%	18%	82%
France	71%	11%	7%	9%	2%	100%	9%	91%
Ireland	70%	15%	4%	9%	2%	100%	19%	81%
Italy	69%	6%	7%	7%	11%	100%	28%	72%
Cyprus	80%	0%	20%	0%	0%	100%	19%	81%
Latvia	65%	15%	5%	0%	15%	100%	15%	85%
Lithuania	59%	24%	10%	3%	3%	100%	15%	85%
Luxembourg	33%	0%	33%	33%	0%	100%	8%	92%
Hungary	59%	13%	5%	9%	14%	100%	15%	85%
Malta	100%	0%	0%	0%	0%	100%	11%	89%
Netherlands	77%	5%	3%	9%	7%	100%	15%	85%
Austria	40%	15%	28%	7%	10%	100%	13%	87%
Poland	47%	19%	10%	6%	18%	100%	16%	84%
Portugal	52%	38%	2%	4%	3%	100%	26%	74%
Romania	19%	38%	29%	2%	12%	100%	17%	83%
Slovenia	50%	14%	18%	5%	14%	100%	17%	84%
Slovakia	81%	2%	5%	5%	7%	100%	12%	88%
Finland	60%	19%	8%	4%	9%	100%	18%	82%
Sweden	67%	10%	18%	6%	0%	100%	7%	93%
United Kingdom	69%	6%	15%	6%	4%	100%	16%	84%
Croatia	41%	30%	11%	3%	16%	100%	16%	84%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

B.3.3. Intrinsic job quality indicators[4]

Compared to employees, self-employed less frequently report to have low autonomy and low task discretion. Dependent freelancers/subcontractors, farmers and other self-employed more frequently report not to learn new things, compared to the other categories of self-employment and compared to employees. Compared to self-employed, employees more frequently report to work at high speed. (See Table B-7a).

Table B-7a: Percentages of categories of self-employed (self_empl_detailed) and employees by job content and psychosocial demands in EWCS 2015, EU-28, weighted

	Not learning new things	**Low Autonomy**	**Low task discretion**	**High intensity (Job quality index)**	**Working at high speed**
	***	***	***	***	***
Director: medium to big employer	17%	5%	13%	43%	61%
Director: small employer	25%	6%	17%	32%	64%
Own account worker, independent	24%	6%	15%	19%	53%
Own account worker, dependent	36%	16%	21%	21%	47%
Farmer: no employer	46%	11%	21%	13%	52%
Freelancer/subcontractor, independent	26%	21%	29%	32%	65%
Freelancer/subcontractor, dependent	44%	26%	34%	24%	54%
Liberal professions	9%	10%	19%	34.2%	63%
Other self-employed	62%	20%	29%	16.9%	36%
Total self-employed	**32%**	**13%**	**22%**	**26.1%**	**55%**
Employees	29%	39%	51%	24.2%	61%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Compared to employees, self-employed have more influence over decisions about their work tasks. Nevertheless, when comparing different categories of self-employed, dependent freelancers/subcontractors and other self-employed more frequently report a low influence over decisions about their work tasks (See Table B-7b).

[4] Note on the construction of the intrinsic quality of work indicators: (1) "not learning new things" equals the category "no" of the item "Q53f"; (2) "low autonomy" represents the lowest tertile of the EUROFOUND-created scale "autonomy"; (3) "low task discretion" represents the corresponding category in the EUROFOUND-created indicator "discretidicho"; (4) "high intensity" represents the highest tertile of the EUROFOUND-created job quality index "intens"; (5) "working at high speed" corresponds to the category "at least a quarter of the time" of the item "Q49a_1"; (6) "low decision power" corresponds to the categories "rarely" and "never" of the item "Q61n"; (7) "no complex tasks" corresponds to the category "no" of the item "Q53e"; (8) "working with angry clients" equals the category "at least a quarter of the time" of the item "Q30g_1"; (9) "emotionally disturbing situations" corresponds to the category "at least a quarter of the time" of the item "Q30h_1"; (10) "adverse social behaviour" corresponds to the category "yes" of the EUROFOUND-created indicator "asb_d"; (11) "high ergonomic risk" represents the highest tertile of the EUROFOUND-created indicator "ergon_rsk"; (12) "high ambient risk" represents the highest tertile of the EUROFOUND-created indicator "ambient_rsk"; (13) "high biochemical risk" represents the highest tertile of the EUROFOUND-created indicator "biochem_rsk"; (14) "bad physical environment" represents the highest tertile of the EUROFOUND-created job quality index "envsec";

Table B-7b: Percentages of categories of self-employed (self_empl_detailed) and employees by job content and psychosocial demands in EWCS 2015, EU-28, weighted

	Low decision power	No complex tasks	Working with angry clients	Emotionally disturbing situations	Adverse social behaviour
	***	***	***	***	***
Director: medium to big employer	2%	21%	51%	32.0%	10.6%
Director: small employer	1%	36%	41%	25.8%	8.8%
Own account worker, independent	4%	40%	40%	23.6%	10.4%
Own account worker, dependent	7%	44%	33%	28.6%	7.5%
Farmer: no employer	6%	52%	12%	11.0%	1.8%
Freelancer/subcontractor, independent	15%	38%	36%	31.1%	19.0%
Freelancer/subcontractor, dependent	15%	51%	25%	26.3%	17.0%
Liberal professions	3%	12%	43%	47.8%	11.9%
Other self-employed	24%	66%	23%	26.6%	10.7%
Total self-employed	**6%**	**40%**	**34%**	**28.1%**	**10.9%**
Employees	31%	39%	36%	32.0%	16.7%

When comparing different categories of self-employed, liberal professions and freelancers/subcontractors more frequently report to work at high speed. Directors who are medium to big employers report the highest percentage of intensity, compared to the alternative categories of self-employed (see Table B-8a). Other self-employed more frequently report not to have complex tasks, compared to the alternative categories of self-employed and compared to employees (see Table B-8b).

Table B-8a: Percentages of categories of self-employed (self_empl_classification) and employees by job content and psychosocial demands in EWCS 2015, EU-28, weighted

	Not learning new things	Low Autonomy	Low task discretion	High intensity (job quality index)	Working at high speed
	***	***	***	***	***
Directors	26%	8%	16%	24.2%	55%
Farmers	41%	10%	19%	15.4%	52%
Freelancers/subcontractors	33%	21%	31%	29.7%	60%
Liberal professions	10%	10%	19%	34.9%	60%
Other self-employed	63%	19%	27%	15.6%	35%
Total self-employed	**34%**	**14%**	**22%**	**24.0%**	**53%**
Employees	29%	39%	51%	33.2%	61%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Adverse social behaviour is more frequently reported by employees and freelancers/subcontractors, compared to the alternative categories of self-employed (see Table B-12).

Table B-8b: Percentages of categories of self-employed (self_empl_classification) and employees by job content and psychosocial demands in EWCS 2015, EU-28, weighted

	Low decision power	**No complex tasks**	**Working with angry clients**	**Emotionally disturbing situations**	**Adverse social behaviour**
	***	***	***	***	***
Directors	4%	39%	40%	25.5%	9.7%
Farmers	5%	45%	15%	13.7%	1.7%
Freelancers/subcontractors	14%	45%	35%	29.5%	16.9%
Liberal professions	2%	13%	45%	46.6%	11.7%
Other self-employed	24%	65%	22%	26.6%	10.9%
Total self-employed	**6%**	**41%**	**31%**	**28.4%**	**10.2%**
Employees	31%	39%	39%	32.0%	16.7%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Table B-9 and B-10 shows all physical risks a person could be exposed to for variable self_empl_detailed and self_empl_classification). Dependent freelancers/subcontractors are less frequently exposed to a high ergonomic risk compared to their independent counterparts (see Table B-9). The same trend is seen for all other indicators of physical risks.

Table B-9: Percentages of categories of self-employed (self_empl_detailed) and employees by physical demands in EWCS 2015, EU-28, weighted

	High ergonomic risk	**High ambient risk**	**High bio-chemical risk**	**Bad physical Environment (job quality index)**
	***	***	***	***
Director: medium to big employer	16%	14%	20%	18%
Director: small employer	34%	28%	26%	37%
Own account worker, independent	34%	22%	26%	36%
Own account worker, dependent	42%	29%	27%	39%
Farmer: no employer	47%	50%	28%	61%
Freelancer/subcontractor, independent	40%	31%	26%	44%
Freelancer/subcontractor, dependent	26%	24%	19%	29%
Liberal professions	11%	8%	20%	15%
Other self-employed	24%	26%	24%	33%
Total self-employed	**30%**	**26%**	**24%**	**35%**
Employees	29%	26%	25%	34%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Farmers have the highest percentages of physical risks (across all indicators), compared to employees and compared to the alternative categories of self-employed (see Table B-10).

Table B-10: Percentages of categories of self-employed (self_empl_classification) and employees by physical demands in EWCS 2015, EU-28, weighted

	High ergonomic risk	**High ambient risk**	**High bio-chemical risk**	**Bad physical Environment (job quality index)**
	***	***	***	***
Directors	34%	24%	25%	35%
Farmers	45%	48%	29%	59%
Freelancers/subcontractors	34%	29%	24%	37%
Liberal professions	10%	7%	21%	14%
Other self-employed	23%	27%	24%	34%
Total self-employed	**29%**	**27%**	**25%**	**36%**
Employees	29%	26%	25%	34%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

B.3.4. Employment conditions (manifest cluster variables)[5]

The lowest income quintile is more frequently found in dependent freelancers/subcontractors and dependent own account workers, compared to their independent counterparts (see Table B-13).

Table B-11: Percentages of categories of self-employed (self_empl_detailed) and employees by income (country-specific quantiles) in EWCS 2015, EU-28, weighted

Income quintiles	**1**	**2**	**3**	**4**	**5**
	***				
Director: medium to big employer	2 %	7%	11%	19%	62%
Director: small employer	9%	12%	15%	16%	48%
Own account worker, independent	26%	15%	17%	19%	24%
Own account worker, dependent	31%	14%	18%	12%	25%
Farmer: no employer	42%	19%	13%	13%	13%
Freelancer/subcontractor, independent	36%	14%	10%	17%	22%
Freelancer/subcontractor, dependent	45%	17%	17%	11%	11%
Liberal professions	6%	8%	13%	12%	61%
Other self-employed	57%	14%	10%	13%	7%
Total self-employed	**28%**	**13%**	**14%**	**15%**	**30%**
Employees	25%	14%	15%	16%	30%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

[5] The construction process of all employment conditions indicators included in this section is discussed under Task C.

The highest income quintile is more frequently reported by liberal professions, compared to employees and the alternative categories of self-employed (see Table B-11).

Table B-12: Percentages of categories of self-employed (self_empl_classification) and employees by income (country-specific quantiles) in EWCS 2015, EU-28, weighted

Income quintiles	**1**	**2**	**3**	**4**	**5**
	***				
Directors	21%	13%	17%	17%	32%
Farmers	35%	19%	12%	15%	20%
Freelancers/subcontractors	35%	16%	12%	14%	23%
Liberal professions	5%	7%	12%	12%	64%
Other self-employed	58%	14%	9%	14%	5%
Total self-employed	**31%**	**14%**	**12%**	**14%**	**29%**
Employees	19%	20%	22%	20%	19%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Dependent freelancers/subcontractors and dependent own account workers are more frequently paid an agreed fee compared to their independent counterparts (see Table B-12).

Table B-13: Percentages of categories of self-employed (self_empl_detailed) and employees by employment conditions in EWCS 2015, EU-28, weighted

	No Authority to hire/dismiss	**Paid agreed fee**	**Difficult to take time off**	**No alternatives**	**Sickness: would be insecure**
	***	***	***	***	***
Director: medium to big employer	4%	63%	15%	6%	28%
Director: small employer	2%	47%	19%	12%	41%
Own account worker, independent	26%	33%	19%	21%	55%
Own account worker, dependent	43%	34%	24%	23%	54%
Farmer: no employer	44%	14%	14%	30%	50%
Freelancer/subcontractor, independent	62%	43%	19%	31%	55%
Freelancer/subcontractor, dependent	83%	50%	26%	38%	46%
Liberal professions	21%	39%	17%	8%	37%
Other self-employed	84%	60%	16%	28%	41%
Total self-employed	**41%**	**42%**	**19%**	**22%**	**45%**
Employees	-	-	37%	-	-

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Compared to employees, self-employed less frequently report that it is difficult to take time off at short notice (see Table B-13). Freelancers/subcontractors more frequently report that they had no alternative than becoming self-employed, compared to the other groups of self-employment (see Table B-14).

Table B-14: Percentages of categories of self-employed (self_empl_classification) and employees by employment conditions in EWCS 2015, EU-28, weighted

	No Authority to hire/dismiss	**Paid agreed fee**	**Difficult to take time off**	**No alternatives**	**Sickness: would be insecure**
	***	***	***	***	***
Directors	22%	62%	20%	19%	16%
Farmers	36%	78%	13%	25%	22%
Freelancers/ subcontractors	63%	53%	21%	31%	21%
Liberal professions	18%	60%	20%	7%	16%
Other self-employed	-	-	16%	-	-
Total self-employed	**35%**	**63%**	**18%**	**21%**	**19%**
Employees	-	-	37%	-	-

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Table B-15 and Table B-16 show some indicators of the working time arrangements. Compared to employees, self-employed have less regularity. Own account workers report a better work life balance than directors who are employers (see Table B-13).

Table B-15: Percentages of categories of self-employed (self_empl_detailed) and employees by working times in EWCS 2015, EU-28, weighted

	Low regularity	**Works 48 hours or more**	**Low work-life balance**	**Works 1 to 5 days a week**	**6 days a week**	**7 days a week**
	***	***	***	***	***	***
Director: medium to big employer	66%	58%	66%	53%	38%	9%
Director: small employer	57%	56%	60%	36%	44%	21%
Own account worker, independent	57%	35%	43%	49%	37%	15%
Own account worker, dependent	58%	32%	41%	59%	25%	17%
Farmer: no employer	71%	49%	47%	20%	30%	49%
Freelancer/subcontractor, independent	70%	24%	46%	64%	27%	9%
Freelancer/subcontractor, dependent	53%	17%	35%	67%	25%	9%

Liberal professions	60%	37%	51%	62%	35%	3%
Other self-employed	65%	20%	26%	66%	16%	18%
Total self-employed	**62%**	**36%**	**46%**	**53%**	**31%**	**17%**
Employees	24%	11%	31%	85%	12%	2%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Farmers more frequently report to work 7 days a week compared to all other categories of self-employed and compared to employees (see Table B-16).

Table B-16: Percentages of categories of self-employed (self_empl_classification) and employees by working times in EWCS 2015, EU-28, weighted

	Low regularity	**Works 48 hours or more**	**Low work-life balance**	**Works 1 to 5 days a week**	**6 days a week**	**7 days a week**
	***	***	***	***	***	***
Directors	57%	41%	49%	48%	37%	15%
Farmers	72%	50%	49%	22%	28%	50%
Freelancers/subcontractors	64%	25%	43%	61%	28%	11%
Liberal professions	61%	40%	54%	63%	35%	2%
Other self-employed	65%	20%	27%	65%	16%	18%
Total self-employed	**64%**	**35%**	**44%**	**52%**	**29%**	**19%**
Employees	24%	11%	31%	85%	12%	2%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Dependent freelancers/subcontractors and dependent own account workers are more frequently unsure of being their own boss compared to their independent counterparts (see Table B-17).

Table B-17: Percentages of categories of self-employed (self_empl_detailed) and employees by motivation and training in EWCS 2015, EU-28, weighted

	Unsure of being own boss - taking decisions	**Hard to be self-employed**	**No training**	**Low job prospects**
	***	**	***	***
Director: medium to big employer	9%	28%	61%	30%
Director: small employer	10%	29%	75%	45%
Own account worker, independent	11%	24%	79%	54%
Own account worker, dependent	18%	29%	85%	62%

Farmer: no employer	20%	26%	93%	67%
Freelancer/subcontractor, independent	27%	26%	84%	59%
Freelancer/subcontractor, dependent	35%	29%	91%	58%
Liberal professions	7%	21%	49%	37%
Other self-employed	71%	9%	84%	82%
Total self-employed	**23%**	**25%**	**78%**	**55%**
Employees	-	-	60%	28%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Self-employed more frequently report to have no training or to have low job prospects compared to employees (see Table B-18).

Table B-18: Percentages of categories of self-employed (self_empl_classification) and employees by motivation and training in EWCS 2015, EU-28, weighted

	Unsure of being own boss - taking decisions	**Hard to be self-employed**	**No training**	**Low job prospects**
	***	**	***	***
Directors	12%	26%	78%	51%
Farmers	18%	29%	91%	64%
Freelancers/subcontractors	28%	26%	85%	59%
Liberal professions	7%	20%	46%	36%
Other self-employed	-	-	84%	83%
Total self-employed	**16%**	**26%**	**77%**	**59%**
Employees	-	-	60%	28%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Task C: Creation of an empirical typology of self-employed

C.1. Introduction

In this chapter the construction process of an empirical typology of self-employed, based on their characterizing attributes, is reported. For creating this typology Latent Class Cluster Analysis (Hagenaars & McCutcheon, 2002) is applied, using the Latent Gold ™ software package.

In the remainder of this report, first the procedure is described in detail. Second the basic constituting manifest variables and their recodifications are described. Then the final cluster solution and its interpretation are discussed. Finally, a summary description of this final solution is described below.

C.2. Detailed description of the applied procedure

C.2.1. Latent Class Cluster Analysis

A Latent Class Cluster Analysis (LCCA (Hagenaars & McCutcheon, 2002)) was conducted on 15 indicators characterizing the professional situation of self-employed. Hereto data from the 2015 EWCS (only the EU 28-countries) was used and the LCCA was performed using the Latent Gold 4.5™ software.

LCCA is a non-parametric alternative for Structural Equation Modelling (SEM). As the technique is person-centred, it can be conceived as more holistic than the variable-centred approach used in structural equation modelling (Marsh, Lüdtke, Trautwein, & Morin, 2009; Van Aerden, Moors, Levecque, & Vanroelen, 2014). LCCA uses the distribution of the indicators over the sample to create an empirical typology of – in this case – employment arrangements among self-employed. In other words, the self-employed included in the sample are rearranged in a limited number of categories (clusters), based on their degree of similarity regarding the manifest indicators reflecting their professional situation.

The best-fitting model is obtained by stepwise extending the number of clusters – i.e. the number of classes/categories in a newly created latent typology. In first instance, changes in formal indicators of model fit (the Akaike Information Criterion, the Bayesian Information Criterion and the Consistent Akaike Information Criterion) are examined. These criteria help to find the most parsimonious well-fitting model (Hagenaars and McCutcheon 2002). The lower their values, the better the model fits the data (that is, the more accurate the relationships predicted by the model represent the real pattern of relations observed in the data). In second instance, in the case of two LCCA solutions with a relatively similar fit, the model with less clusters is preferred over the model offering more but smaller clusters (few observed cases), given that both models had a certain stability in terms of the allocation of respondents to the common clusters (which can be tested by correlating both solutions in terms of the probabilities to belong to the clusters). In third instance, substantial interpretation of the relations between the clusters and indicators (the conditional probabilities) helps to decide on the final number of clusters to be retained.

Cluster solutions can be refined and consolidated by eliminating manifest variables contributing poorly to the final cluster solution; by extending the number of iterations allowed for model convergence and (simultaneously) making convergence criteria more strict; and by

avoiding "local maxima" through imposing different starting values (Vermunt & Magidson, 2005). Restricting the fitting procedure to the EM-algorithm, instead of the Newton-Raphson algorithm is also advised in case of a high amount of manifest variables – as was the case in our analyses (Vermunt & Magidson, 2005). Remaining high error variances between manifest variables can be supressed by specifying direct associations between these manifest variables. However, these direct associations need to be substantially interpretable (McCutcheon, 1987) and (too) many remaining high error variance simply indicate towards a sub-optimal cluster solution.

As countries differ in many ways regarding the organisation of employment, it is likely that not all manifest indicators share exactly the same meaning in every country (e.g. its possible that "having authority to dismiss employees" has another meaning depending on country-specific labour market regulations). To correct for such differences, direct associations between the clusters and the separate countries can be specified. In that way, a "standard EU-cluster solution" is obtained, but the solution loses some (country-)specificity. Because this specificity seemed relevant in this context, it was however decided not to apply this option. Instead we applied the weighting variable "W5-EU28_new", equilibrating the relative importance of each country. This seemed to be the most appropriate approach for receiving a final cluster solution offering a realist representation of the EU-wide reality.

Finally, we used the option to include missing data by directly modelling it in the likelihood function of the model, assuming missing at random (MAR). The latter is a much more valid assumption than the missing completely at random assumption of – for instance – the list wise deletion of missing cases procedure, which assumes randomness of missing data. MAR does not make such an assumption and takes into account that missingness may depend on the other observed characteristics in the model. Using this option in Latent Gold implies that the classification in the cluster typology for a case "X" with a missing value on one or a few manifest indicators is based only on the manifest variables that are observed for that case concerned. The latent class probabilities of the missing manifest variables are a function of those of the non-missing manifest variables.

Every cluster solution should of course make sense from a theoretical point of view. Hence, model fit is but one side of the coin. The choice of the final cluster solution should be complemented by the substantive interpretation of the obtained clusters. Therefore, we examined the probability scores of belonging to a particular cluster. These latent class probabilities include the information regarding the uncertainty of classifying cases in a particular cluster. Next, we validated our typology as a measurement instrument by showing clear relations between different employment arrangements and a selection of relevant background variables.

C.2.2. Model selection procedure

Step 1. A preliminary selection of indicators (see table C-1) was obtained by scrutinizing the questionnaire. Afterwards, the selection of indicators was discussed and validated in the research team and with the EUROFOUND project coordinators. This preliminary set of variables was prepared for the cluster analysis by simplifying and recoding of the original conceptualisation (see infra). Next preliminary analyses were made, including a missing values analysis and investigating the mutual interrelatedness of the selected indicators. In cases of highly correlated indicators grasping into the same dimension, only one indicator was selected for the cluster analysis, as it simplified our model without losing too much information from omitting a relevant dimension. As a general rule, in such cases the variable

with the lowest amount of missing values was selected (although testing alternative models sometimes made us decide to use the variable with the highest number of missings).

Step 2. Initial models were fitted. In these initial models no weighting variable was included, no direct effects between manifest variables were specified and standard converging criteria (EM-algorithm 250 iterations and NR-algorithm 50 iterations) were applied. These models contained most of the manifest indicators listed in table C-1, except for:

- (5) because of the high correlation with (4) and the high number of missing in (5);
- (16) because of the high correlation with (17) and (17) seemed to be more relevant for self-employed;
- (2) and (3) because they conceptually overlap (and are highly correlated). After testing both possibilities, indicator (3) was selected over indicator (2). This decision was based on the fact that there is a clear cluster pattern between those self-employed working with few employees (1-8) and those working with more then 8 employees. Also indicator (2) repeatedly causes identification problems. Note however that indicator (3) is not necessary interpret as having "own employees": in some cases respondents could have interpret this question as "working together with x employees (for example, in the case of freelancers being hired by a company where several other employees or self-employed are active).
- (21) and (22) because when estimating a model including both indicators, identification problems emerged (which might be due to their high correlation). Finally the indicator "receiving training" has been chosen, as it more closely represents the "employment conditions", while "learning opportunities" rather seem to reflect an intrinsic outcome related to the quality of work.

Table C-1: Initial set of selected variables

Variable name	Limitations
Magnitude-dimension	
(1) Does your business have one site or multiple establishments (more than one site)?	
(2) Regarding your business, do you… - Have employees (working for you)?	Overlap with (3)
(3) How many employees in total work in your business?	Overlap with (2)
Economic independency-dimension	
(4) Regarding your business, do you… - Generally, have more than one client or customer?	High correlation with (5)
(5) What proportion of revenue do you receive from your most important client?	High amount of missing; high correlation with (4)
(6) Is it easy to find new customers	
Economic sustainability-dimension	
(7) Since you started your main job, has the number of employees at your workplace increased, stayed the same or decreased?	
(8) During the last three years has there been a restructuring or reorganization at the workplace that has substantially affected your work?	
(9) Income in country specific quintiles	
(10) When you became self-employed, was it mainly through your own personal preference or because you had no better alternatives for work?	
(11) If I had a long-term sickness, I would be financially secure?	
(12) Having a second job	
Discretion-dimension	
(13) Regarding your business, do you… - Have the authority to hire or dismiss employees?	
(14) Regarding your business, do you… - Get paid an agreed fee on a weekly or monthly basis?	
(15) Is it easy to take time off at short notice for personal or family reasons	
Working hours/intensity-dimension	
(16) Working 48 hours or more in main paid job	High correlation with (17)
(17) How many days per week do you usually work in your main paid job?	High correlation with (16)
(18) Working the same number of hours per day and per week, same number of days per week and fixed starting and finishing times (regularity index)	
Motivation for being self-employed	
(19) Self-employed doubting there role as boss-decision maker	
(20) I find it hard bearing the responsibility of running my business	
Human capital-dimension	
(21) Having received training paid by employer or by self if self-employed	Moderate correlation

	with (22)
(22) Generally, does your main paid job involve… - Learning new things	Moderate correlation with (21)

Irrespective of model specification, the ideal cluster solution ranged between four and six clusters. From six clusters onwards (multiple) convergence problems emerged. On top, it was clear that some manifest variables had a low contribution to the selected model solutions. Omitting "redundant variables" from the model partly resolved the convergence problems without fundamentally altering the cluster solution obtained. The following variables have been dropped:

- (7) Since you started your main job, has the number of employees at your workplace increased, stayed the same or decreased?;
- (12) Having a second job;
- (18) Working the same number of hours per day and per week, same number of days per week and fixed starting and finishing times (regularity index);

Table C-2: Final set of selected variables

Magnitude-dimension
(1) Does your business have one site or multiple establishments (more than one site)?
(3) How many employees in total work in your business?
Economic independency-dimension
(4) Regarding your business, do you… - Generally, have more than one client or customer?
(6) Is it easy to find new customers
Economic sustainability-dimension
(8) During the last three years has there been a restructuring or reorganization at the workplace that has substantially affected your work?
(9) Income in country specific quintiles
(10) When you became self-employed, was it mainly through your own personal preference or because you had no better alternatives for work?
(11) If I had a long-term sickness, I would be financially secure?
Discretion-dimension
(13) Regarding your business, do you… - Have the authority to hire or dismiss employees?
(14) Regarding your business, do you… - Get paid an agreed fee on a weekly or monthly basis?
(15) Is it easy to take time off at short notice for personal or family reasons
Working hours/intensity-dimension
(17) How many days per week do you usually work in your main paid job?
Motivation for being self-employed
(19) Self-employed doubting there role as boss-decision maker
(20) I find it hard bearing the responsibility of running my business
Human capital-dimension
(21) Having received training paid by employer or by self if self-employed

Step 3. In the next step, the model was refined. Table C-2 shows the final selection of indicators underpinning the final cluster solution. Besides to building a more parsimonious model, also other actions were taken to consolidate the final model. First of all, several approaches to deal with inter-country heterogeneity in the manifest indicators were tested. Dealing with country heterogeneity by using the EU-28 sample weight (W5-EU28-New) seems to give the best solutions. Second, in order to obtain a stable and reliable solution, iteration criteria were adjusted: the EM algorithm was set on 200.000 iterations and the NR-algorithm was set to zero (as recommended by Vermunt & Magidson, 2005). Starting values were also varied. Finally, the residuals between the manifest variables were inspected for the pre-final model. It can be noticed that the number of high residuals is fairly low in general. In the end, only the residual between indicator (6) and (11) was specified in the final model: this relation presented the highest remaining residual value (75.6002), while it is the only association that can be given a clear substantial interpretation (i.e. experiencing difficulties finding new clients clearly represents a more threatening situation in case of discontinuities in one's activities – as is the case with illness). In that way the final model was ran several times and each time an identical solution was found. The final model contains 15 indicators in total and points towards a 5-cluster solution as the best-fitting model. This final model is further described in section C.4. of this report.

C.3. Description of the manifest variables

In this paragraph all manifest variables included in the final cluster solution are described. Some information on their construction is also provided. All tables show the real (unweighted) observations.

C.3.1. Number of business sites (magnitude dimension)

The indicator used in the cluster analysis is directly adopted from the original survey item. The indicator included in the cluster analysis is described in table C-3.

Table C-3: Does your business have one site or multiple establishments (more than one site)? (Y15_Q15b)

	Frequency	Percent	Valid Percent
One site only	4240	71	88
More than one site	564	10	12
Total	4804	81	100
Missing			
Don't know (spontaneous)	*54*	*1*	
Refusal (spontaneous)	*19*	*0*	
System	*1084*	*18*	
Total	*1157*	*19*	
Total	**5961**	**100.0**	

C.3.2. Number of employees (magnitude dimension)

This indicator is derived from question Q16_b in the questionnaire. Depending from the type of self-employed, this question know two possible interpretations: (1) either it can be interpreted as employees hired by the respondent in his/her own business; (2) or it can be interpreted as the number of employees one is confronted with in the organisation the respondent is working for (e.g. as a freelancer or subcontractor). In the latter case these may be employees of the client company one is working for, or other freelancers, subcontractors. We believe that this dual interpretation may be offering more insight into the situation of specific types of self-employed, rather then being a source of bias.

Table C-4: How many employees in total work in your company/organisation/business? (Rec_Q16b)

	Frequency	Percent	Valid Percent
Works alone, no employees	3092	52	55
1-8 employees	2111	35	37
>8 employees	425	7	8
Total	5628	94	100
Missing			
Don't know (spontaneous)	*231*	*4*	
No answer	*102*	*2*	
Total	*333*	*6*	
Total	**5961**	**100**	

C.3.3. More than one client (economic independency-dimension)

The indicator used in the cluster analysis is directly adopted from the original survey item. The indicator included in the cluster analysis is described in table C-5.

Table C-5: Regarding your business, do you… - Generally, have more than one client or customer? (Y15_Q9d)

	Frequency	Percent	Valid Percent
Yes	4400	74	81
No	1047	18	19
Total	5447	91	100
Missing			
Don't know (spontaneous)	*36*	*1*	
Refusal (spontaneous)	*13*	*0*	
System	*465*	*8*	
Total	*514*	*9*	
Total	**5961**	**100.0**	

C.3.4. Finding new costumers (economic independency-dimension)

This indicator is derived from question Q91c in the questionnaire. The original answering categories were reduced into the three categories shown in table C-6.

Table C-6: Is it easy to find new costumers? (Y15_Q91c_rec)

	Frequency	Percent	Valid Percent
(Strongly) agree	2359	40	48
Neither agree nor disagree	1412	24	28
(Strongly) disagree	1191	20	24
Total	4962	83	100
Missing			
not applicable	*485*	*8*	
Don't know (spontaneous)	*44*	*1*	
Refusal	*5*	*0*	
System	*465*	*8*	
total	*999*	*17*	
Total	**5961**	**100**	

C.3.5. Affected by restructuring (economic sustainability dimension)

The indicator used in the cluster analysis is directly adopted from the original survey item. The indicator included in the cluster analysis is described in table C-7.

Table C-7: During the last three years has there been a restructuring or reorganization at the workplace that has substantially affected your work? (Y15_Q20rec)

	Frequency	Percent	Valid Percent
No	4810	81	89
Yes	593	10	11
Total	5403	91	100
Missing			
Don't know (spontaneous)	*68*	*1*	
Refusal (spontaneous)	*11*	*0*	
System	*479*	*8*	
Total	*558*	*9*	
Total	**5961**	**100.0**	

C.3.6. Income (economic sustainability dimension)

Income is a combination of the source items Q104 and Q105 in the questionnaire. We followed the EUROFOUND recodification leading to a country-specific relative income distribution coded into quintiles. Note that this income distribution refers to the general sample of employees and self-employed.

Table C-8: Net income in quintiles (inc_quintiles)

	Frequency	Percent	Valid Percent
1st quintile	1153	19	28
2nd quintile	580	10	14
3th quintile	598	10	14
4th quintile	708	12	17
5th quintile	1102	19	27
Total	4141	70	100
Missing			
System	*1820*	*31*	
Total	**5961**	**100**	

C.3.7. Reason for becoming self-employed (economic sustainability dimension)

This indicator is derived from question Q10 in the questionnaire. The original answering categories were reduced into the two categories shown in table C-9, according to the following scheme: "other reasons" (mainly through own personal preferences + a combination of both + neither of these reasons); and "No alternatives for work" (no alternatives for work).

Table C-9: When you became self-employed, was it mainly through your own personal preference or because you had no better alternatives for work? (Y15_Q10rec)

	Frequency	Percent	Valid Percent
Other reasons	4364	73	80
No other alternatives for work	1110	19	20
Total	5474	92	100
Missing			
Don't know (spontaneous)	*18*	*0*	
Refusal (spontaneous)	*4*	*0*	
System	*465*	*8*	
Total	*487*	*8*	
Total	**5961**	**100**	

C.3.8. Security in case of sickness (economic sustainability dimension)

This indicator is derived from question Q91a in the questionnaire. The original answering categories were reduced into the three categories shown in table C-10 according to the following scheme: "would be secure" (strongly agree + tend to agree); "neither agree nor disagree"; and "would be insecure" (tend to disagree + strongly disagree).

Table C-10: If you had a long term sickness, would you be financially secure? (Y15_Q91arec)

	Frequency	Percent	Valid Percent
Would be secure	1733	29	32
Neither agree nor disagree	970	16	18
Would be insecure	2667	45	50
Total	5370	90	100
Missing			
Don't know (spontaneous)	*105*	*2*	
Refusal (spontaneous)	*21*	*0*	
System	*465*	*8*	
Total	*591*	*10*	
Total	*5961*	*100*	

C.3.9. Authority to dismiss (discretion-dimension)

The indicator used in the cluster analysis is directly adopted from the original survey item. The indicator included in the cluster analysis is described in table C-11.

Table C-11: Regarding your business, do you… - Have the authority to hire or dismiss employees? (Y15_Q9a)

	Frequency	Percent	Valid Percent
Yes	3873	65	71
No	1548	26	29
Total	5421	91	100
Missing			
Don't know (spontaneous)	*52*	*1*	
Refusal (spontaneous)	*23*	*0*	
System	*465*	*8*	
Total	*540*	*9*	
Total	**5961**	**100**	

C.3.10. Agreed fee (discretion-dimension)

The indicator used in the cluster analysis is directly adopted from the original survey item. The indicator included in the cluster analysis is described in table C-12. This indicator clearly shows some 'discriminatory' potential in the cluster solution, however the interpretation of the answers given on this question is not straightforward. While the indicator was intended to grasp into some kind of 'dependence-situation' (as the price paid for services of the self-

employed appears to be some kind of a wage), this indicator also appears to represent situations of stable prices/income augmenting feelings of being in control for a self-employed worker.

Table C-12: Regarding your business, do you… - Get paid an agreed fee on a weekly or monthly basis? (Y15_Q9brec)

	Frequency	Percent	Valid Percent
No	3361	56	62
Yes	2056	35	38
Total	5417	91	100
Missing			
Don't know (spontaneous)	*49*	*1*	
Refusal (spontaneous)	*30*	*0*	
System	*465*	*8*	
Total	*544*	*9*	
Total	**5961**	**100.0**	

C.3.11. Take time off (discretion-dimension)

This indicator is derived from question Q47 in the questionnaire. The original answering categories were reduced into the two categories shown in table C-13 according to the following scheme: "easy" (very easy + fairly easy); and "difficult" (fairly difficult + very difficult).

Table C-13: Would you say that for you arranging to take an hour or two off during working hours to take care of personal or family matters is... (Y15_Q47rec)

	Frequency	Percent	Valid Percent
Easy	4783	80	83
Difficult	956	16	17
Total	5739	96	100
Missing			
Don't know (spontaneous)	*194*	*3*	
Refusal (spontaneous)	*28*	*1*	
Total	*222*	*4*	
Total	**5961**	**100.0**	

C.3.12. Number of work days a week (intensity-dimension)

This indicator is derived from question Q26 in the questionnaire. This original open question, was recoded into the three categories shown in table C-14.

Table C-14 Working more than 5 days a week (Y15_Q26rec)

	Frequency	Percent	Valid Percent
1 to 5 days a week	2701	45	48
6 days a week	1838	31	32
7 days a week	1128	19	20
Total	5667	95	100
Missing			
Don't know (spontaneous)	*233*	*4*	
Refusal (spontaneous)	*61*	*1*	
Total	*294*	*5*	
Total	**5961**	**100**	

C.3.13. Doubting one's role as self-employed (motivation-dimension)

The indicator reported below is the result of combining two items from the questionnaire: Q91b and Q91e. The original statements were phrased as follows: "To what extent do you agree or disagree with the following statements - I enjoy being my own boss? (Q91b) – "… - I make the most important decisions on how the business is run? (Q91e)". Both items could be answered by means of a Likert scale (strongly agree, tend to agree, neither agree nor disagree, tend to disagree, strongly disagree) and have a .434 correlation. Therefore it was decided to merge them into one combined scale, which was dichotomised (see table C-15) as follows: "Like to be own boss/take decisions" ((strongly) agree on both items) – "Unsure of being one's own boss – taking decisions" (from neither agree nor disagree on one of both items to strongly disagree on both items).

Table C-15: Self-employed doubting their role as boss-decision maker (Motiv_Self_Cat)

	Frequency	Percent	Valid Percent
Like to be own boss - take decisions	4512	76	87
Unsure of being own boss - taking decisions	651	11	13
Total	5163	87	100
Missing			
System	*798*	*13*	
Total	**5961**	**100.0**	

C.3.14. Responsibility of being self-employed (motivation-dimension)

This indicator is derived from question Q91d in the questionnaire. This original 5-point Likert scale (strongly agree, tend to agree, neither agree nor disagree, tend to disagree, strongly disagree) was recoded into the two categories shown in table C-16. The category "hard to be self-employed" is composed of the original answering categories "tend to agree" and "strongly agree".

Table C-16: I find it hard bearing the responsibility of running my business (Y15_Q91d_rec)

	Frequency	Percent	Valid Percent
Not hard to be self-employed	3723	63	73
Hard to be self-employed	1419	24	28
Total	5142	86	100
Missing			
Not applicable	*311*	*5*	
Don't know (spontaneous)	*37*	*1*	
Refusal (spontaneous)	*6*	*0*	
Total	*465*	*8*	
Total	**5961**	**100.0**	

C.3.14. Being trained (human capital-dimension)

This indicator is derived through combining two original items in the questionnaire: (Q65a) "Training paid for or provided by your employer" and (Q65b) "Training paid by yourself". Although in theory self-employed cannot have an employer paying for their training, in practice some self-employed answered this question in an affirmative way. The combination variable reported in table C-17 combines those self-employed paying for training themselves and those receiving training paid by an employer/client in one category. This can be considered as an indicator for investment in human capital.

Table C-17: Having received training paid by employer or by oneself if self-employed (TRAINING2)

	Frequency	Percent	Valid Percent
Paid by employer or paid by oneself if self-employed	1292	22	22
No training received	4585	77	78
Total	5877	99	100
Missing			
System	*84*	*1*	
Total	**5961**	**100.0**	

C.4. Description of the final cluster solution

Following the general procedure described above, a 5-cluster model based on 15 manifest indicators was selected as the best-fitting model. This best-fitting model was further refined by adding a direct relationship between "Finding new customers" and "Security in case of sickness". Below this best-fitting solution is described in more detail.

C.4.1. Model comparison

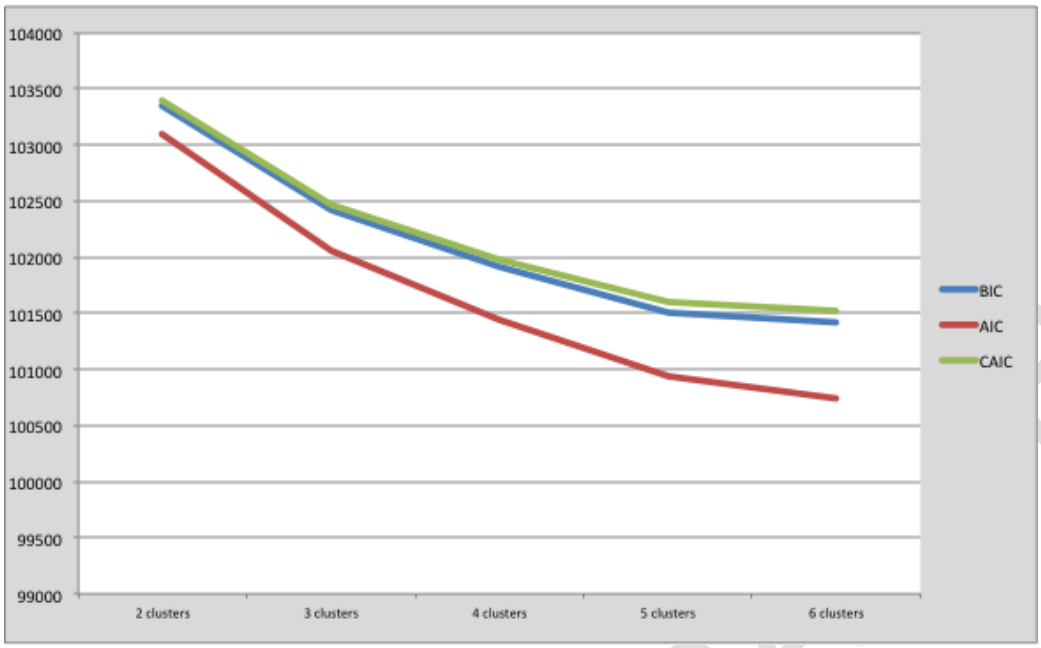
Table C-18 and figure C-1 show the fit indices of the subsequent models. As can be seen, marginal improvement of model fit clearly drops after the fifth model. This result is robust for different weighting variables, different starting values, iteration criteria and different (relevant) direct effects. Therefore the model with five clusters has been selected and subsequently refined. As indicated above, in the final model only one direct relation between manifest variables has been specified (i.e. between "Finding new customers" and "Security in case of sickness").

Table C-18: Comparison of selected fit indices and degree of model improvement over the different cluster models

Model (N=5,693)	BIC	AIC	CAIC	Δ BIC	Δ AIC	Δ CAIC
2 clusters	103355	103103	103393			
3 clusters	102415	102056	102469	940	1046	924
4 clusters	101912	101446	101982	504	610	488
5 clusters	101511	100939	101597	401	507	385
5 clusters (direct effect)	101386	100808	101473	125	132	124
6 clusters	101420	100742	101522	-34	66	-49

The final model shows moderate to strong relations between all manifest variables and the clusters. A number of residual relations between manifest variables remain moderately high. Table C-18 shows the remaining residuals with a value higher than two. Specifying more residuals in the model however does not fundamentally alters the model solution. Therefore, we opted not to specify direct effects, which in our opinion do not have a clear substantial meaning. The final model has a 0.233 classification error rate and a Lambda (reduction of errors) of 0.683.

Figure C-1: Scree plot, showing the evolution of the selected fit indices over different cluster models



C.4.2. Model interpretation

In tables C-19 to C-22, the final cluster solution is described based on its composing manifest variables and some important background characteristics. Based on the relations between these manifest indicators and the five clusters, the latter can be given a substantial interpretation. Below a general description of each cluster is made. Based on this description the clusters are also given a name.

Cluster 1: stable own account workers (26%). The respondents resembling to this cluster predominantly work on one site online and are almost without an exception single workers. The large majority has more than one client and finds it relatively easy to find new clients. Respondents resembling to this cluster are fairly evenly distributed over the country-specific income quintiles, with a small over-representation on the highest earning quintile. The majority of the cluster members are not paid in terms of a monthly/weekly fee – and an important proportion (45%) would be economically insecure in the case of sickness. Most of the self-employed in this category have high discretion over their professional life: (if applicable) they would have authority to dismiss personnel and almost 90% is able to take time off at short notice for private matters. Most of the respondents in this cluster became self-employed for reasons other then the lack of alternatives. In majority they are happy to be self-employed and don't think it is hard to bear the responsibility of being one's own boss.

Table C-19: Distribution of cluster probabilities over the manifest indicators

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
Cluster Size	0.2637	0.2547	0.2313	0.1677	0.0826
Indicators					
Number of work sites (Y15_Q15b)					
One site only	0.9849	0.9589	0.7514	0.9871	0.2559

More than one site	0.0151	0.0411	0.2486	0.0129	0.7441
Mean	1.0151	1.0411	1.2486	1.0129	1.7441
Number of employees (Rec_Q16b)					
Works alone, no employees	0.9921	0.4657	0.0005	0.7634	0.0001
1-8 employees	0.0079	0.5342	0.762	0.2366	0.4213
>8 employees	0.0000	0.0001	0.2375	0	0.5786
Mean	1.0079	1.5344	2.2369	1.2366	2.5786
More than one client? (Y15_Q9d)					
Yes	0.925	0.9344	0.9876	0.4486	0.7231
No	0.075	0.0656	0.0124	0.5514	0.2769
Mean	1.075	1.0656	1.0124	1.5514	1.2769
Easy to find new clients? (Y15_Q91c_rec)					
(Strongly) agree	0.5332	0.391	0.5881	0.2303	0.4232
Neither agree nor disagree	0.2804	0.3072	0.2633	0.2945	0.3038
(Strongly) disagree	0.1864	0.3018	0.1486	0.4752	0.273
Mean	1.6532	1.9109	1.5605	2.2448	1.8497
Authority to dismiss? (Y15_Q9a)					
Yes	0.7399	0.9721	0.9363	0.2768	0.1493
No	0.2601	0.0279	0.0637	0.7232	0.8507
Mean	1.2601	1.0279	1.0637	1.7232	1.8507
Paid a weekly/monthly fee? (Y15_Q9brec)					
No	0.7254	0.6428	0.4591	0.785	0.3573
Yes	0.2746	0.3572	0.5409	0.215	0.6427
Mean	1.2746	1.3572	1.5409	1.215	1.6427
Easy to take time off (Y15_Q47rec)					
Easy	0.8974	0.6678	0.901	0.843	0.6659
Difficult	0.1026	0.3322	0.099	0.157	0.3341
Mean	1.1026	1.3322	1.099	1.157	1.3341
Has there been a restructuring? (Y15_Q20rec)					
No	0.9477	0.8651	0.8211	0.9877	0.7606
Yes	0.0523	0.1349	0.1789	0.0123	0.2394
Mean	1.0523	1.1349	1.1789	1.0123	1.2394
Income (Inc_quantiles)					
1	0.2105	0.2077	0.0434	0.6277	0.3011
2	0.1467	0.1457	0.0535	0.1927	0.1752
3	0.1762	0.176	0.114	0.1019	0.1756
4	0.1784	0.1793	0.2044	0.0454	0.1483
5	0.2882	0.2913	0.5848	0.0323	0.1999
Mean	3.1871	3.2008	4.2337	1.6619	2.7708
Alternatives for being self-employed? (Y15_Q10rec)					
Other reasons	0.8828	0.7417	0.9705	0.6046	0.6582
No other alternatives for work	0.1172	0.2583	0.0295	0.3954	0.3418
Mean	1.1172	1.2583	1.0295	1.3954	1.3418
Financial security in case of sickness (Y15_Q91arec)					
Would be secure	0.3477	0.2111	0.5794	0.2727	0.2224

Neither agree nor disagree	0.1945	0.1749	0.1816	0.1867	0.1776
Would be insecure	0.4578	0.614	0.239	0.5406	0.5999
Mean	2.1102	2.4029	1.6596	2.2679	2.3775
Working days per week (Y15_Q26rec)					
1 to 5 days a week	0.5925	0.2796	0.5414	0.5057	0.6269
6 days a week	0.307	0.3853	0.3309	0.3454	0.289
7 days a week	0.1005	0.3351	0.1277	0.1489	0.0841
Mean	1.508	2.0555	1.5864	1.6432	1.4572
Motivation for self-employment (MOTIV_SELF_cat)					
Like being boss - take decisions	0.9924	0.8632	0.9438	0.6585	0.5059
Unsure being boss – taking decisions	0.0076	0.1368	0.0562	0.3415	0.4941
Mean	1.0076	1.1368	1.0562	1.3415	1.4941
Hard to be self-employed? (Y15_Q91d_rec)					
Not hard to be self-employed	0.8434	0.5936	0.7926	0.7302	0.7235
Hard to be self-employed	0.1566	0.4064	0.2074	0.2698	0.2765
Total	1.1566	1.4064	1.2074	1.2698	1.2765
Receiving training? (TRAINING2)					
Training received	0.2589	0.2031	0.3728	0.0184	0.1727
No training received	0.7411	0.7969	0.6272	0.9816	0.8273
Mean	1.7411	1.7969	1.6272	1.9816	1.8273

Legenda: Yellow: 'neutral values', indication of highest values; High green: high positive values; Pale green: moderately high positive values; Orange: moderately high negative values; Red: High negative values.

The proportion of working five days a week or less is 50% in this cluster, 30% works six days a week and 10% every day of the week. A quarter of the respondents resembling to this cluster got any form of formal training. This cluster is over-represented in the Nordic countries, but also in some Eastern European and Southern European countries. However, in most Eastern European and Southern European countries this cluster is under-represented. In most service sectors this cluster is clearly over-represented, while the opposite is true for the sectors of agriculture and commerce and hospitality. There is also an over-representation of tertiary educated and directors/liberal professions in this cluster.

Cluster 2: small traders and farmers (26%). Respondents resembling to this cluster predominantly work on one site. They work alone or with a small number of employees – more than half of them is a small employer. More than 90% of them has different clients and only a minority (30%) finds it hard to find new clients. This cluster knows a fairly equal income distribution, with a slight over-representation at the bottom and a more important over-representation at the top quintile. The majority is not paid with a fixed monthly/weekly fee – and only few members would be economically secure in case of sickness (21%), while 61% would be insecure. Members of this cluster have high discretion over their work situation: authority to dismiss is almost maximal (97%) and for 67% of the members taking time off at short notice would not be a problem. Only 25% is self-employed because of a lack of other alternatives for work. Nevertheless, this cluster has the highest proportion of respondents stating that bearing the responsibilities of being one's own is hard (40%). That however does not mean that they don't value their situation of being self-employed: only 14% doubts his/her role as decision maker. Work tends to be intense in this cluster: more than 70% works six or seven days a week. The proportion of receiving training is 20%. This cluster is over-represented in (some) Southern European and Eastern European countries, but also in some continental countries (e.g. France, Belgium) there is an over-representation. Higher proportions are seen in agriculture, but most of all in commerce (retail) and hospitality.

Members of this cluster have a slightly higher probability of being lower educated. Directors (small employers) and farmers are over-represented.

Cluster 3: Small and medium size employers (23%). While still 75% works on one site only, there is a considerable proportion that works (owns?) multiple sites (25%). Almost all members have employees working for/with them: for 24% it's more than 8 employees. Almost everyone has different clients (99%), while 59% finds it easy to encounter new clients. Members earning a high income are clearly over-represented in this cluster (58%); 54% declares to get paid on a weekly/monthly scale and a majority (58%) would be secure in case of sickness. The members of this cluster have high discretion over their professional situation (both in terms of laying off employees as in taking time off). Almost no one in this cluster became self-employed out of necessity (3%), and they tend to be at easy with their role of self-employed (94% likes the responsibility of being self-employed; 79% does not find it hard to be self-employed). The majority of the respondents have a relatively balanced working week (54% working one to five days; 33% six days). 37% got training. This cluster is less present in most Eastern and Southern European countries and tends to be more present in many Nordic and Continental countries (highest proportion – 42.6% of all self-employed – in Denmark). This cluster is over-represented in some service sectors (health, finance, commerce and hospitality), as well as in the sectors of construction and industry. The cluster is less present among the lowly qualified and over-represented among tertiary educated. Finally, the cluster is more present among directors and liberal professions.

Table C-20: Distribution of cluster probabilities in the EU28 countries

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
Cluster size	0.2637	0.2547	0.2313	0.1677	0.0826
Countries					
Belgium	0.257	0.286	0.283	0.099	0.076
Bulgaria	0.258	0.217	0.309	0.147	0.068
Czech Republic	0.387	0.190	0.261	0.083	0.080
Denmark	0.290	0.164	**0.426**	0.087	0.033
Germany	0.255	0.199	0.341	0.116	0.089
Estonia	0.183	0.203	0.367	0.154	0.094
Greece	0.166	**0.492**	0.127	0.172	0.043
Spain	0.271	0.343	0.217	0.120	0.049
France	0.236	0.328	0.213	0.175	0.049
Ireland	0.253	0.283	0.292	0.107	0.065
Italy	0.301	0.231	0.203	0.193	0.072
Cyprus	0.321	0.332	0.193	0.120	0.034
Latvia	0.191	0.214	0.306	0.197	0.092
Lithuania	0.147	0.281	0.223	0.251	0.098
Luxembourg	0.328	0.196	0.281	0.138	0.057
Hungary	0.282	0.213	0.215	0.231	0.059
Malta	0.293	0.211	0.298	0.106	0.092
The Netherlands	**0.412**	0.218	0.243	0.098	0.030
Austria	0.237	0.256	0.184	0.246	0.077
Poland	0.188	0.266	0.224	0.235	0.087
Portugal	0.204	0.228	0.179	0.335	0.055
Romania	0.180	0.141	0.127	**0.514**	0.038

Slovenia	0.227	0.332	0.161	0.215	0.066
Slovakia	0.345	0.168	0.195	0.108	0.184
Finland	0.286	0.239	0.281	0.132	0.063
Sweden	0.334	0.230	0.353	0.050	0.032
United Kingdom	0.277	0.161	0.244	0.106	0.213
Croatia	0.163	0.230	0.131	0.416	0.061

Cluster 4: insecure self-employed (17%). Members of this cluster almost exclusively work on one site only (99%) and a majority (76%) works alone, while 24% has between one and eight employees or co-workers. More than half has only one client (55%) and almost half (48%) finds it difficult to find new clients. More than 80% of the respondents in this cluster find themselves in the lowest and the second lowest income quintiles, while they are generally not paid a fixed fee. More than half of them (54%%) would be insecure in case of sickness. Only a minority (28%) has the authority to dismiss employees. In contrast, taking time off at short notice is easy for 84% of the cluster members. 40% of these respondents became self-employed out of necessity; a third does not like the responsibilities of being his/her own boss; most do not find it hard to be self-employed, but 27% does find it hard to bear these responsibilities. Members of this cluster in general do not have a highly intense working week (35% works six days and 15% seven days). This cluster scores very poorly on receiving training (only 2% got training). The fourth cluster is over-represented in Eastern and Southern European countries and under-represented in many Nordic and Continental countries. Cluster membership is higher in agriculture and "other services" – and cluster members are more often lower educated, compared to the other clusters. There is an over-representation among farmers, freelancers and other types of self-employed.

Table C-21: Distribution of cluster probabilities in economic sectors

	Cluster 1	**Cluster 2**	**Cluster 3**	**Cluster 4**	**Cluster 5**
Cluster size	0.2637	0.2547	0.2313	0.1677	0.0826
Nace10					
Agriculture	0.159	0.294	0.144	0.365	0.039
Industry	0.249	0.253	0.276	0.115	0.107
Construction	0.267	0.207	0.281	0.116	0.129
Commerce and hospitality	0.225	0.381	0.259	0.086	0.049
Transport	0.302	0.224	0.163	0.160	0.150
Financial services	0.301	0.225	0.308	0.073	0.093
Public administration and defense	0.441	0.206	0.154	0.103	0.097
Education	0.334	0.137	0.154	0.160	0.215
Health	0.319	0.146	0.343	0.106	0.086
Other services	0.321	0.193	0.206	0.194	0.085

Cluster 5: Dependent self-employed (8%). Most of these self-employed work at different sites (73%) and the vast majority has/works with employees (42% with one to eight employees; 58% with more then 8). The majority (72%) has more than one client. A significant minority (27%) finds it hard to find clients, while 42% finds it easy to find new costumers. The income distribution of this cluster is relatively equal, although with an over-representation of the lowest quintile (30%). Almost 65% of the cluster members gets paid by means of a monthly or weekly fixed fee. A majority of the cluster members (60%) would be economically insecure in case of sickness. In general, the members of this cluster have low discretion over their work situation: only 15% has the authority to dismiss other workers and

for 33% of the respondents it is difficult to take some time off at short notices themselves. Moreover – while this indicator is hardly relevant for all other clusters, 24% of the respondents in this cluster witnessed a restructuring in their own business or the organization they are (mainly) working for. 34% is self-employed out of necessity (no other options for work); 50% doubts their role as boss/decision-maker and 28% finds it hard to bear the responsibility of running an own business. The majority of these respondents (63%) works only five days a week or less. Only 8% works every day of the week. Of this cluster, 17% received training. The fifth cluster is over-represented in Eastern Europe and the United Kingdom. The cluster is more present in industry, construction and transport, but also in education. Finally, there is a relative overrepresentation among the highly educated, among freelancers and subcontractors and other self-employed.

Table C-22: Distribution of cluster probabilities in educational attainment categories and occupations

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
Cluster size	0.2637	0.2547	0.2313	0.1677	0.0826
Education					
Primary	0.201	0.274	0.104	0.363	0.059
Secondary	0.258	0.273	0.209	0.184	0.077
Tertiary	0.291	0.211	0.311	0.087	0.100
Self-employed classification					
Directors	0.294	0.287	0.230	0.128	0.061
Farmers	0.151	0.287	0.159	0.376	0.028
Freelancers/subcontractors	0.211	0.117	0.146	0.273	0.253
Liberal professions	0.274	0.166	0.447	0.033	0.081
Other	0.207	0.204	0.220	0.245	0.124

Task D: Description of the empirical typology of self-employed

D.1. Introduction

In this final chapter the empirical typology of self-employed retained in part C will be described according to a number of covariates. This descriptive overview consists of three main parts: socio-demographic background variables; economic sector and country-variation; and (intrinsic) job quality indicators. In a final part of this chapter, the empirical typology is related to a selected number of workability and health/well-being outcomes.

For the demographic, socio-economic and country variation, mean latent probability scores for each cluster are compared per category of the "independent" variables by means of ANOVA analyses. For the relation with the intrinsic job characteristics, the modal assigned cluster variable was used (modal assignment allocates each respondent exclusively to one cluster based on the highest probability score). All job quality characteristics were dichotomised so that an "acute category" (e.g. low job autonomy, defined as the lowest tertile of autonomy) could be contrasted and the prevalence of belonging to that acute category could be compared between the categories of the typology of self-employed. The relations between the typology of self-employed and workability/well-being outcomes are investigated using two approaches. First, the modal assigned clusters are taken together with a general category of employees and related to the selected outcomes using a descriptive approach. This approach has the advantage of showing the absolute prevalence of the outcomes for each of the categories of self-employed (and relative to employees). Then, in a subsequent series of analyses, we used the saved latent probability scores as independent variables representing the different clusters and estimated logistic regression models with the selected health and well-being indicators as dependent variables. It should be noted here that, each latent probability score has a value range between 0 and 1, which means that the effect of "a one unit increase" in the regression represents a maximum effect (this explains the high regression estimates). Subsequently three models have been fitted: a crude effects model, only including the cluster variables; a second model where the cluster effects are controlled for demographic and socio-economic background variables; and a third model additionally controlling for job quality indicators.[6] In the regression models, the latent probability score for "stable own account workers" was omitted as the reference category. These models are showing relative differences in the prevalence of the outcomes between the cluster variables. Moreover, using a multivariate approach, these relative differences can be estimated net of confounding effects (models 2 and 3).

[6] We used the job quality indicators that are reported in the descriptive part. Only 'skill discretion' was not included since it causes multicollinearity problems with the autonomy- indicator.

D.2. Description of the typology of self-employed

D.2.1. Classification of self-employed (task A)

Table D-1: Distribution of the latent class cluster probabilities over categories of self-employed (mean scores and F-tests)

	Stable own account workers	Small traders & farmers	Small & medium size employers	Insecure self-employed	Dependent self-employed
Self-employed basic classification	***	***	***	***	***
Directors	0.291	0.291	0.230	0.127	0.061
Farmers	0.146	0.296	0.158	0.373	0.028
Freelancers/subcontractors	0.206	0.120	0.145	0.274	0.255
Liberal professions	0.271	0.168	0.446	0.033	0.082
Other	0.201	0.203	0.221	0.245	0.130
Overall	**0.260**	**0.259**	**0.231**	**0.167**	**0.083**
Self-employed detailed	***	***	***	***	***
Director: Medium to big employer	0.000	0.043	0.861	0.001	0.095
Director: small employer	0.016	0.445	0.500	0.028	0.011
Own account worker, independent	0.453	0.290	0.091	0.105	0.061
Own account worker, dependent	0.302	0.183	0.057	0.349	0.109
Farmer: no employer	0.167	0.252	0.083	0.467	0.031
Freelancer/subcontractor, independent	0.307	0.125	0.120	0.176	0.272
Freelancer/subcontractor, dependent	0.114	0.046	0.049	0.502	0.289
Liberal profession	0.316	0.194	0.361	0.038	0.090
Other	0.199	0.196	0.213	0.250	0.143
Overall	**0.260**	**0.259**	**0.231**	**0.167**	**0.083**

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Among the self-employed, own account workers, independent freelancers/subcontractors and liberal professions have the highest probability of belonging to cluster 1 (stable own account workers). Directors (of small and medium to big companies), farmers, and dependent freelancers/subcontractors are underrepresented in this cluster. The higher proportion of "dependent own account workers" may appear somewhat contradictory. Further analyses show that the group of *dependent stable own account workers* (N=230, using modal assignment) has some distinct profile characteristics, including an over-representation of female members, age group 35-49, respondents belonging to a couple with children, NACE "other services" and tertiary educated. This combination is over-represented in Germany and The Netherlands.

Directors in small companies (farmers with employees included) have by far the highest probability of belonging to cluster 2 (small traders and farmers). Also independent own account workers have a higher than average probability. In cluster 3 (small and medium size employers), especially directors of a medium to big company (to a lesser extent directors of a

small company and liberal professions) have much higher than average probabilities. All the other categories of self-employed persons have a lower than average probability. Dependent freelancers/subcontractors, farmers (who are not employer), dependent own account workers and the 'other' group have above average probabilities of belonging to the cluster of 'insecure self-employed' (cluster 4).

Finally, freelancers/subcontractors have by far the highest probability to belong to cluster 5 (dependent self-employed). Also 'dependent own account workers' and the category 'other' have a higher than average probability to this cluster. However, also the combination of "independent freelancers" is highly represented. Further investigation shows that the combination *independent-dependent self-employed* (N=76, using modal assignment) has a specific profile of young, male, singles, working as professionals or in craft and related trades. Moreover, this group has a strong presence in the construction industry and in educational services – and is most common in the UK.

D.2.2. Socio-demographic background variables

Table D-2: Distribution of the latent class cluster probabilities according to sex, age categories and household types (mean scores and F-tests).

	Stable own account workers	Small traders & farmers	Small & medium size employers	Insecure self-employed	Dependent self-employed
Sex	*n.s.*	*n.s.*	***	***	**
Men	0.256	0.257	0.258	0.137	0.091
Women	0.266	0.261	0.186	0.216	0.071
Overall	**0.260**	**0.259**	**0.231**	**0.167**	**0.083**
Age	*n.s.*	***	*	***	***
Under 35	0.244	0.226	0.210	0.168	0.153
35-49	0.270	0.279	0.246	0.137	0.068
50+	0.257	0.254	0.225	0.192	0.072
Overall	**0.260**	**0.259**	**0.231**	**0.167**	**0.083**
Life stage	**	***	***	***	***
Single with parents (18-35 years)	0.202	0.251	0.158	0.208	0.181
Single not with parents (<45 years)	0.280	0.261	0.221	0.145	0.093
Couple without children (<45 years)	0.208	0.288	0.240	0.136	0.128
Couple with children	0.256	0.289	0.264	0.131	0.061
Couple without children (46-59 yrs)	0.249	0.280	0.271	0.140	0.060
Couple without children (>60 yrs)	0.285	0.157	0.186	0.291	0.083
Single without children (>50 years)	0.297	0.193	0.149	0.269	0.092
Not classified	0.269	0.231	0.186	0.195	0.120
Overall	**0.260**	**0.259**	**0.231**	**0.167**	**0.083**

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

The probability of belonging to a specific cluster is not fundamentally different for men than for women, except in clusters 3 (lower probability for women) and 4 (lower probability for men).

When looking at age, the youngest age group has the highest probability to belong to the first three clusters, and a somewhat lower probability to belong to the clusters of insecure self-employed (clusters 4) and dependent self-employed (cluster 5). The same applies to the 35-49 and 50+ age groups, although the probability to belong to Cluster 5 is much lower than to Cluster 4.

By household position, probabilities remain mostly in the same range. However, significantly lower probabilities occur among singles parents and younger couples without children in the cluster of stable own account workers (Cluster 1), among older couples or singles without children in the clusters of small traders and farmers and small and medium size employers (Clusters 2 and 3), singles with parents in the cluster of insecure self-employed (Cluster 4). Significantly higher probabilities are seen among older couples or singles without children in the cluster of insecure self-employed (cluster 4) and single with parents in the cluster of dependent self-employed (cluster 5).

Table D-3: Distribution of the latent class cluster probabilities according to 'second job', educational attainment and occupational categories (mean scores and F-tests)

	Stable own account workers	Small traders & farmers	Small & medium size employers	Insecure self-employed	Dependent self-employed
Having a second job?	*n.s.*	*n.s.*	***	***	**
No second job	0.260	0.262	0.233	0.168	0.078
Second job	0.267	0.232	0.205	0.155	0.142
Overall	**0.260**	**0.259**	**0.231**	**0.167**	**0.083**
Education	***	***	***	***	***
Primary	0.196	0.279	0.104	0.363	0.059
Secondary	0.254	0.277	0.208	0.183	0.078
Tertiary	0.287	0.214	0.309	0.087	0.102
Overall	**0.260**	**0.259**	**0.231**	**0.167**	**0.083**
ISCO	***	***	***	***	***
Directors	0.154	0.350	0.376	0.073	0.047
Professionals	0.320	0.158	0.310	0.082	0.130
Technicians	0.365	0.212	0.229	0.114	0.080
Clerical support workers	0.144	0.267	0.321	0.108	0.160
Service and sales workers	0.264	0.358	0.186	0.137	0.056
Skilled agricultural	0.171	0.293	0.139	0.361	0.036
Craft and related trades	0.300	0.246	0.230	0.129	0.095
Plant and machine operators	0.319	0.221	0.199	0.105	0.156
Elementary occupations	0.222	0.175	0.096	0.392	0.116
Overall	**0.260**	**0.259**	**0.231**	**0.167**	**0.083**

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Having a second job has not so much effect, except in the cluster of ‘dependent self-employed’ (higher than average probability).

By educational attainment, higher probabilities for primary education are found in the 'insecure self-employed-cluster (cluster 4) and to a lesser extent in cluster 2 (small traders and farmers). For secondary education, the probabilities to belong to a specific cluster fluctuate around the average. For tertiary education, probabilities are higher than average in the clusters of ‘stable own account workers’ (cluster 1), ‘small and medium-sized self-employed’ (cluster 3) and ‘dependent self-employed’ (cluster 5).

D.2.3. Economic sectors and countries

Table D-4: Distribution of the latent class cluster probabilities according to economic sectors (mean scores and F-tests)

	Stable own account workers	Small traders & farmers	Small & medium size employers	Insecure self-employed	Dependent self-employed
NACE	***	***	***	***	***
Agriculture	0.154	0.302	0.142	0.364	0.039
Industry	0.244	0.257	0.274	0.116	0.109
Construction	0.262	0.210	0.281	0.117	0.130
Commerce and hospitality	0.220	0.386	0.259	0.086	0.050
Transport	0.303	0.231	0.149	0.162	0.154
Financial services	0.298	0.228	0.305	0.073	0.097
Public administration	0.435	0.210	0.154	0.103	0.099
Education	0.332	0.138	0.151	0.160	0.219
Health	0.317	0.148	0.342	0.106	0.088
Other services	0.319	0.197	0.207	0.193	0.084
Overall	**0.260**	**0.259**	**0.231**	**0.167**	**0.083**

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

According to the ISCO-classification of professions, directors are overrepresented in the cluster of 'small traders and farmers' (cluster 2) and 'small and medium-sized employers' (cluster 3). Professionals are more present in the clusters of 'stable own account workers' (cluster 1), 'small and medium sized-employers' (cluster 3) and 'dependent self-employed' (cluster 5). Technicians tend to be more present in the 'stable own account workers-cluster' (cluster 1) – the same holds for crafts and related trades. Clerical support workers are over-represented in the cluster of 'small and medium employers' (cluster 3). Service and sales workers and skilled agricultural workers are over-represented in the cluster of 'small traders and farmers' (cluster 2). For skilled agricultural workers there is also a higher presence in the 'insecure self-employed cluster' (cluster 5). Plant and machine operators and elementary occupations tend to be over-represented as 'dependent self-employed' (cluster 5), while elementary occupations are also more present in cluster 4 (insecure self-employed). Also the sector of 'education' is over-represented in cluster 5: this is probably due to the fact that also sports coaches, music and other arts teachers and various types of consultants are included in the NACE-category of 'education'.

The country-distribution of the clusters shows a certain degree of regional patterning, although each time also exceptions to these patterns exist. In general, the cluster of 'own account workers' (cluster 1) appears to be a bit more prevalent in Nordic and Continental European countries. The highest prevalence is in The Netherlands (40.7%). However, also some Southern (e.g. Cyprus – 31.9%) and Eastern European countries (e.g. Czech Republic – 38.4%) show an over-representation. Without exception, all countries with a very low presence of this cluster are situated in the east of Europe. The second cluster – 'small traders and farmers' – is generally more present in Continental European countries, although the highest percentage of all self-employed belonging to this cluster can be found in Greece (49.8%). In Eastern European countries, the prevalence of 'small traders and farmers' is generally low. The same holds for the United Kingdom. Small and medium-sized employers

are generally more common in Nordic and Continental European countries, although some exceptions exist. The highest prevalence of this cluster can be found in Denmark (42.4%). A lower prevalence of the third cluster is generally seen in the south and the east of Europe. The fourth cluster – insecure self-employed – is most prevalent in many Eastern European countries (highest prevalence: Romania – 51.4%). Nordic and Continental European countries generally have a lower share of the self-employed in this cluster. Finally, the fifth cluster of 'dependent self-employed' is strongly over-represented in a few countries: The United Kingdom (21.7%), Slovakia (19%) and Romania (15.6%). In most Southern European and Nordic countries this cluster know a particularly low prevalence.

Table D-5: Distribution of the latent class cluster probabilities according in EU28-countries (mean scores and F-tests).

	Stable own account workers	Small traders & farmers	Small & medium size employers	Insecure self-employed	Dependent self-employed
EU28 countries	***	***	***	***	***
Belgium	0.256	0.297	0.276	0.094	0.078
Bulgaria	0.253	0.223	0.309	0.148	0.068
Czech Republic	0.384	0.193	0.260	0.081	0.082
Denmark	0.287	0.167	0.424	0.088	0.034
Germany	0.252	0.201	0.343	0.114	0.090
Estonia	0.178	0.206	0.366	0.154	0.096
Greece	0.162	0.498	0.125	0.171	0.044
Spain	0.266	0.348	0.217	0.120	0.050
France	0.232	0.331	0.212	0.176	0.050
Ireland	0.248	0.289	0.290	0.107	0.067
Italy	0.298	0.236	0.202	0.191	0.074
Cyprus	0.319	0.338	0.190	0.118	0.035
Latvia	0.189	0.204	0.312	0.201	0.094
Lithuania	0.144	0.287	0.215	0.254	0.100
Luxembourg	0.323	0.201	0.279	0.138	0.060
Hungary	0.280	0.216	0.219	0.226	0.059
Malta	0.286	0.216	0.297	0.107	0.093
The Netherlands	0.407	0.219	0.244	0.098	0.031
Austria	0.233	0.261	0.182	0.246	0.078
Poland	0.183	0.275	0.226	0.237	0.079
Portugal	0.199	0.232	0.180	0.201	0.094
Romania	0.175	0.146	0.127	0.333	0.156
Slovenia	0.223	0.334	0.160	0.216	0.066
Slovakia	0.341	0.168	0.195	0.105	0.191
Finland	0.282	0.244	0.279	0.131	0.065
Sweden	0.330	0.235	0.351	0.050	0.035
United Kingdom	0.275	0.162	0.240	0.106	0.217
Croatia	0.155	0.236	0.128	0.422	0.060
Overall	**0.260**	**0.259**	**0.231**	**0.167**	**0.083**

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

D.2.4. Intrinsic job quality

Table D-6 and D-7 are showing the prevalence of a number of selected job quality characteristics in the categories of the empirical typology of self-employed. In this case modal assignment has been used, allocating every respondent to one specific category. As a consequence, there is always a certain degree of classification bias involved when allocating respondents to specific categories of a cluster solution.

Table D-6: Distribution of intrinsic job quality characteristics over types of self-employed (percentages and Chi² tests)

	Not learning new things	**Low autonomy°**	**Low discretion°**	**Low decision power**	**(No) complex tasks**
	***	***	***	***	***
Stable own account workers (cluster 1)	24%	6%	12%	4%	35%
Small traders and farmers (cluster 2)	30%	8%	20%	3%	42%
Small and medium size employers (cluster 3)	20%	6%	15%	3%	30%
Insecure self-employed (cluster 4)	54%	15%	23%	11%	60%
Dependent self-employed (cluster 5)	27%	32%	44%	20%	39%
Total (among self-employed)	**29%**	**10%**	**19%**	**6%**	**40%**
Employees	29%	39%	51%	31%	39%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05; ° Sample-wide third tertile.

From table D-6 it can be seen that self-employed from that 'insecure self-employed cluster' have a higher probability not to learn new things at their job (53.7%) – 'small and medium size' employers have the lowest percentage here (19.9%). Low autonomy is most common in 'stable own account workers' (72.7%), while it is the least common in 'insecure self-employed' (25%). On the other hand, low discretion only occurs in 12.1% of the 'stable own account workers', while it a problem for 44.4% of the 'dependent self-employed'.

Table D-7: Distribution of intrinsic job quality characteristics over types of self-employed (percentages and Chi² tests)

	Ergonomic risks	**Biochemical risks**	**Ambient risks**	**General Phys. Env. (job quality index)**
	***	**	***	***
Stable own account workers	32%	28%	26%	31%
Small traders and farmers	39%	34%	40%	39%
Small and medium size employers	25%	30%	28%	29%
Insecure self-employed	36%	27%	38%	35%
Dependent self-employed	34%	35%	34%	38%
Total	**33%**	**30%**	**32%**	**33%**

Employees	29%	30%	33%	32%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Table D-8: Distribution of intrinsic job quality characteristics over types of self-employed (percentages and Chi^2 tests)

	High intensity	**Angry clients**	**Emotional demands**	**Adverse social behaviour**
	***	***	***	***
Stable own account workers	17%	35%	23%	7%
Small traders and farmers	33%	43%	32%	13%
Small and medium size employers	28%	39%	28%	8%
Insecure self-employed	12%	24%	20%	7%
Dependent self-employed	37%	39%	33%	24%
Total	**24%**	**36%**	**27%**	**10%**
Employees	35%	39%	32%	17%

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Ergonomic risks are most prevalent in ‘small traders and farmers’ (38.5%), while physical risks are the most prevalent in ‘dependent self-employed’ (38.6%) and ‘stable own account workers’ (37.8%). ‘Small traders and farmers’ (40.2%) and ‘dependent self-employed’ (39.8%) are more than other categories of self-employed affect by high work intensity. Also ‘social demands’, like contact with angry clients, emotional demands and adverse social behaviour is more prevalent in these categories, compared to the other categories of self-employed.

D.3. Relations between the typology of self-employed and selected outcomes

D.3.1. Workability outcomes

Descriptive analysis

High prospects for career advancement (table D-9) are most frequent in small and medium size employers (58%). Stable own account workers (42%) and dependent self-employed (39%) are at the same level as employees (38%). Among insecure self-employed prospects for career advancement are quite uncommon (19%). High work engagement is most common among small and medium size employers (54%) and stable own account workers (51%). The lowest frequency is seen for small traders and farmers (30%).

High job insecurity is a problem for 24% of the insecure self-employed and 21% of the dependent self-employed. All other categories of self-employed have job insecurity scores well below the score of employees (17%). Low sustainability – defined as the perception of not being able to work until the age of 60 – is most common among the insecure self-employed (31%). Small and medium size employers (12%) and stable own account workers (15%) have particularly low scores here. A problematic work-private balance is an issue for 41% of the small traders and farmers. This problem is the least frequent among insecure self-employed (14%) and stable own account workers (15%).

Table D-9: Prevalence of worker well-being outcomes over types of self-employed (percentages and Chi^2 tests)

	Career advancement	**Engagement (high)**	**(High) job insecurity**	**(Low) Sustainability**	**(Low) work-private balance**
	***	***	***	***	***
Employees	38%	35%	17%	29%	18%
Stable own account workers	42%	51%	13%	15%	15%
Small traders and farmers	33%	30%	14%	26%	41%
Small and medium size employers	58%	54%	10%	12%	20%
Insecure self-employed	19%	31%	24%	31%	14%
Dependent self-employed	39%	32%	21%	27%	21%
Total	**38%**	**36%**	**17%**	**27%**	**19%**

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Multivariate analysis

Table D-10: Association between clusters of self-employed and workability outcomes (OR's and 95% CI's)

	Model 1				Model 2				Model 3			
	OR	*CI*			OR	*CI*			OR	*CI*		
Prospects for career advancement												
Stable own account workers	1.000				1.000				1.000			
Small traders and farmers	0.382	*0.290*	*0.504*	***	0.454	*0.334*	*0.617*	***	0.455	*0.331*	*0.627*	***
Small and medium size employers	1.845	*1.492*	*2.283*	***	1.848	*1.475*	*2.316*	***	1.809	*1.435*	*2.280*	***
Insecure self-employed	0.174	*0.125*	*0.241*	***	0.203	*0.142*	*0.291*	***	0.217	*0.149*	*0.316*	***
Dependent self-employed	0.558	*0.420*	*0.740*	***	0.491	*0.361*	*0.667*	***	0.552	*0.398*	*0.766*	***
Engagement (high)												
Stable own account workers	1.000				1.000				1.000			
Small traders and farmers	0.168	*0.125*	*0.225*	***	0.189	*0.138*	*0.258*	***	0.237	*0.170*	*0.329*	***
Small and medium size employers	0.956	*0.788*	*1.159*	*n.s.*	0.993	*0.812*	*1.216*	*n.s.*	1.070	*0.868*	*1.320*	*n.s.*
Insecure self-employed	0.361	*0.276*	*0.471*	***	0.468	*0.348*	*0.631*	***	0.461	*0.337*	*0.631*	***
Dependent self-employed	0.383	*0.282*	*0.518*	***	0.393	*0.285*	*0.541*	***	0.615	*0.437*	*0.867*	**
Job insecurity (might lose job)												
Stable own account workers	1.000				1.000				1.000			
Small traders and farmers	1.403	*0.963*	*2.045*	*n.s.*	1.965	*1.292*	*2.988*	*	1.516	*0.982*	*2.341*	*n.s.*
Small and medium size employers	0.659	*0.474*	*0.917*	*	0.824	*0.584*	*1.163*	*n.s.*	0.778	*0.548*	*1.103*	*n.s.*
Insecure self-employed	2.463	*1.723*	*3.521*	***	3.409	*2.288*	*5.082*	***	2.989	*1.982*	*4.508*	***
Dependent self-employed	2.506	*1.762*	*3.565*	***	3.420	*2.325*	*5.032*	***	2.280	*1.512*	*3.437*	***
Sustainability (not able to work until 60)												
Stable own account workers	1.000				1.000				1.000			
Small traders and farmers	4.458	*3.314*	*5.997*	***	4.127	*2.968*	*5.739*	***	3.790	*2.689*	*5.343*	***
Small and medium size employers	0.783	*0.591*	*1.038*	*n.s.*	0.850	*0.632*	*1.142*	*n.s.*	0.831	*0.613*	*1.126*	*n.s.*
Insecure self-employed	4.428	*3.308*	*5.929*	***	3.359	*2.422*	*4.660*	***	3.280	*2.339*	*4.598*	***
Dependent self-employed	3.915	*2.860*	*5.360*	***	3.619	*2.581*	*5.075*	***	2.883	*2.014*	*4.128*	***
Problematic work-private balance												
Stable own account workers	1.000				1.000				1.000			

Small traders and farmers	13.56	*10.30*	*17.87*	***	13.444	*9.958*	*18.15*	***	10.872	*7.941*	*14.88*	***
Small and medium size employers	1.671	*1.307*	*2.136*	***	1.711	*1.330*	*2.202*	***	1.636	*1.261*	*2.122*	***
Insecure self-employed	1.211	*.872*	*1.683*	*n.s.*	1.742	*1.227*	*2.475*	**	1.673	*1.161*	*2.412*	**
Dependent self-employed	2.854	*2.073*	*3.929*	***	3.034	*2.173*	*4.236*	***	1.961	*1.373*	*2.801*	***

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Model 1: crude effects self-employment typology

Model 2: controlled for sex, age, educational attainment, economic sector, country

Model 3: model 2 + autonomy, physical risks, intensity, emotional demands, angry clients

Five workability outcomes have been related to the clusters, conceptualised as latent probability scores. As mentioned in the introduction, the effect estimates that are reported as odds ratio's in table D-10, represent maximum effects: the effect of going from a zero prevalence of a given cluster to a 100% resemblance. In every model, 'stable own account workers' are considered as the reference category. With that reference category in mind, cluster five (dependent self-employed) is significantly related with higher job insecurity, lower sustainability and more problematic work-life balance. The same holds for these outcomes in relation to the cluster of 'insecure self-employed'. 'Small traders and farmer' have higher odds for poor prospects for career advancement, low sustainable work and problematic work-life-balance. These relations generally tent to diminish after controlling for factors, however most of the differences found keep their significance.

D.3.2. Health and well-being outcomes

Descriptive analysis

According to 37% of the small traders and farmers, their work affects their health in a negative way (see table D-11). The prevalence of this indicator is lowest for stable own account workers (19%). The prevalence of a fair to bad general health is highest among insecure self-employed (46%), while only 18% of the small and medium sized employers perceives their health as fair to bad. With regard to poor mental well-being, an elevated prevalence (compared to the mean score of 6%) can be seen for insecure self-employed (12%) and for small traders and farmers (10%). Finally, high job satisfaction is most common among small and medium sized employers (95%) and lowest among the insecure self-employed (75%).

Table D-11: Prevalence of worker health and well-being outcomes over types of self-employed (percentages and Chi^2 tests)

	Work affects health negatively?	**Self-rated health (fair to very bad)**	**Poor mental well-being**	**Job satisfaction (high)**
	***	***	***	***
Employees	27%	21%	6%	85%
Stable own account workers	19%	23%	4%	92%
Small traders and farmers	37%	33%	10%	80%

Small and medium size employers	22%	18%	3%	95%
Insecure self-employed	25%	46%	12%	75%
Dependent self-employed	24%	25%	7%	79%
Total	**26%**	**22%**	**6%**	**85%**

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Multivariate analysis

Also four health and well-being outcomes have been studied in the same way (table D-12). Again comparing to the reference category of 'stable own account workers', 'small traders and farmers' reported more than 5 times higher odds for their health being affected by their work. Also for 'dependent self-employed' clearly higher odds can be seen (OR 2.17). The odds for a fair to bad self-rated health are clearly more elevate among 'insecure self-employed' (OR 5.29) and 'small traders and farmers' (OR 3.16). Poor mental well-being is more elevated in 'insecure self-employed' (OR 7.03), 'small traders and farmers' (OR 5.97) and 'dependent self-employed' (OR 3.76), when compared to 'stable own account workers'. Finally, job satisfaction is highest in 'small and medium size employers' (OR 2.15), while it is significantly lower compared to the reference category in all other types of self-employed.

Table D-12: Association between the clusters of self-employed and health and well-being outcomes – logistic regression (OR's and 95% CI's)

	Model 1				**Model 2**				**Model 3**			
	OR	*CI*			OR	*CI*			OR	*CI*		
Does your work affect your health negatively? (yes)												
Stable own account workers	1.000				1.000				1.000			
Small traders and farmers	5.834	*4.489*	*7.581*	***	4.652	*3.488*	*6.204*	***	4.287	*3.156*	*5.824*	***
Small and medium size employers	1.233	*0.978*	*1.554*	*n.s.*	1.236	*0.971*	*1.574*	*n.s.*	1.198	*0.930*	*1.544*	*n.s.*
Insecure self-employed	1.884	*1.433*	*2.476*	***	1.501	*1.104*	*2.039*	**	1.708	*1.235*	*2.363*	**
Dependent self-employed	2.173	*1.607*	*2.937*	***	2.457	*1.781*	*3.388*	***	1.975	*1.399*	*2.787*	***
General self-rated health (fair to very bad)												
Stable own account workers	1.000				1.000				1.000			
Small traders and farmers	3.159	*2.459*	*4.060*	***	3.264	*2.468*	*4.317*	***	3.075	*2.303*	*4.106*	***
Small and medium size employers	0.779	*0.621*	*0.978*	*	0.770	*0.606*	*0.978*	*	0.730	*0.571*	*0.933*	*
Insecure self-employed	5.293	*4.155*	*6.742*	***	3.964	*3.008*	*5.225*	***	3.993	*3.002*	*5.309*	***
Dependent self-employed	1.819	*1.365*	*2.424*	***	2.164	*1.591*	*2.943*	***	1.884	*1.361*	*2.608*	***
Poor mental well-being (WHO5)												
Stable own account workers	1.000				1.000				1.000			
Small traders and farmers	5.965	*3.680*	*9.671*	***	5.329	*3.138*	*9.050*	***	4.853	*2.817*	*8.361*	***

Small and medium size employers	0.801	*0.478*	*1.342*	*n.s.*	0.848	*0.499*	*1.443*	*n.s.*	0.844	*0.494*	*1.443*	*n.s.*
Insecure self-employed	7.025	*4.462*	*11.06*	***	5.865	*3.552*	*9.686*	***	5.836	*3.491*	*9.759*	***
Dependent self-employed	3.761	*2.214*	*6.390*	***	2.637	*1.511*	*4.603*	**	1.686	*0.934*	*3.043*	*n.s.*
Job satisfaction (high)												
Stable own account workers	1.000				1.000				1.000			
Small traders and farmers	0.108	*0.076*	*0.153*	***	0.119	*0.082*	*0.175*	***	0.134	*0.091*	*0.200*	***
Small and medium size employers	2.147	*1.430*	*3.225*	***	2.022	*1.327*	*3.081*	**	1.994	*1.301*	*3.057*	**
Insecure self-employed	0.110	*0.079*	*0.152*	***	0.111	*0.077*	*0.161*	***	0.113	*0.077*	*0.165*	***
Dependent self-employed	0.123	*0.087*	*0.175*	***	0.086	*0.058*	*0.126*	***	0.116	*0.077*	*0.175*	***

*** p. ≤ 0.000; ** p. ≤ 0.01; * p. ≤ 0.05

Model 1: crude effects self-employment typology

Model 2: controlled for sex, age, educational attainment, economic sector, country

Model 3: model 2 + autonomy, physical risks, intensity, emotional demands, angry clients

E. Discussion

The general objective of our study was to compose nuanced classifications of self-employed for the EU28-countries, based on the data of the 2015 EWCS. This objective was achieved following two different research approaches. In a first approach (Task A) a tree-structured conceptual typology of self-employed was constructed using conceptual criteria routed in the current literature on self-employment and entrepreneurship. A second approach (Task C) applied a wider set of criteria determining the employment situation of self-employed in a data reduction technique (Latent Class Cluster Analysis) in order to derive an empirical typology of self-employed. In tasks B and D both the 'conceptual typology' and the 'empirical typology' are described according to a set of background characteristics (e.g. socio-demographics; socio-economic characteristics; job content and working conditions and relevant well-being-related outcomes). Moreover, both approaches are confronted with each other as a way to validate the results of both approaches.

In task A basically three main criteria were applied in order to create a conceptual typology of self-employed: 1) self-perceived status in employment; (2) magnitude of the economic activity; and 3) economic independency. Besides to the main distinction between 'employees' and 'self-employed', this conceptual exercise yielded two main typologies of self-employed. A first – more general – classification distinguishes five categories of self-employed: *directors; farmers; freelancers/subcontractors; liberal professions and 'other self-employed'*. This basic classification can be further expanded alongside the criteria of 'magnitude' (number of employees and number of settlements) and 'degree of economic dependency' (number of clients; proportion of total income derived from one client; and difficulty to find new clients). At its broadest the self-employment classification counts nine separate categories *(director – medium to big employer; director – small employer; own account worker – independent; own account worker – dependent; farmer – no employer; freelancer/subcontractor – independent; freelancer/subcontractor – dependent; liberal profession; other).*

The conceptual typology resulting from task A was subsequently described in task B. For both the brief and the extended classification of self-employed, a profile was drawn using demographic (sex, age, household status), socio-economic (educational attainment, economic sector) and country characteristics. The profile of the classification was also drawn according to a selected number of intrinsic job characteristics, working conditions and employment conditions. This exercise showed that clear distinctions exist between each of the conceptually determined types of self-employed. In general the 'stronger' and economically independent profiles – i.e. (small) employers, liberal professions, independent own account workers – show a more advantageous profile in terms of intrinsic work characteristics (learning opportunities, autonomy, …), working conditions and discretion over decision making and time-use. In general, these groups are highly schooled. On the other side of the classification, less advantageous characteristics appear to coincide – this is mostly the case for the 'economically dependent categories'.

In task C, a Latent Class Cluster Analysis was conducted on 15 indicators characterizing the professional situation of self-employed. The 15 manifest indicators supporting the cluster analyses can be subdivided into seven dimensions, characterizing the employment situation of self-employed as it was surveyed in the EWCS: (economic) magnitude; economic independency; economic sustainability; discretion; working hours (intensity); motivation for being self-employed; and human capital formation. The result of the cluster analysis was a five cluster solution, which was labelled as follows: stable own account workers (26%); small traders and farmers (26%); small and medium size employers (23%); insecure self-employed (17%); dependent self-employed (8%).

Subsequently, in task D, this cluster solution was described alongside the same series of profile characteristics as was used for the conceptual classification in task B. Moreover, also the relation with selected health and well-being outcomes was investigated. This analysis revealed quite important differences in (mental) health, motivation, satisfaction, work sustainability (being able to work until 60 years old) between the clusters. In general, stable own account workers and small and medium size employers show the most advantageous relation with the outcomes, while some of the results for insecure and dependent self-employed are quite worrisome (e.g. high job insecurity, low sustainability and low job satisfaction for both groups). Moreover, insecure self-employed show an elevated prevalence of adverse mental well-being and general self-rated health. These latter categories of self-employed are clearly worse-off than the "mean employee". Both the conceptual (task A) and the empirical (task C) classifications were also confronted to each other. We can conclude that both approaches are revealing very similar insights, which provides an important validation for our work.

Based on this study, we can conclude that questions on economic independency and magnitude of the self-employed activity, provide useful additional information for making more nuanced classifications of self-employed. Making more nuanced classifications, in turn, seems recommendable in all future studies and surveys given the clear profiles in terms of socio-demographics, job quality and health/well-being outcomes that were revealed in our research. We believe that the EUROFOUND-items for economic independency and magnitude of the economic activity included in the 2015 EWCS are doing a good job in distinguishing different types of self-employed along these lines. Nevertheless, in future data collections it is recommendable to include additional and better items for at least two other dimensions: decision-making authority (do self-employed really have decision-making power over staff, strategic business decisions, etc.?) and social protection (in addition to sickness insurance, pension savings, income protection, etc.). Both these dimensions are yet not adequately covered by the EWCS questionnaire.

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G. Appendix

Appendix with Task A

Table F-1: AutR_new_self_empl

	Frequency	Percent	Valid Percent	Cumulative Percent
Sole director of own business	2136	4.9	26.2	26.2
Partner	533	1.2	6.5	32.8
Work for yourself	3436	7.8	42.2	75.0
Subcontractor	88	0.2	1.1	76.1
Freelancer	481	1.1	5.9	82.0
Wage	29	0.1	0.4	82.3
Other	391	0.9	4.8	87.1
Sole director + a partner in a business or professional practice	15	0.0	0.2	87.3
Sole director +partner + work for yourself	3	0.0	0.0	87.4
Director+ partner + work for yourself + subcontractor + freelancer	2	0.0	0.0	87.4
Sole director +work for yourself	218	0.5	2.7	90.1
Sole director + subcontractor	10	0.0	0.1	90.2
Sole director + freelancer	21	0.0	0.3	90.5
Sole director + wage	1	0.0	0.0	90.5
Sole director + other	7	0.0	0.1	90.6
Partner + work for yourself	40	0.1	0.5	91.0
Partner + subcontractor	4	0.0	0.0	91.1
Partner + freelancer	6	0.0	0.1	91.2
Partner + other	2	0.0	0.0	91.2
Work for yourself + subcontractor	29	0.1	0.4	91.5
Work for yourself + freelancer	82	0.2	1.0	92.6
Work for yourself + wage	4	0.0	0.0	92.6
Work for yourself + other	18	0.0	0.2	92.8
Subcontractor + freelancer	2	0.0	0.0	92.9
Freelancer + wage	2	0.0	0.0	92.9
Freelancer + other	4	0.0	0.0	92.9
Director + work for yourself + freelancer	44	0.1	0.5	93.5
Director + work for yourself + subcontractor	15	0.0	0.2	93.6
Director + work for yourself + wage	2	0.0	0.0	93.7
Partner + work for yourself + subcontractor	1	0.0	0.0	93.7
Partner + work for yourself + freelancer	4	0.0	0.0	93.7
Partner + subcontractor + wage	1	0.0	0.0	93.7
Partner + freelancer + wage	1	0.0	0.0	93.8
Work for yourself + subcontractor + freelancer	6	0.0	0.1	93.8
Work for yourself + freelancer + wage	2	0.0	0.0	93.9

Director + partner + work for yourself + freelancer	1	0.0	0.0	93.9
Director + work for yourself + subcontractor + freelancer	9	0.0	0.1	94.0
Director + work for yourself + subcontractor + other	1	0.0	0.0	94.0
Work for yourself + subcontractor + freelancer + other	1	0.0	0.0	94.0
Director + work for yourself +other	1	0.0	0.0	94.0
Director + work for yourself + freelancer + agency	1	0.0	0.0	94.0
Liberal profession	479	1.1	5.9	99.9
Unclear: wage by agency	7	0.0	0.1	100.0
Total	8140	18.6	100.0	
Missing				
Employees	35571	81.1		
Don't know or refusal	55	0.1		
Self-employed: don't know on Q8B	58	0.1		
Self-employed: no answer on Q8B	26	0.1		
Total	35710	81.4		
Total	43850	100.0		

Cluster analysis "economic independency"

1. Three sub-dimensions of economic independency (N=5310)

Table D-11: Validation analysis task A: model comparison (a)

Cluster	BIC	AIC	CAIC	Difference BIC	Difference AIC	Difference CAIC
1	55475.4093	55390.4277	55488.9321			
2	53816.3849	53632.2215	53844.3849	1659.0244	1758.2062	1644.5472
3	53706.5379	53423.7156	53749.5379	109.847	208.5059	94.847
4	53676.4616	53294.9804	53734.4616	30.0763	128.7352	15.0763
5	53681.085	53200.9448	53754.085	-4.6234	94.0356	-19.6234

Table D-12: Validation analysis task A: cluster description (a)

	Cluster 1	Cluster 2	Cluster 3	Cluster 1
Cluster size	0.5352	0.2529	0.2119	1
Indicators				
y15_Q9d (> 1 client)				
Yes	0.9508	0.5460	0.9192	0.8417
No	0.0492	0.4540	0.0808	0.1583
y15_Q91c (easy new client)				
Strongly agree	0.0458	0.0660	0.5676	0.1615
Tend to agree	0.3699	0.1902	0.2711	0.3035

Neither agree nor disagree	0.3581	0.3359	0.0097	0.2787
Tend to disagree	0.1787	0.2261	0.0193	0.1569
Strongly disagree	0.0475	0.1817	0.1322	0.0994
y15_Q102 (prop. revenue)				
Less than 50 per cent	0.6862	0.4522	0.5888	0.6064
50 to 75 per cent	0.1823	0.2371	0.1886	0.1975
More than 75 per cent	0.1315	0.3107	0.2227	0.1961
y15_Q9a (hire/dismiss)				
Yes	0.8600	0.2343	0.8000	0.6891
No	0.1400	0.7657	0.2000	0.3109
y15_Q91e (decisions)				
Strongly agree	0.6695	0.3065	0.9554	0.6383
Tend to agree	0.2564	0.3114	0.0284	0.2220
Neither agree nor disagree	0.0561	0.2131	0.0024	0.0844
Tend to disagree	0.0138	0.0904	0.0047	0.0313
Strongly disagree	0.0042	0.0787	0.0090	0.0240
y15_Q9b (agreed fee)				
Yes	0.4159	0.2045	0.4089	0.3610
No	0.5841	0.7955	0.5911	0.6390

2. Three dimensions of economic independency only (N=5497)

Table D-12: Validation analysis task A: model comparison (b)

cluster	BIC	AIC	CAIC	Difference BIC	Difference AIC	Difference CAIC
1	32109.1342	32062.8505	32116.1342			
2	31748.299	31642.5078	31764.299	360.8352	420.3427	351.8352
3	31706.8722	31541.5735	31731.8722	41.4268	100.9343	32.4268
4	31750.6396	31525.8334	31784.6396	-43.7674	15.7401	-52.7674

Table D-13: Validation analysis task A: cluster description (b)

	Cluster 1	Cluster 2	Cluster 3	Cluster 1
Cluster size	0.5821	0.3169	0.101	1
Indicators				
y15_Q9d				
Yes	0.8614	0.9995	0.2126	0.8396
No	0.1386	0.0005	0.7874	0.1604
y15_Q102				
Less than 50 per cent	0.5148	0.8432	0.4088	0.6082
50 to 75 per cent	0.2605	0.0879	0.1648	0.1961
More than 75 per cent	0.2247	0.0689	0.4264	0.1957
y15_Q91c				
Strongly agree	0.2087	0.1211	0.0099	0.1609
Tend to agree	0.3487	0.2998	0.0288	0.3009
Neither agree nor disagree	0.2364	0.3245	0.39	0.2798
Tend to disagree	0.1225	0.1802	0.2994	0.1586
Strongly disagree	0.0837	0.0744	0.2718	0.0998

1. Three dimensions of economic independency only (N=5497)

Table D-14: Validation analysis task A: model comparison (c)

cluster	BIC	AIC	CAIC	Difference BIC	Difference AIC	Difference CAIC
1	32109.1342	32062.8505	32116.1342			
2	31748.299	31642.5078	31764.299	360.8352	420.3427	351.8352
3	31706.8722	31541.5735	31731.8722	41.4268	100.9343	32.4268
4	31750.6396	31525.8334	31784.6396	-43.7674	15.7401	-52.7674

Table D-15: Validation analysis task A: cluster description (c)

	Cluster 1	Cluster 2	Cluster 3	Cluster 1
Cluster size	0.5821	0.3169	0.101	1
Indicators				
y15_Q9d				
Yes	0.8614	0.9995	0.2126	0.8396
No	0.1386	0.0005	0.7874	0.1604
y15_Q102				
Less than 50 per cent	0.5148	0.8432	0.4088	0.6082
50 to 75 per cent	0.2605	0.0879	0.1648	0.1961
More than 75 per cent	0.2247	0.0689	0.4264	0.1957
y15_Q91c				
Strongly agree	0.2087	0.1211	0.0099	0.1609
Tend to agree	0.3487	0.2998	0.0288	0.3009
Neither agree nor disagree	0.2364	0.3245	0.39	0.2798
Tend to disagree	0.1225	0.1802	0.2994	0.1586
Strongly disagree	0.0837	0.0744	0.2718	0.0998

Appendix with task C

Table D-16: Final model syntax

```
options
  algorithm
    tolerance=1e-008 emtolerance=0,01 emiterations=200000 nriterations=0;
  startvalues
    seed=0 sets=10 tolerance=1e-005 iterations=50;
  bayes
    categorical=0 variances=1 latent=0 poisson=1;
  montecarlo
    seed=0 replicates=500 tolerance=1e-008;
  quadrature  nodes=10;
  missing  includedependent;
  output
    parameters=effect standarderrors probmeans=posterior profile bivariateresiduals
    classification=model iterationdetails;
variables
  caseweight w5_EU28_new;
  dependent y15_Q15b, Rec_Q16b, y15_Q9d, Y15_Q91c_rec, y15_Q9a, Y15_Q9brec,
    y15_Q47rec, Y15_Q20rec, inc_quantiles, Y15_Q10rec, Y15_Q91arec, Y15_Q26rec,
    MOTIV_SELF_cat, Y15_Q91d_rec, TRAINING2;
  independent countid nominal inactive, nace10 nominal inactive,
    education nominal inactive, self_empl_classification nominal inactive;
  latent
    Cluster nominal 5;
equations
  Cluster <- 1;
  y15_Q15b <- 1 + Cluster;
  Rec_Q16b <- 1 + Cluster;
  y15_Q9d <- 1 + Cluster;
  Y15_Q91c_rec <- 1 + Cluster;
  y15_Q9a <- 1 + Cluster;
  Y15_Q9brec <- 1 + Cluster;
  y15_Q47rec <- 1 + Cluster;
  Y15_Q20rec <- 1 + Cluster;
  inc_quantiles <- 1 + Cluster;
  Y15_Q10rec <- 1 + Cluster;
  Y15_Q91arec <- 1 + Cluster;
  Y15_Q26rec <- 1 + Cluster;
  MOTIV_SELF_cat <- 1 + Cluster;
  Y15_Q91d_rec <- 1 + Cluster;
  TRAINING2 <- 1 + Cluster;
  Y15_Q91arec <-> Y15_Q91c_rec ;
```