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Disclosing 'masked employees' in Europe: Job control, job demands and job outcomes of 'dependent self-employed workers'

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Abstract

In this study, we examine whether *job control*, *job demands* and *job outcomes* of *'dependent self-employed workers'*, i.e., the workers in this particular *grey zone* between employment and self-employment, are more similar to those of the self-employed or paid employed. To this end, we use microdata drawn from the 2010 wave of the *European Working Conditions Survey* for 34 European countries. First, we develop and validate a psychometrically sound multidimensional scale for these 3 key constructs by conducting both *exploratory* and *confirmatory factor analysis*. Then, multilevel (hierarchical) linear regressions are used to test the validity of our hypotheses. Our results suggest that these hybrid work relationships are endowed with the least favourable attributes of both groups: lower *job control* than self-employed workers, higher *job demands* than paid employees and, overall, worse *job outcomes* than both.

JEL-classification: I10, J24, J28, J38, K31, L24, L26, O52.

Keywords: self-employment, dependency, contracting out, job control, job demands, job outcomes, Europe.

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1. Introduction

Over the last few decades, we have seen an increase in outsourcing and subcontracting activities that have transformed employment relationships into business relationships (Muehlberger 2007). There is, however, evidence that an increasing share of outsourcing activities leads outsourced workers to be *economically dependent* on (and often hierarchically subordinate to) the firms with which they contract (Román et al. 2011). Such relationships have been termed *'dependent self-employment'* (hereinafter DSE). DSE can be regarded as a sub-phenomenon of a general trend towards increasing labour market flexibility (Eichhorst et al. 2013), to which the growth of the *gig economy*, typified by online platforms and isolated independent workers, is severely contributing (Stewart and Stanford 2017).

The situation faced by these outsourced workers is being widely discussed in international political and legal forums (ILO 2003; EU Commission 2006; Eichhorst et al. 2013; OECD 2014). Consequently, there are various definitions in this particular *grey zone* between employment and self-employment. Specifically, the OECD (2014a) defines these *'dependent self-employed workers'* (hereinafter DSEW) as "own-account self-employed whose conditions of work are nonetheless similar to those of employees, in the sense that they work mainly or exclusively for a specific client-firm with limited autonomy and often closely integrated into its organizational structure". Unfortunately, under contracting formulas such as DSE, these workers lose their rights under labour law and receive less favourable benefits from social security protection (Muehlberger and Bertolini 2008; Román et al. 2011; Burke et al. 2019; Lyalkov et al. 2019). In this line, externalized workers are usually beyond the scope of collective bargaining and trade union representation (Supiot 2001; ILO 2003). Therefore, these '*masked employees*' are likely to be in an economically weaker and more vulnerable legal situation than either self-employed or paid employed.

Gaining a better understanding of DSEW seems crucial to improve the accuracy and effectiveness of those measures aimed at protecting this sensitive group of workers. However, the number of related empirical studies has been rather low to date, despite this topic being a potentially pressing political issue. The heterogeneous nature of the situations involved, the lack of a definition or statistical tool and, ultimately, the lack of reliable data are seen as more than probable causes of this research gap (Eichhorst et al. 2013; ILO 2006). Furthermore, most previous studies focus on a single country (e.g., VandenHeuvel and Wooden 1995 for Australia Harvey and Behling 2015 for the UK; Semlinger 1993 for Germany; Zientara 2008 for Poland; and Müehlberger and Pasqua 2009 for Italy). To the best of our knowledge, however, a conditional analysis that characterizes DSE, compared with self-employed and paid employed in a cross-country comparable setting does not exist to date.

Filling this research gap is precisely the main aim of this work, i.e., to shed some new light on the characteristics of DSE and, in particular, on whether job control, job demands and job outcomes of DSE are more similar to those of the self-employed or the paid employed.

2. Background and hypotheses

2.1. Job control

Job control refers to decision-making authority, i.e., the freedom that an individual has regarding what to do in his/her job and when and how to perform the necessary work (Karasek 1979). Decision autonomy is probably the most important role characteristic distinguishing self-employment from employment (Patzelt and Shepherd 2011). In contrast, wage workers operate within organizational hierarchies in which they are subject to the decisions of others (Hamilton 2000). Hence, it is clear that, on average, the self-employed have more decision-making authority and, consequently, higher levels of job control than wage workers (Hamilton 2000).

As regards DSEW, these workers are not always *personally dependent* on their principal but are, by definition, *economically dependent* (Muehlberger 2007). Economic dependence means they work exclusively (or mainly) for a specific firm (i.e., the outsourcing firm) (EU Commission 2006) and, hence, generate their entire (or a substantial part of their) income from this business relationship. Concerning personal dependence (also termed organizational dependence or hierarchy), it refers to dependence in terms of time, place and content of work. This sort of dependence or subordination is less habitual among DSEW since they are not necessarily integrated with the outsourcing firm with which they contract. On the contrary, these work relationships are frequently regulated by informal, relational contracts and by network and temporal embeddedness, and, hence, hierarchy re-enters the market through social mechanisms (Muehlberger and Bertolini 2008). Such arguments lead us to adopt the following hypotheses:

> **HYPOTHESIS 1A**. *DSEW have less job control than independent self-employed workers*.
> **HYPOTHESIS 1B**. *DSEW have more job control than paid employees*.

2.2. Job demands

Job demands refer to aspects of the job that require sustained effort and, as such, incur certain costs as a result (Beutell 2010). Job demands can hence be physical, psychological, social or organisational (Beutell 2010). In this vein, running a business is often thought to be a highly demanding task (Eden 1975). Consistently, the self-employed typically report higher job demands, i.e., have longer working hours and less time for leisure activities, than wage workers (J.M. Millán et al. 2013).

Concerning the group of DSEW, most employment protection laws in terms of working hours (and job security) are not applicable in such work relationships since they are formally self-employed (Román et al. 2011). As a result, the outsourcing firm may increase (or reduce) these workers' job demands when necessary. Ultimately, the following hypotheses can be derived:

> **HYPOTHESIS 2A**. *DSEW have fewer job demands than independent self-employed workers*.
> **HYPOTHESIS 2B**. *DSEW have more job demands than paid employees*.

2.3. Job outcomes

Self-employment is often associated with lower levels of *economic utility* than wage employment, i.e., the self-employed have lower and more variable incomes than the paid employed (Hamilton 2000). In contrast, the self-employed enjoy a *non-economic utility* from the opportunity of '*being their own boss*', which has been argued to explain their higher levels of job satisfaction (J.M. Millán et al. 2013).

A parallel explanation to the higher levels of job satisfaction for the self-employed emerges under the framework of the *job-demand-control model* –JDCM– (Karasek 1979). Thus, jobs that combine high job control with high job demands (as is typical for entrepreneurs) are called '*active jobs*'. Workers in an active job situation are motivated and stimulated (rather than stressed) and, hence, experience better health and higher well-being and job satisfaction (De Jonge et al. 2000). Another job type postulated by the JDCM is the '*passive job*', which combines both low job control and low job demands (as is frequent in waged work). This job type can be characterized as routine or monotonous and entails health risks. In particular, job incumbents may gradually lose and unlearn skills in this job situation and experience stress reactions to monotony and meaningless work (Karasek and Theorell 1990).

With respect to the DSEW, they are likely to be in a less favourable position than either self-employed people or employees in various respects.[1] First, this formula is not necessarily an unforced and positive choice to maximize income or to take advantage of non-pecuniary benefits, such as independence and flexibility. Thus, the outsourcing firm may re-grade or *mask* their employees as DSEW in an effort to reduce their associated costs (by transforming fixed costs into variable costs). Under these circumstances, not only their participation and social rights are substantively reduced compared with employees (Román et al. 2011) but also their job incomes. Furthermore, as postulated by the JDCM, these '*high-strain jobs*', which combine low levels of job control with high job demands, can carry important health consequences (e.g., psychological strain or ill health) and low well-being and job satisfaction. Such arguments lead us to adopt the following hypotheses:

> **HYPOTHESIS 3A**: *DSEW achieve worse job outcomes than independent self-employed workers*.
> **HYPOTHESIS 3B**. *DSEW achieve worse job outcomes than paid employees*.

3. Data and methods

3.1. Data

We use data from the Fifth *European Working Conditions Survey* for 34 European countries[2] – EWCS 2010– (Eurofound 2012a, 2012b), which is the first survey in the EWCS series allowing identification of the group of DSEW. This survey is carried out every five years by the EU Agency *Eurofound* (*European Foundation for the Improvement of Living and Working Conditions*) and offers key work-related information on 44,000 workers (including both employees and self-employed individuals) covering 34 European countries.[3] To this end, these workers are interviewed about several working condition aspects, including physical environment, workplace design, working hours, work organization and social relationships in the workplace.

3.2. Sample

We take advantage of the recent methodology to identify the group of DSEW proposed by Oostven et al. (2013) –and echoed by the OECD (2014) –, which is precisely implemented with data drawn from the EWCS 2010. In this sense, the following 3 questions, which are asked to those respondents who previously indicated being self-employed without employees, are crucial: (i) whether his/her firm generally has more than one client, (ii) whether he/she can hire employees to work for him/her if the workload requires it, and (iii) whether he/she makes the most important decisions on how to run his/her business. We note that the additional question (i) is aimed at capturing the presence of economic dependence, whereas the additional questions (ii) and (iii) focus on personal dependence. Thus, those self-employed without employees answering negatively to at least 2 of these 3 additional questions are considered DSEW. Conversely, those answering positively to at least 2 of these 3 additional questions are considered independent self-employed without employees. Our final sample includes men and women from 34 European countries aged 18 to 65 who are classified as DSEW, independent self-employed workers without employees (hereinafter ISE) or paid employees (hereinafter PE). All individuals working part-time, i.e., working under 15 hours per week, are excluded. The final dataset yields 28,650

[1] Using data for the EU-15, A. Millán et al. (2018) observe that DSEW are, compared with ISE, less job satisfied in terms of type of work, number of working hours, working times, and working conditions and environment.
[2] This set includes the EU-28 together, 4 candidate countries (Albania, the Former Yugoslav Republic of Macedonia, Montenegro and Turkey), 1 potential candidate country (Kosovo) and 1 European Free Trade Association (EFTA) country (Norway).
[3] Depending on country size and national arrangements, the sample ranges from 1,000 to 4,000 workers per country.

observations, of which 325 (12.6% of the group of self-employed without employees[4]) refer to DSEW.

3.3. Procedures

This study analyses how DSEW, ISE and PE compare in terms of *job control*, *job demands* and *job returns*. To this end, we first develop and validate a psychometrically sound multidimensional scale for these 3 key constructs by conducting both *exploratory* and *confirmatory factor analysis* (hereinafter EFA and CFA). The *principal factor* method of extraction, followed by an *oblique* rotation method, is used when executing EFA. Next, CFA is developed by means of a *partial least squares structural equation modelling* (PLS-SEM) approach. Finally, we apply *multilevel (hierarchical) linear regressions* to test the validity of our hypotheses.

3.4. Measures

3.4.1. Dependent variables

Towards the end of developing a sound scale, items must reflect what they are intended to measure and represent a proper sample of the domain of a construct, i.e., items must possess *face* and *content validity* (Nunnally and Bernstein 1994). Sets of 14, 37 and 25 items are preselected to capture our latent variables *job control*, *job demands* and *job outcomes*, respectively. Two aspects of our initial pool suggest our scale meets both face and content validity: (i) all the items stem from the EWCS 2010 questionnaire ensuring that they are specifically designed to capture several work-related issues of both employees and self-employed workers; and (ii) all the items are selected consistent with the theoretical bases and/or conceptual definitions discussed in our background section. After several item configurations are judged and tested, 17 items are selected for our final multidimensional scale: (i) *job control* (5 items), (ii) *job demands* (5 items), and (iii) *job outcomes* (7 items). For brevity and focus, only the items in our final scale are presented next.[5]

JOB CONTROL (Hypotheses 1A-1B)

- *JC1. Ability to choose or change (i) order of tasks, (ii) methods of work, and (iii) speed or rate of work* (identifiers Q50A, Q50B, Q50C). Cronbach's alpha is .78.
- *JC2. Capacity to set one's work schedule* (identifier Q39).
- *JC3. Ability to take a break when wished* (identifier Q51F).
- *JC4. Ability to apply one's ideas at work* (identifier Q51I).
- *JC5. Capacity to influence important decisions at work* (identifier Q51O).

Essentially, items JC1 to JC5 refer to job control in terms of (i) scheduling, (ii) work methods, and (iii) decision-making. These 3 concepts have been used in numerous other studies to measure job control or decision-making authority (e.g., Hessels et al. 2017). We will interpret these items in the following manner: The higher the values for JC1 to JC5 are, the more job control there is.

JOB DEMANDS (Hypotheses 2A-2B)

- *JD1. Weekly working hours* (identifier Q18).
- *JD2. Excess between actual and preferred weekly working hours* (identifiers Q18, Q19): When individuals work more (less) hours than preferred, this variable is positive (negative).
- *JD3. Divergence between actual and preferred weekly working hours* (identifiers Q18, Q19): This item equals JD2 but is expressed in absolute values.
- *JD4. Number of weeks a month working on Saturdays and/or evenings* (identifiers Q33, Q35).
- *JD5. Number of times a month working more than 10 hours a day* (identifier Q36).

[4] This figure varies substantially across European countries. Thus, it rises above 20% in countries such as Albania, Bulgaria, Hungary, Latvia, Lithuania, Montenegro, Romania and Slovakia. By contrast, this figure lies below 5% in countries such as Denmark, Estonia, Sweden and the UK.
[5] Excluded items are available upon request.

Items JD1 to JD4 are associated with job demands in terms of workload. Variable JD5 is related to job demands in terms of shift work. Similar items aimed at capturing job demands have been used in several other studies (e.g., Hessels et al. 2017). We will interpret these items as follows: The higher the values for JD1 to JD5 are, the more job demands there are.

JOB OUTCOMES (Hypotheses 3A-3B)

- *JO1. Being well paid* (identifier Q77B).
- *JO2: Household ability to make ends meet* (identifier EF6).
- *JO3. Satisfaction with working conditions* (identifier Q76).
- *JO4. Good prospects for career advancement* (identifier Q77C).
- *JO5. Work effect on health* (identifier Q67).
- *JO6. Health status* (identifier Q68).
- *JO7. Feeling calm and relaxed* (identifier EF4B).

Items JO1 and JO2 refer to job outcomes in terms of economic utility, whereas JO3 to JO7 capture job outcomes in terms of non-economic utility. Several studies use similar items, such as remuneration and job satisfaction, to proxy economic and non-economic utility derived from work (e.g., Block et al. 2015; Van Stel et al. 2018). Stress, well-being and health have also been used as habitual job outcomes in the literature (e.g., De Jonge et al. 2000). Succinctly, we will interpret these variables in this manner: The higher the values for JO1 to JO7 are, the better job outcomes there are.

Once validated, these 3 factors are used as our main dependent variables in our empirical models to test the validity of our hypotheses.

3.4.2. Main explanatory variables

Our main independent variables are a set of 3 dummies capturing the employment status of the individual: (i) DSEW (our reference category), (ii) ISE, or (iii) PE.

3.4.3. Control variables

To isolate the effect of our hypotheses-related variables, the empirical models include a large number of individual-specific independent variables that have been used in prior research about the determinants of job control, job demands (e.g., Hessels et al. 2017) and job outcomes (e.g., J.M. Millán et al. 2014; Congregado et al. 2016). These include demographic indicators (gender, age, cohabitation status, children in the household), educational attainment, and job-related aspects (tenure, business sector). Finally, we also control for country fixed effects, which account for structural differences between countries.

4. Results and discussion

This paper investigates whether *job control*, *job demands* and *job outcomes* of the DSE are more similar to those of the self-employed or the paid employed. To this end, we first develop and validate a psychometrically sound multidimensional scale for these 3 key constructs by means of both EFA and CFA. Subsection 4.1 describes the key elements of the scale generation process. Next, we test the validity of our hypotheses by running multilevel (hierarchical) linear models. Subsection 4.2 presents the main results derived from these regressions. Figure 1 below captures this process in a summary diagram.

--- Figure 1 here ---

4.1. Exploratory and confirmatory factor analyses

Data reduction by means of EFA is found to be legitimate in light of both the *Kaiser–Meyer–Olkin measure* of sampling adequacy (KMO = .79; Kaiser 1974) and the *Bartlett test of sphericity* (χ^2_{Bartlett} [136] = 1.03E+05, $p < .0001$; Bartlett 1950). EFA involves important analytic decisions. *First*, given that the *assumption of multivariate normality* of our items is '*severely violated*' ($\chi^2_{\text{Doornik-Hansen}}$ [34] = 1.58E+05, $p < .0001$; Doornik and Hansen 2008), the *principal factor* method of extraction is used (Fabrigar et al. 1999). *Second*, both the *K1* (eigenvalue-greater-than-one rule; Kaiser 1960) and *Scree Plot* (Cattell 1966) methods suggest 3 as the ideal number of meaningful factors to retain, which is consistent with the proposed approach in this study. *Third*, the *direct oblimin* rotation (oblique) method is used to interpret our factors since orthogonal factors (i.e., completely uncorrelated with each other) are rare in the social sciences (Osborne 2014). In this sense, only items loading substantially on one factor are retained (Spector 1992).[6] These items and their factor loadings are presented in Table 1 below.

--- Table 1 here ---

Finally, rigorous *internal replicability* criteria are fulfilled by splitting our original sample of 28,650 workers into two subsamples via random assignment (Osborne 2014).

After executing EFA to extract and select meaningful factors, this study next applies CFA to empirically examine the dimensional structure, validity and reliability of our multidimensional scale. With this purpose in mind, a PLS-SEM approach is used. This methodology is better suited to the data set of 34 countries than covariance-based CFA (Hair et al. 2011). As is typical, all the factors are modelled as reflective constructs (Diamantopoulos and Winklhofer 2001). Some relevant coefficients to assess the reliability and validity of our scale are presented in Table 2 below.

--- Table 2 here ---

Composite reliability or *internal consistency* of each factor is assessed by calculating (i) *Cronbach's alpha* (Cronbach 1951), (ii) *Dillon-Goldstein's rho* (DG rho), and (iii) the *average inter-item correlation* coefficients. Cronbach's alpha constitutes the lower bound of a scale's internal reliability (Miller 1995) or, stated differently, estimates the proportion of the total variance of the scale that can be attributed to a common source (Spector 1992). According to Chin (1998), DG rho is considered in situations of low numbers of items a better indicator than Cronbach's alpha that provides a lower bound estimate of reliability. As shown in Table 2 above, Cronbach's alphas and DG rhos for our 3 constructs fall above the benchmark of .70, which usually represent satisfying composite reliability (Nunnally and Bernstein 1994). Similarly, the average inter-item correlation coefficients for our factors are found to be between .20 and .40, suggesting that while the items are reasonably homogenous, they do contain sufficiently unique variance to not be isomorphic with each other (Piedmont 2014). Finally, the existence of significant differences in these reliability coefficients when splitting our original sample into two subsamples via random assignment is tested and rejected (Feldt 1969), which indicates that each factor's internal reliability is stable across samples (Miller 1995).

Some final tests are necessary for ensuring the *construct validity* of our scale, i.e., *convergent* and *discriminant validity*. Convergent validity is achieved when all items in a measurement model are statistically significant, whereas discriminant validity expresses that the measurement model of a construct is free of redundant items (Awang 2012). All the primary loadings derived from the PLS approach (not shown for brevity) are greater than .5 (with the only exception of JO5; see footnote 6); consequently, we may conclude that the convergent validity of our scale is adequate

[6] The only exception is the item JO5, which presents a primary loading of .32 and is determined to remain in the model for conceptual reasons. No other relevant loadings are identified for this item.

(Cole 1987). As seen in Table 2, each construct's square root of average variance extracted (AVE) is also greater than all the inter-construct correlations, i.e., $\sqrt{\text{AVE}}\ \xi_j > \max \mid r_{ij} \mid \forall\ i \neq j$, which reflects good discriminant validity (Fornell and Larcker 1981). Additionally, all the indicators' loadings are found to be higher than all of their cross loadings, which also suggests good discriminatory validity (Hair et al. 2011).

In summary, after having exhaustively explored our measures' dimensionality, validity and reliability, we may safely state that we have reached a psychometrically sound multidimensional scale for our 3 constructs of interest, i.e., *job control*, *job demands* and *job outcomes*. This new scale not only is useful for the main purpose of this work (i.e., presenting a comprehensive study about how DSEW, ISE and PE compare in terms of these constructs) but also provides a contribution to the study of *organizational behaviour.*

4.2. Hypothesis testing

4.2.1. Descriptive analysis

Table 3 below compares DSEW (our reference category) to ISE and PE using tests of equality of means. Notable differences exist among these 3 groups.

--- Table 3 here ---

For all the items and constructs related to job control and job demands, the mean values for DSEW lie between those for ISE and PE (those with the highest and lowest values, respectively). Otherwise stated, the group of DSEW seems to have less job control and job demands than ISE on one hand but more than PE on the other hand, which is consistent with Hypotheses 1A-1B and 2A-2B. For all the items and construct related to job outcomes, the mean values for DSEW are the lowest. In other words, DSEW appear to achieve worse job outcomes than both ISE and PE, which is consistent with Hypotheses 3A-3B.

4.2.2. Multivariate analysis

Although our descriptive analysis seems to support the validity of our hypotheses, a conditional analysis is needed to draw robust conclusions. To correct for biases in parameter estimates resulting from country groupings, we use multilevel (hierarchical) linear models (Guo and Zhao 2000). A precondition for running such a model is that significant between-group (in this case, countries) variance exists for the dependent variable (Autio and Acs 2010). We therefore perform ANOVAs with each of our constructs as dependent variables and country group membership as the predictors. The *intraclass correlation* (ICC) coefficients indicate that the country-level variance is, for each factor, (i) nontrivial, (ii) highly significant, and (iii) within the normal range (5–20%) that can be expected of grouped data of this nature (Bliese 2000). Hence, using multilevel models is legitimate.

Table 4 below shows the estimation results from 3 specifications, which are associated with our 3 constructs developed and validated to capture *job control*, *job demands* and *job outcomes*. At this point, we again note the manner in which we interpret our dependent variables: The higher their values are, the more job control, job demands and job returns there are.

--- Table 4 here ---

First, our results in specification 1 show that, compared with being DSEW, being ISE increases job control by .37 (approximately 25.6% of the job control interquartile range), whereas being PE decreases job control by 1.05 (approximately 72.8% of the job control interquartile range). *Second*, our results in specification 2 reveal that, compared with being DSEW, being ISE increases job demands by .29 (approximately 39.7% of the job demands interquartile range), whereas being PE decreases job demands by .54 (approximately 79.7% of the job demands

interquartile range). *Third*, our results in specification 3 indicate that, compared with being DSEW, being ISE and being PE increase job outcomes by, respectively, .33 and .20 (approximately 24.8% and 14.7% of the job outcomes interquartile range, respectively). Essentially, our empirical tests support all the hypotheses advanced in this article and, in particular, show how DSEW combine the disadvantages of alternative statuses without benefiting from the advantages. These results, when placed in perspective with their respective interquartile range, are seen to be not just statistically significant but also substantial and, hence, meaningful.

The first implication emerging from this result is the existence of an empirical relationship between our measures of job control, job demands and job outcomes, and other concept to which we argue these 3 measures should be theoretically related, i.e., the employment status of the individual: DSEW, ISE or PE. This relationship can be interpreted as a final test ensuring *construct validity* of our multidimensional scale developed in this study. The remaining implications of these results for both policy makers and researchers are comprehensively discussed next in the conclusions section.

4.3. Robustness checks

We perform a couple of robustness checks. *First*, our results are robust to the use of an alternative and less restrictive definition of DSEW. In particular, all self-employed without employees answering negatively to the question (iii) are considered DSEW in this robustness test, regardless of their answer to questions (i) and (ii).[7] By doing so, the number of DSEW increases to 363 (14.1% of the group of self-employed without employees). *Second*, the development and validation of our scale are robust to using alternatives: (i) factor extraction techniques (e.g., *maximum likelihood*), (ii) rotation methods (e.g., *promax*), and (iii) CFA (e.g., covariance-based SEM). *Third*, our conditional analysis is also robust to the use of simple OLS regressions. *Fourth*, our hypotheses are also confirmed when running 17 additional regressions with each item acting as separate dependent variable (which are available upon request). *Fifth*, the maximum correlation is 0.32 (between cohabiting and number of children), and the *variance inflation factors* values (from specification 1 in Table 4) range from 1.00 to 1.61. Hence, multicollinearity does not pose a concern, especially given the large size of our sample (N = 28,650).

4.4. Limitations

Our study is not exempt of limitations. *First*, although we use microdata drawn from a dataset with a very clear definition of DSEW, we cannot rule out the possibility that our results are affected by the adequacy of this proxy. More research is needed to determine whether alternative proxies reinforce the robustness of our results. *Second*, the number of observations per country is rather low to examine in greater depth individual countries. *Third*, the lack of panel data precludes analysis of the dynamics of this phenomenon. Thus, a natural extension of this study would explore DSE entry determinants, the length of their spells and existing pathways out.

5. Conclusions

In recent years, the situation of those workers in this particular *grey zone* between employment and self-employment has become a *hot* policy issue. From a policy perspective, governments are faced with the twin objectives of preserving employment and reforming labour and social protection when addressing the situation of these hybrid work relationships. In this sense, the widespread increase in outsourcing and subcontracting activities makes a return to traditional forms of dependent wage labour unlikely. On that basis, even DSE can be promoted (to some extent) in some sectors and occupations if articulated in a sustainable manner, i.e., in a way that does not adversely affect the working and living conditions of potential workers. However, the empirical evidence gathered in this study clearly shows the group of DSEW as being in a more

[7] See subsection 3.2.

vulnerable situation compared with other employment statuses. Therefore, a substantial policy reform seems in order.

First, given obvious tendencies of highly flexible employment, there is a strong need for clear criteria for the definition of employment status, including (different forms of) DSE (Eichhorst et al. 2013). To this end, countries such as Austria, Germany and Italy have taken the lead in creating special categories to classify some forms of DSE. In this sense, the creation of a legal hybrid category for DSE can be seen as a potentially promising way not only to establish an operational labour market status but also to extend certain employees' labour and social rights to these '*masked employees*'. Furthermore, reducing misclassification of DSEW as independent self-employed would result in a decrease of losses in terms of unpaid contributions and taxes. In other words, DSE protection is also necessary because there are public goods at stake (ILO 2006).

Second, making non-wage labour costs (i.e., taxes and social insurance contributions) less dependent on the legal employment status of the employee can reduce employers' incentives to *mask* their employees (by artificially altering their employment status) to evade the economic effects of labour regulations (Eichhorst et al. 2013). We note that promoting protection is beneficial not only for these workers but also for those employers who comply with the law and, hence, suffer unfair competition (ILO 2006; Eichhorst et al. 2013). For that purpose, either the integration of DSE into the existing social security regime for regular employees or, alternatively, the design of an *ad-hoc* category for DSEW with specific rules as regards their social protection is a valid option, if combined with liability of their employers to pay taxes and social security contributions. Additionally, as Eichhorst et al. stress, these actions are fully consistent with the ambition of the *European social model* to provide more universal social and labour protections, such as health and safety standards for all.

However, for a finer-grained assessment of the situation and a better-tailored policy approach, better data availability is simply essential. Thus, given that DSE is not a part of formal working relationships in most countries, the statistical information deficiencies on these activities are serious. As a result, DSE is an under-researched phenomenon with several heterogeneous operationalisations in the literature which, in most cases, are only accurate for single countries. Nevertheless, not all the blame can be placed on data deficiencies. In this sense, generally accepted definitions of the existing employment statuses, including DSE, have not yet been achieved and, hence, accurate statistical necessities have not been clearly revealed. As we surpass these obstacles, the subsequent homogenisation of the demands for these types of data will result in better statistical measurements that will allow capturing the different dimensions in which DSEW affects economic activity.

At any rate, there are 2 reasons (at least) to be optimistic as regards future perspectives for both policy makers and applied researchers to further elucidate the DSE phenomenon. *First*, the production and availability of reliable and internationally comparable statistics on DSE are expected to grow in the short term. Thus, the 2015 wave of the EWCS (Eurofound 2016) is ready since mid-2017 and the European Union Labour Force Survey *ad hoc* module 2017 (EU-LFS AHM 2017) on self-employment incorporates one particular sub-module (sub-module 1) specifically designed to identify DSEW. In this sense, this sub-module is planned not only to be ready for scientific purposes in 2019, but also to be permanently incorporated in the survey from 2019 onwards. *Second*, by comparing operational definitions of DSEW proposed by (i) Oostven et al. (2013) for the EWCS and (ii) the EU-LFS, we can observe a noticeable degree of convergence around the concepts of both economic and personal dependence. In this sense, although it is still too soon to evaluate the accuracy of the EU-LFS operationalisation, the proposal by Oostven et al. to distinguish DSE from other employment statuses is revealed as a very promising and effective methodology, as shown by the evidence gathered in this study. Thus, the internal coherence of our results and their compatibility with existing literature concur in strengthening the adequacy of these proxies to both explore the DSE phenomenon and establish

solid ground to arrive at the desired generally accepted definitions of the existing employment statuses, including special categories such as DSE.

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Tables *–to be inserted in the text–*

Table 1. Scale dimensionality: *oblimin*-rotated factor loadings

Items		Factor 1	Factor 2	Factor 3
Job control				
JC1	Ability to choose or change (i) order of tasks, (ii) methods of work, and (iii) speed or rate of work	-.02	**.58**	.07
JC2	Capacity to set one's work schedule	.19	**.47**	.03
JC3	Ability to take a break when wished	.01	**.67**	.15
JC4	Ability to apply one's ideas at work	.10	**.66**	.15
JC5	Capacity to influence important decisions at work	.07	**.51**	.10
Job demands				
JD1	Weekly working hours	**.73**	.04	-.03
JD2	Excess between actual and preferred weekly working hours	**.66**	.03	.01
JD3	Divergence between actual and preferred weekly working hours	**.52**	.04	-.16
JD4	Number of weeks a month working on Saturdays and/or evenings	**.50**	.01	-.12
JD5	Number of times a month working more than 10 hours a day	**.61**	.09	-.03
Job outcomes				
JO1	Being well paid	-.04	.12	**.60**
JO2	Household ability to make ends meet	-.04	.20	**.51**
JO3	Satisfaction with working conditions	-.14	.21	**.58**
JO4	Good prospects for career advancement	.01	.20	**.49**
JO5	Work effect on health	-.09	.10	**.32**
JO6	Health status	-.01	.06	**.46**
JO7	Feeling calm and relaxed	-.08	.07	**.41**
Eigenvalue		2.63	2.11	0.90

Notes: Substantial loads on each factor are indicated in bold.
N = 28,650 obs.; Data source: EWCS 2010.

Table 2. Factor summary statistics and scale reliability and validity

	Summary statistics				Reliability			Validity		
Key constructs	Mean	SD	Min	Max	Cronbach's α	Dillon-Goldstein ρ	Average inter-item correlation	Job control	Job demands	Job outcomes
Job control	0	1	-2.10	1.91	0.74	0.83	0.37	**0.70**		
Job demands	0	1	-1.48	8.57	0.75	0.83	0.37	0.13	**0.70**	
Job outcomes	0	1	-3.46	2.64	0.72	0.80	0.26	0.32	-0.11	**0.61**

Notes: Figures in bold in the diagonal are the square root of each construct's average variance extracted ($\sqrt{\text{AVE}}\ \xi_j$).
Figures below the diagonal are inter-construct correlations (r_{ij}).
N = 28,650 obs.; Data source: EWCS 2010.

Figure 1. Summary diagram

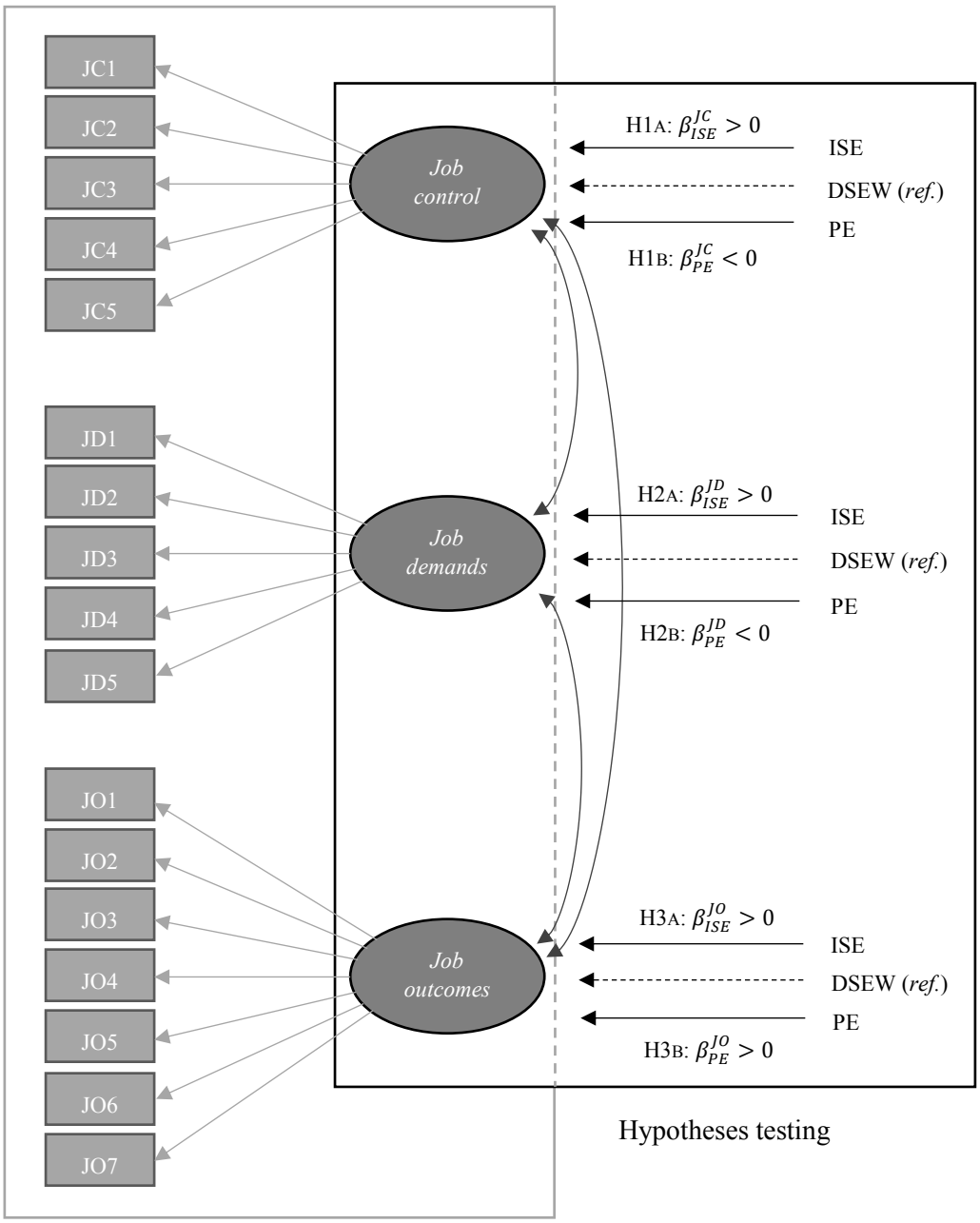

Table 3. Univariate analysis

Variables		Min – Max	PE		DSEW		ISE		t-statistic test of the equality of means (PE-DSEW)	t-statistic test of the equality of means (ISE-DSEW)
			Mean	Std. dev	Mean	Std. dev.	Mean	Std. dev.		
Job Control		-2.10 – 1.91	-0.13	0.94	0.89	0.90	1.33	0.60	-20.33***	8.56***
JC1	Ability to choose or change (i) order of tasks, (ii) methods of work, and (iii) speed or rate of work	0 – 3	1.96	1.18	2.50	0.92	2.70	0.75	-10.50***	3.81***
JC2	Capacity to set one's own work schedule	0 – 4	1.51	0.90	3.25	1.11	3.65	0.81	-28.03***	6.29***
JC3	Ability to take a break when wished	1 – 5	3.46	1.34	4.08	1.21	4.48	0.87	-9.14***	5.82***
JC4	Ability to apply one's own ideas at work	1 – 5	2.89	1.28	3.72	1.34	4.33	0.99	-11.06***	7.93***
JC5	Capacity to influence important decisions at work	1 – 5	3.04	1.44	3.96	1.19	4.24	1.06	-13.79***	3.99***
Job demands		-1.48 – 8.57	-0.08	0.86	0.59	1.50	0.88	1.69	-8.08***	3.25***
JD1	Weekly working hours	15 – 90	38.85	9.34	44.40	15.90	47.44	15.91	-6.28***	3.23***
JD2	Excess between actual and preferred weekly working hours	-60 – 84	1.72	8.62	4.35	13.21	6.64	14.08	-3.58***	2.89***
JD3	Divergence between actual and preferred weekly working hours	0 – 84	4.61	7.49	8.68	10.86	9.54	12.29	-6.73***	1.32*
JD4	Number of weeks a month working on Saturdays and/or evenings	0 – 9	1.62	1.95	3.72	2.50	3.74	2.45	-15.09***	0.12
JD5	Number of times a month working more than 10 hours a day	0 – 31	1.91	4.51	4.19	7.29	5.44	8.46	-5.64***	2.83***
Job outcomes		-3.46 – 2.64	0.01	0.99	-0.47	1.15	0.01	1.09	7.43***	7.06***
JO1	Being well paid	1 – 5	3.03	1.12	2.75	1.11	3.03	1.13	4.51***	4.16***
JO2	Household ability to make ends meet	1 – 6	3.73	1.29	3.26	1.34	3.69	1.35	6.36***	5.47***
JO3	Satisfaction with working conditions	1 – 4	3.01	0.70	2.72	0.88	3.01	0.81	5.89***	5.55***
JO4	Good prospects for career advancement	1 – 5	2.77	1.19	2.40	1.15	2.81	1.23	5.67***	5.83***
JO5	Work effect on health	1 – 3	1.82	0.59	1.75	0.63	1.83	0.63	1.82**	2.15**
JO6	Health status	1 – 5	4.01	0.75	3.82	0.84	4.05	0.75	4.15***	4.69***
JO7	Feeling calm and relaxed	1 – 6	3.35	1.15	3.07	1.21	3.29	1.19	4.07***	3.07***

Notes: N = 28,650 obs.; * $0.1 > p \geq 0.05$; ** $0.05 > p \geq 0.01$; *** $p < 0.01$; Data source: EWCS 2010.

Table 4. Determinants of job control, job demands and job outcomes

	Multilevel (hierarchical) linear models					
# Specification	**1**		**2**		**3**	
Dependent variable (y_i)	*Job control*		*Job demands*		*Job outcomes*	
Min – Max	-2.10 – 1.91		-1.48 – 8.57		-3.46 – 2.64	
Independent variables (x)	*dy/dx*	t-stat.	*dy/dx*	t-stat.	*dy/dx*	t-stat.
Employment status						
H1A-3A ISE [a]	0.371	7.18***	0.291	5.22***	0.332	5.94***
DSEW [a] (*ref.*)	---		---		---	
H1B-3B PE [a]	-1.052	-21.33***	-0.541	-10.16***	0.198	3.70***
Demographic characteristics						
Female [a]	-0.127	-11.43***	-0.271	-22.27***	-0.143	-11.89***
Age (*18-65*)	0.010	2.73***	0.009	2.14**	-0.049	-11.90***
Age (squared)	-5.5E-05	-1.19	-1.6E-04	-3.13***	4.7E-04	9.40***
Cohabiting [a]	0.044	3.61***	0.021	1.54	0.106	7.94***
Number of children under 14	0.049	3.84***	-0.038	-2.77***	-0.018	-1.33
Educational attainment						
Basic education (ISCED-1997, 0-1) [a] (*ref.*)	---		---		---	
Secondary education (ISCED-1997, 2-4) [a]	0.226	9.44***	-0.192	-7.44***	0.404	15.59***
Tertiary education (ISCED-1997, 5-6) [a]	0.671	26.32***	-0.172	-6.22***	0.833	30.16***
Job-related aspects						
Tenure (0-49 years)	0.007	4.01***	0.007	3.39***	0.009	4.67***
Tenure (squared)	-1.2E-04	-2.26**	-2.1E-04	-3.60***	-1.4E-04	-2.46**
Log likelihood	-36,822.5		-39,117.0		-39,117.8	

Notes: Although we present only final specifications, a stepwise regression approach (in which models incorporate covariates one-by-one) is followed.
For continuous variables, *dy/dx* captures the average marginal effects. In the context of dummy variables, this reflects the impact for a discrete change of the dummy variable from 0 to 1.
All the regressions include 17 business sector dummies based on the *Nomenclature of Economic Activities* (NACE rev. 1, 2002).
All the regressions are grouped for 34 countries. Min. obs. per group = 442. Max obs. per group = 2,694.
* $0.1 > p \geq 0.05$; ** $0.05 > p \geq 0.01$; *** $p < 0.01$.
[a] Dummy variable.
N = 28,650 obs.; Data source: EWCS 2010.