Self-employment and job satisfaction: Own-account workers versus employers

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***** PRELIMINARY VERSION, PLEASE DO NOT QUOTE*****

Abstract:
Informed by data from the European Community Household Panel (ECHP; Eurostat), this paper investigates job satisfaction of self-employed individuals, distinguishing between employers and own-account workers. The results suggest that employers have significantly higher levels of job satisfaction than the own-account workers, confirming the existence of heterogeneity within the self-employment sector. Employers who have five or more employees are most satisfied, although those with less than five employees are also more satisfied with their work than own account workers. The significant difference with employers disappears, however, for solo self-employed with high income and for those with high levels of education.

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1. INTRODUCTION

Self-employment is increasing in many parts of the world. The information technology revolution has made it easier for people to set up their own business. Self-employment receives considerable attention and support from national governments as well as from international organizations such as the World Bank and the United Nations. (New) business ownership is considered to be important because it can help to improve people's lives, not only for the business owners themselves, but also because business owners may create jobs for others. Governments around the world have created policies for encouraging and facilitating the growth of small business and self-employment (see, for instance the new Europe 2020 strategy, the EU's growth strategy for the coming decade).

Prior studies have focused attention on the pecuniary and non-pecuniary gains of self-employment (Hamilton, 2000; Benz and Frey, 2008). In terms of non-pecuniary gains previous work acknowledges the importance of job satisfaction, i.e. the degree to which people like their work, for individuals' choice between salaried work and self-employment. Most findings are consistent with the hypothesis that self-employed are more satisfied with their job than employees (Blanchflower and Oswald, 1998; Blanchflower, 2000; Hundley, 2001; Benz and Frey, 2004). It has been argued that greater job satisfaction reported by the self-employed is due to procedural preferences for independence and flexibility (Eden, 1975; Hamilton, 2000; Hundley 2001; Benz and Frey, 2008a, b). According to this procedural utility view, utility differences with respect to job satisfaction between the self-employed and employees result from the nature of self-employment which provides more independence and flexibility than being in wage employment.

Other streams of research highlight that there exists substantial segmentation within the self-employment sector: (i) innovative versus imitative entrepreneurs (Schumpeter, 1912); (ii) productive, unproductive and destructive entrepreneurs (Baumol 1990); (iii) opportunity versus necessity entrepreneurs (Reynolds et al. 2002); (iv) the distinction between several engagement levels of the entrepreneurial process (Grilo and Thurik 2008; Van der Zwan et al. 2010); and (v) the distinction between self-employed with employees (hereafter employers) and the own-account workers (Earle and Sakova 2000; Congregado, Golpe and Carmona 2010; Congregado, Millán and Román 2010; Congregado, Golpe and Parker 2013; Mandelman and Montes-Rojas 2009; Millán et al. 2012; Román et al. 2013).

With respect to this last distinction, it has been found, for example, that employers much more resemble creative and dynamic entrepreneurship than the own-account workers (Mandelman and Montes-Rojas, 2009), who are often driven by necessity considerations (Congregado, Golpe and Carmona 2010; Congregado, Golpe and Parker 2013; Mandelman and Montes-Rojas, 2009; Román et al. 2013). Overall, having employees tends to be associated with higher ability and with business success (Congregado, Millán and Román 2010). It may therefore not be correct to consider the self-employed as one group which does not do justice to the existence of heterogeneity between employers and own account workers. In addition, having more employees may even be more indicative for ability and business success (De Paula and Scheinkman, 2007). This would suggest that levels of job satisfaction may be considerably higher among employers, in particular among those having a higher number of employees, than among the own-account workers. Prior studies investigating job satisfaction in relation to self-employment have usually treated the self-employed as one single homogeneous group (Blanchflower and Oswald 1998; Blanchflower 2000; Blanchflower et al. 2001; Parasuraman and Simmers, 2001; Benz and Frey, 2004, 2008; Bradley and Roberts, 2004; Millán et al. 2013).

Taking account of the potential heterogeneity within the group of self-employed, this paper investigates job satisfaction of the self-employed by examining whether there are any differences in levels of satisfaction (i) between employers and own-account workers; and (ii) between employers with different number of employees and own-account workers. It is, however, also very likely that considerable heterogeneity exists within the group of own-account workers. Own-account work is not necessarily undertaken out of necessity or a lack of alternative employment options, but may also be a positive choice to maximize income or to take advantage of non-pecuniary benefits such as

independence and flexibility as argued above. Many useful examples of opportunity- and necessity-driven self-employment (mostly applicable to the own-account workers group) are available in Professor Peter Kuhn's editor's note to the *Labour Economics Special Issue on Self-employment* (September 2000): [1]

> *Both labour economists and the general public tend to entertain several very disparate stereotypes of the "self-employed". One such stereotype is the prosperous and stable professional: the doctor, lawyer, dentist, or accountant. Another is the immigrant working long hours for a low income, perhaps "pushed" into self-employment by racial or ethnic discrimination. There is the new home business, made possible by advances in computer and Internet technology, supplying business services, creative services, or selling a niche product on line. Not to be forgotten is the displaced middle-manager, labeling himself as a "consultant", but who might be more accurately described as unemployed. Finally, the clever tax-minimizer has set up a business alongside her regular paid work to take advantage of strategic deductions. She may even have given up paid work but —with her former employer's cooperation — continues to perform the same services as before outside the purview of a variety of regulations and taxes.*

Therefore, the level of ability and extent of business success of own-account workers may matter for how satisfied they are with their job. Using education as a proxy of ability and self-employment earnings as a proxy of business success, we also investigate whether there are any differences in levels of satisfaction between on the one hand employers and on the other hand own-account workers (iii) with high and low levels of education; and (iv) with high and low levels of earnings.

To this aim, generalized ordered logit models are applied to data drawn from the European Community Household Panel (ECHP, Eurostat). Our results suggest that employers have significantly higher levels of job satisfaction than the own-account workers, confirming the existence of heterogeneity within the self-employment sector. Employers who have a higher number of employees (five or more) are most satisfied. The significant difference with employers disappears, however, for solo self-employed with high income and for those with high levels of education.

The remainder of this paper is set out as follows. Section 2 briefly describes the underlying rationale, while section 3 describes the data, methodology and variables. Results are presented in section 4. Section 5 concludes and provides some further discussions.

2. LITERATURE BACKGROUND

The choice of labor market state depends on expected utility (Evans and Jovanovic, 1989; Evans and Leighton, 1989; Taylor, 1996; Taylor, 1999). This also applies to the state of solo self-employment versus being an employer. Self-employed will only decide to hire one or more employees when the expected marginal benefits of having employees are higher than the expected marginal costs. As part of this cost-benefit analysis the expected benefits and costs of alternatives to hiring employees, e.g. to cooperate with other self-employed instead, also are considered.

Segmentation within the self-employment sector

Several studies distinguish between entrepreneurs who monitor others and (solo) self-employment hinting at the existence of segmentation within the self-employment (Banerjee and Newman, 1993; Earle and Sakova, 2000). This distinction is considered to be relevant, for example, to understand the role that entrepreneurs' play in markets and the process of economic development. It has been highlighted that self-employed who employ others tend to resemble the dynamic and creative entrepreneurship view and are more likely to represent "entrepreneurial pull", while the solo self-employed tend to be stagnant and unproductive and to reflect "unemployment push" (Earle and Sakova, 2000; Mandelman and Montes-Rojas, 2009; Román et al. 2013). Furthermore, it has also been found that entrepreneurs who employ others on average have higher returns or earnings premia than the solo self-employed (Earle and Sakova, 2000; Tamvada, 2010). The main idea is that self-employment with employees is more likely to represent true "entrepreneurial" activity than solo self-employment. In this paper we argue that the distinction between employers and solo self-employed is also likely to matter for job satisfaction. Below we will develop three main lines of reasoning for why

[1] Kuhn, P. (2000). Editor's note. Labour Economics 7(5), 463-469.

we expect that self-employed with employees will derive a higher utility or job satisfaction from being self-employed than the solo self-employed.

Our first line of reasoning is related to ability, which is one of the determinants of (expected) utility from self-employment (Taylor, 1999). Employers are likely to have a higher ability than solo self-employed and therefore we expect that employers will be more satisfied with their job than the solo self-employed. The solo self-employment sector likely reflects a large number of individuals with little entrepreneurial ability who would have preferred to be in wage employment (Wiggins 1995). It is indeed confirmed that there is a negative self-selection for own account workers in terms of entrepreneurial ability and that there is segmentation in the self-employment sector between employers and own account workers when taking into account unobserved ability of individuals (Mandelman and Montes-Rojas, 2009). Employers need to perform different, more and/or more complex functions in the market than solo self-employed individuals. They not only assume risk associated with uncertainty and make decisions regarding what to produce and for whom, they are also the owner of an enterprise, a superintendent and employer of factors of production and they often need to be able to attract capital to be able to grow (Hebert and Link, 2009). Being an employer and to be able to survive requires to operate a firm and to employ others in a successful way. Thus, that employers have higher levels of ability is related to the fact that they have to perform more or different functions than solo self-employed. And even when they perform similar functions as the solo self-employed, the nature of this functions is often more complex. Solo self-employed, for example, are also decision makers, but their decisions regarding what to produce and for whom will often be less complex, mainly involving choices regarding what project they themselves will undertake. We expect a larger expected utility or job satisfaction of employers which stems from their higher level of entrepreneurial ability (which cannot be observed). They need this ability to perform the many different tasks associated with being an (successful) employer. Entrepreneurs have some initial level of entrepreneurial ability, but they also learn about their ability over time and they can improve their ability as learning takes place. In sum, those who employ others need more entrepreneurial ability but are also more likely to develop (further) entrepreneurial ability. Based on the higher levels of ability of employers, we expect that they display higher levels of job satisfaction than the solo self-employed.

The second line of reasoning that we pursue is that the creation of jobs for others is some kind of sign of business success, at least of past success. The fact that those self-employed with employees (have) create(d) jobs for others indicates that they had some success with their business (Earle and Sakova, 2000). The decision to hire one or more employees likely stems from the fact that the business was doing well, and the entrepreneur needed (extra) staff to do the additional work. Employers may be very proud of the fact that they have been able to provide jobs for others. Furthermore, the fact that one has a business with employees is often highly visible to others. This success may translate into enhanced ability, a better capital position for the business and/or the entrepreneur and positive preferences for being an employer, and, subsequently, into higher levels of job satisfaction.

Finally, the third line of reasoning relates to procedural utility. Individual preferences determine utility from self-employment and in this respect job satisfaction of self-employed has been associated with procedural preference. Procedural utility of work is expected to be higher for employers than for solo self-employed. Prior studies argue that greater job satisfaction reported by the self-employed is due to procedural preferences for independence and being one's own boss (Eden, 1975; Hamilton, 2000; Hundley 2001; Benz and Frey, 2008). Thus, according to the procedural utility argument, workers might be attracted to self-employment by characteristics such as flexibility and independence. Entrepreneurs may to a considerable extent be able to determine the type of work they do. They perform a function as decision makers. They are the ones deciding what type of goods or services to offer on the market and therefore what to produce. These decisions directly affect the type or nature of the work that entrepreneurs do. In case assignments are conducted for other parties, entrepreneurs are the ones who make decisions about what projects to bid for and to undertake, what assignments to conduct etc. either for themselves or as employers of others. Of course this freedom is not unlimited as there may sometimes be an economic necessity to do a certain project etc. But as opposed to those working for others, entrepreneurs have a central decision making role when it comes to determining the nature of their work. Furthermore, when having employees, self-employed have decision making

power over other people's work, and they may be able to delegate certain tasks that they rather would not do themselves. When entrepreneurs (decide to) employ others they also need to make decisions about what laborers to hire and how these laborers should allocate their time and effort. In this case they are the ones in control and they also exert a function of supervision. While we realize that for solo self-employed it is often a deliberate decision not to have employees based on rational decision making and profit maximization, and that having employees also includes risk-bearing for the entrepreneur, we still expect that being an employer provides some additional non pecuniary utility up and above the satisfaction that is already generally associated with self-employment for the reasons specified above.

In sum, based on these three main lines of reasoning we expect that employers are more likely to be satisfied with their work than the solo self-employed. Higher levels of ability, business success, and procedural utility are likely to be translated into higher levels of job satisfaction.

Firm size matters

The arguments given above may be even more valid for those employers who have a higher number of employees, since this is likely to be indicative for a higher level of ability, business success, and procedural preference. It can be argued, for example, that entrepreneurial ability positively relates to firm size and that this also results in higher levels of job satisfaction among employers with a higher number of employees. Above we argued that employers tend to have higher levels of entrepreneurial ability than solo self-employed. Being an employer requires different types of abilities than being solo self-employed or a worker (Lazear, 2005). Furthermore, entrepreneurs with higher ability (and control spans) will recruit personnel and end up as managers of larger firms (Lucas, 1978). Murphy et al. (1991) show that firm size is related to entrepreneurial talent so that more talented entrepreneurs end up with larger firms. (See also Cabral and Mata, 2003 for Portugal). Furthermore, having more employees is generally a sign of success. The arguments regarding procedural utility may also be more valid in case of having more employees: it offers more room for delegation and provides control over more people.

Segmentation within the group of solo self-employed

There may also be substantial segmentation within the group of solo self-employed. The status of own account workers is ambiguous in the sense that self-employment may be an optimal and voluntary decision and some of them might be successful business owners exploiting new opportunities, while others might be displaced workers pushed into self-employment by lack of alternative work opportunities which is a form of disguised unemployment (Earle and Sakova, 2000). Those who have become employers often started as solo self-employed (Congregado, Millán and Román 2010). Solo self-employment may lead to the creation of successful businesses and to the provision of paid employment to other individuals.

Solo self-employed may comprise those with high ability and those with low ability, as there may be adverse selection. Prior research provides ambiguous results regarding the impact of education on entry into self-employment (opportunity cost of self-employment raises for those high educated individuals since better salaried positions are available for them. On the other hand, those higher educated individuals will be more likely to identify better –and more profitable- business opportunities; Parker (2009)). It has also been shown that observable human capital is associated with increased chances of self-employment survival (Mandelman and Montes-Rojas, 2009). We argue that those with higher levels of education will resemble employers more (they may be the ones who will decide to hire employees in the future) and that especially those solo self-employed with low levels of education will be less satisfied with their job than employers. Since employers often start as solo self-employed and only decide to hire employees over time (Congregado, Millán and Román 2010), this would imply that at least some solo self-employed should resemble employers in terms of ability. Skilled solo self-employed individuals may become future employers; they may not yet have hired employees but may be willing to do so at some point. Some solo self-employed may, however, have the appropriate skills to become employers but prefer to remain solo self-employed e.g. because of constraining regulations regarding hiring and firing or because they are simply happy working on their own not have any responsibility for others; the alternatives to hiring employees may be more attractive

such as to cooperate with other self-employed or other firms' employees instead of growing one's own business.

In addition, the solo self-employed may differ in terms of success or pecuniary benefits. Some solo self-employed may be highly successful and generate high financial returns (Hamilton, 2000). Better performance in terms of generating higher earnings is associated with increased chances of self-employment survival (Mandelman and Montes-Rojas, 2009) and is an important determinant of work satisfaction (Millán et al., 2013). Those with high incomes may resemble employers more as financial success may be an important pre-condition for hiring employees. Thus, those solo self-employment with low incomes may be least satisfied and the difference between employers and solo-self employed in terms of job satisfaction is likely to be most pronounced for those solo self-employed with low incomes.

Furthermore, when an entrepreneur is skilled or performing well but not growing in terms of employees, he or she may experience more independence than other solo self-employed (e.g. he or she is in a better position to say no to certain assignments and he or she may feel more control (e.g. he/she may have the option to grow by hiring employees but does not do this because he/she does not want to).

In sum, the arguments given above for why employers and solo self-employed differ in terms of ability, (past) business success and procedural preference, may in particular apply when comparing employers with solo self-employed who have low levels of education and low levels if income and may be less valid for those with a high level of education and a high level of income.

Hypotheses

Given this framework, the determinants of job satisfaction emerge. On average, self-employed individuals with (a higher number of) employees will have a higher level of job satisfaction than the solo self-employed. We also expect, however, that solo self-employed with higher levels of ability and higher levels of income will not differ significantly from employers in terms of job satisfaction. They are likely to be the ones who reap benefits from self-employment and who pursue self-employment for positive considerations (e.g. increase independence or income) instead of out of necessity.

> *Hypothesis 1: Self-employed with employees are more satisfied with the type of work they do than solo self-employed.*
>
> *Hypothesis 2: Self-employed who have more employees are most satisfied with the type of work they do.*
>
> *Hypothesis 3: The difference between self-employed with employees and solo self-employed in terms of satisfaction with type of work is higher for those self-employed with lower levels ability as reflected by their level of education.*
>
> *Hypothesis 4: The difference between self-employed with employees and solo self-employed in terms of satisfaction with type of work is higher for those self-employed with lower levels of income.*

3. DATA, METHODOLOGY AND VARIABLES

3.1 Data source and sample

Data source. The data are from the European Community Household Panel (ECHP) for the period 1994-2001.[2] The ECHP is a standardized multi-purpose annual longitudinal survey carried out at the

[2] ECHP data are used with the permission of Eurostat (contract ECHP/2006/09 with the Universidad de Huelva).

level of the EU-15 reflecting a nationally representative random sample of households and individuals in the participating countries.[3] The survey was designed and coordinated by the Statistical Office of the European Communities (Eurostat). The target population of the ECHP consists of people living in private households throughout the national territory of each participating country. The definition of household is based on the standard criteria of "sharing the same dwelling" and "common living arrangements". Individuals in the sample who move or join a new household are followed up at their new location. The survey also covers all persons cohabiting with any of the original sample persons in the same household. These procedures are followed to reflect the demographic changes in the population and to maintain the panels' cross-sectional representativeness of the population.[4]

Each year in the period 1994-2001 all members of the selected households in the participating countries were interviewed about issues relating to demographics, labor market characteristics, income and living conditions. The same questionnaire was used in all countries, which makes the information directly comparable. The first wave of data collection was held in 1994. We have information on 60,500 nationally representative households, i.e. approximately 130,000 individuals aged 16 years and older, for the entire period 1994-2001.

Our sample. We limit our sample to include only men and women aged 18 to 65 working in any business sector as self-employed. In a final step, we removed observations with missing data for any of the variables included in our regressions. After filtering, the final sample used for estimation contains 58,156 observations (16,842 individuals). Table 1 presents some descriptive information.

--- Insert Table 1 about here ---

Table 1 reveals that participation of females in self-employment is rather low, especially within the group of employers. Employers have received higher levels of education than own-account workers. Finally, on average, employers earn about €5,000 more and present more unequal incomes (32,605 against 10,713 in terms of standard deviation for annual earnings) as compared to own-account workers.

Reported levels of job satisfaction for self-employed comparing employers and own-account workers are presented in table 2.

--- Insert Table 2 about here ---

Table 2 presents levels of job satisfaction and the percentage of respondents that report high job satisfaction for self-employed comparing employers and own-account workers for all participating countries for the whole period under consideration. It shows that, on average, employers have higher levels of job satisfaction than solo self-employed, which also applies to most countries when individually considered. These figures, however, do not hold for Austria, Belgium, Ireland and Luxembourg.[5]

3.2 Method

We aim to explain the variance in the satisfaction profile of individual occupations. While we cannot directly observe ability, (past) business success and procedural preference, we can observe whether someone is solo self-employed or an employer. This observed choice can be related to a specific ability, success or preference. To investigate the impact of self-employment status (employer versus solo self-employed) on job satisfaction with type of work we use ordered logit models. To avoid

[3] Information concerning job satisfaction for Sweden was not collected.

[4] See Peracchi (2002) for a review of the organization of the survey, and a discussion of the issues a researcher may face when using these data.

[5] The data in table 2 indicate that it is questionable to assume uniform results across the sample of countries. Thus, in order to test if the fit is similar across all countries (or if the results are being skewed by some idiosyncratic specifications for a few countries), we ran separate estimations country by country as robustness tests.

violation of the proportional odds assumption (also called parallel regressions assumption, or parallel lines assumption) we apply generalized ordered logit models.[6]

Within this framework, an individual's self-reported job satisfaction (sat_i) is interpreted as an ordinal indicator of a latent wellbeing variable (WB_i), which is unobservable. Our dependent variable is job satisfaction in terms of type of work. These variables range from 1 to 6 and equal 1 for individuals who are not satisfied with their present job and 6 for those being fully satisfied with their job. The dependent variable has been reclassified into three values for job satisfaction: (1) dissatisfied, (2) neither dissatisfied nor satisfied, (3) satisfied.[7] The relationship between self-reported job satisfaction (sat_i) and the latent variable (WB_i) is given by

$$\begin{aligned} sat_i &= 1 \quad if \quad -\infty < WB_i \le \mu_1 \\ sat_i &= 2 \quad if \quad \mu_1 < WB_i \le \mu_2 \\ sat_i &= 3 \quad if \quad \mu_2 < WB_i \le +\infty \end{aligned}$$

where μ_1 and μ_2 are the thresholds of the variable WB_i that divide its range into separate intervals associated with the different levels of job satisfaction.

The generalized ordered logit model can be written as

$$Pr(sat_i > j) = g(X\beta_j) = \frac{exp(\alpha_j + X_i\beta_j)}{1 + exp(\alpha_j + X_i\beta_j)}, \; j = 1,2$$

where the vector X_i represents individual and firm-specific characteristics and economic conditions; β_j is the associated vector of coefficients to be estimated[8]; and $g(\cdot)$ is specified as the logistic cumulative distribution function. It can be determined that the probabilities that sat_i will take on each of the values 1, 2 and 3 is equal to

$$\begin{aligned} Pr(sat_i = 1) &= 1 - g(X_i\beta_1) \\ Pr(sat_i = 2) &= g(X_i\beta_1) - g(X_i\beta_2) \\ Pr(sat_i = 3) &= g(X_i\beta_2) \end{aligned}$$

Finally, since the ECHP tracks the same individuals from 1994 to 2001, standard errors are adjusted for intra-individual correlation in order to control for the possible existence of unobserved heterogeneity.

3.3 Variables

Hypothesis-related independent variables. 4 different models serve to test the validity of our hypotheses H1 to H4, respectively. For the purpose of this study the estimation strategy will be to include the following dummies that control for an individual's status within self-employment:

1 Model I
   - Employer

[6] Different tests of the proportional-odds assumption (whether the coefficients are equal across categories) have been performed for all our estimations (global test of whether any variable violates the parallel lines assumption). All these tests provided evidence that the parallel regression assumption was violated and, as a consequence, demonstrate the need to apply generalized ordered logit models. See Williams (2006) for a complete description of the methodology.

[7] There are two reasons for doing this: first, in most cases, there are only few observations in the low satisfaction scales. A second reason for recoding is that we assume that there is quite a bit of "noise" in detailed scales. This can be illustrated using the following - much-cited - example: people usually know if they are tall or short; they may, however, have difficulties in classifying themselves as very short or extremely short.

[8] The formulas for the parallel lines model and generalized ordered logit model are the same, except that in the parallel lines model the Betas (but not the Alphas) are the same for all values of j.

- *(Reference category: own-account workers)*

2 Model II
- Employer in micro firm (1-4 emp.)
- Employer in small firm (5-19 emp.)
- Employer in medium or large firm (>19 emp.)
- *(Reference category: own-account workers)*

3 Model III
- Own-account worker with low incomes
- Own-account worker with high incomes
- *(Reference category: employers)*

4 Model IV
- Own-account worker with low education
- Own-account worker with high education
- *(Reference category: employers)*

Control variables. In the analyses we include a large number of individual-specific independent variables such as demographic indicators (gender, age, cohabitation status, number of children, health status), level of education, hours of work per week, and level of earnings. For comparability purposes, incomes are corrected by purchasing power parities (comparability across countries) and harmonized consumer price indexes (comparability across time). Finally, we include business sector, country, and year dummies to control for industry, country, and business cycle effects, respectively.[9]

4. RESULTS

This section presents the main results of the empirical analyses and will address to what extent the hypotheses are confirmed by the analysis.

All our results are presented in Table 3 where 4 different models serve to test the validity of our hypotheses H1 to H4, respectively. Each model follows the same format: for each possible level of job satisfaction (1 = dissatisfied, 2 = neither dissatisfied nor satisfied, 3 = satisfied), predicted probabilities of job satisfaction for the sample means are shown. Below only the effects of the explanatory variables on the probability that individuals are satisfied with their type of work (job satisfaction equals 3) are presented in terms of marginal effects (and not the coefficients). These marginal effects are expressed in relative terms (with respect to the predicted probabilities for the sample means). Finally, t-statistics associated with marginal effects are reported in each column. At the bottom of each column, the number of individuals and observations involved in the estimations are reported.

--- Insert Table 3 about here ---

Models I confirms as observed in table 2, that employers are more likely to report high levels of job satisfaction than their own-account workers counterparts. Further, Model II shows that firm size matters when concentrating on job satisfaction of employers. Somewhat surprisingly, we observe how employers in small firms (5-19 employees) are those employers that report high levels of job satisfaction with higher likelihood. This group is followed by those employers in medium or large firm (more than 19 employees). Finally, those employers in micro firms (1-4 employees) are less likely to report high levels of job satisfaction than employers with more employees but, still, they are more likely to be satisfied with their work than the own-account workers.

Models III and IV distinguish solo self-employed with high and basic or medium levels of education as well as solo self-employed with high and low income. They show that only those self-employed with basic or medium levels of education and those with low levels of income are significantly less

[9] Variable definitions are reported in the Appendix.

likely to be satisfied with their job than employers. There is no significant difference in terms of job satisfaction between, on the one hand, employers and, on the other hand, solo self-employed with high levels of education and with high levels of income.

5. CONCLUSION AND DISCUSSION

This paper has investigated job satisfaction of self-employed. The data allow for a distinction between solo self-employed and employers. Evidence emerges supporting that there is segmentation within the self-employment sector, and that this plays a major role in determining job satisfaction levels. Being an employer seems to increase the probability for a self-employed individual of being satisfied with the type of work one does. It is especially large among those employers who have five or more employees. These findings complement the existing international evidence on job satisfaction of the self-employed by revealing the importance of taking into account heterogeneity within the self-employment sector. While we assume that the difference between employers and solo self-employed in terms of job satisfaction stems from differences in ability, (past) business success and procedural preference, we urge future researchers to shed more light on the specific differences between employers and solo self-employed regarding these three aspects, as well as to assess the relative importance of these three aspects in determining job satisfaction.

The finding that employers are more satisfied, and that the highest scores in terms of job satisfaction are found among self-employed who have a higher number of employees implies that governments should provide a good environment for business growth including for the solo self-employed. This finding also indicates that entrepreneur's role as a provider of employment not only has broad societal relevance by offering employment to others, but is also beneficial from the viewpoint of the individual entrepreneur. Since job satisfaction may (further) increase productivity, this may result in further beneficial outcomes for business and society.

Our results confirm that employers on average have a higher level of education and higher earnings than the solo self-employed. It is found that employers differ significantly in terms of job satisfaction from solo self-employed with low levels of education and low levels of income while those solo self-employed with high levels of education and high levels of income seem to resemble employers more in the sense that they do not differ significantly from employers in terms of levels of job satisfaction. These results shed some light on the existence of segmentation within the solo self-employment sector which may comprise voluntary and successful business owners, but may also reflect involuntary choices and subsistence. It implies that human capital matters and that it may pay off for those aspiring self-employment to invest in education, or to encourage the solo self-employed to increase their human capital e.g. through training. The results also imply that financial success matters.

Overall, our study stresses the importance for studies on self-employment in general and for those on job satisfaction in specific to consider the segmented characteristics of self-employment. Different groups of self-employed may have little in common apart from their self-employment status (Roman et al., 2013) and therefore their impact is also likely to differ.

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TABLES

Table 1. Descriptive statistics

	All self-employment	Employers	Own-account workers
Number of observations	58,156	28,095	30,061
Number of individuals	16,842	10,124	10,414
Job satisfaction with type of work (y)			
JS with type of work = 1	8.19%	6.44%	9.82%
JS with type of work = 2	39.92%	37.33%	42.35%
JS with type of work = 3	51.89%	56.23%	47.83%
Independent variables (*x*)			
Main variables			
OA [a]	51.69%		
OA with low incomes [a]			56.48%
OA with low education [a]			87.27%
EMP [a]	48.31%		
EMP in micro firm (1-4 emp.) [a]		75.57%	
EMP in small firm (5-19 emp.) [a]		18.30%	
EMP in medium or large firm (>19 emp.) [a]		6.13%	
Demographics			
Female [a]	26.22%	23.61%	28.67%
Age (*18-65*)	43.9 *(10.9)*	43.1 *(10.7)*	44.7 *(11.1)*
Cohabiting [b]	81.55%	83.11%	80.10%
Number of children under 14	0.64 *(0.93)*	0.67 *(0.94)*	0.61 *(0.92)*
Health status	2.00 *(0.82)*	1.97 *(0.79)*	2.04 *(0.85)*
Educational attainment			
Basic education [a]	55.12%	49.01%	60.83%
Secondary education [a]	29.54%	32.86%	26.45%
Tertiary education [a]	15.34%	18.13%	12.73%
Job characteristics			
Work experience	12.0 *(6.9)*	11.9 *(6.8)*	12.1 *(6.9)*
Weekly working hours	50.7 *(15,1)*	51.3 *(14.3)*	50.1 *(15.8)*
Earnings as self-employed	€11,316.5 *(24,071.7)*	€13,961.2 *(32,605.7)*	€8,844.8 *(10,713.1)*

Notes: Standard deviations for continuous explanatory variables in parentheses.
[a] Dummy variable.

Table 2. Job satisfaction for self-employed comparing employers and own-account workers

	Job satisfaction level (1-3)			Percentage of observations reporting high satisfaction levels (JS = 3)		
	All self-employment	**Employers**	**Own-account workers**	**All self-employment**	**Employers**	**Own-account workers**
Austria	2.782	2.775	2.793	80.62%	80.22%	81.24%
Belgium	2.698	2.685	2.724	72.52%	71.59%	74.44%
Denmark	2.828	2.840	2.810	84.67%	85.68%	83.27%
Finland	2.561	2.588	2.547	59.99%	62.31%	58.80%
France	2.510	2.513	2.507	61.26%	61.61%	61.00%
Germany	2.759	2.793	2.672	78.33%	81.21%	71.09%
Greece	2.096	2.184	2.036	27.59%	32.66%	24.13%
Ireland	2.781	2.765	2.792	80.66%	79.12%	81.61%
Italy	2.455	2.491	2.364	53.93%	56.19%	48.28%
Luxembourg	2.817	2.815	2.824	82.37%	82.38%	82.35%
Netherlands	2.858	2.861	2.858	87.01%	87.34%	86.93%
Portugal	2.281	2.370	2.210	32.40%	39.94%	26.41%
Spain	2.484	2.563	2.441	56.47%	61.91%	53.47%
United Kingdom	2.597	2.632	2.569	65.98%	68.80%	63.80%
Unweighted average	2.437	2.498	2.380	51.89%	56.23%	47.84%

Table 3. Job satisfaction with type of work
-Generalized Ordered Logit estimations-

	Model I		**Model II**		**Model III**		**Model IV**	
Predicted probability (JS = 1)	0.0553		0.0552		0.0553		0.0552	
Predicted probability (JS = 2)	0.4181		0.4181		0.4183		0.4182	
Predicted probability (JS = 3)	**0.5266**		**0.5267**		**0.5264**		**0.5266**	
Independent variables (*x*)	$\frac{dy/dx}{y}\%$ [a]	t-stat.	$\frac{dy/dx}{y}\%$ [a]	t-stat.	$\frac{dy/dx}{y}\%$ [a]	t-stat.	$\frac{dy/dx}{y}\%$ [a]	t-stat.
Main variables								
OA [b]	(*ref.*)		(*ref.*)					
OA with low incomes [b]					-0.0565	-7.53 ***		
OA with high incomes [b]					-0.0092	-1.14		
OA with low education [b]							-0.0385	-5.56 ***
OA with high education [b]							-0.0134	-0.78
EMP [b]	0.0344	5.29 ***			(*ref.*)		(*ref.*)	
EMP in micro firm (1-4 emp.) [b]			0.0276	4.09 ***				
EMP in small firm (5-19 emp.) [b]			0.0642	5.45 ***				
EMP in medium or large firm (>19 emp.) [b]			0.0428	2.28 **				
Demographics								
Female [b]	0.0016	0.19	0.0019	0.23	0.0043	0.51	0.0016	0.19
Age (*18-65*)	-0.0028	-1.17	-0.0029	-1.18	-0.0030	-1.25	-0.0028	-1.16
Age (squared)	0.0001	1.89 *	0.0001	1.89 *	0.0001	1.99 **	0.0001	1.89 *
Cohabiting [b]	-0.0033	-0.35	-0.0039	-0.42	-0.0042	-0.44	-0.0031	-0.34
Number of children under 14	-0.0048	-1.18	-0.0046	-1.13	-0.0048	-1.19	-0.0047	-1.16
Health status	-0.0693	-16.5 ***	-0.0691	-16.5 ***	-0.0686	-16.3 ***	-0.0693	-16.5 ***
Educational attainment								
Basic education [b] (*ref.*)								
Secondary education [b]	0.0750	9.36 ***	0.0739	9.21 ***	0.0738	9.21 ***	0.0748	9.34 ***
Tertiary education [b]	0.1351	11.8 ***	0.1330	11.6 ***	0.1338	11.7 ***	0.1247	8.87 ***
Job characteristics								
Work experience	-0.0027	-1.25	-0.0029	-1.33	-0.0030	-1.36	-0.0027	-1.25
Work experience (squared)	0.0001	1.30	0.0001	1.36	0.0001	1.36	0.0001	1.29
Weekly working hours	0.0055	5.80 ***	0.0055	5.81 ***	0.0052	5.53 ***	0.0055	5.80 ***
Weekly working hours (squared)	-2.9E-05	-3.36 ***	-2.9E-05	-3.37 ***	-2.7E-05	-3.16 ***	-2.9E-05	-3.36 ***
Earnings as self-employed	0.0065	7.78 ***	0.0065	7.80 ***	0.0048	5.37 ***	0.0065	7.81 ***
Business sector dummies	*Yes*		*Yes*		*Yes*		*Yes*	
Macroeconomic variables								
Country dummies	*Yes*		*Yes*		*Yes*		*Yes*	
Year dummies	*Yes*		*Yes*		*Yes*		*Yes*	
Number of observations	58,156		58,156		58,156		58,156	
Number of individuals	16,842		16,842		16,842		16,842	
Log pseudolikelihood	-45,792.5		-45,780.1		-45,766.2		-45,787.3	

Notes: [a] For continuous variables, *[(dy/dx)/y]%* captures marginal effects, but expressed in relative terms with respect to predicted probabilities for sample means. In the context of dummy variables, it reflects the impact for a discrete change of the dummy variable from 0 to 1.
[b] Dummy variable.
* $0.1 > p \geq 0.05$; ** $0.05 > p \geq 0.01$; *** $p < 0.01$.

APPENDIX: DESCRIPTION OF VARIABLES

Variable	Description
	Dependent variables
Job satisfaction with type of work	Dependent variable varies from 1 to 3 showing a scale of job satisfaction with present job in terms of type of work. Thus, this variable equals 1 for individuals who are not satisfied with their present job and 3 for satisfied individuals.
	Independent variables
Main variables	
OA	Dummy equals 1 for own-account workers.
OA with low incomes	Dummy equals 1 for own-account workers with incomes below median incomes of the group of own-account workers.
OA with high incomes	Dummy equals 1 for own-account workers with incomes above median incomes of the group of own-account workers.
OA with low education	Dummy equals 1 for individuals with basic or secondary education (ISCED 0-3).
OA with high education	Dummy equals 1 for individuals with tertiary education (ISCED 5-6).
EMP	Dummy equals 1 for employers.
EMP in micro firm (1-4 emp.)	Dummy equals 1 for employers with 1-4 paid employees.
EMP in small firm (5-19 emp.)	Dummy equals 1 for employers with 5-19 paid employees.
EMP in medium or large firm (>19 emp.)	Dummy equals 1 for employers with more than 19 paid employees.
Demographic characteristics	
Female	Dummy equals 1 for females. This variable is omitted in our fixed effects regressions but is included within our robustness checks when estimating by clustered OLS.
Age	Age of the individual, ranging from 18 to 65.
Cohabiting	Dummy equals 1 for cohabiting individuals.
Number of children under 14	Number of children aged under 14 living in the household.
Health status	Variable ranging from 1 to 5; the scale refers to the level of health and equals 1 for individuals whose health is very good and 5 for individuals whose health is very bad.
Education	
Basic education (*ref.*)	Dummy equals 1 for individuals with less than second stage of secondary level education (ISCED 0-2).
Secondary education	Dummy equals 1 for individuals with second stage of secondary level education (ISCED 3).
Tertiary education	Dummy equals 1 for individuals with recognized third level education (ISCED 5-6).
Job characteristics	
Work experience	Number of years in present job.
Weekly working hours	Hours of work per week.
Earnings as self-employed	Net work incomes from self-employment, earned during period *t-1*, converted to thousands of average euros of 1996, having been corrected by Harmonized Consumer Price Index. Furthermore, these incomes are corrected by Purchasing Power Parity (across countries).
Business sector dummies	18 dummies equalling 1 for individuals whose codes of main activity of the local unit of the business, by means of the Nomenclature of Economic Activities (NACE-93), are the following: A+B (*ref.*) Agriculture, hunting and forestry, fishing. C+E Mining and quarrying + Electricity, gas and water supply. DA Manufacture of food products, beverages and tobacco. DB+DC Manufacture of textiles, clothing and leather products. DD+DE Manufacture off wood and paper products; publishing and printing. DF-DI Manufacture of coke, refined petroleum/chemicals/rubber/plastic and other non-metallic mineral products. DJ+DK Manufacture of metal products, machinery and equipment. DL-DN Other manufacturing. F Construction G Wholesale and retail trade; repair of motor vehicles, motorcycles and personal/household goods. H Hotels and restaurants. I Transport, storage and communication. J Financial intermediation.

	K Real estate, renting and business activities. L Public administration and defence; compulsory social security. M Education. N Health and social work. O-Q Other community, social and personal service activities; private households with employed persons; extra-territorial organizations and bodies.
Macroeconomic variables	
Country dummies	14 dummies equalling 1 for individuals living in the named country: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, and the United Kingdom.
Year dummies	8 dummies equalling 1 for observations referring to each of the periods covered by the sample: 1994, 1995, 1996, 1997, 1998, 1999, 2000 and 2001.