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The Transition to Self-Employment and Perceived Skill-Mismatches: Panel Data Evidence from Eleven EU Countries

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ABSTRACT

The Transition to Self-Employment and Perceived Skill-Mismatches: Panel Data Evidence from Eleven EU Countries[*]

Some studies using either objective or subjective indicators, find that self-employed individuals are less likely to be or to report being skill-mismatched in comparison with salaried employees. The aim of this paper is to analyze the impact of the transition from salaried employment to self-employment on self-reported skill mismatches. To do so, this article uses eight waves of the European Community Household Panel covering the period 1994–2001. The panel data nature of this rich dataset, allows us to track individuals over time and measure self-reported skill-mismatches before and after the transition for the same individuals, using as the comparison group those individu-als who remain in salaried employment during the whole sample period. Our empirical findings indicate that those individuals who transit from salaried employment to self-employment reduce their probability to report being skill-mismatched after the transition. Interestingly, we also observe that this effect vanish if the transition is done from an unemployment status, and that the effect is quite heterogenous across countries.

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1. Introduction

A wide empirical literature has found that the self-employed are more satisfied with their jobs than salaried employees (e.g. Thompson et al., 1992; Blanchflower and Oswald, 1998; Blanchflower, 2000; Hundley, 2001; Benz and Frey, 2008a, 2008b; Bradley and Roberts, 2004; Noorderhaven et al., 2004; Lange, 2012; Binder and Coad, 2013). However, job-to-job transitions involve new working conditions that have an impact on the worker–job match. In this sense, while the positive link between the transition from salaried employment to self-employment and job satisfaction is well documented (Binder and Coad, 2013; Georgellis and Yusuf, 2016), there is no empirical evidence on the impact of the transition to self-employment on the workers' perception of skills mismatches. This is an important issue because employees' perceived skill mismatches reduce their motivation and effort, leading to a lower level of productivity (Berlingieri and Erdsiek, 2012). This also affects social interaction, psychological outcomes, and generates significant economic and social costs (Allen and Velden, 2001).

Keeping this in mind and since most individuals who report being skill mismatched are salaried employees (Allen and Velden, 2001; Vieira, 2005; Millán et al., 2013), we hypothesize that a significant number of employees may overcome this problem by making the transition to self-employment. Given the relevance of matching skills and jobs and of promoting self-employment, this article aims to determine whether those individuals who transit from salaried employment to self-employment are less like to report being skill mismatched after this transition in the short and the medium term. However, since some workers may exhibit aversion to self-employment, they may also try to overcome the self-perceived skills matching problem by doing job-to-job transitions within salaried employment. Therefore, we complement our analysis by analyzing also the impact of this transition. According to our hypothesis, we expect that the reduction in the probability of

reporting being skill mismatched will be more sizeable for those workers moving to salaried employment than for their counterparts moving withing salaried employment.

To test for our hypothesis, we resort to the European Community Household Panel (ECHP). This survey provides comparable microdata for some EU countries during the period 1994–2001. The panel nature of the data allows us to track individuals over time and measure their self-reported skill mismatch before and after the transition. Our results indicate that moving from salaried employment to self-employment significantly reduces the probability of reporting being skill-mismatched and that this effect no only lasts but also increases over time. Finally, job-to-job transitions within salaried employment also reduce the probability of reporting being skill mismatched, however, the estimated impact is three times smaller than for transitions to self-employment. These findings are robust across alternative models and specifications.

This article contributes to the existing literature in two aspects. First, while the bulk of the literature analyses the static determinants of self-assessed skill mismatches such as education, gender, etc, and the impact of this variable on job satisfaction, this work focuses for the first time on the impact on job-to-job transitions on self-perceived skill-mismatches. Second, we adopt a longitudinal approach, which makes it possible to capture the "pure" effect of employment status (salaried or self-employment) by observing the same individuals before and after the job-to-job transition is made. Finally, we also offer empirical evidence on the heterogeneous impact of job-to-job transitions across countries. The results offer an interesting picture of the pattern of individuals in different labour markets regarding their response to job-to-job transitions within salaried employment and to self-employment.

The remainder of the article is structured as follows. Section 2 overviews the previous literature. Section 3 describes and summarizes the data. Section 4 introduces the

econometric framework. Section 5 presents the main results. Finally, section 6 summarizes and concludes.

2. Conceptual framework and literature

The existence and persistence of skill mismatches in the labour market may be explained by two factors: the presence of asymmetric information and the skills heterogeneity of the individuals searching for a job. The heterogeneous individuals' skills and the hidden nature of skills may cause the appearance of skill mismatches between skills and jobs. Different authors have developed models with individuals with heterogeneous "entrepreneurial ability" (Baumol, 1990; Gifford, 1993; Quadrini, 2000; Dinlersoz et al., 2019). Individuals with "entrepreneurial abilities" have a larger number of skills than salaried employees (Lazear, 2005; Hartog et al., 2010; Astebro et al., 2011; Backes-Gellner and Moog, 2013) and they will have higher propensity to become self-employed since they are more likely to suffer from skill mismatches in salaried employment. In this context, individuals will decide to become self-employed according to an evaluation of economic and non-economic factors (Agarwal and Braguinsky, 2015). Consequently, they decide their labour role increasing efficiency in the labour market and mitigating dysfunction in it (Failla et al., 2017). The main reason is that workers making this transition are more aware of how to exploit their skills in self-employment.

The improvement in the perception of the change of job status may be also linked with Kalleberg (2008), who considers that "mismatches are contextual" depending on workers' preferences, attitudes and personality. Under this reasoning, objective skill mismatches are not necessarily perceived as such by workers, and the other way around. That is, workers objectively well-matched, may have the perception that they could do a

more demanding job. There exists empirical evidence that reports a positive impact of self-perceived skill mismatches on quitting behavior and job turnover (e.g. Allen and Velden, 2001; Wolbers, 2003; McGuinness and Wooden, 2009)). More recently, Lee et al. (2011) show that self-employment becomes desirable when there is a mismatch between the employees' innovation orientation and the characteristics of the organizations for which they work. Their results highlight that the existence of a mismatch between the skills of an individual and those required in the work affects the intention to become self-employed positively[1].

One of the key points is the identification of skill mismatches. In that sense, different methods are used to identify on-the-job skill requirements and the quality of worker-job matches.[2] The most widely used measures are subjective measures of skill-mismatch, where individuals are asked to self-report whether they are mismatched or not. In this regard, a large number of works using subjective measures have covered the European labor market. For a sample of Dutch graduates, Allen and Velden (2001) reveal that skill mismatches have a strong effect on job satisfaction and on-the-job search while the effect is nearly negligible on wages. For Portugal, Vieira (2005) shows that skill mismatches matter for overall job satisfaction. For Britain, Green and McIntosh (2007) find that over-skilled workers receive lower earnings. Later, Green and Zhu (2010) find that overqualification, when not accompanied by underutilization of skill, is only a minor problem for job satisfaction; but when it is accompanied by underutilization of skills, overqualification is a substantive issue.

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[1] Conversely, some authors show that individuals do not decide to become self-employed if they have skill shortages (see Brixiova et al. (2009)).

[2] See Groot and Maassen van den Brink (2000) a complete meta-analysis and Munoz de Bustillo-Lorente (2018) for a survey.

Finally, Badillo-Amador et al. (2012) show that skill mismatches have negative effects on wages and job satisfaction in Spain.

In the context of the US labor market, subjective measures provide similar results to the ones observed in Europe. Johnson and Johnson (2000) confirm that perceived overqualification is negatively associated with job satisfaction and it shows persistence in the short-term for postal workers. Bender and Heywood (2006) find that PhD scientists' perception of job closeness has a positive incidence on job satisfaction. For the same sample, Bender and Heywood (2011) analyse the career mismatch among PhD showing that very mismatched workers suffer a decrease in their earnings. Finally, Robst (2007a, 2007b) confirms that mismatched workers earn less than adequately matched workers. Several studies using subjective measures have also been conducted for the Australian labour market. McGuinness and Wooden (2009) find that over-skilled workers are much more likely to quit their current job. Interestingly, and maybe also related to the potential effect of job transitions, their results indicate that over-skilled workers are also relatively unconfident of finding an improved job match. Mavromaras et al. (2009, 2010) and Mavromaras and McGuinness (2012) find that higher degree graduates suffer the greatest over-skills state dependence and the highest over-skills wage penalty.

Finally, some cross-country studies relying on subjective measures are also worth mentioning. Allen and de Weert (2007) estimated for Spain, Germany, Netherlands, the UK, and Japan that the wage penalty due to educational mismatches are much higher than that due to skill mismatches. More recently, Mateos-Romero and Salinas-Jiménez (2018), using information for 17 OECD countries, find that educational mismatches show greater effects on wages than skill mismatches, while skill-mismatch is a better predictor of job satisfaction.

Because of the difficulty in its measurement, the number of studies using objective measures of skill mismatch is quite scant, since the survey and register data generally do not include objective measures. Green et al. (2002) show that education and skill underuse affect negatively on the earnings on UK graduates. Also, Chevalier (2003) applies an overlapping methodology of objective (qualification) and subjective (satisfaction between education and job). Their methodology captures the heterogeneity between 'apparent' and 'genuine' overeducation of dissatisfied graduate workers. Results show that 'genuine' overeducation brings a much larger pay penalty than 'apparent' overeducation. For Italy, Di Pietro and Urwin (2006) confirm that education and skill mismatches affect wages negatively and are significant indicators of the job search. However, the most interesting point is that the authors follow a double approach: the 'employee-reported' and the employer's requirements. Their results support that employees' perceptions of the educational requirements of a particular job are more reliable indicators of the true nature of the job when compared to the formal educational requirements as set out by the employer. Finally, Nieto and Ramos (2017) test the individuals' heterogeneous skill level on educational mismatch for Spain. Their measure of skill mismatch corresponds to a combination of workers' self-assessment questions and their skill proficiency score in the PIAAC data. Their results confirm that the wage penalty of overeducation is explained by the lower skill level of overeducated workers.

As it is common in the previous literature, in this paper we use a subjective measure consisting of individuals self-reporting whether they think that they are over-skilled. Subjective measures tend to be criticized because they are subject to a certain bias due to individual overconfidence when they answer if they are over-skilled or under-skilled. Consequently, measures relying on self-reported mismatch produce a much lower share of well-matched individuals than statistical measures that compare individual skills with average

skills in the occupation.[3] The main reason is that respondents tend to overstate the requirements of their jobs and to upgrade the status of their position (Hartog, 2000). However, despite this potential bias, it is important to remark that the few studies that use objective measures tend to provide identical results than the studies based on subjective measures.

3. Econometric model

3.1. Random effects vs. pooled probit model

Our outcome variable is SM_{it}, a dummy that takes the value one if individual i perceives him- or herself to be skill-mismatched in period t and zero otherwise. Hence, the econometric specification can be written as

$$SM_{it} = I(SM^*{}_{it} > 0) = I(\lambda Trans_{it} + Z'_{it}\gamma + v_{it} > 0), \quad (i = 1, \ldots, N; t = 1, \ldots, T) \qquad (3.1)$$

where $I(.)$ is a binary indicator function that takes the value one if the argument is true and zero otherwise, $Trans_{it}$ is an indicator picking up the transition from salaried employment to self-employment, Z_{it} is a vector of explanatory variables, λ and γ are a set of coefficients to be estimated and v_{it} is the error term. λ is our parameter of interest since it shows the impact of the transition to self-employment on the probability of reporting being skill-mismatched.

Equation (3.1) represents the standard pooled probit model, which ignores the heterogeneity across individuals. If v_{it} is independent of Z'_{it}, the estimates produced by this

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[3] See Brunello and Wruuck (2019) for a recent survey.

model are consistent but might not be asymptotically efficient. However, the following clustering correction allows us to estimate standard errors efficiently (Greene, 2004):

$$\hat{V}(\hat{\delta}, \hat{\gamma}) = \left(\frac{N}{N-1}\right)(-H^{-1})(\sum_{i=1}^{n} g_i g_i')(-H^{-1}) \tag{3.2}$$

where g_{it} and H are the gradient and the Hessian of the corresponding likelihood function of Equation (3.1), respectively, and $g_i = \sum_{t=1}^{T} g_{it}$.

The error term in Equation (3.1) can be additively decomposed into an unobservable individual-specific component, δ_i, which is constant over time and normally distributed with zero mean and variance σ_δ^2, and time-varying white noise, e_{it}, independent of both δ_i and Z_{it}, then Equation (3.1) becomes:

$$SM_{it} = I(SM^*_{it} > 0) =$$
$$= I(\lambda Trans_{it} + Z_{it}'\gamma + \delta_i + e_{it} > 0), \quad (i = 1, \dots, N; t = 1, \dots, T) \tag{3.3}$$

Equation (3.3) corresponds to the standard random-effects probit model for which maximum likelihood estimates are generally consistent and asymptotically efficient (see Greene, 2000). We can obtain an estimate of ρ defined as:

$$\rho = corr(\delta_i + e_{it}, \delta_i + e_{is}) = \frac{\sigma_\delta^2}{\sigma_\delta^2 + \delta_e^2}, \forall t \neq s \tag{3.4}$$

This term is the correlation between the composite latent errors, $\delta_i + e_{it}$, across any two time periods and it measures the relative importance the individual's unobserved effect, δ_i.

So far, both the pooled and the random-effects model provide consistent estimates under given circumstances. Moreover, after applying the correction expressed in Equation (3.1), the pooled probit model also turns out to be efficient. The estimated parameters of

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the correlated random-effects probit model will converge to the estimated parameters of the pooled probit model as ρ tends to zero. In this setting, given the binary and panel nature of our data, a natural candidate to model skill mismatches is the random-effects probit model.

3.2. Endogeneity

One potential source of endogeneity stems from the fact that some unobserved factors might affect simultaneously both the probability of perceiving skill mismatches and the probability of moving to self-employment. If we do not account for this endogeneity, the estimates will be inconsistent, thus generating an identification problem for the parameters in Equation (3.1). Given that both variables are binary and the pooled model is feasible in this setting, the pooled bivariate probit model, which simultaneously estimates Equation (3.1) and the transition equation (3.5), is a good solution to account for endogeneity:

$$Trans_{it} = I(Trans^*{}_{it} > 0) = I(X'_{it}\pi + \varepsilon_{it} > 0), \quad (i = 1, ..., N; t = 1, ..., T) \qquad (3.5)$$

Trans$_{it}$ stands as defined in Equation (3.1), X_{it} is a vector of explanatory variables, π is a set of coefficients to be estimated and ε_{it} is the error term. Now $\rho^* = cov(\varepsilon_{it}, v_{it})$ is the correlation of the error terms in Equations (3.1) and (3.5). Endogeneity exists if ρ^* is sufficiently large. As we have discussed in subsection 3.1, unbiased and asymptotically efficient estimates of the simultaneous equation model composed by Equations (3.1) and (3.5) can be obtained using the maximum likelihood estimation of a pooled bivariate probit model. Recall that since we estimate a pooled model, we do not account for individual-

specific effects. However, as we explained in subsection 3.1, this should not be a problem after using the clustering correction defined in Equation (3.2).[4]

4. Data and variables

4.1. Data

The data used in this article come from the European Community Household Panel (ECHP). The main advantage of this survey is that the questionnaires are standardized and comparable across countries. Each year, all the surveyed individuals in the participating countries answer the same questions. These interviews cover a wide range of topics concerning living conditions, income, financial situation, working life, housing, social relations, health, and sociodemographic information.

The data collection started in 1994 and was conducted over eight consecutive years. We make use of all the waves of the ECHP, thus covering the 1994–2001 period[5] for eleven of the EU-15 countries (Denmark, the Netherlands, Belgium, France, Ireland, Italy, Greece, Spain, Portugal, Austria, and Finland). For Austria and Finland, the available files only cover the periods 1995–2001 and 1996–2001, respectively.[6] Although the European Community Household Panel (ECHP) does not cover the recent financial crisis, the time window focuses during the financial crisis in 1996-1997 and a period of growing digitalization of the companies. The panel nature of the data allows us to control for these temporal changes, track individuals over time, and measure the impact of job transitions on skill mismatches.

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[4] See Diaz-Serrano and Stoyanova (2010) for further discussion.
[5] EU-15 refers to the fifteen member states of the European Union before the 1 May 2004 enlargement.
[6] See Peracchi (2002) for a review of the organization of the survey.

Recent papers that have used also the same database are Badillo et al. (2012) and Justo et al. (2019), among others.

We restrict our sample to those individuals who are self-employed or salaried employees, aged 18–65, and working full-time in the private sector. We exclude from the analysis workers employed in the public sector because job-to-job transitions from salaried public employment to self-employment and the other way around are virtually inexistent. This circumstance implies that the inclusion of public workers in the analyses may distort the estimated effects of job-to-job transitions on self-perceived skill mismatches. Individuals who do not participate in consecutive waves are excluded from our sample. Workers are counted as self-employees if they answer "yes" to a direct question on self-employment[7] and salaried employees if they answer "yes" to a direct question on private employment[8].

We are interested mainly in the transition from salaried employment to self-employment. However, since workers may also try to search for a better worker-job match within salaried employment, we also study the impact of this type of transition on self-assessed skill-mismatch. We exclude from the sample all individuals that remain in self-employment during the whole sample period and focus on those who remain in salaried employment during the whole sample period, and on those who experience a job-to-job transition either from salaried employment to self-employment or within salaried employment. We will refer to the first group as "stayers", and to the second group as

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[7] Individuals are forced to choose only one main occupation, either working for an employer in paid employment or working in self-employment. Hence, it is not possible to determine whether some individuals combine both self-employment and paid employment.

[8] We exclude workers in the public sector from the analysis because the determinants of occupational choice and job satisfaction among public sector workers deviate from those of private (salaried employment) sector workers (Francois, 2000; Glazer, 2004; Besley and Ghatak, 2005; Prendergast, 2007; Delfgaauw and Dur, 2008, 2009; Millán et al., 2013).

"movers". We think this is a quite clean empirical strategy. In this setting, the group of "stayers", respect to the group of "movers", will be considered as the comparison group.

Our final sample consists of a pooled sample of countries containing 193,586 observations from which 166,327 correspond to the group of stayers, 6 589 to the group of workers moving from salaried employment to self-employment, and 20,400 to the individuals changing jobs within salaried employment.

4.2. Variables

Our main outcome variable, self-reported *Skill Mismatch*, is a dummy obtained from the responses to the following question: "*Do you feel that you have the skills or qualifications to do a more demanding job than the one you now have?*" Those individuals who respond affirmatively to this question are considered to perceive themselves as being skill mismatched. To test our hypothesis, we create different transition variables. First, we consider that a transition to self-employment occurs when an individual i declares himself/herself to be in salaried employment in period t and self-employed in period $t+1$. Second, we identify job-to-job transition within salaried employment using the variable tenure in the current job (*Tenure*). We assume that this type of transition occurs if $Tenure_{t-1} > Tenure_t$, in which $Tenure_t = 0$ or 1. Our main transition variables in each take the value zero before the transition, one after the individual moves to a new job and while this individual remains in the same job.

For both transition variables, we also create a set of dummies picking up different periods after the transition is made. These variables are considered in the analysis to test whether individuals adjust or not to the new context, and the effect of the transitions on self-assessed skill mismatch lasts over time or on the contrary tends to vanish. Our

explanatory variables account for a set of individual-specific socio-demographic indicators such as age, gender, educational attainment, and a set of employment characteristics such as tenure in the current job, type of occupation, and type of industry. In Table 1, we report some of the descriptive information regarding our variables of interest. The summary statistics are reported separately for the sample of "stayers" (Column 1), and the sample of "movers" (Column 2), and for the latter, we split the summary statistics for those in salaried employment before and after moving.

----Insert Table 1 here----

The percentage of individuals who report being skill mismatched is significantly different between stayers and movers. 53.10% of stayers perceived being skill mismatched, while this percentage is higher before moving (55.9%). The percentage of skill-mismatched individuals diminishes up to 50.6% after moving. Job satisfaction provides interesting figures. As one might expect, before doing the job transition, movers report a lower level of satisfaction that stayers (4.15 vs. 43.31), however, after moving, this group report the same level of satisfaction as stayers (4.30). Concerning the demographic characteristics, the average age for stayers is almost 37 years and few of the individuals are females (34%). Conversely, movers are younger (34 years) and more gender-biased (only 27.1% of movers are women). Around 50% of individuals have primary education; however, there are differences between stayers and movers. There is a lower percentage of individuals with primary education among stayers (46.1%) while the percentage is higher for movers (51.8%). The percentage of individuals with tertiary education is 17.20% for stayers, a value similar to those before moving.

Regarding the employment characteristics, for individuals who are stayers, their average number of years in employment is 7.6 and their weekly hours worked is more than 41. Interestingly, for the sample of movers, we observe that the tenure is lower (6.1) and they work more hours per week over 43 hours, a value that increases to more than 44 after moving.

Concerning firm-specific indicators, among movers there is a larger share of individuals who work as *managers* (a percentage that increases from 7% before moving up to 10% after moving). The occupation with the highest share of workers is *craft and trade,* the value among stayers is equal to 21.8%, while for movers (before and after) the share is over 24%. Conversely, there is a lower presence of clerks among movers (10.5% before and 9.1% after moving) in comparison with stayers (14.9%). Finally, most of the stayers work in the services industry (51.7%), a percentage slightly lower for those who decide to move (49.5). However, after moving, we observe that a larger share of individuals work in agriculture and services after moving (6.2% and 51.7%, respectively).

Table 2 reports the share of individuals who report being skill.mismatched by country. We do the calculations for both stayers and movers. For the latter group, we also consider before and after moving. This table reveals that our key variable is quite heterogeneous across countries for both stayers and movers. Finland, Belgium, Austria and Denmark are the countries where the share of salaried employees that perceive themselves as being skill mismatched is higher, above 60%. In France, Ireland, Italy, Greece, and Spain this figure ranges between 50% and 60%, while only in Portugal and the Netherlands this figure is bellow 45%. The countries where workers experience a higher decrease in self-reported skill-mismatch after moving to a new job, either in salaried employment or self-employment, are the Netherlands (9.8), Portugal (8.3), Finland (7.3) and France (6.7). These

raw statistics also inidicate that Spain is the unique country where movers do not experience any gain in terms of self-assessed skill mismatch after moving to a new job.

----Insert Table 2 here----

5. Empirical results

Table 3 contains the results of two models. Model (1) presents the results of the univariate probit model regarding the probability of reporting being satisfied with the job. Model (2) shows the results of the univariate probit model regarding the probability of self-reporting being skill mismatched. This model is used as an initial approach to determine the factors affecting self-reported skill mismatches and to detect potential differences between the workers in salaried employment and the self-employed.

Our findings indicate that the probability of reporting being satisfied for those individuals reporting being skill-mismatched is 3.5 percentage points lower than that for those who report not being skill mismatched. This negative link between job satisfaction and self-assessed skill mismatches is line with what it has been observed in previous studies. Self-employees are 3.2 percentage points more likely to report being satisfied and 6.6 percentage points less likely to report being skill mismatched than salaried employees. Age is U-shaped with job satisfaction and inverted U-shaped with self-reported skill mismatch. Females are less satisfied than males, but they are less likely to report being skill mismatched in their current work. As one might expect, more educated workers are more satisfied with the job, but are also more likely to report being skill mismatched. The *weekly hours worked* has a statistically significant and positive effect on both job satisfaction and self-reported skill-mismatch, while years in the current job (tenure) has a positive effect on job satisfaction,

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but negative on the probability of reporting being skill mismatched. Workers occupied as professionals, managers and technicians are more likely to be satisfied with the job. While individual working in manufacturing and services are more likely to be satisfied that their counterparts working in agriculture. The sign and magnitude of effect of the occupation and the industry dummies on the probability of reporting being skill mismatched is fairly similar to what we observe regarding job satisfaction.

To sum up, our preliminary approach confirms previous empirical evidence (Bradley and Roberts, 2004; Noorderhaven et al., 2004; Lange, 2012; Binder and Coad, 2013) since self-employees are more job satisfied and they are more likely to report being skill-mismatched (Allen and Velden, 2001; Vieira, 2005; Millán et al., 2013).

----Insert Table 3 here----

In Table 4, we report the marginal effects of our variables of interest. That is, the impact of job-to-job transitions on the probability of reporting being skill mismatched. We estimate the long-term impact of the transition from salaried employment to self-employment and of the job-to-job transitions within salaried employment. We estimate three models for each transition: random effects probit model (RE Probit), bivariate probit model (BV probit) and the "pooled probit model". The technical differences between these three models have been explained in section 3. In these models, we use the same controls as in Model (2) in Table 3. The results regarding the estimation of the marginal effects of the explanatory variables, excluding the transition the variables, of the models reported in table 4 are, qualitatively and quantitatively, practically the same as those reported for Model (2) in Table 3. Therefore, in Table 4 we will focus on the estimated marginal effects for our

variables of interest, that is, transitions from salaried employment to self-employment and job-to-job transitions within salaried employment.[9] The sample used to estimate the effect of these two types of transition on self-reported skill-mismatch, each one estimated separately, is made of the sample of "stayers" and of those workers who experience each type of transition. In this setting, the sample of "stayers" is used as the comparison group respect to each of the transitions.

----Insert Table 4 here----

We first start by testing for endogeneity using the bivariate models. For both types of transition, we cannot null hypothesis that $\rho^*=0$. The chi-square values of the tests for both types transition are very small, 0.31 and 0.24. This result indicates that the variables picking-up job-to-job transitions is not endogenous. in the self-reported skill mismatch equation. Therefore, our comments will be focused on the univariate models reported in column (4) to column (8) regarding the transition from salaried employment to self-employment, and in column (9) to column (13) regarding the job-to-job transition within salaried employment. We start with the most parsimonius specification (column 4 and 9), that is job transitions without interactions. Our results indicate that compared with job-to-job transitions, moving from salaried employment to self-employment reduces much more importantly the worker's perception of being skill mismatched. For the later transition the probability of reporting being skill mismatched is between two or three times smaller,

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[9] The estimated coefficients of the control variables included in the models shown in Table 4, which are not reported, provide the same qualitative results as the coefficients reported in Table 3 in terms of the direction and the size of the effect. Full estimates of the models in the table are available from the authors upon request.

depending on the type of model, than for the job-to-job transitions within salaried employment. For the random effects probit model (column 4), after becoming a self-employee the probability of reporting being skill mismatched decreases -7.6 percentage points respect to those who remain in salaried employment. This figure is of -6.4 percentage points for the pooled probit model (column 5). For the job-to-job transitions within salaried employment, respect to those who do not move, the reduction in the probability of reporting being skill mismatched is of -3.4 and -2.5 percentage points for the random effects (column 9) and the pooled probit model (column 10), respectively.

5.1. Job transitions and unemployment

It is important to have into account that the impact of job transitions might be different depending on the reasons that motivate workers to change their jobs. During economic recessions, individuals may perceive self-employment as a way to escape from unemployment. In this context, it is important to differentiate between these new self-employees coming from unemployment and those who become self-employed pushed by a kind of "entrepreneurial spirit" or chasing a business opportunity. In this context, the quality of the job–worker match is expected to be higher for the latter; therefore, it is likely that for the first, the probability of perceiving themselves as being skill mismatched is higher than for the second. We think that the same argument is valid for job-to-job transitions within salaried employment, since the opportunity window for improving the job-worker match is wider if workers do not feel the pressure of being unemployment.

In order to account for this circumstance, we estimate two models where the dummy variable picking-up job-to-job transitions is interacted with a dummy variable that takes the value 1 if movers were unemployed before doing the transition. As we explain above, the

random effects probit model and the pooled probit models provide similar marginals effects, therefore, given that estimating marginal effects in random effects models with big sample sizes and with interactions is computationally very demanding, results regarding the impact of transitions and their interactions, will be calculated using the pooled probit model, which also provide consistent estimates. Results are reported in column (6) and column (11). As a general result, we observe that previous unemployment has a positive impact on the probability of reporting being skill mismatched, 1.6 percentage points higher. However, this impact is stronger for those individuals who move from salaried employment to self-employment, 4.2 percentage points (0.0158+0.0261). On the contrary, this positive effect is not observed for workers doing job-to-job transitions within salaried employment.

5.2. Heterogeneous effects across countries

Another relevant issue regards the high level of heterogeneity of our sample, which is made of observations from 11 countries. To account for this heterogeneity, we also interacted the job transition dummies with the country dummies. Results regarding these models are reported in column (8) and (13). Results reveal that there exists a high degree of heterogeneity across countries regarding the impact of the transition from salaried employment to self-employment on workers' perceived skill mismatches. The interpretation of the marginal effects of the interactions is straightforward. Despite on average, this type of transition reduces significantly the probability that workers report being skill-mismatched, the impact of this transition in the Netherlands, Ireland, Italy, Greece, Spain, Portugal and Austria is significantly milder than in Denmark, Belgium, France and Finland. This result is indicated by the fact that for the first group of countries, the estimated marginal effects of the transition-country interactions are statistically significant and positive.

Results regarding the job-to-job transitions within salaried employment are more homogeneous across countries. Again, on average, this type of transition reduces the probability that workers report being skill-mismatched, thought with much lesser intensity than transitions to self-employment. However, within salaried employment, job-to-job transitions have a similar effect on self-perceived skill mismatches in all countries except in the Netherlands, Spain and Portugal. In the first two countries, the effect is smaller than the average, while in the latter this effect is higher. Results reported in Table 4 regarding the differential impact of job transitions across countries can be seen more clearly in Figure 1.

----Insert Figure 1 here----

5.3. The timing of job transitions

Another relevant issue regards the fact that the skill-mismatch phenomenon is not homogenously distributed by age. In this sense, they can be identified different stages which are age dependent: job placement (18-30 years old), job affirmation (30-50 years old), career (50-65 years). We should expect the mismatch phenomenon is reduced with the growth of working seniority, therefore, the impact of job transitions might be also age dependent. To test for this hypothesis, we create three age dummy variables picking-up these three age groups and interact them with the transitions dummies. Results are interesting. First at all, perceived skill mismatches strongly decreases with age. However, while the previous hypothesis is confirmed for the trasntions from salaried employment to self-employment, this is not so for job-to-job transitions within salaried employment. For the latter transition, estimated marginal effects for interactions are small and not statistically significant (column

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13). However, for the transition to self-employment, estimated marginal effects for the interactions have a different sign and are statistically significant. Indeed, the estimated effect of the interaction for the oldest group is quite sizeable (column 8). For the age group 18-30, the transition to self-employment reduces the probability of reporting being skill-mismatched in -6.4 percetage points, this figures are -0.1 (-0,064-0.028-0.007) and -0.12 (-0,064-0.112+0.056) for the age groups 30-50 and 50-65, respectively.

5.4. Worskers' Adaptation to job transitions

Another relevant issue is whether the improvements on workers' perception of skill-mismatches due to job-to-job transitions last over time, or on the contrary, after an initial shock, individuals adapt to this change and the effect tend to vanish over time. In order to test for this hypothsis, we estimate again our models but now we split the post-transition years into three periods: the year in which the transition is made and one year after the transition (JJ_l01), two and three years after the transition (JJ_l23), and from the fourth year after the transition until the last year in our sample period (JJ_l4567). Results are reported in table 5. We carry out this analysis using both the pooled probit model (column 1 and 3) and the random effects probit model (column 2 and 4). Estimated results are quite interesting.

We observe that the transition to self-employment no only produces an immediate impact that lasts over time, but also that increases in the medium-long run. One year after becoming a self-employee, the probability of reporting being skill mismatched is reduced in 6 percentage points, which remains practically the same two and three years after the transition. However, after the fourth year since individuals became self-employed, the probability of reporting being skilled mismatched is -10 percentage points smaller than for

those who remain in salaried employment during the whole sample period. Interestingly, for individuals doing job-to-job transitions within salaried employment, we observe the opposite. During the first two years after the transition, the probability of reporting being skill-mismatched decreases by only -3.5 percentage points. This reduction remains very similar 2-3 years after the transition. However, four years after the transition, the probability for these individuals of reporting being skilled mismatched is only -2 percentage points smaller than for those who remain in salaried employment during the whole sample period.

----Insert Table 5 here----

6. Summary and concluding remarks

Skill mismatches in Europe have attracted the attention of the academic community due to their effects on labor market, competitiveness and growth as well as on psychological aspects such as job satisfaction and subjective well-being. Hence, there seems that matching skills supply and available jobs through better labor market information and efficient job placement services is a relevant issue. In contrast to Lazear's (2005) assumptions, however, self-employees need more basic and specialized skills than salaried employees (Lechmann and Schnabel, 2014). Recent studies suggest that self-employment has tangible positive economic impacts not only on salaried employment but also on per capita income growth and poverty reduction (Goetz et al., 2012). In this cotext, we think it is important to investigate whether self-employment is a way to improve the worker-job match, either from an objective or subjective point of view.

Using panel data from eleven European countries covering the period 1994–2001, this article investigates the relationship between the transition from salaried employment to self-employment and the probability of reporting being skill-mismatched. Panel data allow us to observe whether individuals perceive themselves as skill-mismatched before and after the transition. The results indicate that switching from salaried to self-employment significantly reduces the probability of reporting being-skill mismatched both in the short and the long term. Furthermore, this effect reinforced overtime in comparison with job-to-job transions within salaried employment. We find that the negative impact of the transition to self-employment remains robust across alternative specifications and models. We think this is proof of the robustness of our results, which suggest that a significant number of salaried employees may resort to self-employment as a way to improve the worker-job match in terms of the utilization of their skills. Interestingly, we also observe that the benefits of self-employment vanishes if workers do the transition from an unemployment status. Finally, we also observe that there are significant differences across countries in the effect of the transition to self-employment on the likelihood to report skill-mismatches. At this regard, job-to-job transitions report a more homogeneous response across countries.

Our results suggest that self-employment may improve, if not totally at least partially, the quality of the worker-job match in terms of the utilisation of their skills, which in turn may raise economic performance, workers' productivity and other workers' subjective and psicological outcomes. However, we must be cautious since individuals' perception of skill mismatches does not disappear simply with job transitions. Skill mismatches are the result of individual and structural characteristics which are by far difficult to measure and control. At this regard, our paper is not an exception and we have to admit that this is a limitation we had to face. Consequently, our study highlights some interesting

paths for the future research agenda. We think that future research lines should pay more attention to the psychological factors and personality traits affecting the perception of skill-mismatches. Second, the interaction between these personal traits and the labour context are also of interest. Undoubtedly, the complexity of the phenomena may give fruitful results and shed some more light at at the "black box" of entrepreneurship.

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Table 1.
Descriptive statistics of the variables in the model

| | Stayers | | Movers | | | |
| | | | Before moving | | After moving | |
	Mean	s.d.	Mean	s.d.	Mean	s.d.
Self-assessed skill mismatch	0.531	0.499	0.559	0.497	0.506	0.500
Job satisfaction	4.316	1.150	4.159	1.249	4.305	1.161
Age	36.622	10.905	34.016	9.876	36.455	9.969
Women	0.344	0.475	0.271	0.444	0.263	0.440
Higher education	0.172	0.490	0.175	0.489	0.160	0.484
Secondary education	0.367	0.482	0.353	0.478	0.323	0.467
Primary education	0.461	0.498	0.472	0.499	0.518	0.500
Weekly hours worked	41.820	7.381	43.780	8.960	44.473	9.726
Tenure	7.623	6.761	6.131	5.766	2.717	4.383
Managers	0.057	0.307	0.070	0.308	0.103	0.304
Professionals	0.070	0.255	0.072	0.259	0.073	0.260
Technicians	0.130	0.336	0.113	0.317	0.116	0.320
Clerks	0.149	0.356	0.105	0.307	0.091	0.288
Service, shop, sales workers	0.123	0.328	0.137	0.344	0.120	0.324
Skilled agriculture and fishery	0.016	0.124	0.032	0.175	0.041	0.199
Craft and trade workers	0.218	0.413	0.248	0.432	0.244	0.429
Plant and Machine operators	0.129	0.336	0.115	0.318	0.123	0.328
Elementary occupations	0.108	0.311	0.108	0.311	0.090	0.286
Agriculture	0.032	0.499	0.058	0.499	0.062	0.497
Manufacturing	0.451	0.498	0.447	0.497	0.420	0.494
Services	0.517	0.500	0.495	0.500	0.517	0.500
Observations	163,921		24,251		22,405	

Source: Own elaboration from the ECHP

Table 2
Average values of self-assessed skill mismatch by country

	Stayers		Movers				Diff.
			Before moving		After moving		
	N	Mean	N	Mean	N	Mean	
Denmark	10,015	0.629	1,628	0.650	1,534	0.613	0.037
Netherlands	18,466	0.382	2,528	0.474	2,284	0.376	0.098
Belgium	7,729	0.659	973	0.715	840	0.658	0.057
France	22,288	0.533	2,259	0.581	1,738	0.514	0.067
Ireland	10,814	0.535	1,607	0.551	1,511	0.518	0.033
Italy	20,594	0.501	3,141	0.521	2,943	0.471	0.05
Greece	10,040	0.597	2,154	0.581	2,288	0.523	0.058
Spain	22,011	0.551	4,000	0.538	3,560	0.540	-0.002
Portugal	21,990	0.445	3,756	0.484	3,488	0.401	0.083
Austria	11,200	0.608	1,111	0.659	1,182	0.610	0.049
Finland	8,774	0.674	1,094	0.740	1,037	0.667	0.073

Source: Own elaboration from the ECHP

Table 3.
Pooled probit estimates of job satisfaction and self-reported skill mismatches

	Model 1	Model 2
	Job Satisfaction	**Skill Mismatch**
Self-assessed skill mismatch	-0.0349***	
	(0.00211)	
Self-employment	0.0318***	-0.0663***
	(0.00321)	(0.00311)
Age	-0.00492***	0.00525***
	(0.000656)	(0.000670)
Age2	5.64e-05***	-0.000111***
	(7.99e-06)	(8.17e-06)
Female$_t$	-0.0266***	-0.0520***
	(0.00241)	(0.00246)
Base (Higher education)		
Secondary education	-0.0197***	-0.0738***
	(0.00351)	(0.00363)
Primary education	-0.0537***	-0.218***
	(0.00371)	(0.00380)
Tenure$_t$	0.00213***	-0.00328***
	(0.000188)	(0.000190)
Log Hours Worked$_t$	0.000731***	0.000401***
	(0.000110)	(0.000113)
Base (Managers)		
Professionals	0.0389***	-0.0404***
	(0.00541)	(0.00550)
Technicians	8.28e-05	0.00740
	(0.00476)	(0.00484)
Clerks	-0.0545***	0.0417***
	(0.00497)	(0.00505)
Service workers and sales	-0.0663***	0.0283***
	(0.00479)	(0.00485)
Agriculture and fishery workers	-0.140***	-0.0159*
	(0.00824)	(0.00838)
Craft and related trade workers	-0.0892***	-0.0417***
	(0.00452)	(0.00457)
Plant and Machine operators	-0.101***	-0.0118**
	(0.00492)	(0.00499)
Elementary occupations	-0.158***	-0.000885
	(0.00525)	(0.00534)
Base (Agriculture)		
Manufacturing	0.0306***	0.0339***
	(0.00720)	(0.00729)
Services	0.0438***	0.0423***
	(0.00711)	(0.00720)
Sample size	208,659	211,898

Notes:
  1. *** Significant at 1%, ** Significant at 5%, * Significant at 10%.
  2. All models include country and year dummies.
  3. Estimated values are marginal effects
  4. Numbers in parenthesis are standard errors.

Table 4
Estimation of the impact of job transitions on the probability of reporting being skill-mismatched

	Transitions from salaried employment to self-employment					Job transitions within salaried employment				
	RE probit	Pooled probit model				RE probit	Pooled probit model			
	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Job-to-job transition (JJ)	-0.0763*** (0.01042)	-0.0643*** (0.00688)	-0.0568*** (0.00769)	-0.0905*** (0.0107)	-0.0645*** (0.0069)	-0.0342*** (0.00452)	-0.0249*** (0.00428)	-0.0202*** (0.00459)	-0.0247*** (0.00433)	-0.0259*** (0.0043)
Age 30-50 (A3050)					-0.0283*** (0.0035)					-0.0301*** (0.0031)
Age 50-65 (A5065)					-0.1126*** (0.0050)					-0.1172*** (0.0047)
JJ x A3050					-0.0074 (0.0152)					0.0026 (0.0082)
JJ x A5065					0.0567*** (0.0211)					0.0033 (0.0138)
Previous unemployment (PU)			0.0158*** (0.00342)					0.0164*** (0.00307)		
JJ x PU			0.0261* (0.0155)					0.00219 (0.00844)		
Netherlands				-0.181*** (0.00785)					-0.188*** (0.00677)	
Belgium				0.0192** (0.00910)					0.0159** (0.00797)	
France				-0.0662*** (0.00784)					-0.0645*** (0.00646)	
Ireland				-0.0844*** (0.00825)					-0.0953*** (0.00727)	
Italy				-0.0604*** (0.00740)					-0.0686*** (0.00656)	
Greece				-3.60e-05 (0.00819)					-0.0158** (0.00737)	
Spain				-0.0295*** (0.00737)					-0.0339*** (0.00645)	
Portugal				-0.0576*** (0.00753)					-0.0800*** (0.00665)	
Austria				-0.00372 (0.00818)					-0.0139* (0.00722)	
Finland				0.0567*** (0.00907)					0.0544*** (0.00810)	

Netherlands		0.139***		0.0522***
		(0.0469)		(0.0188)
JJ x Belgium		0.0658		0.0277
		(0.0560)		(0.0241)
JJ x France		-0.0942		0.0288
		(0.0728)		(0.0198)
JJ x Ireland		0.104**		0.0222
		(0.0437)		(0.0208)
JJ x Italy		0.0851**		0.0176
		(0.0389)		(0.0192)
JJ x Greece		0.114***		-0.00409
		(0.0394)		(0.0208)
JJ x Spain		0.0997**		0.0549***
		(0.0390)		(0.0179)
JJ x Portugal		0.121***		-0.0461**
		(0.0388)		(0.0182)
JJ x Austria		0.0952**		0.0178
		(0.0475)		(0.0216)
JJ x Finland		0.0672		0.0133
		(0.0521)		(0.0257)
Chi rho=0 p-value				
Observations	127,585	127,585	150,648	150,648

Notes:
1. *** Significant at 1%, ** Significant at 5%, * Significant at 10%.
2. Estimated values are marginal effects
3. Numbers in parenthesis are standard errors.
4. All models include year and country dummies.

Table 5
Estimation of the impact of the lags of job transitions on the probability of reporting being skill-mismatched

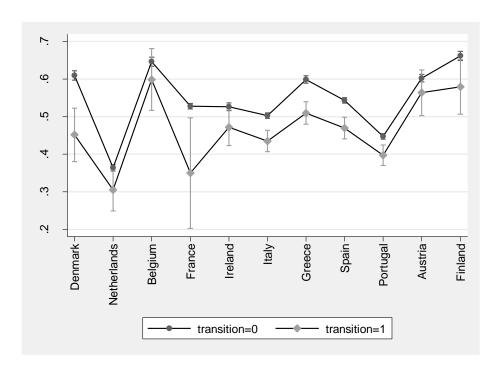|	(1)	(2)	(3)	(4)
JJ_l01	-0.0607***	-0.0755***	-0.0246***	-0.0353***
	(0.00817)	(0.0111)	(0.00490)	(0.00471)
JJ_l23	-0.0601***	-0.0722***	-0.0265***	-0.0323***
	(0.0131)	(0.0174)	(0.00762)	(0.00685)
JJ_l4567	-0.102***	-0.105***	-0.0221*	-0.0200*
	(0.0209)	(0.0272)	(0.0133)	(0.0114)
Observations	127,585	127,585	150,648	150,648

Notes:
1. *** Significant at 1%, ** Significant at 5%, * Significant at 10%.
2. Estimated values are marginal effects
3. Numbers in parenthesis are standard errors.
4. All models include year and country dummies.

Figure 1.

Marginal effects of job-to-job transitions across countries.

a) Transitions for salaried employment to self-employment

b) Transitions within salaried employment