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Self-employment and well-being : new insights on heterogeneity, satisfaction, and health

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Self-Employment and Well-Being: New Insights on Heterogeneity, Satisfaction, and Health

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A Marina, mi persona favorita.

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"Magic is believing in yourself. If you can make that happen, you can make anything happen."

— Johann Wolfgang Von Goethe

"Be happy with what you have while working for what you want."

— Helen Keller

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Published and submitted content

Chapter 2 of this thesis, entitled *"Becoming self-employed from inactivity: an in-depth analysis of satisfaction"* has been published together with Prof. Emilio Congregado and Prof. Concepción Román at *Small Business Economics, Volume 56; January 2021* (available at https://doi.org/10.1007/s11187-019-00212-2).

Chapter 3 of this thesis, entitled *"Opportunity and Necessity Self-Employment: The Role of Nonpecuniary Benefits in Workers' Mental Well-Being"* is a single author paper. It is currently "under review" at *Journal of Business and Psychology.*

Chapter 4 of this thesis, entitled "*Self-Employment and Early Retirement: The Moderating Role of Well-Being*" is a joint work with Prof. Adrián Mérida and Prof. Juan Sanchis. It has been submitted to *Journal of Business Venturing.*

English Summary

Is entrepreneurship a good work alternative in terms of individual well-being? How is the well-being of entrepreneurs compared to that of employees? Does individual well-being determine the prolongation of the entrepreneur's working life? Despite the increasing international attention that the issue of individual well-being is receiving in both the political and academic arenas, these and other questions still lack an answer. Choosing Europe as the research scenario, this thesis aims to solve these questions to offer more arguments that enrich the current literature on well-being and entrepreneurship, while being useful both for individuals who are or want to become entrepreneurs and for future political reforms of entrepreneurship.

The first essay uses data from the European Community Household Panel to examine the change in satisfaction with the main activity of inactive individuals who transition to self-employment compared to those who become paid employees and those who remain inactive. Incorporating inactive individuals into the workforce could generate significant economic and social benefits. Despite the fact that inactivity is made up of very heterogeneous individuals, self-employment could be a very attractive occupational alternative for them, thanks to the nonpecuniary benefits it offers. The estimates point to a positive association between satisfaction with the main activity of inactive individuals and entry into self-employment. In addition, specific analyses are performed for the different profiles of inactive people in order to draw more exhaustive and detailed conclusions. This work may be relevant to policies that seek employment opportunities for inactive individuals, while improving their welfare.

The second study echoes government programs focused on reducing the widespread problems of mental health and considers the workplace as the main context to analyze. Therefore, the objective of this work is to make an in-depth comparison of the mental health of self-employed and paid workers, distinguishing between two main types of self-employment (necessity and opportunity self-employment). Using the European Working Conditions Survey, results from the analysis confirm

the existence of differences between the two groups of workers. Additionally, moderation-based analyses are used to find out the influence of nonpecuniary benefits from self-employment on the main results. The findings of this study contribute to the literature on entrepreneurship and mental health, while also being of particular relevance for policy makers in these areas.

The last chapter studies an issue of great concern in Europe: retirement. In recent years, the debate has focused mainly on raising the mandatory age of retirement. However, a widespread trend has recently arisen among Western governments aimed at encouraging individuals to voluntarily discard early retirement. In this context, although many academics have studied paid employees in terms of their retirement behavior, little is known as to the retirement behavior of the self-employed. The goal of this chapter is to shed light on this research gap. Thus, using the Survey on Health, Aging and Retirement in Europe, it analyzes and compares the probability of early retirement for both paid employees and self-employed workers. In addition, it tests the moderating effect of well-being on that probability. The results indicate that the self-employed are less likely to retire early as compared to paid employees. These findings, besides contributing to the extant literature, have meaningful implications for designing policy-makers aimed at extending working life.

Resumen en Español

¿Es el emprendimiento una buena alternativa laboral en términos de bienestar individual? ¿Cómo es el bienestar de los emprendedores en comparación con el de los asalariados? ¿Determina el bienestar individual la prolongación de la vida laboral de los emprendedores? Pese a la creciente atención internacional que está recibiendo el concepto de bienestar individual, tanto en el panorama político como en el académico, éstas y otras cuestiones aún carecen de respuesta. Eligiendo Europa como escenario de investigación, esta tesis tiene como propósito resolver estas preguntas para ofrecer más argumentos que enriquezcan la literatura actual de bienestar y emprendimiento, al tiempo que resulten útiles tanto para los individuos que son o quieren llegar a ser emprendedores como para futuras reformas políticas de emprendimiento.

El primer ensayo de esta tesis utiliza datos del Panel de Hogares de la Unión Europea para examinar el cambio en la satisfacción con la actividad principal de los individuos inactivos que transitan al autoempleo en comparación con los que se convierten en empleados asalariados y los que permanecen inactivos. La incorporación de los individuos inactivos a la fuerza laboral podría generar beneficios económicos y sociales significativos. A pesar de que la inactividad está compuesta de individuos muy heterogéneos, el autoempleo podría ser una alternativa ocupacional muy atractiva para sus integrantes, gracias a los beneficios no pecuniarios que ofrece. Las estimaciones apuntan a una asociación positiva entre la satisfacción con la actividad principal de los individuos inactivos y la entrada al autoempleo. Además, se efectúa un análisis específico para distintos perfiles de inactivos con el objetivo de extraer conclusiones más exhaustivas y detalladas. Este trabajo puede ser relevante para las políticas que buscan una salida laboral para los individuos inactivos que ayude a mejoran su bienestar.

El segundo estudio se hace eco de los programas gubernamentales centrados en reducir el impacto negativo de la salud mental y considera el puesto de trabajo como contexto principal a analizar. Por tanto, el objetivo de este trabajo es comparar en profundidad la salud mental de au-

toempleados y asalariados, distinguiendo entre los dos principales tipos de autoempleo (autoempleo por necesidad y por oportunidad). Utilizando datos de la Encuesta Europea sobre Condiciones de Trabajo, el análisis confirma la existencia de diferencias entre los dos colectivos analizados. Adicionalmente, se hace uso de análisis basados en moderaciones para averiguar la influencia de los beneficios no pecuniarios del autoempleo en los resultados principales. Los hallazgos obtenidos contribuyen a la literatura sobre emprendimiento y la salud mental, a la vez que resultan de relevancia para la formulación de políticas en estas materias.

El último capítulo se centra en uno de los fenómenos que más preocupación está generando en el ámbito europeo: la jubilación. En los últimos años, el debate se ha centrado en retrasar la edad de jubilación. Sin embargo, recientemente, existe una tendencia generalizada por parte de los gobiernos occidentales centrada en alentar a los individuos a descartar la salida anticipada de sus vidas laborales de manera voluntaria. En este contexto, aunque muchos académicos han estudiado la jubilación de los empleados asalariados, los estudios acerca del comportamiento de los autoempleados en relación a la jubilación son más escasos. El objetivo de este capítulo es arrojar luz en esta brecha de investigación. Así, empleando datos de la Encuesta de Salud, Envejecimiento y Jubilación en Europa, se compara la probabilidad de jubilación anticipada de los asalariados y los autoempleados. Además, se analiza el efecto moderador del bienestar en dicha probabilidad. Los resultados obtenidos indican que los autoempleados son menos propensos a prejubilarse y menos sensibles al bienestar laboral en comparación con los asalariados. Estos hallazgos, además de contribuir a la literatura previa, tienen implicaciones significativas para los responsables de las políticas orientadas a extender la vida laboral.

Contents

Chapter 1

Introduction and Outline

Well-being has been the focus of numerous studies, especially in the international political arena and in global organizations. The OECD highlights the need to design policies to promote happiness (Easterlin, 2003; OECD & European Union, 2020; OECD/EU, 2020; Stiglitz et al., 2009). In July 2012 the United Nations General Assembly decreed that March 20 of every year be reserved for the International Day of Happiness, being its purpose "to promote happiness as a universal goal and aspiration in the lives of human beings around the world" (United Nations, 2020).

As emphasized in the European Union's Lisbon Treaty (European Council, 2000) and as reinforced in subsequent reports (Caza & Wrzesniewski, 2013; Muñoz de Bustillo et al., 2011; Sironi, 2019), having access to quality jobs is crucial to achieve individual well-being. Indeed, one of the most accepted findings in the literature is that work contributes to people's well-being (C. D. Fisher, 2010; Warr, 2013). Happier people tend to show greater satisfaction with work and life (Erdogan et al., 2012; Peiró, 2006), develop strong social connections (De Neve et al., 2013) and live longer and healthier lives (Anderson et al., 2012).

Entrepreneurship can play an important role in this international uprising trend focused on well-being. More precisely, entrepreneurship is a significant booster of economic growth (Acs & Armington, 2006; Audretsch et al., 2006; Van Stel et al., 2005) thanks to its positive effects on productivity, innovation, employment and competition (Acs & Armington, 2006; Braunerhjelm et al., 2010; Carree & Thurik, 2010). This leads to positive social changes that influence the general level of individual well-being. Moreover, entrepreneurs enjoy certain nonpecuniary aspects, such as increased levels of autonomy, flexibility and job control (Croson & Minniti, 2012; Hamilton, 2000; Hundley, 2001; S. C. Parker, 2018) that may affect well-being differently than wage employment.

Such nonpecuniary aspects might explain why entrepreneurs tend to report higher levels of job and life satisfaction (Millán et al., 2013; Van der Zwan et al., 2018; Wiklund et al., 2019), which are key psychological factors that can push individuals into new challenges (Foo et al., 2009; Kanfer et al., 2017) and increase their overall well-being (Cannas et al., 2019; Erdogan et al., 2012). Entrepreneurship is also associated with "procedural utility", which means that individuals obtain satisfaction not just from the outcomes of their work, but also from doing what they like (Benz & Frey, 2004, 2008a, 2008b). Thus, entrepreneurship seems to be a job option that promotes personal growth and individual well-being (Shir et al., 2019; Stephan, 2018).

Entrepreneurship could be a way of acquiring well-being throughout the working life of individuals, from the moment when they enter the labor market to the time they retire. On the one hand, entrepreneurship could be a great source of job satisfaction for groups outside the labor market, i.e. inactive individuals. On the other hand, the well-being of entrepreneurs may be conditioned by the motivations that led them to establish a business. In particular, individuals may become entrepreneurs guided by their desire to seek profit from a business opportunity or due to a lack of better alternatives. These are commonly referred to as opportunity and necessity entrepreneurs, respectively. It is possible that there exist differences between them in terms of well-being, given their different characteristics and motivations. In addition, the individual well-being could also condition the anticipated exit from the labor market, especially in those cases where individuals do not reach the desired state of happiness at work.

Yet, despite the several ways in which entrepreneurship can be related to well-being, the relationship between them at different stages of one's career—from the time an individual decides to become an entrepreneur until the retirement moment—and the nuances derived from the different sources of heterogeneity among individuals remains somewhat underexplored.

This thesis aims at adding evidence to this field of study. In particular, this dissertation studies the link between entrepreneurship and different dimensions of individual well-being while accounting for the differences across the various groups of self-employed workers. Ignoring the peculiarities of different groups of individuals can lead to imprecise and hasty conclusions. Thus, with the aim of uncovering more detailed and robust results, this thesis tackles the heterogeneity associated with different groups of self-employment—according to their motivations—throughout different stages of workers' careers, while also dealing with the various aspects of well-being by considering a diverse set of dimensions related to it.

In this regard, the second chapter focuses on the role of transitions to the labor market, either through self-employment or wage employment as a source of improved well-being for previously inactive individuals, who represent a source of potential labor whose activation may lead to economic and social progress. However, inactivity is a rather heterogeneous category composed by individuals with rather distinct personal circumstances and professional motivations—such as students, homemakers, and retirees. As such, the path to desirable states of well-being may vary for each of these groups. In this scenario, this thesis posits that self-employment may prove an adaptable occupation that fits the specific needs and situations of the various inactive individuals thanks to its nonpecuniary aspects. This chapter explores whether transitions from inactivity to self-employment are associated with a higher increase in satisfaction than transitions to wage employment or than remaining inactive, using satisfaction with one's main activity as a measure of individual well-being. Moreover, this work further evaluates the extent to which the change in satisfaction is explained by the nonpecuniary benefits offered by self-employment. To do this, an emphasis is put on the degree of satisfaction with several aspects of work, including earnings, security, working conditions, working times and hours, and distance to work.

Once individuals have entered self-employment, differences in well-being may still exist depending on the motivations behind the transition. In this sense, a significant categorization in the entrepreneurship literature is the one that classifies entrepreneurs as opportunity- and necessity-driven (Hay et al., 2002; S. C. Parker, 2018). Although this distinction has been shown to explain differences in certain dimensions of well-being, such as life satisfaction (Binder & Coad, 2016; Larsson & Thulin, 2019), its relationship with other aspects of well-being remains uncharted in the entrepreneurial literature.

The third chapter of this thesis contributes to this gap by analyzing the latent differences in mental health between opportunity and necessity self-employed workers and wage employees. Defined as "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (Herrman et al., 2005), mental health is a determining aspect of individual well-being and fulfillment (Ryan & Deci, 2001; Ryff, 2017) and a driver of potential success at work (OECD/EU, 2018). Because of that, in addition to comparing the mental health status of self-employed workers and wage employees, this chapter also assesses the relevance of the different nonpecuniary benefits of self-employment in explaining the differences

in mental health across the various groups of workers. This is a relevant niche to investigate, as mental health problems are a widespread phenomenon and not only lead to a lack of well-being and even suicidal behavior, but also hinders the overall economy (OECD/EU, 2018), particularly when self-employed workers are the ones with poor mental health (Audretsch & Thurik, 2001; Van Praag & Versloot, 2008).

Finally, individual well-being may influence the length of the working life of individuals. Indeed, the literature suggests that individuals with higher well-being are more likely to delay their retirement (E. Davies & Cartwright, 2011; Kautonen et al., 2012; Oakman & Wells, 2013). However, it is possible that the relationship between well-being and retirement differs for self-employed and paid employees. For instance, self-employed workers could take advantage of their increased level of job control and autonomy to make changes at work to improve their well-being. In this context, the fourth chapter examines whether the probability of engaging in early retirement is dissimilar for these two groups of workers and explicitly considers the moderating role of well-being. More specifically, this study uses both life and job satisfaction as measures of well-being, which represent two of the most determining elements in people's happiness. The results of this last chapter may be useful for policy makers concerned about encouraging delayed retirement plans and promoting a healthy aging, which has become an extended concern to ensure the sustainability of the pension systems (European Commission, 2011; Eurostat, 2019, 2020; Johnson et al., 2011).

In sum, this is an interdisciplinary thesis that combines various perspectives from the fields of entrepreneurship—given its direct impact on the economic and social sustainability—and psychological well-being—as one of the key pillars of individual happiness. The different chapters included in this dissertation address different sources of heterogeneity in order to obtain more fine-grained results. As such, different dimensions of well-being are examined while accounting for the diversity embedded among current and potential self-employed workers. In this way, this thesis aspires to contribute to the extant literatures of entrepreneurship and well-being by providing new insights related to different facets and particularities of entrepreneurship and its relationship with well-being. Findings are likely of interest and assistance to academics, organizations and policy makers in maintaining a healthy, potentially innovative and competitive workforce.

Dissertation Structure

In addition to the introductory chapter, this thesis is composed by three other chapters, which represent the main body of the thesis, as well as a concluding chapter. As summarized in table 1.1, Chapter 2 analyzes the change in satisfaction with one's main activity of inactive individuals becoming self-employed as compared to those becoming paid employees and those remaining inactive. Chapter 3, investigates the differences in mental health between self-employed workers—distinguishing between necessity and opportunity self-employed—and paid employees and if these dissimilarities are influenced by the nonpecuniary benefits that self-employed workers tend to enjoy. Lastly, Chapter 4 considers the role of job and life satisfaction in the probability of early retirement of self-employed workers compared to paid-employees.

Table 1.1: Dissertation structure

Title of the chapter	Research questions	Types of heterogeneity	Data and methodology
2. Becoming Self-Employed From Inactivity: An In-Depth Analysis of Satisfaction	Are transitions from inactivity to self-employment associated with a different change in satisfaction compared to transitions to wage employment and to continued inactivity?	**Individual-level:** inactive individuals (homemakers, retirees and students) **Well-being:** satisfaction with main activity	European Community Household Panel Propensity Score Matching, Fixed Effects and Ordered Logit Regressions
3. Opportunity and Necessity Self-Employment: The Role of Nonpecuniary Benefits in Workers' Mental Well-Being	Are there differences in mental health between opportunity and necessity self-employed workers? Do nonpecuniary aspects of work explain such differences?	**Individual-level:** self-employed workers (opportunity and necessity) **Well-being:** mental health	European Working Conditions Survey Ordered Logit Regressions
4. Self-Employment and Early Retirement: The Moderating Role of Well-Being	Is the probability of early retirement different for self-employed and paid workers? Does well-being moderate that difference?	**Individual-level:** Older self-employed and wage employees **Well-being:** job and life satisfaction	Survey of Health, Ageing and Retirement in Europe Logit Regressions

Chapter 2: Becoming self-employed from inactivity: An in-depth analysis of satisfaction

Inactive individuals represent a pool of potential labor force whose activation entails economic and social advantages. Additionally, being active allows individuals to cover their basic psychological needs—*autonomy*, *competence* and *relatedness*—which leads to greater satisfaction through self-determination. However, inactive individuals may be categorized in different groups with diverse profiles, which can make it difficult to design effective labor policies that benefit all of them.

In this context, this chapter posits that self-employment may be an attractive occupational alternative because its nonpecuniary aspects may suit their dissimilar needs better. This idea has been scarcely explored by the academic literature on self-employment and entrepreneurship, although policy makers ratify the potential of self-employment to help inactive people enter the labor market and potentially improve their well-being. Hence, the main goal of this chapter is to get a bigger picture of how and when inactive individuals feel satisfied.

This chapter takes advantage of the longitudinal dimension of the *European Community Household Panel* (ECHP) to track individuals over time and analyze whether transitions from inactivity to self-employment are associated with a change in satisfaction with work or main activity—which is used as a measure of well-being. The use of ECHP data is crucial in the context of the analysis presented in chapter 2 for two reasons. First, it provides details on satisfaction levels with one's main activity not only for those who are active in the labor market, but also for inactive individuals. Second, it allows identifying self-employed workers, wage workers and different types of inactive individuals, distinguishing between students, homemakers, and retirees. This makes it possible to perform separate analyses on the change in satisfaction with one's main activity after transitions from inactivity to self-employment compared to transitions to wage employment and to situations in which individuals remain inactive.

Propensity score matching techniques are applied to minimize the impact of confounding variables and obtain comparable samples leading to a more accurate analysis. The results suggest that self-employment is associated with more satisfaction than remaining inactive in the case of retirees and homemakers, while students tend to experience a larger increase in satisfaction when entering self-employment compared to paid employment. These findings emphasize the importance of considering the existing heterogeneity within inactive population and the need to consider such heterogeneity when designing activation policies. Moreover, they are recalling for the need to adapt existing policy measures to support inclusive and sustainable business creation.

Chapter 3: Opportunity and Necessity Self-Employment: The Role of Nonpecuniary Benefits in Workers' Mental Well-Being

In response to the social and economic impact of mental illnesses, European governors and institutions are already in the midst of mental health prevention and treatment. In the last few years, a wide range of intervention programs have arisen with the goal of preserving and fostering men-

tal well-being. Some of those programs include the *WHO Comprehensive Mental Health Action Plan 2013-2020* (Saxena & Setoya, 2014), *Recommendation of the Council on Integrated Mental Health, Skills and Work Policy* (OECD, 2015), and *EU-Compass for Action on Mental Health and Wellbeing* (European Commission, 2018).

These proposals are not only based on the family environment, but also emphasize the importance of promoting mental health in the professional environment. In this context, many scholars have investigated the relationship between work and workers' mental health. However, most of the research has focused on paid employment, so there is a lack of research on the relationship between mental health and self-employment. The goal of chapter 3 is, therefore, to shed light on this topic by thoroughly analyzing the state of mental health among the self-employed workers.

Chapter 3 makes use of the *European Working Conditions Survey* (EWCS) to compare the mental health status of self-employed workers and wage employees across the EU-28 member states. A key feature of the EWCS dataset is that self-employed respondents have been further categorized as opportunity and necessity self-employed. The empirical operationalization of necessity and opportunity self-employment tends to be somewhat convoluted (Fairlie & Fossen, 2018). In this sense, the EWCS provides self-reported motivations of those who enter self-employment, thus making this measurement more straightforward and enabling a more fine-grained analysis by acknowledging the heterogeneous motivations of the self-employed workers. Another interesting aspect of the EWCS stems from the inclusion of details regarding nonpecuniary aspects of work, including different proxies of flexibility, autonomy, and job control. This allows exploring to what extent such nonpecuniary benefits explain differences in mental health between wage employees and necessity and opportunity self-employed workers.

In chapter 3, it is theorized that self-employment is likely to affect mental health differently than wage employment due to its nonpecuniary benefits. Results from ordered *logit* regressions confirm that there are differences between self-employed and wage employees in terms of mental health. After accounting for the heterogeneity of self-employed workers, it is found that opportunity self-employed workers are the ones who tend to have the highest levels of mental health, while necessity self-employed are no different than wage employees in that regard. Additional analyses highlight the relevance of nonpecuniary benefits—flexibility, autonomy and job control—in determining the mental health status of self-employed workers. These findings may offer potentially relevant insights for organizations and policy makers.

Chapter 4: Self-Employment and Early Retirement: The Moderating Role of Well-Being

The aging of the population is a concerning reality in Europe. Currently, more than 14% of the European population is over 65 and approximately 6% is over 80 (Eurostat, 2019). This has led the promotion of sustainable community pension systems to become one of the most discussed issues in recent European political debates (OECD, 2019b).

In this context, raising the retirement age has been the most commonly applied measure for several years. However, more recently, governments are betting heavily on encouraging individuals to voluntarily stay in the workforce (Eurostat, 2020). From an academic perspective, previous literature has widely explored the retirement behavior of paid employees, but the self-employed have received less attention despite the impact of their retirement on the economy. Chapter 4 aims at filling this gap by comparing these two groups in terms of their likelihood to engage in early retirement. In addition, the moderating role of well-being in the decision to retire early is explicitly analyzed.

In particular, this chapter postulates that self-employed workers are less likely to engage in early retirement due to the nonpecuniary benefits that they enjoy, and because they tend to identify themselves with their firms and to show higher levels of commitment to work. Moreover, it is theorized that their increased levels of autonomy, flexibility and job control also make them less sensitive to well-being when evaluating retirement. In order to test these ideas, chapter 4 utilizes data from the *Survey of Health, Ageing and Retirement in Europe* (SHARE) to explore the early retirement behavior of older self-employed workers compared to their counterparts in wage employment. SHARE provides details on the early retirement status (and intentions) of the interviewees as well as their levels of both life and job satisfaction—which are used to measure two different dimensions of well-being.

Results from *logit* regressions support the aforementioned hypotheses. First, self-employed workers are less likely to retire early than wage employees. Second, results provide evidence of differential effects of well-being on early retirement between wage employees and self-employed workers. Furthermore, results suggest that such differential effects mostly derive from well-being at work rather than overall well-being, which accentuates the need of differentiating between the various dimensions of well-being. Policy makers interested in designing actions focused on extending working lives may benefit from these findings.

Chapter 2

Becoming Self-Employed From Inactivity: An In-Depth Analysis of Satisfaction

2.1 Introduction

Inactive individuals represent a large pool of potential labor whose participation in the productive system could potentially bring economic, fiscal, and societal benefits. As a consequence, policies to encourage their participation in the labor market have become increasingly common worldwide (Eichhorst et al., 2008; International Monetary Fund, 2018; Leaker, 2009). In addition, from an individual point of view, being active offers the opportunity to grow both personally and professionally, as well as the chance to take on responsibility, make decisions, solve problems, and interact within a broader social environment (Blustein, 2008; Van den Broeck et al., 2016). This enables the fulfilment of basic psychological needs—such as *autonomy*, *competence* and *relatedness*—which are expected to increase satisfaction by achieving self-determination (E. Deci & Ryan, 1985; E. L. Deci et al., 2017; Gagné & Deci, 2005; Ryan & Deci, 2000; Yu et al., 2018).

However, the high degree of heterogeneity within the group of inactive people (Little, 2007) implies that not all types of employment would increase their satisfaction relative to their current status. The main types of inactive individuals include homemakers, retirees and students.[1] They

[1] Previous studies such as those of Blanchflower and Oswald (2004) or Azzopardi and Bezzina (2014) take homemakers, retirees and students as the main subgroups of inactive individuals.

all have different lifestyles, characteristics and needs that may affect their search for satisfaction. Homemakers may need to find a balance between housekeeping duties and work (Wellington, 2006). Retirees may seek to return to the labor market—particularly if their retirement was involuntary (Van Solinge, 2014)—in search of a type of employment that grants them increased autonomy at work (Kautonen et al., 2017). Finally, young students might be more likely to value leisure over work (Cennamo & Gardner, 2008; Twenge et al., 2010). Therefore, not all types of work are equally likely to help them find satisfaction, given their particular needs.

In this paper, we explore whether self-employment could be an attractive alternative for them due to the nonpecuniary aspects of running one's own firm (Hamilton, 2000). Self-employed workers enjoy higher levels of autonomy (Croson & Minniti, 2012), flexibility (Hyytinen & Ruuskanen, 2007), and independence (Benz & Frey, 2008a) and often report high levels of procedural utility because they enjoy the process of being a business owner (Benz & Frey, 2008a, 2008b).

While the literature provides evidence that transitions from paid employment to self-employment are associated with increases in satisfaction (Benz & Frey, 2008a; Binder & Coad, 2013; Kautonen et al., 2017), whether such a conclusion would hold when the transition occurs from (different types of) inactivity remains unexplored. Moreover, although past research shows that transitions from activity to joblessness lead to a decrease in satisfaction (Flint et al., 2013; Knabe & Rätzel, 2011; Krueger, 2017; Lucas et al., 2004; Winkelmann & Winkelmann, 1998), little is known regarding the effects on satisfaction in the reverse transition. In this paper, we intend to fill such gaps by analyzing changes in the satisfaction of formerly inactive individuals when they transition to self-employment compared to remaining inactive or becoming paid employees. Therefore, we contribute to two strands of the literature on satisfaction: (i) the literature on the relationship between *(in)activity and satisfaction*, where we analyse how satisfaction varies in transitions from inactivity to employment, not in the opposite direction, distinguishing between transitions to self- and paid employment; and (ii) the literature on *self-employment and satisfaction*, where we investigate the extent to which self-employment may affect the satisfaction of formerly inactive individuals, which is unknown at the time of writing. Thus far, few studies have focused on this population segment (Leaker, 2009), so this article offers the possibility of obtaining a broader picture of how and when inactive individuals become satisfied.

Drawing from the two aforementioned streams of the literature, we derive specific hypotheses for each subgroup of inactive individuals. In order to test them, we use data from the European

Community Household Panel (ECHP) covering the period from 1994 through 2001. In particular, we compare *changes in satisfaction with main activity* of inactive individuals switching to self-employment to that of (i) those switching to paid employment and (ii) those remaining inactive. Since the decision to become self-employed or paid employee or to remain inactive is not random—i.e. individuals are likely to self-select into their preferred group—, we apply *propensity score matching techniques*. This procedure allows balancing treated and control groups and therefore alleviates potential problems of self-selection based on observed heterogeneity. In this way, the impact of a transition to self-employment on satisfaction can be interpreted as a conditional gap once we control for observable characteristics (see e.g. Caliendo et al., 2015; Caliendo and Lee, 2013).

The overall picture that emerges from our results is the following. On the one hand, for retirees and homemakers, self-employment seems to be associated with a more positive change in satisfaction than remaining in inactivity, whereas students becoming self-employed report similar levels of satisfaction than those who continue their studies. On the other hand, while homemakers and retirees who (re)enter the labor market are equally content in either type of employment, students seem to be more satisfied when they become business owners instead of becoming employees. This new empirical evidence may be relevant to the design of policies aimed at stimulating the labor force participation of these groups of inactive individuals through active labor market programmes, particularly in light of the mixed effectiveness of previous measures (Carcillo & Grubb, 2006; Card et al., 2010).

The remainder of this paper is structured as follows. Section 2.2 contains a selective literature review and derives hypotheses about the potential impact of transitions to self-employment on *satisfaction with main activity* of each subgroup of inactive individuals. Section 2.3 describes the data and the methodology employed in the analysis. Section 2.4 presents and discusses the results. Section 2.5 concludes the paper.

2.2 Literature Review and Theory

This section reviews the theoretical and empirical literature, which helps us to develop hypotheses regarding the potential impact of a transition to self-employment on changes in satisfaction of previously inactive individuals. Thus, section 2.2.1 concentrates on the relationship between (in)activity

status and satisfaction; section 2.2.2 focuses on the association between self-employment and satisfaction; and finally, section 2.2.3 highlights differences across groups of inactive individuals and derives hypotheses to be tested in the empirical part.

2.2.1 (In)activity and Satisfaction

Satisfaction is associated with and affected by a very wide range of personal and environmental factors that relate to both pecuniary and nonpecuniary aspects of life (Erdogan et al., 2012; Frijters et al., 2004a). While the achievement of material values increases satisfaction (Frijters et al., 2004b), there is consistent evidence that having only materialistic goals leads to negative effects in the individual's well-being, both at work and on a personal level (Sirgy, 1998; Vansteenkiste et al., 2007). According to the *self-determination theory* (E. Deci & Ryan, 1985; Ryan & Deci, 2000), in addition to seeking extrinsic satisfaction, it is essential to satisfy the intrinsic needs of *autonomy*, *competence* and *relatedness*. The desire for *autonomy* refers to choosing and acting according to one's own criteria (De Charms, 2013; E. L. Deci, 1975); the need for *competence* is related to the resolution of challenging situations autonomously (Skinner, 1995); and the need for *relatedness* is associated with the desire to connect with others through respect and trust (Baumeister & Leary, 1995).

Being active in the labor market is expected to help cover such needs, as it guides individuals towards growth and self-realization (Blustein, 2008). The need for *autonomy* is met at work when labor freedom—such as decision-making or the ability to choose—is granted to workers, thereby leading to higher satisfaction levels (Benz & Frey, 2008a; E. L. Deci et al., 1989). The need for *competence* can also be addressed through employment since working facilitates learning, development and use of skills. This enables intrinsic motivation, satisfaction and commitment to work (E. L. Deci & Ryan, 2000; D. Morrison et al., 2005; Rau, 2006). Finally, being employed answers a large part of the need for *relatedness* due to the social connections in the workplace—i.e. colleagues, customers, suppliers, etc.—(Flum, 2001; Phillips et al., 2001; Schultheiss, 2003).

In line with these arguments, empirical studies have found that satisfaction varies across employment situations (Y.-C. Lin et al., 2015; Stam et al., 2016) and that transitions from paid employment to joblessness lead to lower levels of satisfaction on average (Flint et al., 2013; Winkelmann & Winkelmann, 1998). Nonetheless, the difference in satisfaction between inactive individuals and paid employees appears to be heterogeneous across the different types of inactivity. For

example, retirees and homemakers tend to report lower or equal levels of satisfaction compared to salaried employees (Blanchflower & Oswald, 2004; Brereton et al., 2008; Stutzer, 2004), whereas students seem to experience greater satisfaction than salaried employees (Blanchflower & Oswald, 2004; Di Tella et al., 2001)—or, at the very least, they are equally satisfied (Brereton et al., 2008). Comparisons between satisfaction levels of inactive individuals and self-employed individuals has been less explored. Next, we will use the above arguments to develop our hypotheses concerning the change in satisfaction experienced by those inactive individuals switching to self-employment compared to those remaining inactive. Before doing this, we complete the picture with a revision of the arguments behind the association between self-employment and satisfaction.

2.2.2 Self-Employment and Satisfaction

Self-employment has certain nonpecuniary characteristics that are linked to the basic needs described by self-determination theory. First, the freedom that entrepreneurs enjoy in the decision-making process is likely to fulfil the need for *autonomy* (Benz & Frey, 2008b; Croson & Minniti, 2012). Second, some self-employed workers can achieve *relatedness* both at work—through networking with suppliers, customers, and possibly other entrepreneurs—and outside of it—as a result of greater scheduling flexibility (Hyytinen & Ruuskanen, 2007). This favours social relationships with friends and family and thus positively affects well-being (Lelkes, 2006; Pichler, 2006). Finally, because entrepreneurial success is dependent on the performance of the owner, self-employment work incentivises greater skill utilization (Congregado et al., 2016; Hundley, 2001). This should make individuals more likely to meet the need for *competence*.

Such nonpecuniary aspects may indeed explain why most studies find that self-employed workers report higher levels of job satisfaction (e.g. Benz and Frey, 2004; Blanchflower, 2004; Blanchflower and Oswald, 1998) and life satisfaction (Andersson, 2008; Oswald, 1997). These results hold despite the fact that self-employment involves greater stress (Jamal, 1997; Parslow et al., 2004), longer working hours (Hyytinen & Ruuskanen, 2007), irregular timetables (Hamermesh, 1990), overall higher commitment and effort at work (Felfe et al., 2008) and lower and riskier earnings (Hamilton, 2000) compared to wage employment. It has been argued that entrepreneurs are more satisfied than paid employees thanks to the greater procedural utility derived from running their firms (Benz & Frey, 2004). In other words, entrepreneurs not only enjoy the monetary outcomes of their job but also, and more importantly, the process of performing the job itself (Benz & Frey,

2008b).

Consistent with the above, empirical studies have found evidence that self-employed workers are more satisfied than paid employees and also that transitions to self-employment have a positive effect on satisfaction (e.g. Benz and Frey, 2008a; Binder and Coad, 2013; Kautonen et al., 2017)—although the effect might not be persistent over time (Georgellis & Yusuf, 2016). Importantly, transitions to self-employment may have varying effects on satisfaction depending on the initial employment status (Binder & Coad, 2013). To the best of our knowledge, inactivity has not been considered as a potential starting status in the context of transitions to self-employment. Nevertheless, we use these arguments to hypothesize about whether self-employment provides more or less satisfaction for each specific subgroup of inactive individuals compared to the alternatives of wage employment and inactivity.

2.2.3 Hypothesis Development

We first hypothesize on the relationship between self-employment and the satisfaction of inactive individuals in comparison to remaining outside the labor force. Concerning *homemakers*, because they generally watch over their home and take care of the children—if it corresponds—(Stam et al., 2016) they may have troubles developing a professional career. Aspects such as skill utilization, professional growth, assumption of responsibilities, social relations, and disconnection from home duties may increase their self-determination and well-being (Bezzina et al., 2013; Dex et al., 2008; Sahu & Rath, 2003). However, these are aspects that they cannot fully experience outside the labor market. In this sense, running a business and contributing financially to their households may raise their self-esteem (Hughes, 2003) compared to the alternative of remaining outside the labor market. Thus, our hypothesis for this group posits a positive impact of the transition to self-employment on *satisfaction with main activity* compared with remaining inactive.

Along the same lines is the case of *retirees*. Retirement provides individuals with time to invest in leisure (Blundell et al., 2016; Laslett, 1991) and in interests unrelated to work (Shultz et al., 1998). However, after the end of their productive activity, some retirees may experience a feeling of lack of purpose and perhaps even loneliness—through the loss of work ties—resulting in a decrease in satisfaction (Siegrist et al., 2004; Wahrendorf & Siegrist, 2010). In this sense, research shows that older individuals often face a loss of well-being and subjective satisfaction after transitioning to inactivity (Stutzer, 2004). Hence, they might decide to come back to activity to

regain their identity and to feel self-sufficient and productive again (Wang, 2007). Several studies agree that participation by retirees in any activity—even volunteering—is positively associated with greater well-being and quality of life (Hao, 2008; Li & Ferraro, 2005; Wahrendorf & Siegrist, 2010; Wahrendorf et al., 2006). As such, it is expected that running their own companies will have a positive impact on some of their psychological needs such as locus of control, autonomy, self-realization, and pleasure (Kautonen et al., 2017), which are positively related to quality of life (Hyde et al., 2003). Hence, we predict that retirees becoming self-employed will experience a higher change in satisfaction than those remaining out of the labor market.

Regarding *students*, arguments can be made in either direction. On the one hand, there is evidence that leisure has become increasingly important among younger generations (Cennamo & Gardner, 2008; Ng & Feldman, 2015; Twenge et al., 2010). Being a student is a relatively less strict activity than being a worker in terms of schedule flexibility and time management, particularly when class attendance is not compulsory—as in most tertiary education programmes. Students could take advantage of that situation and decide when and for how long they want to work on each task in a way that allows them to nurture social relations both at school and outside of it. Hence, not only educational environments offer ways to satisfy the need for competence (E. L. Deci et al., 1991), but also the need for autonomy and relatedness. On the other hand, given that students do not generally have a stable or significant source of income, a switch to the labor market should improve their financial status, thus helping them to become financially independent (Stern & Nakata, 1991). Moreover, the aforementioned benefits of study life are no different than those in self-employment. Being a self-employed worker is also associated with relatively high levels of autonomy (Croson & Minniti, 2012), flexibility (Hyytinen & Ruuskanen, 2007), and independence (Benz & Frey, 2008a). However, the fact that earnings in self-employment are rather volatile (Hamilton, 2000) might reduce their satisfaction if their ventures incur financial losses. Moreover, the greater pressure or responsibility derived from running a firm (Felfe et al., 2008; Parslow et al., 2004) might play against their satisfaction with the activity that they perform. All in all, the conflicting theoretical arguments do not allow the formulation of a clear hypothesis regarding the changes in satisfaction of students switching to self-employment as compared to that of those remaining at school.

Our first hypothesis states the following:

Hypothesis 1: *Compared to their respective counterparts who stay in inactivity,*

retirees and homemakers sorting into self-employment will experience an increase in satisfaction with their main activity.

Turning to the comparison between entering self-employment or opting for a paid job, the arguments in section 2.2.2 show that there exist positive as well as negative aspects of self-employment that have to be considered. In the following, we hypothesize that the positive arguments outweigh the negative ones for the three groups of inactive individuals considered.

There is evidence that some *homemakers* who enter the labor market choose self-employment to better balance their time at work and at home (Boden, 1999; Wellington, 2006), particularly if they have small children (Edwards & Field-Hendrey, 2002). However, self-employment does not grant a reduced amount of work-family conflicts. In fact, it may increase such conflicts if one gets too involved in the process of running the firm (Parasuraman & Simmers, 2001). Hence, it is up to the self-employed individual to make use of the flexibility and autonomy that self-employment provides to make decisions based on their specific home and family duties. Indeed, it has been found that women who become self-employed are likely to adapt their work schedule according to their home duties, which means that they can choose to work fewer hours even if it compromises potential earnings (Craig & Powell, 2012). In addition, they can work from home, which can alleviate work-family conflicts (Edwards & Field-Hendrey, 2002; K. Loscocco & Smith-Hunter, 2004). Hence, this increased autonomy and flexibility in self-employment becomes particularly relevant when confronted with the fact that women often have troubles accessing flexible paid jobs (Golden, 2008). Therefore, we expect that homemakers sorting into self-employment will experience higher levels of satisfaction thanks to their increased autonomy.

Concerning *retirees*, the literature suggests that older workers can achieve higher levels of quality of life managing their own businesses (Kautonen et al., 2017). The substantial amount of experience and knowledge that they have gathered over their careers should help them perform well in self-employment (Agarwal et al., 2004; Chatterji, 2009). Some retirees might choose self-employment as a way to remain active without having to face problems of marginalization due to their age (Karpinska et al., 2011; Kibler et al., 2015). Moreover, the increased autonomy of self-employment may help them fulfil some psychological needs (Kautonen et al., 2017). Indeed, some older workers who become entrepreneurs do it because they want to continue with their working life at their own pace while enjoying higher levels of autonomy, control and self-realization (Kautonen et al., 2017). In addition, the autonomy, independence and flexibility of self-employment should

allow them to work as much as they like and to devote themselves to activities that they enjoy, thus leading to higher levels of procedural utility (Benz & Frey, 2008a, 2008b). We therefore propose that, in general, former retirees are more likely to be satisfied with their activity if they choose self-employment compared with being a paid employee.

Finally, in the case of *students*, although their general lack of experience when they enter the labor market may harm their performance in terms of self-employment (Chatterji, 2009), such inexperience also makes it difficult for them to find a good first job (Koen et al., 2012). Moreover, past literature suggests that returns to education might be higher in entrepreneurship (Hartog et al., 2010). In addition, students could be more likely to fulfil their need for competence in self-employment since skill utilization (overqualification) is higher (lower) in entrepreneurship than in paid employment (Congregado et al., 2016; Hundley, 2001). Moreover, self-employment entails more varied tasks (Lazear, 2004, 2005), which may imply that students seeking a challenge might be more likely to find it in this type of employment. Finally, it is important to consider that autonomy at work has become more relevant among newer generations (Ng & Feldman, 2015), so it seems reasonable to think that self-employment might be more satisfying for students in this regard.

All in all, the arguments above lead to our second hypothesis:

> **Hypothesis 2:** *Compared to their respective counterparts who sort into paid employment, homemakers, retirees and students sorting into self-employment will experience an increase in satisfaction with their main activity.*

2.3 Data and Methods

2.3.1 Data

To obtain our estimates, we use data from the European Community Household Panel (ECHP), which cover the period from 1994 to 2001.[2] The ECHP is a standardized multi-purpose annual longitudinal survey that is conducted at the level of the EU-15.[3] It was designed and coordinated by the Statistical Office of the European Communities (Eurostat). The target population of the ECHP

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

[3] Sweden was excluded from our analysis because this country presented missing values for several relevant variables.

consists of people who live in private households in the national territory of each country. This panel offers information on 60,500 nationally representative households, which includes approximately 130,000 individuals aged 16 years and older. These individuals are interviewed about a wide range of topics concerning living conditions. These topics include detailed income information, the financial situation in a wider sense, working life, the housing situation, social relationships, health and the biographical information of the interviewed. One of its attractive features is the high level of comparability across countries and over time. Thus, by using the same questionnaire, all the members of the selected households are interviewed about issues that relate to demographics, labor market characteristics, income, and living conditions. Additional details on ECHP data can be found in Peracchi (2002).

2.3.2 Sample

Individuals in the ECHP are asked about their main activity status (paid employment, self-employment, unpaid work in a family enterprise, unemployment or inactivity). We are interested in analyzing the relationship between a transition from inactivity to self-employment and *satisfaction with main activity*. To this end, our sample includes men and women who are inactive in period t and who (i) become self-employed (either with or without employees) in period $t+1$; (ii) become paid employed in period $t+1$; or (iii) remain inactive in period $t+1$.[4] The final dataset, after removing cases with missing data for any of the relevant variables, yields 210,467 observations, from which 202,327 (96.13%) correspond to individuals who remain inactive; 1,606 (0.76%) correspond to inactive individuals switching to self-employment; and 6,332 (3.01%) correspond to inactive individuals transitioning to paid employment.

Inactive individuals can be further categorized in those (i) who perform housework, look after children and other persons—*homemakers*—; (ii) who are retired—*retirees*—; (iii) who are in education or training—*students*—; and (iv) categorized as other economically inactive (e.g. in community or military service). To account for the heterogeneous character of inactivity, in addition to the analysis with the whole sample of inactive individuals, we perform separate analyses for three subsamples of homemakers, retirees and students.[5]

[4] For individuals switching to either paid or self-employment, we restrict the sample to those who work for at least 15 hours per week.

[5] The subsample of other economically inactive is not separately analyzed because its own heterogeneous nature would make it difficult to interpret the results.

2.3.3 Estimation Methods

We analyse the association between a transition from inactivity to self-employment and satisfaction using *propensity score matching (PSM) techniques*.[6] Rosenbaum and Rubin's seminal work (Rosenbaum & Rubin, 1983) proposed PSM as a method to reduce the bias in the estimation of treatment effects with observational datasets. These methods have become increasingly popular in the evaluation of economic policy interventions (see, e.g. Caliendo et al., 2017) and have recently been applied to analyse the effects of self-employment on satisfaction (Binder & Coad, 2013, 2016; Kautonen et al., 2017), a strand of the literature in which our work fits.

In randomized controlled trials, where the allocation to treatment and control groups is random, individuals in both groups can be expected to be similar in terms of observable and non-observable characteristics. Thus, the treatment effect can be estimated by directly comparing outcomes between treatment and control groups (Austin, 2011). When dealing with observational data, however, individuals are likely to self-select into their preferred group, and therefore, it is realistic to assume that treatment and control groups are systematically different, which implies that comparing individuals from both groups is prone to *selection bias*. In this context, matching approaches make it possible to mimic randomized controlled trials with observational data. The idea is to match each observation in the treatment group with an observation from the control group that is the closest match based on relevant pretreatment characteristics. Therefore, the bias is reduced when the comparison of outcomes is performed using treated and control individuals who are as similar as possible. Since matching individuals on a large number of characteristics is typically unfeasible (*curse of dimensionality*), PSM proposes summarizing pretreatment characteristics of each individual into a single-index variable —the propensity score— that makes matching feasible (Caliendo & Kopeinig, 2008). Thus, the propensity score is calculated as the probability that an individual participates in the treatment given her observed characteristics.

We follow Binder and Coad (2013, 2016) and Kautonen et al. (2017) by using propensity score matching as the estimation technique to analyse the relationship between a transition to self-employment and satisfaction. In particular, we compute *average treatment effects on the treated* (ATET) to compare satisfaction (the outcome variable) of inactive individuals becoming self-employed (treated group) with satisfaction of inactive individuals becoming paid employees

[6] See G. W. Imbens (2004) or Caliendo and Kopeinig (2008) for further details on the methodology that is applied in this work.

(control group).[7]

Under the *conditional independence assumption* (CIA), which implies that systematic differences in outcomes between treated and control groups with the same characteristics are attributable to treatment (Lechner, 1999), and *common support condition*, which ensures that individuals with the same characteristics have a positive probability of being both treated and control (J. J. Heckman et al., 1999), the PSM estimator for ATET can be written as:

$$\tau_{ATET}^{PSM} = E_{P(X)|D=1}\{E[Y(1)|D=1, P(X)] - E[Y(0)|D=0, P(X)]\} \tag{2.1}$$

where D is the treatment indicator that equals 1 if the individual receives treatment and 0 otherwise; $Y(D)$ is the potential outcome; $P(X) = P(D=1|X)$ is the propensity score—the probability that an individual participates in the treatment given her observed characteristics X. This is the mean difference in outcomes over the common support, appropriately weighted by the propensity score distribution of participants (Caliendo & Kopeinig, 2008).

The complete PSM procedure has been implemented for the whole sample of inactive individuals and separately for subsamples of homemakers, retirees and students to ensure a perfect match in terms of type of inactive situation and to identify potentially heterogeneous effects across these subgroups (J. Heckman et al., 1998).

We are aware that PSM does not take into account unobserved differences between treated and control groups, so that this approach can be quite sensitive to identification bias. However, it could be argued that unobserved heterogeneity is likely to be reflected in observed characteristics that we do control for (Kaiser & Malchow-Møller, 2011; Stuart, 2010). In this sense, although CIA cannot be formally tested, we check whether treatment and control observations indeed no longer differ significantly with respect to observable characteristics after matching (balancing diagnosis). In addition, we perform a sensitivity analysis that follows the simulation approach by Nannicini (2007) and Ichino et al. (2008), which allows us to identify the robustness of our estimation strategy

[7] In a general framework, it could be considered that our treatment is multiple instead of binary (G. Imbens, 2000; Lechner & Pfeiffer, 2001). Thus, inactive individuals may have at least three alternatives: (i) switching to self-employment, (ii) switching to paid employment or (iii) not switching but remain as inactive. In this context, the estimation of the propensity score should take into consideration this multinomial choice (Caliendo & Kopeinig, 2008). However, as Lechner and Pfeiffer (2001) suggests, a practical alternative, which presents few differences in relative performance, is to estimate a series of binomial models (Caliendo & Kopeinig, 2008). In this vein, although our hypotheses are focused on the comparison between inactive individuals switching to self-employment and those inactive becoming paid employed, the empirical part of this work also includes analyses that make it possible to compare individuals switching to self-employment with those not switching and individuals switching to paid employment with those not switching.

with respect to simulated confounders that recreate violations of the CIA. This simulation-based procedure relies on the following idea. It assumes that the CIA is not satisfied given the observables, but would be satisfied if an additional binary variable is included in the set of matching variables. A potential binary confounder is simulated in the data.[8] This confounder is considered as any other covariate and included in the set of matching variables used to estimate the propensity score and the ATET. The estimation procedure is replicated many times and a simulated ATET is retrieved as an average of the ATET over the distribution of the confounder. Thus, the comparison of the simulated ATET and the baseline ATET gives information about the robustness of the estimates with respect to the specific deviation from the CIA that is assumed.

In any case, an alternative interpretation of our results that does not rely on CIA is to consider the estimated effects as a conditional gap after having controlled for observable characteristics (see e.g. Caliendo et al., 2015; Caliendo and Lee, 2013). In this way, we simply focus on estimating the magnitude of the gaps in satisfaction between inactive individuals switching to self-employment and those switching to paid employment or remaining inactive that are unexplained by observed characteristics. Anyhow, given that we are controlling for a large set of observable characteristics that are correlated with others such as personality or ability, the remaining influence of unobserved differences should be significantly reduced. Thus, the conditional gap in satisfaction between control and treated groups might be explained, at least to some extent, by the transition to self-employment.[9]

2.3.4 Measures

In this section, we describe the variables that are used in our main analysis. Detailed definitions and descriptive statistics are presented in tables A1 and A2, respectively (see Appendix).

2.3.4.1 Dependent variable

The ECHP offers two sets of questions related to satisfaction. The first is presented to all (working or not working) individuals, whereas the second set is only presented to individuals working more than 15 hours per week. The set presented to the whole sample includes a measure of the level

[8] One approach for the simulation of the potential confounder is to mimic the distribution of some relevant binary covariates included in the PSM analysis.

[9] To avoid any misunderstanding, we emphasize that although we use the term ATET to refer to the results of the PSM estimates, as in the evaluation literature, we do not make causal interpretations here. Although the robustness checks we perform give confidence to our estimates, we prefer to be conservative and interpret the results as conditional gaps after having controlled for observable characteristics.

of *satisfaction with work or main activity* in a scale that ranges from 1 (not satisfied) to 6 (fully satisfied).[10] With this information, we construct our main dependent variable, which measures the change between t and $t+1$ in satisfaction with work or main activity ($\Delta_{(t+1)-t}S_{main\ activity}$).

2.3.4.2 Treatment variables

Since we are interested in analyzing the relationship between a transition to self-employment and satisfaction, our treatment variables compare individuals who switched to self-employment to (i) those who remain inactive and (ii) those who switched to paid employment. To complete the picture, we also compare satisfaction of those switching to paid employment and those staying inactive. Given that we further disaggregate the inactive population to perform separate analysis for three different subsamples—homemakers (HM), retirees (RT) and students (ST)—we have the following 12 treatment variables:

Switching to self-employment vs. not switching: Four binary variables compare individuals who switch to self-employment with those who remain inactive: $IN_t \rightarrow SE_{t+1}$ vs. $IN_t \rightarrow IN_{t+1}$; $HM_t \rightarrow SE_{t+1}$ vs. $HM_t \rightarrow HM_{t+1}$; $RT_t \rightarrow SE_{t+1}$ vs. $RT_t \rightarrow RT_{t+1}$; $ST_t \rightarrow SE_{t+1}$ vs. $ST_t \rightarrow ST_{t+1}$.

Switching to paid employment vs. not switching: Four binary variables compare individuals who switch to paid employment with those who remain inactive: $IN_t \rightarrow PE_{t+1}$ vs. $IN_t \rightarrow IN_{t+1}$; $HM_t \rightarrow PE_{t+1}$ vs. $HM_t \rightarrow HM_{t+1}$; $RT_t \rightarrow PE_{t+1}$ vs. $RT_t \rightarrow RT_{t+1}$; $ST_t \rightarrow PE_{t+1}$ vs. $ST_t \rightarrow ST_{t+1}$.

Switching to self-employment vs. switching to paid employment: Four binary variables compare individuals who switch to self-employment (SE) with those who switch to paid employment (PE): $IN_t \rightarrow SE_{t+1}$ vs. $IN_t \rightarrow PE_{t+1}$; $HM_t \rightarrow SE_{t+1}$ vs. $HM_t \rightarrow PE_{t+1}$; $RT_t \rightarrow SE_{t+1}$ vs. $RT_t \rightarrow PE_{t+1}$; $ST_t \rightarrow SE_{t+1}$ vs. $ST_t \rightarrow PE_{t+1}$.

2.3.4.3 Covariates used in the matching process

The choice of covariates used in the matching process should be based on economic theory and previous empirical findings (Caliendo & Kopeinig, 2008). These variables should simultaneously

[10] Examples of studies that use this variable as proxies of job satisfaction or subjective well-being include those of Böckerman and Ilmakunnas (2012), Clark et al. (2009), D'Addio et al. (2007), Pagán and Malo (2009), and Pedersen and Schmidt (2011).

influence the treatment and the outcome variables and be unaffected by the treatment (or the anticipation of it) (Ho et al., 2007; G. W. Imbens, 2004). Thus, we use a set of variables measured in t —the period before the potential transition— which are known to influence the decision to enter self-employment (Blanchflower, 2000; Carrasco, 1999; Cowling & Taylor, 2001; Evans & Leighton, 1989; Z. Lin et al., 2000; S. C. Parker, 2018; Román et al., 2013; Taylor, 1996) as well as job satisfaction (Álvarez & I. Sinde-Cantorna, 2014; Benz & Frey, 2004, 2008a, 2008b; Carree & Verheul, 2012; Freeman, 1978; Georgellis & Yusuf, 2016; Lange, 2012; Millán et al., 2013; Sousa-Poza & Sousa-Poza, 2000). These variables, which are also in line with the previous empirical research using PSM techniques to analyse the impact of transitions to self-employment on satisfaction (Binder & Coad, 2013, 2016; Kautonen et al., 2017), include gender, age, household type, health status, household financial situation, household main source of income, education, baseline levels of satisfaction and country dummies.[11]

2.3.5 Descriptive Statistics

Table A2 in the Appendix reports basic descriptive statistics of our dependent variable and covariates used in the matching process. For the full sample of inactive individuals as well as each of the three subsamples considered (homemakers, retirees and students), we present means (and standard deviations) of treated (individuals switching to self-employment) and controls (individuals switching to paid employment and individuals remaining inactive).

On the one hand, this information confirms the heterogeneous character of the inactive population. Thus, we observe differences between subsamples of inactive individuals in terms of gender (most homemakers are females, whereas most retirees are males), age (students are the youngest while retirees are the oldest), health (students report the best health status whereas retirees have the lowest health level) or baseline levels of satisfaction (students are the most satisfied with their main activity), irrespective of whether a transition to paid or self-employment is made or not.

On the other hand, we observe that there also exist differences between individuals depending on the treatment (switching to self-employment, switching to paid employment or not switching) that are irrespective of the subgroup of inactive individuals. For instance, those homemakers, retirees or students transitioning to either paid or self-employment show lower levels of baseline

[11] In addition to these variables, when using the whole sample of inactive individuals, we include a set of dummy variables that classify individuals depending on the type of inactive situation they have in t (in education or training; doing housework, looking after children or other persons; retired or other economically inactive).

satisfaction with a financial situation and worse household financial situation than those remaining inactive. It can also be observed that compared with those switching to paid employment, individuals who become self-employed are older and less satisfied with their main activity at the baseline.

Finally, there are also differences across subgroups of inactive and treated individuals. Thus, in the case of homemakers and retirees, those switching to self-employment are less educated than those switching to paid employment, whereas the reverse is true for students. All these baseline differences highlight the appropriateness of matching techniques to assure that such covariate imbalances do not influence the treatment effects estimate, as well as the importance of considering the heterogeneity of an inactive population.

2.4 Results

2.4.1 Preliminary Results

Before we present the results of the PSM analysis, in this section, we start with some naïve estimations to have a first orientation about the relationship between satisfaction and labor market status. Thus, we consider a sample of self-employed workers (the reference category), wage employees and inactive individuals and regress their level of *satisfaction with work or main activity* with the usual control variables, the main independent variables being those related to labor market status. The final dataset of this preliminary analysis yields 541,811 observations, from which 242,873 (44.83%) correspond to inactive individuals; 241,698 (44.61%) correspond to paid employees; and 57,240 (10.56%) correspond to self-employed workers. Table 2.1 presents the results concerning these estimations. Models I and II refer to ordered *logit* estimations. As is frequently reported in the literature, it can be observed that being a paid employee is associated with lower levels of satisfaction, compared with being a self-employed worker. Focusing on the comparison between self-employment and inactivity, although inactivity seems to be associated with lower levels of satisfaction than self-employment, interesting differences between groups of inactive individuals emerge. Thus, model II shows that, compared with self-employed workers, homemakers and other economically inactive individuals present lower levels of satisfaction, whereas students are more satisfied. Retirees do not present statistically significant differences.

Models III and IV in table 2.1 repeat the analysis but in a fixed-effects regression framework.[12] Taking into account time-invariant individual-specific components, the results are substantially the same: Wage employees, homemakers, retirees and other economically inactive individuals are less satisfied than the self-employed, whereas students are more satisfied than the self-employed.

These results are interesting by themselves, but as is well known, they might suffer from some drawbacks such as covariate imbalance between groups, lack of a common support or over-controlling (Binder & Coad, 2013, 2016). Therefore, in the next section, we concentrate on the PSM estimates to analyse the relationship between a transition from inactivity to self-employment and satisfaction.

2.4.2 Main Results

This section discusses the main results of our propensity score matching estimates. Our main goal is to analyse the association between self-employment and satisfaction. As mentioned above, to have a complete picture, we consider three scenarios: (i) switching to self-employment vs. not switching; (ii) switching to paid employment vs. not switching; and (iii) switching to self-employment vs. switching to paid employment, the latter being our focus scenario.

After estimating the corresponding propensity score using the baseline variables described in section 2.3.4.3, we choose as a matching algorithm *nearest neighbor matching with a specified caliper distance*—tolerance level on the maximum propensity score distance. Thus, to avoid matching observations whose propensity scores are far away but that are nevertheless the closest available match, we set a caliper computed as 0.2 of the pooled standard deviation for the *logit* of the propensity score (Austin, 2011; Kautonen et al., 2017). As a first robustness test, we also present results using a caliper matching algorithm with oversampling (Caliendo & Kopeinig, 2008).

Table 2.2 shows the treatment effect estimates for the three scenarios considered. Panel A shows results concerning the comparison between those inactive individuals switching to self-employment and those remaining inactive. Panel B presents results that compare inactive individuals becoming self-employed with those becoming wage employees. Finally, panel C reports results regarding the comparison of those individuals transitioning to paid employment and those remaining inactive. Each panel offers results for the whole sample of inactive population (column 1) as well as separate results for subsamples of homemakers, retirees and students (columns 2, 3 and 4, respectively).

[12] Although the dependent variable is ordered, we use fixed effects OLS since it is shown that this does not alter findings substantially (Ferrer-i-Carbonell & Frijters, 2004).

For each case, we present the number of observations, ATET—whose interpretation is similar to a linear regression coefficient (marginal effect) giving information on the change in the dependent variable in response to the treatment—their standard errors and the z-statistics of the significance test.

Focusing on the *inactive population* as a whole (table 2.2, column 1), it can be observed that, compared to individuals remaining inactive, those switching to both self or paid employment present higher increments in *satisfaction with their main activity* (panels A and C). If we compare these two groups of switching individuals (panel B), we observe no statistically significant differences. Although these results are interesting in themselves, the separate analysis of each inactive subgroup sheds more light on the phenomenon we are analyzing. Thus, we now develop the results of each subgroup separately.

Concentrating on the subsamples of *homemakers* and retirees (table 2.2, columns 2 and 3, respectively), our results show that those becoming self-employed present higher changes in *satisfaction with main activity* than those remaining out of the labor force, as hypothesis 1 claims. Comparisons between those switching to wage employment compared to those remaining inactive lead to similar conclusions. Consequently, when comparing the change in *satisfaction with main activity* between those transitioning to self-employment and those becoming paid employees, the estimated ATET are not statistically significant. Thus, although the direction of the association goes as our *hypothesis 2* predicts, the coefficients are not statistically significant for these two groups of inactive individuals.

Regarding the subgroups of *students* (table 2.2, column 4), we observe that, compared with those remaining out of the labor force, the changes in satisfaction of those becoming self-employed are lower but not statistically significant. This non-significant result suggests that the competing theoretical arguments discussed in section 2.2.3 indeed counterbalance each other in practice and lead to an overall similar satisfaction for students becoming self-employed and those remaining in school. Estimates in panel B show that switching to self-employment is associated with higher increases in satisfaction than switching to paid employment for the subgroup of students, which lends partial support to *hypothesis 2*. Finally, for the case of students, becoming a wage employee is associated with lower changes in satisfaction than not switching.

In sum, our results seem to support our first hypothesis, so that self-employment offers higher chances of self-determination than remaining out of the labor force for homemakers and retirees.

When comparing individuals switching to self-employment with those switching to paid employment, *hypothesis 2* is just partially supported: students becoming self-employed experience a higher change in satisfaction compared to those becoming employees, but the difference is not significant for the cases of homemakers and retirees. These results might be driven by differences in employment characteristics between both types of employment. Thus, after presenting the assessment of matching quality and describing some robustness checks in section 2.4.3, section 2.4.4 below presents some complementary analyses to shed new light in this issue.

2.4.3 Assessment of Matching Quality and Robustness Checks

Matching techniques are a robust way of identifying appropriate control and treatment groups. However, the results can be sensitive to identification bias (Binder & Coad, 2013). In particular, problems might arise if the conditional independence assumption is not valid (Caliendo & Kopeinig, 2008). This assumption may be strong and cannot be verified directly but only with reference to theoretical considerations of what drives treatment and outcome (Binder & Coad, 2016). We justify the identifying assumption having selected our matching variables drawing on job satisfaction and determinants of the self-employment literature.

Moreover, figures 2.1a to 2.1d and table 2.3 assess the quality of our estimates by checking if the matching procedure balances the distribution of covariates in both treatment and control groups.[13] In particular, figures 2.1a to 2.1d show the visual degree of overlap achieved for the four subsamples considered in our main scenario. It can be observed that balancing after matching is good in the four samples considered —to a lesser extent in the case of retirees.

In addition, table 2.3 reports *covariates balancing diagnostic* between treated and control groups before and after matching by means of *t*-tests for equality of means. The diagnostics show several statistically significant differences between treated and control groups in the unmatched samples. Nevertheless, the diagnostics also reveal that these differences are small and not statistically significant after matching.[14] We also report standardized differences, which compare differences in means between treated and control (unmatched or matched) sub-samples in units of the pooled standard deviation and are not influenced by sample size (Austin, 2011; Rosenbaum & Rubin,

[13] Figures 2.1a to 2.1d and table 2.3 are based on estimations with oversampling of panel A in table 2.2. Balance diagnostics for the rest of estimations on table 2.2 (not shown for brevity) lead to similar conclusions about covariates balancing and are available from the authors under request.

[14] Few exceptions are health status and household financial situation for the whole sample and baseline satisfaction for the retiree case.

1985).[15] With few exceptions in the subsample of retirees, standardized differences are all below 0.1 in the matched case, as suggested in the literature (D'Agostino, 1998; Kautonen et al., 2017).

Table 2.3 also shows overall measures of covariate imbalance. It presents Pseudo R^2 (Sianesi, 2004), which indicates how well the regressors explain the treatment probability. Pseudo R^2 are fairly low after matching, indicating that no systematic differences in the distribution of covariates between treated and control groups exist (Caliendo & Kopeinig, 2008). In addition, the results of likelihood ratio tests on the joint insignificance of all covariates are also presented. In the same lines as before, the null hypotheses are not rejected before matching, but they are after matching. Finally, table 2.3 also reports means of absolute value of standardized differences in percentage that are below 5% (or close to it in the case of the subsample of retirees) after matching, which is considered sufficient in the literature (Caliendo & Kopeinig, 2008). Overall, it can be concluded that the matching quality is adequate, so it can be argued that mean independence is fulfilled and hence, that the treatment effect on the treated is identified.

Moreover, we perform a sensitivity analysis based on the simulation approach by Ichino et al. (2008) and Nannicini (2007). This analysis allows us to identify the robustness of our estimation strategy with respect to simulated confounders that recreate violations of the CIA. Table 2.4 has the same structure as table 2.2 and presents the results when simulated confounders are calibrated to mimic the distribution of the observed variables female, tertiary education and age.[16] To compare actual and simulated results, the first row of each panel in table 2.4 shows the baseline ATET estimates obtained with no confounder in the matching set (using PSM without caliper). Outcome effect, selection effects, ATET and SE with calibrated confounders are estimated using command *sensatt* in Stata 14. Results are obtained after 500 simulated iterations. Outcome effect and selection effect show the influence of each confounder on the untreated outcome and on the selection into treatment, respectively. Values below (above) 1 indicate a negative (positive) impact of the confounder. It can be observed that the introduction of simulated confounders does not alter the ATET estimates in spite of the impact of the confounder on the outcome or on the selection. This fact leads us to conclude that our results are robust with respect to simulated confounders that mimic the observed gender, tertiary education and age dummies.

Finally, we check the robustness of our estimates by using different matching algorithms—with

[15] Standardized differences compare differences in means between treated and control (unmatched or matched) sub-samples in units of the pooled standard deviation (Rosenbaum & Rubin, 1985).

[16] Age has been dichotomized so that the observations above the sample mean take a value of 1.

and without replacement, oversampling with different number of neighbors and setting different caliper widths. In addition, we also estimated our models with different sets of covariates.[17] Results are quite robust, which lends confidence to our estimates.

2.4.4 Additional Estimations

This section supplements previous results obtained with PSM, by presenting additional analyses that compare satisfaction levels of those inactive individuals switching to self-employment with that of those switching to paid employment by means of ordered *logit* estimations. Thus, we perform separate analyses for homemakers, retirees and students, where the dependent variable is the level of satisfaction with work or main activity in $t+1$ and the main independent variable is a dummy that equals one (zero) if the inactive individual is making a transition to self-employment (paid employment) between t and $t+1$. This setting allows us to control for some characteristics referred to the period after the transition occurs that cannot be used in the PSM framework. For these exercises, we take advantage of a set of job satisfaction variables offered by the ECHP that are only asked of individuals working more than 15 hours per week and measures the level of satisfaction with the present job in terms of (i) earnings; (ii) job security; (iii) type of work; (iv) number of working hours; (v) working times; (vii) working conditions and environment and (vii) distance to job / commuting. This analysis might help us to disentangle what is driving satisfaction differences between inactive individuals switching to self-employment and those switching to paid employment.

In this manner, tables 2.5 to 2.7 present the results of 9 different specifications for homemakers, retirees and students, respectively. In each table, specification I—the baseline—includes, in addition to the main independent variable, demographic characteristics, education, baseline levels of satisfaction, business sector dummies, a dummy for part-time employment and country dummies. Specifications II to IX add one by one several variables that might be driving satisfaction differences between self and paid employment. Thus, Specifications II and III include two variables related with *outcomes*, such as job satisfaction with earnings and job satisfaction with job security. Specification IV tests the role of *competence* adding a dummy for overskilled workers.[18]

[17] In particular, alternatively to the variable that measures *ability of the household to make ends meet*, the household financial situation has been controlled with a variable that gives information about *income situation compared to last year*. Additionally, we also incorporated to the analysis a variable measuring the household general *feeling about present economic situation*. Finally, we control regional differences by incorporating harmonised unemployment rates instead of country dummies.

[18] Examples of works that emphasize the role of using skills in fulfilling the psychological needs of competence

Specifications V and VI check for the impact of *autonomy* through the inclusion of job satisfaction with type of work and job satisfaction with working conditions.[19] Finally, specifications VII to IX include, respectively, job satisfaction with working times, job satisfaction with working hours and job satisfaction with distance to work as measures of perceived *flexibility*.[20] We are interested in analyzing how the coefficient associated with the main independent variable, $ST_t \rightarrow SE_{t+1}$ vs. $ST_t \rightarrow PE_{t+1}$, changes as these variables are included.

Focusing on the subsample of *homemakers*, the baseline model (table 2.5, model I) shows a positive association between transition to self-employment and *satisfaction with main activity*, compared with switching to paid employment, once we control for business sector and part-time employment. This result seems to be driven by more satisfying conditions for this group of inactive individuals in self-employment as regards job security, type of work and distance to work (the transition dummy becomes insignificant in models III, V and IX). In contrast, self-employment seems to offer less rewarding conditions in terms of earnings and working hours (the transition dummy becomes more significant in models II and VIII).

Regarding the subgroup of *retirees* (table 2.6), our baseline results show that those becoming self-employed are as satisfied as those becoming paid employees.[21] Only when controlling for job satisfaction with earnings (model II) the transition to self-employment dummy becomes significant, remaining statistically insignificant in models III to IX.

Finally, in the case of *students*, the baseline model (table 2.7, model I) shows that when controlling for the business sector and part-time employment, differences in satisfaction levels between those students switching to self-employment and those switching to paid employment are positive, although just marginally significant. When controlling for job satisfaction with earnings (table 2.7, model II), the coefficient associated with the transition to the self-employment dummy becomes more significant. This result is consistent with the previous literature that highlights the existence of an earnings penalty in entrepreneurship (Hamilton, 2000), compared with paid employment. Model III, which controls for job satisfaction with job security shows a result similar to the base-

include those of Mateos-Romero and Salinas-Jiménez (2018), Van den Broeck et al. (2015), Van Ruysseveldt and Van Dijke (2011), and Vieira (2005).

[19] Autonomy and independence might be reflected in more freedom to determine the type of work and the working conditions and, therefore, in job satisfaction associated with these domains (Millán et al., 2013).

[20] Some contributions pay specific attention to the effect on workers' well-being of some forms of flexibility including working times and working hours (McNall et al., 2009; Origo & Pagani, 2008) or distance to work (Becker & Moen, 1999; Hundley, 2000, 2001; K. Loscocco & Smith-Hunter, 2004).

[21] We acknowledge that results concerning this group of individuals should be taken with cautious, given the low number of observations.

line specification. However, when testing the role of competence and autonomy (table 2.7, models IV to VI), the dummy $ST_t \rightarrow SE_{t+1}$ vs. $ST_t \rightarrow PE_{t+1}$ becomes totally insignificant, highlighting that the differences in satisfaction between students switching to self and paid employment might be associated with self-employment offering higher degrees of autonomy and independence for setting the type of work and the working conditions, as well as higher possibilities of skill utilization. Finally, when domains of job satisfaction related with flexibility are considered (table 2.7, models VII to IX), it can be observed that working hours and working times might be more satisfying for students becoming wage employees, whereas in terms of distance to work and commuting, self-employment is more appropriate.

Our findings thus underscore that there are divergent forces at work that determine the overall relationship between self-employment and satisfaction, depending on the group of individuals considered.

2.4.5 Summary of Results and Discussion

This section summarizes the overall picture that emerges from our results and discusses them thoroughly. While we initially find that, taken as a whole, inactive individuals who transition to self-employment experience a larger increase in their satisfaction compared to those who remain inactive—but are no more satisfied than those transitioning to paid employment—specific analyses for homemakers, retirees, and students show a more detailed portrait.

Thus, focusing on the comparison between s*witching and non-switching individuals*, our results show that, on the one hand, homemakers and retirees seem to find a boost in satisfaction when they start working, regardless of the type of job. On the other hand, students who move to self-employment are as satisfied as those continuing with their studies, while those who move to wage employment experience a decrease in satisfaction. This evidence is in line with the previous literature that analyses the impact of employment status on satisfaction (Blanchflower & Oswald, 2004; Brereton et al., 2008; Di Tella et al., 2001; Y.-C. Lin et al., 2015; Stutzer, 2004) and confirms educational settings as environments that enhance self-determination (E. L. Deci et al., 1991). Thus, homemakers and retirees cannot seem to achieve self-determination in the same way they would do if they were (self-) employed and they are more satisfied by simply (re)engaging in the labor market, whereas students depart from a position that they seem to be already content

with.[22]

Turning to the comparison between switching individuals, we observe that there are no significant differences in the case of homemakers and retirees, while students becoming self-employed report a larger increase in satisfaction than those becoming wage employees. Interestingly, our complementary analysis—where we additionally control for employment characteristics—sheds additional light on this issue. Thus, once we control for job satisfaction with earnings, irrespective of the group of inactive individuals who we are considering, those switching to self-employment are more satisfied with their main activity than those switching to paid-employment. This seems to confirm that self-employment offers less *pecuniary* rewards than paid employment for the three subgroups of the inactive population considered in the analysis—homemakers, retirees and students. Although this result has to be qualified taking into consideration that self-employment earnings may need more time than wages to be satisfying (Lévesque & Minniti, 2006), it is in line with the previous literature, which shows that self-employment earnings are lower and riskier (Hamilton, 2000). This penalty may be exacerbated in the case of disadvantaged groups included in the inactive population, such as youth, women and seniors. These groups face barriers—market barriers, cultural barriers, skill barriers and institutional barriers—that hamper their access to finance and may turn them into *discouraged borrowers* (Kon & Storey, 2003). Consequently, those inactive individuals becoming self-employed have to rely more on their own resources and on the support of family and friends, which may be associated with lower levels of satisfaction with these respects. This result highlights the importance of introducing appropriate policy actions to extend the reach of emerging financing instruments—such as loan guarantees, microcredits, crowdfunding, peer-to-peer lending and business angel investment—that complement the role of traditional policies for the particular group of individuals we are analyzing (OECD/EU, 2014).

Additionally, our results show that differences in satisfaction between self and paid employment can be explained by different underlying mechanisms for each subgroup of inactive individuals. In the case of homemakers, increased levels of satisfaction with self-employment seem to be associated with self-employment offering more possibilities to survive in the labor market while looking after their family (Heilman & Chen, 2003) and to make decisions that allow them to better balance work and family, such as choosing to work from home (Edwards & Field-Hendrey, 2002; K. Loscocco

[22] We do not have information about the phase of the studies in which the students are involved. Consequently, although we control for the level of educational attainment, we acknowledge that differences might arise between students that quit studying because of a great business opportunity and students that finished their studies and are forced to find employment.

& Smith-Hunter, 2004). This positive association may, however, be offset by the fact that running a firm demands a higher commitment and effort at work (Felfe et al., 2008) working longer hours (Hyytinen & Ruuskanen, 2007) and having irregular working schedules adapted to clients' and suppliers' needs (Goffee & Scase, 1983; Hamermesh, 1990). Concerning retirees, differences in satisfaction between self-employment and paid employment remain statistically insignificant after controlling for differences across occupations in terms of job security, competence fulfilment, autonomy or flexibility. The results in Binder and Coad (2013, 2016) indicated that the positive association between job satisfaction and self-employment is linked to the voluntary character of the decision to become an entrepreneur, the relationship being less apparent in the case of necessity-driven transitions. In this sense, our results regarding this group may be consistent with retirees becoming self-employed as a last resort (Dingemans & Henkens, 2014) due to age discrimination in paid employment (Karpinska et al., 2011), which implies increasing levels of stress that offset the advantages of being self-employed in terms of autonomy and flexibility (J. H. Block & Wagner, 2010; S. C. Parker, 2018). Finally, the fact that former students experience higher levels of satisfaction when becoming self-employed seems to be related to the more varied set of tasks that self-employment implies (Lazear, 2004, 2005) and the greater chances of being able to apply what they learned and not feeling overskilled (Congregado et al., 2016; Hundley, 2001; Millán et al., 2013). They also seem to appreciate the higher degree of autonomy in self-employment (Ng & Feldman, 2015), in spite of having to work longer hours (Hyytinen & Ruuskanen, 2007) and being forced to give up something that they value, i.e. leisure time (Twenge et al., 2010).

All in all, this evidence highlights the existing heterogeneity between the three subgroups of inactive individuals considered and is suggestive of the need to adapt existing policy measures to support inclusive business creation—such as entrepreneurship training, coaching and mentoring, role models, microfinance, welfare bridges, business counselling and entrepreneurial networking—to address the specific needs of the different groups (OECD/EU, 2016). Specifically, we stress the potential of a particular subgroup of inactive individuals—the students—as a target of highly selective policy incentives, which focus more on innovative and high-growth entrepreneurship. These measures, designed as entrepreneurship policies instead of as activation policies, are essential to contribute to the processes of growth and job creation (Congregado et al., 2010; Román et al., 2013; Santarelli & Vivarelli, 2007; Shane, 2009; Thurik et al., 2008).

2.5 Conclusions and avenues for future research

The global economic and financial crisis emphasized the necessity for *activation policies*, which provide groups at the margins of the labor market—such as youth, women, elderly and low-skilled workers—with the support, incentives and training to enter into employment. Activation policies recognize that engaging these groups in the labor market is crucial for strengthening overall economic growth, equality and social cohesion, as well as for improving their individual well-being (OECD, 2013). Because it is commonly accepted that there is no silver bullet solution to overcome the employment challenge, governments have implemented multipronged approaches. *Inclusive entrepreneurship policies*—aimed at ensuring that all groups of people, regardless of their background and personal characteristics, have an opportunity to start businesses and be self-employed—are part of the suite of activation policy actions (OECD/EU, 2015).

Although policy makers recognize the potential of self-employment in helping inactive people to enter the labor market and potentially improve their well-being, the academic literature on self-employment and entrepreneurship has overlooked this group of individuals. To the best of our knowledge, this study is the first to provide a comprehensive set of evidence concerning the association between transitions from inactivity to self-employment and satisfaction. Thus, using European data, we apply matching techniques, which minimize potential confounding effects caused by differences in observed characteristics, to compare changes in *satisfaction with main activity* of inactive individuals becoming self-employed with that of (i) those switching to paid employment and (ii) those remaining inactive.

Our estimates suggest that the inactive population is a rather heterogeneous group of people with different lifestyles, expectations and needs and that such heterogeneity should be accounted for to disentangle potentially mixed results. Thus, our results show that the dynamics of satisfaction across labor market statuses do not follow the same pattern for homemakers, retirees and students. In this sense, self-employment does not always provide a larger boost in satisfaction than paid employment or even inactivity. This fact might be related to self-employment providing different levels of satisfaction depending on the initial status and the voluntary nature of the transition to this status (Binder & Coad, 2013; J. Block & Koellinger, 2009).

All in all, we believe that our study has relevant implications for both the academic literature and policy makers interested in engaging inactive individuals in the labor market. On the one

hand, it highlights that analyses that neglect the heterogeneous nature of this group of individuals should be taken with a grain of salt. Hence, we encourage scholars to actively distinguish the subgroups of inactive individuals in future research since such a distinction will provide a more accurate picture of reality. On the other hand, this work also stresses that a *one-size-fits-all* activation policy—including measures promoting entrepreneurship—might be unsuitable, bringing to light the importance of considering varying needs, lifestyles and expectations of different groups of individuals.

As no study comes without limitations, a few shortcomings of our paper should be noted. First and foremost, as we have already mentioned, we cannot dismiss the possibility that our results are affected by unobserved characteristics. Thus, we are not able to make causal interpretations as regards the impact of a transition to self-employment on changes in satisfaction. Although the robustness checks we perform give confidence to our estimates, we interpret the results in terms of the gaps in satisfaction between inactive individuals switching to self-employment and those switching to paid employment or remaining inactive that are unexplained by observed characteristics. Nevertheless, given that unobserved characteristics such as personality or ability are correlated with the rich array of observable characteristics we are controlling for, the remaining influence of unobserved differences should be significantly reduced. Thus, the conditional gap in satisfaction between control and treated groups might be explained, at least to some extent, by the transition to self-employment. Thus, in spite of not doing any causal claims, the implications of our results in terms of the importance of taking into account the existing heterogeneity within inactive population and the need to consider such heterogeneity when designing activation policies are appropriate independently of the causal or conditional interpretation of the results.

Finally, previous studies have shown that a transition into self-employment causes an immediate boost in job satisfaction but also that the effect tends to disappear after the first few years (Georgellis & Yusuf, 2016; Hanglberger & Merz, 2015). Thus, a potential extension to the current paper would entail observing the evolution of the job satisfaction levels among inactive individuals sorting into either paid or self-employment and testing whether different levels of persistence can be found depending on the type of transition to self-employment. We believe this is an interesting avenue for future research, albeit its execution depends heavily on the availability of longer panel data. In any case, our results are a good starting point for an in-depth analysis of the relationship between self-employment and satisfaction for the case of previously inactive individuals.

Table 2.1: Labor market status and satisfaction: Ordered logit regressions and fixed effects estimates.

	Model I Ordered logit				Model II Ordered logit				Model III Fixed effects				Model IV Fixed effects			
	Coeff.	SE	z		Coeff.	SE	z		Coeff.	SE	z		Coeff.	SE	z	
Dependent variable: $S_{main\ activity}$																
Labor market status																
Self-employed worker (ref.): $S_{main\ activity}$																
Paid employee	-0.091	0.010	-9.36	***	-0.075	0.010	-7.72	***	-0.094	0.011	-8.28	***	-0.077	0.011	-6.75	***
Inactive	-0.026	0.010	-2.71	***					-0.121	0.012	-10.45	***				
Homemaker					-0.197	0.011	-17.34	***					-0.117	0.013	-8.79	***
Retiree					0.005	0.012	0.47						-0.148	0.013	-10.97	***
Student					0.378	0.015	25.25	***					0.095	0.018	5.36	***
Other economically inactive					-0.727	0.017	-42.25	***					-0.397	0.015	-26.02	***
Demographic characteristics																
Female	-0.060	0.005	-11.58	***	-0.017	0.005	-3.07	***								
Age	0.009	0.000	44.23	***	0.011	0.000	46.76	***	-0.005	0.001	-6.58	***	-0.004	0.001	-4.84	***
Household type																
Single person (*ref.*)																
Single parent	-0.107	0.013	-8.10	***	-0.088	0.013	-6.65	***	-0.051	0.016	-3.12	***	-0.052	0.016	-3.17	***
Couple without children	0.046	0.009	4.89	***	0.060	0.009	6.44	***	-0.003	0.013	-0.25		-0.004	0.013	-0.32	
Couple with children	-0.047	0.009	-5.15	***	-0.020	0.009	-2.13	**	-0.017	0.013	-1.31		-0.019	0.013	-1.48	
Other situations	-0.142	0.011	-12.51	***	-0.114	0.011	-10.02	***	-0.035	0.015	-2.32	**	-0.035	0.015	-2.31	**
Health status	-0.402	0.003	-116.85	***	-0.390	0.003	-112.82	***	-0.019	0.003	-7.40	***	-0.019	0.003	-7.15	***
Household financial situation	0.333	0.002	137.68	***	0.327	0.002	135.29	***	0.099	0.002	51.25	***	0.100	0.002	51.37	***
Household main source of income from SE	-0.059	0.009	-6.69	***	-0.049	0.009	-5.53	***	0.003	0.008	0.37		0.003	0.008	0.34	
Education																
Basic education (*ref.*)																
Secondary education	0.234	0.006	36.88	***	0.214	0.006	33.66	***	0.033	0.006	5.16	***	0.037	0.006	5.88	***
Tertiary education	0.300	0.008	37.51	***	0.293	0.008	36.58	***	0.015	0.011	1.40		0.039	0.011	3.67	***
Country dummies																
Austria	0.961	0.013	74.81	***	0.936	0.013	72.64	***								
Belgium	0.182	0.014	12.92	***	0.153	0.014	10.84	***								
Denmark	0.752	0.015	51.84	***	0.715	0.015	49.18	***								
Finland	0.372	0.014	26.88	***	0.316	0.014	22.73	***								
France	0.264	0.010	26.03	***	0.224	0.010	21.90	***								
Germany	-0.192	0.017	-11.10	***	-0.217	0.017	-12.53	***								

Table 2.1 continued: Labor market status and satisfaction: Ordered logit regressions and fixed effects estimates.

	Model I Ordered logit				Model II Ordered logit				Model III Fixed effects			Model IV Fixed effects		
	Coeff.	SE	z		Coeff.	SE	z		Coeff.	SE	z	Coeff.	SE	z
Greece	-1.000	0.010	-95.54	***	-1.029	0.011	-97.74	***						
Ireland	0.488	0.014	35.82	***	0.502	0.014	36.79	***						
Italy	-0.676	0.009	-71.63	***	-0.716	0.009	-75.50	***						
Luxembourg	0.565	0.034	16.86	***	0.564	0.034	16.79	***						
Netherlands	0.402	0.011	35.15	***	0.453	0.011	39.38	***						
Portugal	-0.370	0.010	-38.03	***	-0.414	0.010	-42.34	***						
Spain (*ref.*)														
United Kingdom	-0.008	0.022	-0.38		-0.021	0.022	-0.95							
Number of observations	541,811				541,811				541,811			541,811		
Log likelihood	-791,950.5				-790,016.3									
Pseudo R^2	0.0743				0.0766									
R^2 (within)									0.1102			0.1225		
R^2 (between)									0.0071			0.0093		
R^2 (overall)									0.0820			0.0906		
Hausman specification test														
Chi^2									3.70			3.68		
p-value									0.000			0.000		

Notes: *** denotes significance at 1% level; ** denotes significance at 5% level; * denotes significance at 10% level.

Table 2.2: Effects of moving from inactivity to self-employment on change in satisfaction: PSM estimates.

Dependent variable: $\Delta_{(t+1)-t}\ S_{main\ activity}$																
Sample	Inactive Population				Homemakers				Retirees				Students			
Panel A. Switching to self-employment vs. not switching																
Treatment variable	$IN_t \to SE_{t+1}$ *vs.* $IN_t \to IN_{t+1}$				$HM_t \to SE_{t+1}$ *vs.* $HM_t \to HM_{t+1}$				$RT_t \to SE_{t+1}$ *vs.* $RT_t \to RT_{t+1}$				$ST_t \to SE_{t+1}$ *vs.* $ST_t \to ST_{t+1}$			
Number of observations	203,933				73,905				83,800				23,112			
	ATET	SE	z-stat.		ATET	SE	z-stat.		ATET	SE	z-stat.		ATET	SE	z-stat.	
Matching algorithm																
Calliper	0.245	0.040	6.08	***	0.147	0.053	2.79	***	0.196	0.072	2.70	***	-0.014	0.102	-0.14	
Calliper with oversampling	0.246	0.034	7.20	***	0.168	0.044	3.80	***	0.165	0.062	2.68	***	-0.003	0.074	-0.05	
Panel B. Switching to self-employment vs. switching to paid employment																
Treatment variable	$IN_t \to SE_{t+1}$ *vs.* $IN_t \to PE_{t+1}$				$HM_t \to SE_{t+1}$ *vs.* $HM_t \to PE_{t+1}$				$RT_t \to SE_{t+1}$ *vs.* $RT_t \to PE_{t+1}$				$ST_t \to SE_{t+1}$ *vs.* $ST_t \to PE_{t+1}$			
Number of observations	7,938				2,774				577				3,330			
	ATET	SE	z-stat.		ATET	SE	z-stat.		ATET	SE	z-stat.		ATET	SE	z-stat.	
Matching algorithm																
Calliper	0.042	0.070	0.61		-0.007	0.097	-0.07		0.187	0.148	1.26		0.329	0.131	2.52	**
Calliper with oversampling	0.045	0.059	0.77		0.006	0.067	0.09		0.085	0.095	0.89		0.175	0.098	1.78	*

Table 2.2 continued: Effects of moving from inactivity to self-employment on change in satisfaction: PSM estimates.

Dependent variable: $\Delta_{(t+1)-t}\ S_{main\ activity}$																
Sample	Inactive Population				Homemakers				Retirees				Students			
Panel C. Switching to paid employment vs. not switching																
Treatment variable	$IN_t \rightarrow PE_{t+1}$ *vs.* $IN_t \rightarrow IN_{t+1}$				$HM_t \rightarrow PE_{t+1}$ *vs.* $HM_t \rightarrow HM_{t+1}$				$RT_t \rightarrow PE_{t+1}$ *vs.* $RT_t \rightarrow RT_{t+1}$				$ST_t \rightarrow PE_{t+1}$ *vs.* $ST_t \rightarrow ST_{t+1}$			
Number of observations	208,659				75,075				83,543				26,062			
	ATET	SE	z-stat.		ATET	SE	z-stat.		ATET	SE	z-stat.		ATET	SE	z-stat.	
Matching algorithm																
Calliper	0.074	0.026	2.86	***	0.142	0.037	3.80	***	0.105	0.116	0.91		-0.116	0.032	-3.63	***
Calliper with oversampling	0.057	0.022	2.61	***	0.125	0.032	3.92	***	0.239	0.087	2.75	***	-0.124	0.028	-4.36	***

Notes: ATET are calculated using command teffects psmatch in Stata 14. This command implement the estimator derived by Abadie and Imbens (2006, 2011). Standard errors (SE) are based on Abadie and Imbens (2016) and take into account that the propensity score is estimated rather than observed.
Variables used for calculating the propensity score include gender, age, household type, health status, household financial situation, household main source of income, education, baseline levels of satisfaction and country dummies.
For the matching procedure we set a calliper computed as 0.2 of the pooled standard deviation for the logit of the propensity score (Austin, 2011)
*** denotes significance at 1% level; ** denotes significance at 5% level; * denotes significance at 10% level.

Table 2.3: Balance diagnostic for PSM estimates – Transitions from inactivity to self-employment vs. to paid employment.

Sample		Inactive Population					Homemakers					Retirees					Students				
		Mean		*t*-test		Std.	Mean		*t*-test		Std.	Mean		*t*-test		Std.	Mean		*t*-test		Std.
		T	C	*t*-stat		Diff.	T	C	*t*-stat		Diff.	T	C	*t*-stat		Diff.	T	C	*t*-stat		Diff.
Status in T [a]																					
Homemaker	U	0.260	0.027	34.1	***	0.704	–	–	–		–	–	–	–		–	–	–	–		–
	M	0.260	0.272	-0.8		-0.028	–	–	–		–	–	–	–		–	–	–	–		–
Retiree	U	0.499	0.311	14.3	***	0.390	–	–	–		–	–	–	–		–	–	–	–		–
	M	0.499	0.481	1.1		0.036	–	–	–		–	–	–	–		–	–	–	–		–
Other economically	U	0.123	0.162	-3.9	***	-0.113	–	–	–		–	–	–	–		–	–	–	–		–
inactive	M	0.123	0.120	0.2		0.008	–	–	–		–	–	–	–		–	–	–	–		–
Demographic Characteristics																					
Female	U	0.633	0.604	2.1	**	0.058	0.974	0.962	1.5		0.065	0.225	0.363	-3.4	***	-0.304	0.442	0.515	-2.0	*	-0.146
	M	0.633	0.611	1.3		0.043	0.974	0.974	0.0		0.003	0.225	0.231	-0.2		-0.013	0.442	0.452	-0.2		-0.022
Age	U	48.113	28.701	54.3	***	1.349	45.062	36.799	18.5	***	0.748	66.058	57.469	10.1	***	0.887	24.563	22.448	5.1	***	0.386
	M	48.113	47.740	0.6		0.022	45.062	44.735	0.6		0.023	66.058	65.207	1.6		0.183	24.563	24.661	-0.2		-0.019
Household type [b]																					
Single parent	U	0.045	0.076	-4.3	***	-0.127	0.037	0.051	-1.6		-0.067	0.038	0.050	-0.6		-0.056	0.095	0.088	0.3		0.025
	M	0.045	0.047	-0.2		-0.009	0.037	0.040	-0.2		-0.013	0.038	0.032	0.5		0.057	0.095	0.090	0.2		0.015
Couple without	U	0.222	0.083	16.0	***	0.393	0.165	0.075	7.2	***	0.278	0.427	0.300	2.8	***	0.266	0.047	0.080	-1.6		-0.134
children	M	0.222	0.207	1.0		0.035	0.165	0.133	1.8		0.078	0.427	0.446	-0.6		-0.107	0.047	0.038	0.4		0.046
Couple with	U	0.529	0.688	-12.1	***	-0.330	0.601	0.751	-7.9	***	-0.323	0.288	0.413	-2.9	***	-0.263	0.700	0.669	0.9		0.066
children	M	0.529	0.509	1.1		0.040	0.601	0.617	-0.7		-0.032	0.288	0.299	-0.3		0.058	0.700	0.707	-0.2		-0.015
Other situations	U	0.158	0.106	5.8	***	0.153	0.182	0.115	4.7	***	0.189	0.158	0.138	0.6	***	0.058	0.105	0.092	0.6		0.043
	M	0.158	0.192	-2.5		-0.088	0.182	0.196	-0.7		-0.027	0.158	0.161	-0.1		-0.013	0.105	0.123	-0.5		-0.055
Health status	U	2.343	1.849	21.2	***	0.553	2.183	1.970	6.1	***	0.246	2.851	2.544	3.7	***	0.344	1.663	1.678	-0.3		-0.022
	M	2.343	2.270	2.2	**	0.077	2.183	2.175	0.2		0.023	2.851	2.932	-1.3		-0.059	1.663	1.669	-0.1		-0.013
Household	U	2.979	3.082	-3.1	***	-0.087	2.964	3.008	-0.9		-0.037	2.851	3.200	-3.1	***	-0.287	3.311	3.179	1.5		0.111
financial situation	M	2.979	3.028	-1.2	**	-0.041	2.964	2.930	0.6		0.033	2.851	2.735	1.4		-0.009	3.311	3.302	0.1		0.008
Household main	U	0.261	0.107	16.2	***	0.405	0.330	0.123	13.2	***	0.510	0.153	0.044	3.6	***	0.374	0.232	0.108	5.2	***	0.334
income from SE	M	0.261	0.259	0.1		0.005	0.330	0.343	-0.5		-0.029	0.153	0.125	1.2		-0.013	0.232	0.203	0.7		0.068
Education [c]																					
Secondary education	U	0.242	0.402	-12.0	***	-0.348	0.213	0.310	-5.2	***	-0.222	0.082	0.231	-5.0	***	-0.420	0.642	0.495	3.9	***	0.299
	M	0.242	0.253	-0.7		-0.023	0.213	0.224	-0.5		-0.052	0.082	0.095	-0.7		-0.036	0.642	0.668	-0.5		-0.056
Tertiary education	U	0.085	0.117	-3.7	***	-0.107	0.064	0.111	-3.8	***	-0.167	0.072	0.125	-2.0	**	-0.178	0.163	0.117	1.9	*	.134
	M	0.085	0.093	-0.8		-0.030	0.064	0.057	0.6		0.047	0.072	0.053	1.1		0.082	0.163	0.158	0.2		0.014
Baseline Levels of Satisfaction																					
Satisfaction with	U	3.740	4.104	-9.6	***	-0.266	3.767	3.983	-3.7	***	-0.156	3.657	3.925	-2.2	**	-0.206	4.121	4.408	-3.3	***	-0.237
main activity in t	M	3.740	3.804	-1.3		-0.047	3.767	3.737	0.4		0.023	3.657	3.811	-1.8	*	-0.129	4.121	4.202	-0.6		-0.067

Table 2.3 continued: Balance diagnostic for PSM estimates – Transitions from inactivity to self-employment vs. to paid employment.

Sample		Inactive Population					Homemakers					Retirees					Students				
		Mean		*t*-test		Std.	Mean		*t*-test		Std.	Mean		*t*-test		Std.	Mean		*t*-test		Std.
		T	C	*t*-stat		Diff.	T	C	*t*-stat		Diff.	T	C	*t*-stat		Diff.	T	C	*t*-stat		Diff.
Country Dummies [d]																					
Austria	U	0.042	0.075	-4.7	***	-0.140	0.060	0.076	-1.5		-0.064	0.019	0.044	-1.7		-0.141	0.058	0.059	-0.1		-0.006
	M	0.042	0.042	0.0		0.000	0.060	0.048	1.1		0.047	0.019	0.030	-1.0		-0.083	0.058	0.066	-0.3		-0.034
Belgium	U	0.012	0.022	-2.6	***	-0.079	0.009	0.012	-0.8		-0.034	0.010	0.025	-1.4		-0.118	0.037	0.032	0.4		0.027
	M	0.012	0.021	-2.0	**	-0.071	0.009	0.010	-0.2		0.008	0.010	0.006	0.5		0.019	0.037	0.032	0.3		0.027
Denmark	U	0.012	0.042	-5.8	***	-0.186	0.009	0.004	1.5		0.059	0.019	0.075	-3.3	***	-0.265	0.011	0.062	-2.9	***	-0.278
	M	0.012	0.010	0.6		0.020	0.009	0.007	0.4		0.033	0.019	0.013	0.7		0.042	0.011	0.011	-0.1		-0.005
Finland	U	0.026	0.080	-7.6	***	-0.242	0.026	0.058	-3.6	***	-0.160	0.031	0.069	-2.0	**	-0.173	0.037	0.112	-3.3	***	-0.289
	M	0.026	0.018	1.5		0.053	0.026	0.017	1.3		0.077	0.031	0.036	-0.4		-0.010	0.037	0.035	0.1		0.011
France	U	0.014	0.085	-9.9	***	-0.329	0.017	0.084	-6.5	***	-0.307	–	–	–		–	0.021	0.064	-2.4	**	-0.214
	M	0.014	0.017	-0.6		-0.023	0.017	0.024	-0.9		-0.049	–	–	–		–	0.021	0.018	0.2		0.021
Germany	U	0.007	0.022	-3.7	***	-0.118	0.005	0.031	-4.1	***	-0.196	0.007	0.006	0.1		0.012	0.011	0.017	-0.7		-0.057
	M	0.007	0.006	0.4		0.015	0.005	0.006	-0.4		-0.016	0.007	0.001	1.3		0.120	0.011	0.008	0.3		0.027
Greece	U	0.216	0.077	16.6	***	0.402	0.226	0.113	7.7	***	0.303	0.264	0.150	2.9	***	0.283	0.116	0.055	3.5	***	0.219
	M	0.216	0.220	-0.3		-0.009	0.226	0.241	-0.7		-0.045	0.264	0.223		1.4	0.014	0.116	0.133	-0.5		-0.052
Ireland	U	0.035	0.080	-6.3	***	-0.193	0.041	0.126	-6.8	***	-0.309	0.031	0.056	-1.4		-0.123	0.011	0.074	-3.3	***	-0.318
	M	0.035	0.035	0.1		0.002	0.041	0.046	-0.5		-0.041	0.031	0.029	0.2		0.029	0.011	0.010	0.0		0.000
Italy	U	0.178	0.114	7.0	***	0.183	0.151	0.111	2.9	***	0.120	0.163	0.225	-1.7		-0.157	0.305	0.093	9.4	***	0.551
	M	0.178	0.178	0.0		0.002	0.151	0.158	-0.4		-0.006	0.163	0.122	1.7	*	0.122	0.305	0.294	0.2		0.027
Luxembourg	U	0.001	0.003	-1.0		-0.030	0.002	0.007	-1.3		-0.204	–	–	–		–	–	–	–		–
	M	0.001	0.001	0.5		0.015	0.002	0.003	-0.2		0.037	–	–	–		–	–	–	–		–
Netherlands	U	0.027	0.075	-7.0	***	-0.221	0.027	0.072	-4.5	***	0.230	0.010	0.025	-1.4		-0.118	0.037	0.096	-2.7	***	-0.238
	M	0.027	0.027	0.0		0.002	0.027	0.022	0.6		0.003	0.010	0.008	0.3		0.013	0.037	0.023	0.8		0.079
Portugal	U	0.249	0.159	8.4	***	0.224	0.206	0.121	5.8	***	-0.017	0.391	0.294	2.2	**	0.205	0.147	0.177	-1.1		-0.081
	M	0.249	0.245	0.3		0.008	0.206	0.206	0.0		-0.054	0.391	0.490	-2.9	***	-0.125	0.147	0.161	-0.4		-0.042
United Kingdom	U	0.007	0.013	-2.1	**	-0.063	0.006	0.025	-3.3	***	-0.064	0.005	0.013	-1.0		-0.083	–	–	–		–
	M	0.007	0.009	-0.8		-0.027	0.006	0.009	-0.7		0.047	0.005	0.003	0.5		0.052	–	–	–		–
Overall Measures of Covariate Imbalance																					
Pseudo R^2	U	0.328					0.199					0.228					0.132				
	M	0.006					0.005					0.027					0.007				
LR test on joint insignif. of covar.	U	$\chi^2 = 2,623.68$		$p > \chi^2 = 0.000$			$\chi^2 = 662.93$		$p > \chi^2 = 0.000$			$\chi^2 = 155.25$		$p > \chi^2 = 0.000$			$\chi^2 = 192.02$		$p > \chi^2 = 0.000$		
	M	$\chi^2 = 24.65$		$p > \chi^2 = 0.647$			$\chi^2 = 10.89$		$p > \chi^2 = 0.993$			$\chi^2 = 30.86$		$p > \chi^2 = 0.126$			$\chi^2 = 3.54$		$p > \chi^2 = 1.000$		
Mean Std. Diff.(%)	U	27.8					20.8					23.1					18.3				
	M	2.7					2.6					6.0					3.0				

U: Unmatched; M: Matched; T: Treated; C: Control; Std. diff.: standardized difference.
t-test tests the null hypothesis of treated and control means being equal; *** denotes significance at 1% level; ** denotes significance at 5% level; * denotes significance at 10% level.
Reference categories: [a] Student; [b] Single person; [c] Basic education; [d] Spain.
Results are calculated using commands *pstest* and *tebalance* in Stata 14 after running estimations with oversampling of panel B in table 2.2. Balance diagnostics for the rest of estimations on table 2 (not shown for brevity) lead to similar conclusions about covariates balancing and are available from the authors under request.

Table 2.4: Sensitivity analysis of PSM estimates: effect of calibrated confounders.

Sample	Inactive Population				Homemakers				Retirees				Students			
Panel A. Switching to self-employment vs. not switching																
	Outcome Effect	Selection Effect	ATET	SE	Outcome Effect	Selection Effect	ATET	SE	Outcome Effect	Selection Effect	ATET	SE	Outcome Effect	Selection Effect	ATET	SE
No confounder	–	–	0.247	0.046	–	–	0.149	0.065	–	–	0.199	0.083	–	–	-0.030	0.138
Confounder-like																
Female	0.990	0.940	0.247	0.046	0.993	0.836	0.150	0.065	1.033	0.378	0.199	0.083	0.987	0.671	-0.030	0.138
Tertiary education	1.042	1.611	0.247	0.046	1.119	1.684	0.150	0.065	1.029	1.096	0.199	0.083	0.911	3.778	-0.030	0.138
Age [a]	1.015	0.324	0.247	0.046	1.015	0.345	0.150	0.065	0.939	0.545	0.199	0.083	0.973	7.559	-0.030	0.138
Panel B. Switching to self-employment vs. switching to paid employment																
	Outcome Effect	Selection Effect	ATET	SE	Outcome Effect	Selection Effect	ATET	SE	Outcome Effect	Selection Effect	ATET	SE	Outcome Effect	Selection Effect	ATET	SE
No confounder	–	–	0.041	0.089	–	–	-0.007	0.106	–	–	0.187	0.275	–	–	0.329	0.155
Confounder-like																
Female	0.837	1.130	0.041	0.089	0.747	1.509	-0.007	0.106	1.011	0.526	0.187	0.275	0.888	0.759	0.329	0.155
Tertiary education	0.800	0.455	0.041	0.089	0.792	0.518	-0.007	0.106	0.556	0.708	0.187	0.275	1.033	0.944	0.329	0.155
Age [a]	1.185	8.517	0.041	0.089	1.002	3.021	-0.007	0.106	0.959	4.153	0.187	0.275	1.086	3.202	0.329	0.155
Panel C. Switching to paid employment vs. not switching																
	Outcome Effect	Selection Effect	ATET	SE	Outcome Effect	Selection Effect	ATET	SE	Outcome Effect	Selection Effect	ATET	SE	Outcome Effect	Selection Effect	ATET	SE
No confounder	–	–	0.074	0.027	–	–	0.142	0.044	–	–	0.105	0.148	–	–	-0.117	0.034
Confounder-like																
Female	1.042	0.833	0.074	0.027	0.992	0.543	0.142	0.044	1.033	0.744	0.105	0.148	0.986	0.895	-0.117	0.034
Tertiary education	3.547	0.032	0.074	0.027	1.119	3.296	0.142	0.044	1.029	1.633	0.105	0.148	0.909	3.940	-0.117	0.034
Age [a]	1.018	0.020	0.074	0.027	1.026	0.078	0.142	0.044	0.940	0.077	0.105	0.148	0.974	2.573	-0.117	0.034

Notes: ATET with no confounder corresponds to baseline estimates without calliper. Outcome effect, selection effects, ATET and SE with calibrated confounders are estimated using command *sensatt* in Stata 14. This command implements the sensitivity analysis presented in Nannicini (2007). Results obtained after 500 simulated iterations.

[a] Age has been dichotomized so that the observations above the sample mean take a value of 1.

Table 2.5: Determinants of satisfaction after a transition from inactivity - Ordered logit regressions - Homemakers.

	Model I		Model II		Model III		Model IV		Model V		Model VI		Model VII		Model VIII		Model IX	
	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z
Transition to self-employment																		
$HM_t \rightarrow SE_{t+1} vs. HM_t \rightarrow PE_{t+1}$	0.363	3.14 ***	0.450	3.84 ***	0.155	1.33	0.356	3.08 ***	0.107	0.89	0.273	2.31 **	0.341	2.92 ***	0.489	4.18 ***	0.140	1.19
Outcomes																		
$JS_{earnings}$			0.697	17.76 ***														
$JS_{job\ security}$					0.594	17.22 ***												
Competence																		
Overskilled							-0.218	-2.55 **										
Autonomy																		
$JS_{type\ of\ work}$									1.343	27.71 ***								
$JS_{working\ conditions}$											0.877	20.31 ***						
Flexibility																		
$JS_{working\ times}$													0.660	16.57 ***				
$JS_{working\ hours}$															0.715	18.15 ***		
$JS_{distance\ to\ work}$																	0.392	11.02 ***
Demographic characteristics																		
Female	-0.220	-0.89	-0.265	-1.03	-0.137	-0.55	-0.218	-0.87	0.260	1.01	-0.020	-0.08	-0.081	-0.32	-0.045	-0.17	-0.264	-1.05
Age	0.009	1.97 **	0.008	1.71 *	0.004	0.88	0.008	1.75 *	0.004	0.89	0.006	1.28	0.007	1.70 *	0.008	1.73 *	0.006	1.36
Household type (*ref.* Single)																		
Single parent	0.463	1.34	0.419	1.18	0.583	1.65 *	0.432	1.25	0.294	0.82	0.358	0.99	0.458	1.31	0.457	1.30	0.318	0.92
Couple without children	0.337	1.04	0.344	1.02	0.378	1.13	0.301	0.92	0.187	0.55	0.243	0.71	0.312	0.94	0.302	0.91	0.218	0.67
Couple with children	0.342	1.11	0.287	0.90	0.454	1.43	0.304	0.99	0.174	0.54	0.203	0.63	0.357	1.14	0.337	1.07	0.224	0.73
Other situations	0.604	1.86 *	0.566	1.69 *	0.624	1.87 *	0.575	1.77 *	0.389	1.15	0.405	1.19	0.587	1.78 *	0.624	1.88 *	0.444	1.36
Health status	-0.278	-4.63 ***	-0.257	-4.24 ***	-0.232	-3.83 ***	-0.284	-4.73 ***	-0.216	-3.51 ***	-0.245	-4.05 ***	-0.245	-4.09 ***	-0.224	-3.69 ***	-0.261	-4.33 ***
HH financial situation	0.271	6.73 ***	0.118	2.84 ***	0.164	3.99 ***	0.272	6.74 ***	0.149	3.59 ***	0.238	5.84 ***	0.209	5.14 ***	0.185	4.53 ***	0.248	6.11 ***
HH main income from SE	0.094	0.84	0.098	0.87	-0.009	-0.08	0.092	0.83	0.010	0.09	0.061	0.54	0.169	1.51	0.209	1.85 *	0.158	1.42
Education (*ref.* Basic)																		
Secondary education	0.086	0.80	0.064	0.59	0.045	0.42	0.129	1.18	-0.005	-0.04	-0.028	-0.25	0.084	0.77	0.168	1.54	0.057	0.53
Tertiary education	-0.057	-0.36	-0.055	-0.33	0.073	0.44	0.000	0.00	-0.213	-1.28	-0.225	-1.38	-0.081	-0.50	-0.084	-0.52	-0.062	-0.38
Baseline levels of satisfaction																		
$S_{main\ activity}$ in t	0.315	9.20 ***	0.270	7.82 ***	0.274	7.98 ***	0.315	9.20 ***	0.235	6.74 ***	0.253	7.27 ***	0.281	8.17 ***	0.278	8.09 ***	0.281	8.15 ***
Employment characteristics																		
Part time work	-0.019	-0.20	0.040	0.42	0.028	0.30	-0.011	-0.12	0.054	0.55	-0.165	-1.73 *	-0.187	-1.96 **	-0.173	-1.81 *	-0.064	-0.68
Industry dummies (*ref.* Construction)	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Country dummies (*ref.* Spain)	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Number of observations	2,064		2,064		2,064		2,064		2,064		2,064		2,064		2,064		2,064	
Log likelihood	-2,940.6		-2,937.3		-2,478.4		-2,715.6		-2,793.1		-2,763.7		-2,878.6		-2,771.3		-2,782.1	

Notes: *** denotes significance at 1% level; ** denotes significance at 5% level; * denotes significance at 10% level.

Table 2.6: Determinants of satisfaction after a transition from inactivity - Ordered logit regressions - Retirees.

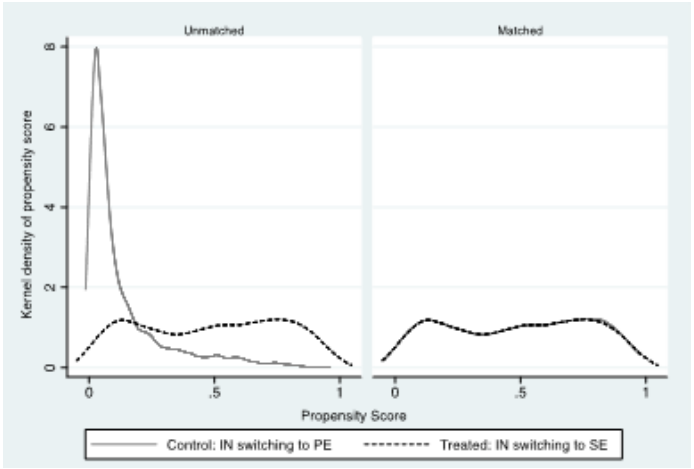
	Model I		Model II		Model III		Model IV		Model V		Model VI		Model VII		Model VIII		Model IX	
	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z
Transition to self-employment																		
$RT_t \rightarrow SE_{t+1} vs. RT_t \rightarrow PE_{t+1}$	0.296	0.93	0.664	2.01 **	0.044	0.13	0.309	0.96	0.020	0.06	0.105	0.32	0.309	0.95	0.511	1.54	0.249	0.77
Outcomes																		
$JS_{earnings}$			0.664	5.63 ***														
$JS_{job\ security}$					0.825	7.70 ***												
Competence																		
Overskilled							0.109	0.39										
Autonomy																		
$JS_{type\ of\ work}$									1.493	10.04 ***								
$JS_{working\ conditions}$											0.985	7.90 ***						
Flexibility																		
$JS_{working\ times}$													0.892	7.14 ***				
$JS_{working\ hours}$															1.148	8.23 ***		
$JS_{distance\ to\ work}$																	0.554	4.96 ***
Demographic characteristics																		
Female	-0.192	-0.69	-0.157	-0.56	-0.180	-0.65	-0.205	-0.73	-0.279	-0.96	0.010	0.04	-0.134	-0.47	0.080	0.28	0.001	0.00
Age	0.008	0.58	-0.001	-0.10	0.001	0.06	0.008	0.59	0.009	0.67	0.015	1.12	0.005	0.38	0.005	0.40	0.007	0.54
Household type (*ref.* Single)																		
Single parent	-1.934	-2.82 ***	-2.050	-2.94 ***	-1.696	-2.35 **	-1.965	-2.85 ***	-2.068	-2.81 ***	-1.988	-2.83 ***	-1.816	-2.52 **	-1.646	-2.28 **	-2.290	-3.27 ***
Couple without children	-0.917	-2.07 **	-1.083	-2.40 **	-0.976	-2.16 **	-0.919	-2.08 **	-1.017	-2.22 **	-0.628	-1.41	-0.778	-1.74 *	-0.991	-2.15 **	-0.790	-1.79 *
Couple with children	-0.706	-1.47	-0.999	-2.04 **	-0.706	-1.46	-0.719	-1.49	-1.007	-2.02 **	-0.283	-0.58	-0.524	-1.09	-0.585	-1.19	-0.471	-0.98
Other situations	-0.463	-0.98	-0.667	-1.39	-0.397	-0.83	-0.479	-1.01	-0.927	-1.91 *	-0.483	-1.02	-0.355	-0.75	-0.628	-1.30	-0.402	-0.85
Health status	-0.334	-1.96 **	-0.259	-1.51	-0.289	-1.68 *	-0.332	-1.95 *	-0.376	-2.15 **	-0.293	-1.68 *	-0.453	-2.60 ***	-0.375	-2.16 **	-0.400	-2.33 **
HH financial situation	0.451	3.72 ***	0.267	2.13 **	0.420	3.39 ***	0.450	3.71 ***	0.359	2.89 ***	0.358	2.95 ***	0.390	3.22 ***	0.474	3.82 ***	0.445	3.66 ***
HH main income from SE	0.179	0.51	0.097	0.27	0.012	0.03	0.167	0.47	0.013	0.03	0.034	0.10	0.151	0.42	0.426	1.17	0.214	0.61
Education (*ref.* Basic)																		
Secondary education	1.027	2.00 **	0.805	1.55	1.283	2.43 **	1.026	2.00 **	0.842	1.58	0.909	1.74 *	0.680	1.32	1.042	1.99 **	1.059	2.05 **
Tertiary education	1.431	2.77 ***	1.412	2.70 ***	2.023	3.84 ***	1.419	2.74 ***	1.115	2.08 **	1.122	2.15 **	1.196	2.33 **	1.135	2.20 **	1.866	3.52 ***
Baseline levels of satisfaction																		
$S_{main\ activity}$ in t	0.411	3.51 ***	0.365	3.12 ***	0.410	3.52 ***	0.409	3.49 ***	0.278	2.37 **	0.307	2.63 ***	0.315	2.74 ***	0.319	2.76 ***	0.383	3.25 ***
Employment characteristics																		
Part time work	0.525	1.89 *	0.333	1.17	0.429	1.51	0.535	1.92 *	0.348	1.20	0.465	1.63	0.187	0.66	0.049	0.17	0.527	1.87 *
Industry dummies (*ref.* Construction)	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Country dummies (*ref.* Spain)	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Number of observations	307		307		307		307		307		307		307		307		307	
Log likelihood	-381.2		-381.1		-319.5		-346.4		-353.9		-343.3		-368.3		-364.7		-348.7	

Notes: *** denotes significance at 1% level; ** denotes significance at 5% level; * denotes significance at 10% level.

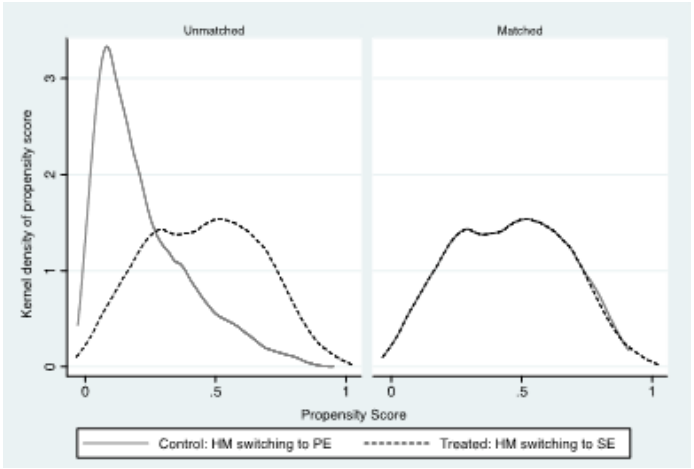
Table 2.7: Determinants of satisfaction after a transition from inactivity - Ordered logit regressions - Students.

	Model I		Model II		Model III		Model IV		Model V		Model VI		Model VII		Model VIII		Model IX	
	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z	Coeff.	z
Transition to self-employment																		
$ST_t \rightarrow SE_{t+1} vs. ST_t \rightarrow PE_{t+1}$	0.253	1.60	0.387	2.39 **	0.245	1.52	0.203	1.27	0.043	0.26	0.091	0.57	0.280	1.75 *	0.369	2.31 **	0.177	1.11
Outcomes																		
$JS_{earnings}$			0.714	22.41 ***														
$JS_{job\ security}$					0.467	17.80 ***												
Competence																		
Overskilled							-0.509	-6.97 ***										
Autonomy																		
$JS_{type\ of\ work}$									1.384	34.57 ***								
$JS_{working\ conditions}$											0.922	24.51 ***						
Flexibility																		
$JS_{working\ times}$													0.600	17.85 ***				
$JS_{working\ hours}$															0.694	20.64 ***		
$JS_{distance\ to\ work}$																	0.335	12.04 ***
Demographic characteristics																		
Female	-0.053	-0.73	-0.078	-1.05	-0.004	-0.06	-0.064	-0.87	-0.120	-1.57	-0.068	-0.91	-0.055	-0.74	-0.071	-0.97	-0.070	-0.95
Age	0.002	0.34	0.014	1.97 **	0.008	1.08	0.003	0.48	-0.014	-1.86 *	0.009	1.21	-0.002	-0.25	0.007	1.00	-0.001	-0.19
Household type (*ref.* Single)																		
Single parent	-0.299	-1.77 *	-0.052	-0.31	-0.115	-0.67	-0.300	-1.77 *	-0.270	-1.54	-0.377	-2.20 **	-0.212	-1.25	-0.310	-1.81 *	-0.285	-1.68 *
Couple without children	-0.045	-0.28	0.170	1.03	0.018	0.11	-0.043	-0.27	-0.205	-1.23	-0.199	-1.21	-0.077	-0.48	-0.052	-0.32	-0.005	-0.03
Couple with children	-0.143	-1.07	0.116	0.85	0.038	0.28	-0.121	-0.91	-0.150	-1.08	-0.218	-1.60	-0.142	-1.06	-0.278	-2.05 **	-0.136	-1.01
Other situations	0.003	0.02	0.247	1.41	0.197	1.14	0.001	0.00	-0.058	-0.33	-0.198	-1.14	-0.097	-0.56	-0.207	-1.19	-0.057	-0.33
Health status	-0.262	-4.41 ***	-0.230	-3.82 ***	-0.208	-3.47 ***	-0.265	-4.46 ***	-0.178	-2.92 ***	-0.166	-2.76 ***	-0.212	-3.55 ***	-0.191	-3.17 ***	-0.214	-3.59 ***
HH financial situation	0.100	3.13 ***	0.000	-0.01	0.055	1.69 *	0.097	3.05 ***	0.104	3.16 ***	0.072	2.21 **	0.074	2.29 **	0.075	2.32 **	0.089	2.77 ***
HH main income from SE	0.080	0.74	0.040	0.37	0.037	0.34	0.065	0.60	-0.022	-0.20	-0.046	-0.42	0.055	0.50	0.092	0.85	0.047	0.43
Education (*ref.* Basic)																		
Secondary education	0.036	0.41	0.064	0.72	0.047	0.53	0.076	0.86	0.019	0.21	0.028	0.32	0.036	0.41	0.031	0.35	0.038	0.43
Tertiary education	0.119	1.08	0.163	1.46	0.162	1.46	0.141	1.27	-0.002	-0.02	0.137	1.23	0.113	1.02	0.105	0.94	0.164	1.47
Baseline levels of satisfaction																		
$S_{main\ activity}$ in t	0.274	8.59 ***	0.250	7.77 ***	0.242	7.56 ***	0.278	8.68 ***	0.211	6.42 ***	0.200	6.18 ***	0.238	7.44 ***	0.254	7.93 ***	0.246	7.69 ***
Employment characteristics																		
Part time work	-0.295	-3.07 ***	-0.182	-1.88 *	-0.268	-2.78 ***	-0.259	-2.69 ***	-0.180	-1.76 *	-0.311	-3.17 ***	-0.359	-3.70 ***	-0.137	-1.40	-0.317	-3.28 ***
Industry dummies (*ref.* Construction)	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Country dummies (*ref.* Spain)	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Number of observations	2,966		2,966		2,966		2,966		2,966		2,966		2,966		2,966		2,966	
Log likelihood	-4,219.9		-4,195.4		-3,491.4		-3,894.8		-4,054.1		-3,994.5		-4,145.8		-3,949.4		-4,054.3	

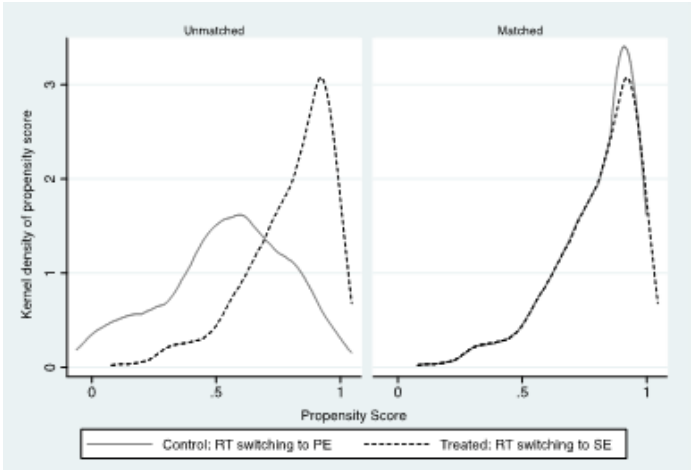
Notes: *** denotes significance at 1% level; ** denotes significance at 5% level; * denotes significance at 10% level.



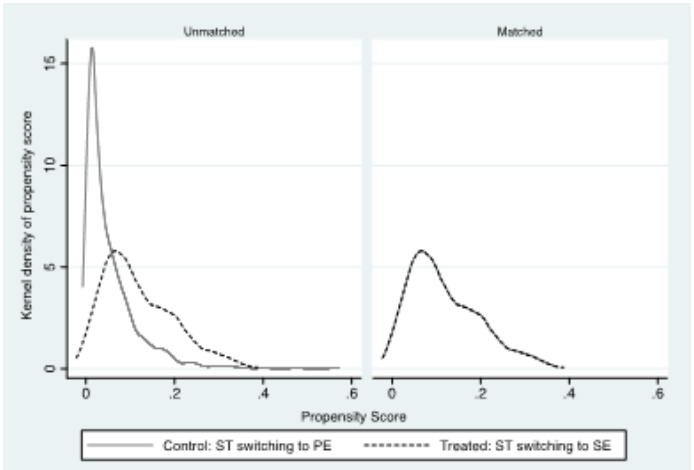
(a) Inactive population



(b) Homemakers



(c) Retirees



(d) Students

Figure 2.1: Balance plots before and after matching.

Note: Plots are obtained using command *tebalance* in Stata 14 after running estimations with oversampling of panel B in table 2.2. Balance plots for the rest of estimations on table 2.1 (not shown for brevity) lead to similar conclusions about covariates balancing and are available from the authors under request.

Appendix A

Table A1: Description of variables.

Satisfaction Variables	
$\Delta_{(t+1)-t}\ S_{main\ activity}$	Change in the level of satisfaction with work or main activity between t and $t+1$.
$JS_{earnings_{t+1}}$	Ordered categorical variable ranging from 1 (not satisfied) to 6 (fully satisfied) that measures the level of job satisfaction with the present job in terms of earnings in period $t+1$
$JS_{job\ security_{t+1}}$	Ordered categorical variable ranging from 1 (not satisfied) to 6 (fully satisfied) that measures the level of job satisfaction with the present job in terms of job security in period $t+1$.
$JS_{type\ of\ work_{t+1}}$	Ordered categorical variable ranging from 1 (not satisfied) to 6 (fully satisfied) that measures the level of job satisfaction with the present job in terms of type of work in period $t+1$.
$JS_{working\ hours_{t+1}}$	Ordered categorical variable ranging from 1 (not satisfied) to 6 (fully satisfied) that measures the level of job satisfaction with the present job in terms of working hours in period $t+1$.
$JS_{working\ times_{t+1}}$	Ordered categorical variable ranging from 1 (not satisfied) to 6 (fully satisfied) that measures the level of job satisfaction with the present job in terms of working times (day time, night time, shifts, etc.) in period $t+1$.
$JS_{working\ conditions_{t+1}}$	Ordered categorical variable ranging from 1 (not satisfied) to 6 (fully satisfied) that measures the level of job satisfaction with the present job in terms of working conditions / environment in period $t+1$.
$JS_{distance\ to\ work_{t+1}}$	Ordered categorical variable ranging from 1 (not satisfied) to 6 (fully satisfied) that measures the level of job satisfaction with the present job in terms of distance to job / commuting in period $t+1$.
Treatment Variables	
Switching to SE vs. not switching $IN_t \to SE_{t+1}$ vs. $IN_t \to IN_{t+1}$ $HM_t \to SE_{t+1}$ vs. $HM_t \to HM_{t+1}$ $RT_t \to SE_{t+1}$ vs. $RT_t \to RT_{t+1}$ $ST_t \to SE_{t+1}$ vs. $ST_t \to ST_{t+1}$	Four binary variables that equal 1 for individuals who are inactive (homemaker / retiree / student) in period t and become self-employed in period $t+1$; the variables equal 0 for individuals who are inactive (homemaker / retiree / student) in periods t and $t+1$.
Switching to SE vs. switching to PE $IN_t \to SE_{t+1}$ vs. $IN_t \to PE_{t+1}$ $HM_t \to SE_{t+1}$ vs. $HM_t \to PE_{t+1}$ $RT_t \to SE_{t+1}$ vs. $RT_t \to PE_{t+1}$ $ST_t \to SE_{t+1}$ vs. $ST_t \to PE_{t+1}$	Four binary variables that equal 1 for individuals who are inactive (homemaker / retiree / student) in period t and become self-employed in period $t+1$; the variables equal 0 for individuals who are inactive (homemaker / retiree / student) in period t and become paid employed in period $t+1$.
Switching to PE vs. not switching $IN_t \to PE_{t+1}$ vs. $IN_t \to IN_{t+1}$ $HM_t \to PE_{t+1}$ vs. $HM_t \to HM_{t+1}$ $RT_t \to PE_{t+1}$ vs. $RT_t \to RT_{t+1}$ $ST_t \to PE_{t+1}$ vs. $ST_t \to ST_{t+1}$	Four binary variables that equal 1 for individuals who are inactive (homemaker / retiree / student) in period t and become paid employed in period $t+1$; the variables equal 0 for individuals who are inactive (homemaker / retiree / student) in periods t and $t+1$.
Demographic Characteristics	
Female	Dummy equals 1 for females.
Age	Age reported by the individual.
Household type	
Single person (*ref.*)	Dummy equals 1 if the household type is single person.
Single parent	Dummy equals 1 if the household type is single parent.
Couple without children	Dummy equals 1 if the household type is couple without children.
Couple with children	Dummy equals 1 if the household type is couple with children.
Other situations	Dummy equals 1 if the household type is different from those considered above.
Health status	Ordered categorical variable ranging from 1 (very good) to 5 (very bad) that measures the level of health.

Table A.1 continued: Description of variables.

Household financial situation	Ordered categorical variable ranging from 1 (with great difficulty) to 6 (very easily) that measures the ability of the household to make ends meet.
Household main income from SE	Dummy equals 1 if the household main source of income is self-employment.
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 5-7).
BASELINE LEVELS OF SATISFACTION	
$S_{main_activity}$ in t	Ordered categorical variable ranging from 1 (not satisfied) to 6 (fully satisfied) that measures the level of satisfaction with work or main activity in period t.
EMPLOYMENT CHARACTERISTICS	
Part time work	Dummy equals 1 for individuals who declare working in a part time basis.
Overskilled	Dummy equals 1 for individuals who declare having skills or qualifications to do a more demanding job.
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 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.
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 (*ref.*), and the United Kingdom.

Table A2: Descriptive statistics.

	Inactive individuals in t						Homemakers in t						Retirees in t						Students in t					
	Not switching		Switching to SE in $t+1$		Switching to PE in $t+1$		Not switching		Switching to SE in $t+1$		Switching to PE in $t+1$		Not switching		Switching to SE in $t+1$		Switching to PE in $t+1$		Not switching		Switching to SE in $t+1$		Switching to PE in $t+1$	
Number of observations	202,327		1,606		6,332		73,103		802		1,972		83,383		417		160		22,922		190		3,140	
	Mean	**(S.D.)**	**Mean**	**(S.D.)**	**Mean**	**(S.D.)**	**Mean**	**(S.D.)**	**Mean**	**(S.D.)**	**Mean**	**(S.D.)**	**Mean**	**(S.D.)**	**Mean**	**(S.D.)**	**Mean**	**(S.D.)**	**Mean**	**(S.D.)**	**Mean**	**(S.D.)**	**Mean**	**(S.D.)**
Dependent Variable																								
$\Delta_{(t+1)-t}\ S_{main\ activity}$ [a]	-0.02	(1.28)	0.27	(1.49)	0.15	(1.54)	-0.01	(1.30)	0.18	(1.47)	0.17	(1.52)	-0.02	(1.30)	0.26	(1.38)	0.28	(1.46)	-0.01	(1.24)	0.20	(1.49)	-0.06	(1.45)
Demographic Characteristics																								
Female [b]	0.65	–	0.63	–	0.60	–	0.98	–	0.97	–	0.96	–	0.43	–	0.23	–	0.36	–	0.54	–	0.44	–	0.51	–
Age	57.47	(19.15)	48.11	(16.72)	28.70	(11.60)	53.43	(15.30)	45.06	(11.87)	36.80	(10.17)	69.50	(8.70)	66.06	(8.35)	57.47	(10.84)	20.01	(4.15)	24.56	(5.33)	22.45	(5.62)
Household type																								
Single person [b]	0.14	–	0.04	–	0,04	–	0.09	–	0.02	–	0.00	–	0.20	–	0.08	–	0.10	–	0.03	–	0.05	–	0.07	–
Single parent [b]	0.05	–	0.05	–	0.08	–	0.05	–	0.04	–	0.05	–	0.04	–	0.04	–	0.05	–	0.09	–	0.09	–	0.09	–
Couple without children [b]	0.33	–	0.22	–	0.08	–	0.25	–	0.16	–	0.08	–	0.44	–	0.43	–	0.30	–	0.02	–	0.05	–	0.08	–
Couple with children [b]	0.36	–	0.53	–	0.69	–	0.50	–	0.60	–	0.75	–	0.18	–	0.29	–	0.41	–	0.76	–	0.70	–	0.67	–
Other situations [b]	0.12	–	0.16	–	0.11	–	0.11	–	0.18	–	0.12	–	0.14	–	0.16	–	0.14	–	0.10	–	0.11	–	0.09	–
Health status	2.55	(0.95)	2.34	(0.99)	1.85	(0.79)	2.40	(0.91)	2.18	(0.93)	1.97	(0.80)	2.84	(0.89)	2.85	(0.87)	2.54	(0.92)	1.64	(0.65)	1.66	(0.68)	1.68	(0.66)
HH financial situation	3.26	(1.24)	2.98	(1.19)	3.08	(1.19)	3.16	(1.24)	2.96	(1.18)	3.01	(1.18)	3.29	(1.27)	2.85	(1.20)	3.20	(1.23)	3.25	(1.15)	3.31	(1.18)	3.18	(1.17)
HH main income from SE [b]	0.09	–	0.26	–	0.11	–	0.13	–	0.33	–	0.12	–	0.04	–	0.15	–	0.04	–	0.15	–	0.23	–	0.11	–
Education																								
Basic education [b]	0.73	–	0.68	–	0.48	–	0.77	–	0.73	–	0.58	–	0.76	–	0.85	–	0.64	–	0.46	–	0.20	–	0.38	–
Secondary education [b]	0.21	–	0.24	–	0.40	–	0.19	–	0.21	–	0.31	–	0.17	–	0.08	–	0.23	–	0.47	–	0.64	–	0.50	–
Tertiary education [b]	0.06	–	0.08	–	0.12	–	0.04	–	0.06	–	0.11	–	0.07	–	0.07	–	0.13	–	0.07	–	0.16	–	0.12	–
Baseline Levels of Satisfaction																								
$S_{main activity}$ in t	4.18	(1.36)	3.74	(1.38)	4.10	(1.36)	4.08	(1.37)	3.77	(1.37)	3.98	(1.40)	4.17	(1.40)	3.66	(1.27)	3.93	(1.33)	4.43	(1.14)	4.12	(1.25)	4.41	(1.16)
Country Dummies																								
Austria [b]	0.06	–	0.04	–	0.08	–	0.06	–	0.06	–	0.08	–	0.08	–	0.02	–	0.04	–	0.06	–	0.06	–	0.06	–
Belgium [b]	0.04	–	0.01	–	0.02	–	0.02	–	0.01	–	0.01	–	0.05	–	0.01	–	0.03	–	0.04	–	0.04	–	0.03	–
Denmark [b]	0.03	–	0.01	–	0.04	–	0.00	–	0.01	–	0.00	–	0.07	–	0.02	–	0.08	–	0.02	–	0.01	–	0.06	–
Finland [b]	0.03	–	0.03	–	0.08	–	0.00	–	0.03	–	0.06	–	0.06	–	0.03	–	0.07	–	0.04	–	0.04	–	0.11	–
France [b]	0.11	–	0.01	–	0.08	–	0.08	–	0.02	–	0.08	–	–	–	–	–	–	–	0.08	–	0.02	–	0.06	–
Germany [b]	0.02	–	0.01	–	0.02	–	0.02	–	0.00	–	0.03	–	0.04	–	0.01	–	0.01	–	0.01	–	0.01	–	0.02	–
Greece [b]	0.13	–	0.22	–	0.08	–	0.14	–	0.23	–	0.11	–	0.16	–	0.26	–	0.15	–	0.08	–	0.12	–	0.05	–
Ireland [b]	0.05	–	0.03	–	0.08	–	0.10	–	0.04	–	0.13	–	0.03	–	0.03	–	0.06	–	0.02	–	0.01	–	0.07	–
Italy [b]	0.17	–	0.18	–	0.11	–	0.18	–	0.15	–	0.11	–	0.19	–	0.16	–	0.23	–	0.25	–	0.31	–	0.09	–
Luxembourg [b]	0.01	–	0.00	–	0.00	–	0.01	–	0.00	–	0.01	–	–	–	–	–	–	–	–	–	–	–	–	–
Netherlands [b]	0.06	–	0.03	–	0.08	–	0.11	–	0.03	–	0.07	–	0.01	–	0.01	–	0.03	–	0.03	–	0.04	–	0.10	–
Portugal [b]	0.11	–	0.25	–	0.16	–	0.07	–	0.21	–	0.12	–	0.15	–	0.39	–	0.29	–	0.14	–	0.15	–	0.18	–
Spain [b]	0.16	–	0.17	–	0.15	–	0.19	–	0.21	–	0.16	–	0.13	–	0.05	–	0.02	–	0.22	–	0.21	–	0.16	–
United Kingdom [b]	0.02	–	0.01	–	0.01	–	0.01	–	0.01	–	0.03	–	0.03	–	0.00	–	0.01	–	–	–	–	–	–	–

Notes: [a] $\Delta_{(t+1)-t}$ denotes change in satisfaction level between t and t+1; [b] Dummy variable.

Chapter 3

Opportunity and Necessity Self-Employment: The Role of Nonpecuniary Benefits in Workers' Mental Well-Being

3.1 Introduction

A sizable part of an adult's life takes place in the workplace. There, in addition to earning income, individuals can enhance their personal and professional development, expand their networks and cultivate new social relationships. Importantly, participating in the labor market could condition relevant individual aspects such as their mental health (World Health Organization, 2021).

The importance of workers' *mental well-being* (MWB) is widely recognized by organizations and governments around the globe. Accordingly, initiatives to improve mental health in the workplace are becoming more frequent. Some examples include the OECD *Mental Health Performance Framework* (OECD, 2019a), information sheets such as *Mental Health in the Workplace* (World Health Organization, 2021), booklets about supporting mental health at work by the *Mental Health Foundation*, the resources offered by the Health at Work portal, the guides by the *World Economic Forum*, and the elaboration of guidelines on mental health in the work environment that the WHO is developing in collaboration with the *Wellcome Trust*. These projects have emerged since the

WHO launched the comprehensive mental health action plan 2013-2020 at the 66th World Health Assembly. This plan has been a historic achievement, as the WHO Director-General (Dr Margaret Chan) has suggested: "*Rarely have I seen Member States work so hard to get an action plan right and ensure that its recommendations are workable and on target. (…) This tells us that mental health really matters*".

Mental health and workforce research are essential for organizations and workers. Poor mental health reduces self-efficacy (Hessels et al., 2018), is related to lower performance and functioning at work (Cottini, 2012; Murray & Lopez, 1996; Price et al., 2002), leads to absenteeism (Cooper & Dewe, 2008; National Mental Health Association, 2007) and increases the probability of unemployment (Ettner et al., 1997). In fact, some common mental disorders such as depression and anxiety are estimated to cost the world economy approximately US$ 1 trillion per year (World Health Organization, 2021).

A considerable number of studies indicate that working under appropriate conditions is beneficial for mental health (Boardman et al., 1999; Modini et al., 2016). Having a part-time job (Barnay, 2016), enjoying social support at work from colleagues and supervisors (Luchman & González-Morales, 2013), having some control over work (S. A. Stansfeld et al., 1999) or being in a favorable work environment with high job security (Bardasi & Francesconi, 2004; Cottini & Lucifora, 2013) are all positively related to mental health. Similarly, in a study with Canadian women, Llena-Nozal (2009) found that a work environment with low levels of stress and tension and a high degree of decision-making power is also associated with better mental health.

Conversely, a negative work environment can lead to mental health problems. S. Stansfeld and Candy (2006) conclude that job strain and effort-reward imbalance are two of the main causes of common mental disorders. Other risk factors include low levels of decision making, high job demands and inflexible schedules (Cheng et al., 2000; Gupta & Kristensen, 2008; Shields, 2002) as well as episodes of intimidation in the workplace (Theorell et al., 2015). Given this evidence, the WHO has provided recommendations to reduce the chances of mental instability in organizations, for example, by offering more lenient and flexible time schedules as well as by increasing workers' capacity to make decisions about their own work (World Health Organization, 2021).

Entrepreneurship has certain nonpecuniary characteristics (Hamilton, 2000) that are likely to affect mental health differently than wage employment. As their own bosses, self-employed workers enjoy more freedom in the decision-making process and have a great amount of control over their

work (Benz & Frey, 2008b; Croson & Minniti, 2012), including the power to decide on the planning and organization of tasks as well as on the allocation of resources (Hébert & Link, 1989; Prottas & Thompson, 2006; Stephan, 2018). Moreover, self-employed workers enjoy more autonomy that allows them to adapt their work duties to their personal needs (Haynie & Shepherd, 2011) while not suffering the tension derived from the pressure of a boss (Häusser et al., 2011). Finally, the self-employed workers' flexibility allows them to decide where and with whom to work (Benz & Frey, 2008a; S. K. Parker, 2014; Prottas & Thompson, 2006) as well as to take a break whenever they wish, which is also positively associated with MWB (Vesala & Tuomivaara, 2015). These factors, together with a lower likelihood of feeling overskilled at work (Congregado et al., 2016; Stephan, 2018), might help explain why individuals sorting into entrepreneurship tend to experience a boost in their levels of job and life satisfaction (e.g. Benz and Frey, 2008a, 2008b; Binder and Coad, 2013; Justo et al., 2021), as well as a higher level of "procedural utility" (Benz & Frey, 2004), which implies that they enjoy not only the results of their work but also the process itself. All these qualities make self-employment a job option that promotes personal growth and well-being (Shir, 2015; Stephan, 2018).

However, self-employment also has some drawbacks. Self-employed workers usually face higher job stress (Cardon & Patel, 2015; Patzelt & Shepherd, 2011), longer working hours and irregular schedules (Hyytinen & Ruuskanen, 2007; Jamal & Badawi, 1995), all of which could be detrimental to MWB (Bannai & Tamakoshi, 2014). Moreover, self-employed individuals suffer a greater risk of job insecurity given their dependence on fluctuating markets (Mandel, 1996) and are often ineligible for welfare state benefits (Perry et al., 2007). Nevertheless, some studies claim that the self-employed experience less stress related to work (Hessels et al., 2017) and life (Baron et al., 2016) compared to wage employees.

It is not clear ex-ante whether the advantages of self-employment outweigh the disadvantages or vice versa, which means that there are arguments supportive of both a positive and a negative relationship between self-employment and MWB. Unfortunately, research focused on this relationship has not received much attention in the literature (Shepherd & Patzelt, 2015). So far, and in line with the mixed arguments, the results have been contradictory. Some studies show that self-employed workers have poorer mental health levels than employees (Gunnarsson et al., 2007; Jamal, 1997; Parslow et al., 2004), whereas others document a positive association between self-employment and MWB (Baron et al., 2016; Hessels et al., 2017).

While such conflicting evidence might be driven by the differences in the data and methods used across studies, it is also likely affected by the lack of a clear distinction between self-employed workers. In this sense, self-employed workers are often classified in two different categories owing to their dissimilar motivations and characteristics: necessity and opportunity self-employed workers (Binder & Coad, 2016; Larsson & Thulin, 2019; S. C. Parker, 2018). This categorization may be playing a role in the overall relationship between self-employment and mental health.

Opportunity self-employed workers are those who enter self-employment voluntarily, while necessity self-employed workers are pushed into self-employment due to the lack of a better alternative (S. C. Parker, 2018). The voluntary nature of opportunity self-employment may be related to the identification of a business opportunity, but also to a personal preference for this type of occupation. As such, it is possible that opportunity self-employed workers factor in the nonpecuniary benefits of self-employment in their occupational choice. In contrast, it seems less likely that necessity self-employed workers consider these nonpecuniary aspects, as they are forced to become self-employed due to their circumstances, which often reflect a lack of alternative employment options and the pecuniary—rather than nonpecuniary—necessities. Consequently, nonpecuniary benefits of self-employment should be more relevant for opportunity than for necessity self-employed workers. Hence, the relationship between nonpecuniary aspects and mental health may be different for opportunity and necessity self-employed workers. In this sense, exploring the potential heterogeneous effects of such nonpecuniary characteristics on the mental health of necessity and opportunity self-employed workers could help reconcile the mixed results.

Therefore, this study attempts to answer the following questions: (i) What are the differences in MWB across different types of occupation, namely, wage employees and self-employed workers? (ii) Do differences in MWB depend on whether self-employment is driven by necessity or opportunity? And (iii) what is the role of nonpecuniary benefits in explaining the differences in MWB between employees and (necessity and opportunity) self-employed workers? Thus, this paper aims to contribute to the entrepreneurship and mental health literature in several ways. First, we compare the MWB of self-employed workers and wage employees, further distinguishing between *necessity* and *opportunity* self-employed workers—whose differences in terms of mental health remain underexplored. Next, this study explores whether differences in mental health between employees and self-employed individuals are due to the nonpecuniary characteristics associated with this employment status and whether such nonpecuniary benefits affect necessity and

opportunity entrepreneurs differently.

The rest of the paper is organized as follows. Section 3.2 describes the data and the methodology used. In section 3.3, the results are presented. Section 3.4 concludes the paper.

3.2 Data and Methodology

3.2.1 Data

In this research, we use the sixth wave (2015) of the *European Working Conditions Survey* (EWCS). This survey has been monitored by *Eurofound* since 1991. Containing information on working conditions across European countries, the survey was conceived to analyze the relationships between different aspects of work, highlight issues of concern and areas of progress and, ultimately, to contribute to the development of policies aimed at improving job quality. The sixth EWCS interviewed almost 44,000 workers (both employees and self-employed individuals) in 35 European countries. All respondents were asked a wide variety of questions related to their employment status, work organization, learning and training, working time duration, physical and psychosocial risk factors, health and safety, work–life balance, worker participation, earnings and financial security. Further, individuals were also asked about issues related to their health status. Additional details about this survey can be found in the technical report of the sixth wave of the EWCS (Parent-Thirion et al., 2016).

3.2.2 Sample

The objective of this paper is to test whether there are differences in mental health status between self-employed and wage employees among the EU-28 member states. To this end, the sample includes women and men who are self-employed workers—further categorized as opportunity and necessity self-employed—or employees in 2015. The final sample after removing data with missing values results in a total of 22,502 respondents. The overall mean age was approximately 43 years old, with the youngest respondent being 15 and the oldest respondent being 67 years old. In this sample, 51.08 percent of the individuals are women, and 7.38 percent are self-employed workers. Among the self-employed workers, 78.51 are opportunity-driven and 21.49 are necessity-driven.

3.2.3 Measures

Based on the information available in the EWCS, the dependent variable is the 5-item World Health Organization's *WHO-5 Well-being Index* (Psykiatric Center North Zealand, 2021). The index consists of five questions rated on a 6-point *Likert* scale (from "*at no time*" to "*all of the time*") that assess different aspects of mental well-being. In particular, the items used to construct the WHO-5 index are "*I have felt cheerful and in good spirits*", "*I have felt calm and relaxed*", "*I have felt active and vigorous*", "*I have felt fresh and rested*", "*My daily life has been filled with things that interest me*". High scores represent better well-being. WHO-5 is an index that can take values between 1 and 6, where 1 is the lowest possible well-being and 6 is the maximum possible well-being. Since the distribution of the variable was rather compressed at approximately 5, we divide this variable into three categories in the following way:[1]

- $y = 1$ if $1 \leq WHO5 \leq 3$; low well-being.
- $y = 2$ if $3 < WHO5 \leq 5$; medium well-being.
- $y = 3$ if $5 < WHO5 \leq 6$; high well-being.

Self-employed workers are identified in the data by combining different questions. First, we utilize the following question: "*Are you working as an employee or are you self-employed?*" to classify individuals into two groups: wage employees and self-employed workers. Second, the groups of opportunity and necessity are created based on the following question: "*When you became self-employed, was it mainly through your own personal preference or because you had no other alternatives for work?*"

Entrepreneurial nonpecuniary benefits are measured using different variables. First, *flexibility* is proxied through the variables (i) *flex-hours* (ability to arrange hours off during working hours), (ii) *flex-breaks* (ability to take a break when needed) and (iii) *flex-fit* (ability to have a balance between work and family or social commitments outside work). These three variables are categorical and range from values 1 to 4 in the cases of *flex-hours* and *flex-fit*, while *flex-breaks* takes values between 1 and 5. In all cases, the value 1 represents the lowest ability, and the value 4 (5 for the case of *flex- breaks*) represents the highest ability.

[1] This categorization ensures that a sufficient number of observations are included in each category. Different thresholds led to very similar results.

Second, *autonomy* is measured based on the variables (i) *auto-tasks* (ability to choose or change the order of tasks), (ii) *auto-methods* (ability to choose or change the methods at work), (iii) *auto-speed* (ability to choose or change the speed or rate of work) and (iv) *auto-ideas* (ability to apply own ideas at work). The three first variables are dummies taking the value of 1 if the workers are able to influence tasks, methods and speed at work, and 0 otherwise. The last variable (*auto-ideas*) is a categorical variable ranging from 1 to 5, where 1 represents the lowest ability to apply own ideas in the workplace and where the value 5 represents the highest ability.

Lastly, *job control* at work is measured through the variables (i) *jcont-involved* (how often the worker is involved in improving the work organization or work processes of her department or organization) and (ii) *jcont-consulted* (how often the worker is consulted before the work objectives are set). Both are categorical variables ranging from 1 to 5, where 1 represents the lowest frequency and 5 the highest. Given that all these mechanisms have a positive relationship with the probability of having a better mental health status, we treat all of them as continuous variables to simplify the analysis.

Finally, we also consider a wide range of control variables, including demographic characteristics, education, household financial situation, business sector dummies and country dummies.[2] Concerning the demographic characteristics, descriptive results reveal that self-employed workers are, on average, older than their counterparts, especially those who are necessity-driven self-employed. Females typically present higher levels of participation in wage employment than in self-employment. In relation to domestic incomes, self-employed workers are more often the main earners in the household. Moreover, necessity self-employed are workers who have received tertiary education less often, while opportunity self-employed workers are the most educated individuals. Regarding employment characteristics, the sample means suggest that self-employed individuals work 5 hours per week more than wage employees, with opportunity (necessity) self-employed workers working 6 (1) hours more per week than wage workers. At the same time, self-employed individuals are generally workers who dedicate more nights to working when compared to wage employees, which is again mostly driven by opportunity self-employed workers. Finally, although the private sector is the most common type of industry for both self-employed and wage employees workers, wage employees are more often found in the public sector than the self-employed.

[2] Descriptive statistics can be found in table B1 in the Appendix.

3.2.4 Methodology

The goal of the analysis is to assess the relationship between occupational status (self-employment compared to wage employment) and mental well-being, controlling for (i) the heterogeneity of self-employed workers by distinguishing between necessity and opportunity self-employed, (ii) the effect of nonpecuniary benefits derived from self-employment on mental well-being and (iii) the control variables used. Therefore, the estimated model is as follows:

$$MWB_i = \beta_0 + \beta_1 SE_1 + \beta_2 NB_i + \beta_3 X_i + u_i \tag{3.1}$$

where MWB_i is the mental well-being of an individual i andSE_i is a dummy variable that equals 1 if the individual i is a self-employed worker and 0 if she is a wage employee. To control for the heterogeneity of self-employment, in further specifications, I replace the variable SE_i by two dummies to account for necessity and opportunity self-employed workers separately, with wage employees as the reference category. NB_i represents the different measures of the various nonpecuniary benefits of self-employment, which are added step-by-step in additional analyses. X_i is a vector including the individual-level controls used, which include information on demographics, household, education, and employment characteristics. Finally, u_i is the unexplained share of the variation. Since the dependent variable is categorical and ordered, I run ordered *logit* regressions to estimate the various specifications (Wooldridge, 2010).

3.3 Results

The results derived from the empirical analysis are included in this section. First, estimates of the relationship between being self-employed compared to being a wage employee—further distinguishing between *necessity* and *opportunity* self-employed workers—and the probability of having a high level of MWB are presented in table A1. Subsequently, the results for additional analyses on potential mechanisms using different measures of *flexibility*, *autonomy* and *job control* are included in tables A2, A3 and A4.

At the beginning of each column, the predicted probability of having a high level of MWB for the sample means is presented. For each specification, the left column exhibits the effects of the independent variables on the probability that the individuals report a high level of mental

health ($P(y = 3)$) in terms of *marginal effects* (and not coefficients). These marginal effects are indicated in relative terms (i.e. with respect to the predicted probabilities for the sample means). Additionally, I display the z statistics linked to each marginal effect for the different specifications. Finally, I present the number of observations and the *log likelihood* for all specifications at the end of each column.

3.3.1 Differences in Mental Health Across Occupations

Table A1 shows the marginal effects from generalized ordered *logit* regressions on the probability of having a high level of mental health for the different occupations—wage employees and self-employed workers, further making a distinction between the necessity and opportunity self-employed. Specification I presents the estimates for all self-employed workers compared to wage employees (the reference category), while specification II displays the results distinguishing between the necessity and opportunity self-employed workers and comparing them to wage employees.

The results in specification 1 indicate that self-employed workers are more likely to have a high level of mental health compared to wage employees. More specifically, I observe that the predicted probability of having a good mental health is 2.2 percent points higher for the self-employed workers, which is roughly a 10% increase in the baseline predicted probability. This result is in line with Hessels et al. (2017). However, when distinguishing between the two types of self-employed workers—specification 2—the results reflect the heterogeneity within the self-employed. In this sense, compared to wage employees, necessity self-employed workers show no differences in their probability of having a high level of mental health—its associated marginal effect is negative but not significant—while the predicted probability increases by 3.6 percent points for the case of opportunity self-employed workers, or approximately a 17% increase on the baseline probability.

Hence, the results suggest that opportunity-driven self-employed workers tend to have a higher probability of enjoying a good level of MWB than wage employees, whereas no significant differences are found between necessity self-employed and wage employees. In the next section, I delve deeper into the analysis and consider several potential underlying mechanisms that could explain the results from table A1.

3.3.2 The Role of Nonpecuniary Benefits in Mental Health

This section shows additional analyses carried out on mechanisms that represent the most typical nonpecuniary benefits of self-employment—*flexibility*, *autonomy* and *job control*. The main objective of these analyses is to test whether such nonpecuniary characteristics explain the differences (or lack thereof) in mental health status across the different types of occupation. I develop separate analyses for self-employed individuals as a whole and the necessity self-employed and opportunity self-employed workers. The key purpose of these analyses is to understand how the marginal effect associated with the main independent variable (type of occupation) changes in terms of size, sign and significance when the different mechanisms are controlled for. In this way, I am able to identify which nonpecuniary elements are driving the main results from table A1.

Tables A2, A3 and A4 contain results on how the probability of having a high level of mental health is affected by *flexibility*, *autonomy*, and *job control*, respectively. The tables present different specifications (in columns), in which different measures of each mechanism are introduced step-wise. The odd specifications refer to self-employed individuals as a group, while the even specifications distinguish between necessity self-employed and opportunity self-employed workers.

3.3.2.1 Flexibility

Table A2 contains the results corresponding to analyses on the role of *flexibility* in explaining differences in the probability of having a high level of mental health across occupations. In particular, flexibility at work is measured through three different variables, namely: (i) *flex-hours*, (ii) *flex-breaks* and (iii) *flex-fit*.

I begin by discussing the results in specifications III and V, which test the role of the possibility of (i) taking hours off (*flex-hours*) and (ii) taking breaks at work (*flex-breaks*). The associated marginal effects indicate that the easier it is for workers to take hours off or breaks at work, the higher the mental health of the workers. In particular, the variables *flex-hours* and *flex-breaks* increase the probability of having a high level of mental health by 4.2 and 2.2 percent points, respectively. When looking at the variables of interest, I observe that the positive relationship between self-employment and mental health vanishes after controlling for either *flex-hours* or *flex-breaks*. These results can be aligned with those in Álvarez and I. Sinde-Cantorna (2014), Hundley (2001), and Parasuraman and Simmers (2001), who establish that flexibility leads to job satisfaction, a measure which is highly related to psychological well-being.

In specifications IV and VI, I show the results for necessity and opportunity self-employed workers. On the one hand, the marginal effects of necessity self-employment in specifications IV and VI are now negative and significant. To be more precise, when accounting for the possibility of either arranging hours off or taking breaks during work, the probability of having a high level of mental health decreases by 3.4% percent points in the case of necessity self-employed workers, compared to wage employees. On the other hand, the marginal effect on opportunity self-employment becomes non-significant. This suggests that the ability to take hours off and breaks at work is a relevant factor in explaining why opportunity-driven self-employed workers have better mental health and why there are no differences between necessity-driven self-employed and wage employees.

Specifications VII and VIII test the role of the fit of work and personal life. My results are consistent with past studies such as Grzywacz and Marks (2000) and Nguyen and Sawang (2016), my results show that the better the fit between work and life, the higher the levels of mental health. In particular, obtaining a balance between work and personal life increases the probability of having a high level of mental health by 9.7 percent points. Interestingly, however, this variable does not seem to explain the positive effect of self-employment on mental health. The marginal effects on self-employed workers as a whole as well as on opportunity-driven self-employed workers remain positive and significant, and the marginal effect on necessity self-employed workers remains non-significant. I do observe that the marginal effect on opportunity self-employment becomes slightly less positive, while the opposite is true for necessity self-employment. This suggests that although opportunity (necessity) self-employed workers may have a better (worse) balance between life and work, this is not enough to explain why they have a better (similar) mental health than employees.

3.3.2.2 Autonomy

Table A3 shows estimates of the role of *autonomy* on mental health levels across the different occupational categories considered. This mechanism is captured through four variables, including (i) *auto-tasks*, (ii) *auto-methods*, (iii) *auto-speed* and (iv) *auto-ideas*, and the results obtained when including them as additional regressors are exhibited in specifications III to X.

Specifications III to VIII tell a very similar story. Specifications III and IV show the results regarding the ability to alter work tasks (*auto-tasks*), while specifications V and VI relate an individual's mental health to the possibility of changing methods at work (*auto-methods*) and

specifications VII and VIII show the results of being able to influence the work speed (*auto-speed*). Being able to influence the order of tasks at work marginally increases the likelihood of having a high level of mental health by 2.7 percent points, while the ability to influence work methods and work speed increases mental health by 5.1 and 4.5 percent point, respectively. Controlling for this characteristic makes the marginal effect of necessity self-employment negative and significant. Hence, when compared to wage employees with a similar ability to influence work tasks, methods or speed, the necessity self-employed workers are approximately 3 percent points less likely to have a high level of mental health. However, these features are not enough to explain the greater likelihood of enjoying a good level of mental health that the opportunity self-employed workers enjoy.

Conversely, as established in other past studies (see e.g. Benz and Frey, 2004; Hundley, 2001), the possibility of applying one's own ideas in the workplace appears to be of high relevance for self-employed workers in general, both necessity- and opportunity-driven. In specification IX, it can be appreciated that the relationship between self-employment and mental health becomes negative and highly significant. This suggests that after controlling for the fact that self-employed workers enjoy a higher opportunity to apply their own ideas at work, their probability of having a high level of mental health decreases by 2.5 percent points compared to wage employees. This finding is further reinforced by the results of specification X, where the probability of high mental health level in the case of necessity self-employed workers is reduced by 5.6 percent points. In the case opportunity-driven self-employed workers, the marginal effect loses its significance, which suggests that their higher likelihood of having a high level of mental health is, at least partially, due to their greater ability to apply their own ideas at work.

3.3.2.3 Job control

To finalize the additional analysis, I now focus on the role of *job control* as a potential mechanism that drives differences in mental health across occupations. Table A4 displays results from the two variables used to measure the degree of job control that individuals have. Namely, these measures are (i) *jcon-involved* and (ii) *jcon-consulted*. The findings from specification III reveal that being involved in improving the work organization increases the probability of having a high level of mental health by 3.4 percent points. Similarly, being consulted about decisions made at work raises the probability of good mental health by 3.5 percent points. In both cases, the marginal

effect of necessity self-employment becomes negative and significant, and the significance of that of opportunity self-employment vanishes. Taken together, the results in this table suggest that job control is a very strong driver of mental health and that the positive relationship between self-employment and mental health is largely due to the greater levels of job control that self-employed workers possess (K. A. Morrison, 1997; Wincent & Örtqvist, 2009).

3.3.2.4 Control variables

As for the controls presented in table A1, I observe a tendency for female individuals to be less likely to have a high level of mental health than their male counterparts. The same can be said when comparing workers in the public sector with those in the private sector. Moreover, higher self-reported general health status is associated with an increase in the likelihood of having a good mental health status of approximately 22 percent point, making it one of the main predictors of mental health (Stephan, 2018). Conversely, working more hours and working at night significantly decreases the likelihood of having good mental health. I detect no significant effects of age, experience, education levels, marital status, having children and nationality.

3.4 Conclusion

Self-employed workers often have to face many challenging situations for which they are not sufficiently prepared. Fighting for success in a business is not easy and generates many episodes of stress (Hessels et al., 2018). Good mental health is key for self-employed workers to properly handle the most difficult moments and achieve their objectives (Rietveld et al., 2015; Wincent et al., 2008). Moreover, given the relevant role that successful business owners play in the economy through job creation and innovation (Audretsch & Thurik, 2001), their mental welfare ought to be of high importance for society and policy makers. However, there is a lack of research on the relationship between mental health and self-employment. To the best of my knowledge, this study is unique because, on the one hand, it provides estimates about the relationship between self-employment and mental health status while simultaneously embracing the heterogeneity of self-employment and, on the other hand, because it tests the effects of nonpecuniary aspects typical of self-employment on mental well-being.

The conclusions from previous studies on self-employment and mental well-being are mixed.

Since self-employment encompasses individuals with different backgrounds, one potential reason for these inconsistent outcomes could be the fact that the group of self-employed workers has been typically analyzed without distinguishing between *necessity* and *opportunity* self-employed workers. The results show that it is important to consider the different types of self-employed individuals, as heterogeneity is one of the most relevant characteristics of self-employment.

The overall picture of the results from this paper may be summarized in three key findings: (i) there are differences between self-employed and wage employees in terms of mental health, since self-employed workers enjoy higher levels of MWB than their counterparts; (ii) necessity-driven self-employed workers have poorer MWB than wage employees; and (iii) opportunity-driven self-employed workers are mentally healthier compared to wage employees. Additional analyses indicate that these results can be explained when the nonpecuniary benefits that are characteristic of self-employment come into play. Indeed, self-employed workers appear to benefit in terms of MWB from the higher *flexibility*, *autonomy* and *job control* that they enjoy at work. In particular, the probability of having good levels of mental health for opportunity self-employed workers seems to be highly conditioned by their ability to manage their own schedule, their involvement in decision making and the opportunity to apply their own ideas. Similarly, it appears that the characteristics that equalize the probability of having a similar mental health between necessity self-employed workers and wage employees is mostly explained by the flexibility to enjoy hours off and breaks, an absolute autonomy at work and the privilege of having control over work activities.

These findings not only corroborate the important role of nonpecuniary benefits in the life and health of the self-employed but also highlight the importance of disentangling the diversity within self-employment. It appears evident that each of these groups has different needs and that they are concerned about different aspects of work. Hence, applying the same policies to the self-employed workers as a group may not be the best alternative.

Furthermore, these results may also offer potentially relevant insights for organizations and policy makers. First, the results presented in this paper are related to the *Europe Strategy 2020 program*, which is concerned with the relevance of improving the psychological well-being of workers. Second, having specific knowledge about interactions between work and mental health could help anticipate complicated situations concerning the lack of productivity of workers and lower levels of job satisfaction and job absenteeism, among others. Third, as self-employment involves different nonpecuniary benefits, investigating whether they affect the mental well-being of workers provides

a more detailed understanding of the relationship between mental health and self-employment. All these findings may lead to the design of more focused policies regarding the mental health of self-employed and wage workers alike.

Finally, this study is not free of limitations. First and foremost, the data employed in this study, although detailed in qualitative terms, do not allow performing causal analyses. Instead, the results presented here are descriptive, and causal interpretations should be made carefully. In addition, the time period included in the data only covers one year, which implies that the potential influence of the business cycle and state of the economy in different time periods is not captured. This might play a role, as economic conditions likely affect individuals' mental well-being, and it could be the case that they do so differently for self-employed and wage workers. Future research should focus on understanding to what extent the effects of nonpecuniary aspects as a mediator in the relationship between occupational choice and mental health are causal if appropriate datasets become available.

Table A1: Estimates of the relationship between type of occupation and mental well-being.

	Well-being Index (WHO5)					
	Specification I			Specification II		
Dependent variable (y): WHO5						
Predicted probability (y = 3)	0.2134			0.2134		
	dy/dx	*z*		*dy/dx*	*z*	
Labor market status						
Wage employee (*ref.*)						
Self-employed	0.022	2.58	***			
Necessity				-0.021	-1.32	
Opportunity				0.036	3.44	***
Demographic characteristics						
Age	1e-4	0.43		1e-4	0.46	
Female	-0.040	-8.08	***	-0.040	-8.06	***
Foreigner	-0.003	-0.54		-0.003	-0.51	
Children	-0.003	-0.62		-0.003	-0.62	
Married	-2e-4	-0.04		-3e-4	-0.05	
Health status	0.220	39.08	***	0.220	38.97	***
Main earner in the household	-0.001	-0.18		-0.001	-0.19	
Education						
Basic (*ref.*)						
Secondary	0.013	0.94		0.012	0.89	
Tertiary	0.008	0.58		0.007	0.51	
Employment characteristics						
Working hours	-0.001	-4.65	***	-0.001	-4.72	***
Working at night	-0.002	-3.58	***	-0.002	-3.56	***
Experience	3e-4	1.00		-3e-4	0.90	
Sector						
Private sector (*ref.*)						
Public sector	-0.011	-1.80	*	-0.011	-1.77	*
Other	0.005	0.56		0.006	0.62	
Industry dummies (17 categories; *ref.* Activities of households)	Yes			Yes		
Country dummies (28 categories; *ref.* Spain)	Yes			Yes		
Number of observations	22,502			22,502		
Log likelihood	-22258.62			-22254.06		

Notes: *** denotes significance at 1% level; ** denotes significance at 5% level; * denotes significance at 10% level.

Table A2: Estimates of the role of flexibility at work in the relationship between type of occupation and mental well-being.

	Well-being Index (WHO5)							
	I	II	III	IV	V	VI	VII	VIII
Dependent variable (y): WHO5								
Predicted probability ($y = 3$)	0.2133	0.2133	0.2133	0.2133	0.2134	0.2134	0.2134	0.2134
	dy/dx z	dy/dx z	dy/dx z	dy/dx z	dy/dx z	dy/dx z	dy/dx z	dy/dx z
Labor market status								
Wage employee (*ref.*)								
Self-employed	0.022 2.58 ***		0.005 0.56		0.005 0.53		0.018 2.22 **	
Necessity		-0.021 -1.32		-0.034 -2.22 **		-0.034 -2.22 **		-0.015 -0.93
Opportunity		0.036 3.44 ***		0.016 1.64		0.016 1.61		0.029 2.89 ***
Flexibility								
Flex-hours			0.042 18.37 ***	0.042 18.34 ***				
Flex-break					0.022 13.82 ***	0.022 13.78 ***		
Flex-fit							0.097 30.99 ***	0.096 30.93 ***
Demographic characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Employment characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	25,502	25,502	25,502	25,502	25,502	25,502	25,502	25,502
Log likelihood	-22258.62	-22254.06	-22078.43	-22074.53	-22154.33	-22150.42	-21730.70	-21727.92

Notes: *** denotes significance at 1% level; ** denotes significance at 5% level; * denotes significance at 10% level.

Table A3: Estimates of the role of autonomy at work in the relationship between type of occupation and mental well-being.

	Well-being Index (WHO5)									
	I	II	III	IV	V	VI	VII	VIII	IV	X
Dependent variable (y): WHO5										
Predicted probability ($y = 3$)	0.2133	0.2133	0.2133	0.2133	0.2133	0.2133	0.2133	0.2133	0.2137	0.2137
	dy/dx *z*	*dy/dx* *z*	*dy/dx* *z*	*dy/dx* *z*	*dy/dx* *z*	*dy/dx* *z*	*dy/dx* *z*	*dy/dx* *z*	*dy/dx* *z*	*dy/dx* *z*
Labor market status										
Wage employee (*ref.*)										
Self-employed	0.022 2.58***		0.016 1.87*		0.010 1.20		0.013 1.55		-0.025 -2.92***	
Necessity		-0.021 -1.32		-0.027 -1.73*		-0.032 -2.05**		-0.029 -1.87*		-0.056 -4.04***
Opportunity		0.036 3.44***		0.029 2.86***		0.023 2.27**		0.026 2.57***		-0.015 -1.62
Autonomy										
Auto-tasks			0.027 5.71***	0.027 5.73***						
Auto-methods					0.051 10.83***	0.051 10.83***				
Auto-speed							0.045 9.45***	0.045 9.45***		
Auto-speed									0.048 25.74***	0.048 25.69***
Demographic characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Employment characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	25,502	25,502	25,502	25,502	25,502	25,502	25,502	25,502	25,502	25,502
Log likelihood	-22258.62	-22254.06	-22241.98	-22237.29	-22198.20	-22193.64	-22212.81	-22208.22	-21884.46	-21881.26

Notes: *** denotes significance at 1% level; ** denotes significance at 5% level; * denotes significance at 10% level.

Table A4: Estimates of the role of job control at work in the relationship between type of occupation and mental well-being.

	Well-being Index (WHO5)																					
	I			II			III			IV			V			VI		
Dependent variable (y): WHO5																						
Predicted probability ($y = 3$)	0.2133			0.2135			0.2136			0.2136			0.2132			0.2132		
	dy/dx	z		dy/dx	z		dy/dx	z		dy/dx	z		dy/dx	z		dy/dx	z	
Labor market status																		
Wage employee (*ref.*)																		
Self-employed	0.022	2.58	***				-0.011	-1.28					-0.001	-0.17				
Necessity				-0.021	-1.32					-0.042	-2.86	***				-0.033	-2.14	***
Opportunity				0.036	3.44	***				-0.002	-0.17					0.008	0.79	
Job control																		
Jcon-involved							0.034	21.28	***	0.034	21.20	***						
Jcon-consulted													0.035	22.60	***	0.035	22.52	***
Demographic characteristics	Yes			Yes			Yes			Yes			Yes			Yes		
Education	Yes			Yes			Yes			Yes			Yes			Yes		
Employment characteristics	Yes			Yes			Yes			Yes			Yes			Yes		
Industry dummies	Yes			Yes			Yes			Yes			Yes			Yes		
Country dummies	Yes			Yes			Yes			Yes			Yes			Yes		
Number of observations	25,502			25,502			25,502			25,502			25,502			25,502		
Log likelihood	-22258.62			-22254.06			-22010.34			-22007.48			-21979.42			-21976.72		

Notes: *** denotes significance at 1% level; ** denotes significance at 5% level; * denotes significance at 10% level.

Appendix B

Table B1: Descriptive statistics.

	Wage employees		Self-employed (SE)		Necessity SE		Opportunity SE	
Number of observations	20,841		1,661		357		1,304	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Dependent variable								
Mental health status								
Low mental health [a]	0.106	0.307	0.099	0.299	0.174	0.379	0.079	0.270
Medium mental health [a]	0.684	0.465	0.648	0.478	0.625	0.485	0.655	0.476
High mental health [a]	0.210	0.408	0.252	0.434	0.202	0.402	0.266	0.442
Flexibility mechanisms								
Difficulty to take hours off during work	2.722	0.983	3.193	0.882	3.014	0.402	3.242	0.851
Able to take a break at work	3.088	1.427	4.085	1.123	3.821	1.239	4.158	1.078
Work fits with personal life	3.96	0.736	3.045	0.785	2.944	0.823	3.073	0.773
Autonomy mechanisms								
Able to change work tasks [a]	0.658	0.475	0.880	0.326	0.846	0.362	0.889	0.314
Able to change work methods [a]	0.659	0.474	0.893	0.309	0.849	0.359	0.906	0.292
Able to change work speed [a]	0.698	0.459	0.893	0.309	0.854	0.353	0.903	0.296
Able to apply own ideas at work	3.437	1.282	4.478	0.895	4.165	1.118	4.564	0.802
Job control mechanisms								
Involved in improving work organization	3.185	1.409	4.221	1.268	3.745	1.521	4.351	1.157
Consulted before objectives are set	3.160	1.410	3.860	1.455	3.440	1.547	3.975	1.407
Demographic characteristics								
Age	43.520	11.198	45.568	10.879	46.594	11.473	46.561	10.715
Female [a]	0.525	0.499	0.331	0.471	0.401	0.491	0.311	0.463
Foreigner [a]	0.133	0.340	0.134	0.341	0.154	0.362	0.129	0.335
Married [a]	0.653	0.476	0.680	0.467	0.639	0.481	0.691	0.462
Health status [a]	0.783	0.412	0.787	0.410	0.658	0.475	0.822	0.383
Main earner in the household [a]	0.684	0.465	0.765	0.424	0.714	0.452	0.779	0.415
Education								
Basic [a]	0.027	0.163	0.036	0.185	0.073	0.260	0.025	0.157
Secondary [a]	0.617	0.486	0.606	0.489	0.678	0.468	0.587	0.493
Tertiary [a]	0.356	0.479	0.358	0.480	0.249	0.433	0.388	0.487
Employment characteristics								
Working hours	37.442	10.243	42.416	16.215	38.521	18.586	43.209	15.416
Number of nights worked per month	1.293	3.590	1.730	4.647	1.765	4.915	1.720	4.573
Experience	11.282	9.588	13.556	10.437	11.207	9.899	14.199	10.492
Sector								
Private sector [a]	0.639	0.480	0.897	0.304	0.863	0.345	0.906	0.291
Public sector [a]	0.296	0.456	0.031	0.173	0.025	0.157	0.032	0.177
Other [a]	0.065	0.247	0.072	0.259	0.112	0.316	0.061	0.240

Notes: Country and industry dummies are omitted for simplicity. [a] Dummy variable.

Chapter 4

Self-Employment and Early Retirement: The Moderating Role of Well-Being

4.1 Introduction

The study of workers' retirement behavior and the different aspects that motivate it has become particularly relevant nowadays, as the aging of the population represents a threat to economic development, the labor force and the sustainability of the pension systems in many Western countries (European Commission, 2011; Eurostat, 2019; Ilmarinen, 2001; OECD, 2006). Some of the baby boomers are already retiring (De Preter et al., 2013; Martin et al., 2009; Stafford et al., 2019) while birth rates are decreasing and life expectancy is increasing (Alley & Crimmins, 2007). In fact, the current predictions suggest that the share of the working-age population in the total population —which in 2014 accounted for 65,9%— will drop below 60% by 2035 while the elderly will increase steadily (Eurostat, 2019). Hence, a smaller number of active individuals in the workforce will have to provide financial coverage to an increasing number of older people dependent on public funds (Komisija, 2010; Siegrist et al., 2007). In particular, early retirement constitutes a great challenge both for social and health policy in developed countries (Eurostat, 2019; Siegrist et al., 2007). As a result, governments have started to design policies focused on discouraging early retirement decisions (Johnson et al., 2011), for example by increasing the legal retirement age, making early retirement less appealing in monetary terms, or concentrating efforts on the labor continuity of

older workers (Eurostat, 2019; Komisija, 2010; O'Loughlin et al., 2010; Truxillo & Fraccaroli, 2013).

The literature suggests that early retirement is determined by the interplay of a wide set of personal (e.g. Christensen and Kallestrup-Lamb, 2012; Schalk et al., 2010; Van den Berg et al., 2010; Wang and Shultz, 2010) and work-related factors (Lund et al., 2001; Morris et al., 2020). Among the several drivers of retirement, past studies have highlighted the role of well-being (E. M. M. Davies et al., 2017; Horner, 2014). In particular, the literature suggests that individuals with higher well-being are more likely to delay their retirement (E. Davies & Cartwright, 2011; Kautonen et al., 2012; Oakman & Wells, 2013). To date, scholars have focused on how well-being shapes the early retirement behavior of paid employees (e.g. Kubicek et al., 2010; Mein et al., 2000; Topa et al., 2009; Zappalà et al., 2008), but little is known about its potential impact on the retirement behavior of self-employed workers.

The retirement of self-employed workers has a direct impact on the continuity of their firms (Wennberg et al., 2010), which implies not only that they would add to the increasing number of retired workers, but also that their employees may lose their jobs, and that the business fabric or even economic sustainability could be affected (Morris et al., 2020; Von Bonsdorff et al., 2019). Yet, only a few studies have delved into the early retirement decision of the self-employed workers (Axelrad & Mcnamara, 2018; Chevalier et al., 2018; S. C. Parker & Rougier, 2007) and they have rarely been compared to paid employees in that regard. Thus, there are at least to questions in the literature that remain unanswered by the time of writing: Is the probability of early retirement different for self-employed workers compared to paid employees? Does well-being moderate that difference in early retirement behavior between the two groups? This paper aims at providing an answer to such questions.

Several studies show that self-employed workers report higher levels of well-being compared to paid employees (Andersson, 2008; Lange, 2012), especially in terms of job satisfaction (Benz & Frey, 2008a, 2008b; Binder & Coad, 2013, 2016; Blanchflower & Oswald, 2004; Kautonen et al., 2017). Since individuals with high satisfaction rates tend to retire later in life (Zappalà et al., 2008), we first posit that the self-employed are more likely than paid employees to delay their retirement. Notably, the higher self-reported well-being of self-employed workers has often been linked to their increased autonomy, job control, and flexibility, which allow them to manage their work environment and adapt their work schedules as required by their particular necessities (Birley

& Westhead, 1994; N. M. Carter et al., 2003; Croson & Minniti, 2012). In addition, the literature provides evidence that self-employed workers tend to be more identified with and more passionate about their work, and to develop a stronger sense of work commitment and attachment (Cardon et al., 2009; Cardon et al., 2005; Shane et al., 2003). Hence, we theorize that self-employed workers will be less sensitive to well-being when evaluating the possibility of retirement, as they have more room to influence such well-being at work without resorting to retirement thanks to their higher levels of job control and because, even if they cannot improve their current well-being, they are likely more attached to their work.

We test these hypotheses with data drawn from the *Survey of Health, Ageing and Retirement in Europe* (SHARE), which allows identifying around five thousand individuals from 11 European countries who are susceptible of retiring. In particular, we evaluate whether the likelihood of early retirement is different for self-employed workers as compared to paid employees, and whether the role of well-being in the decision to retire early is different between these groups. In order to capture different aspects of well-being, we use two different proxies: job satisfaction and life satisfaction. Our results provide two main contributions that may be of interest to academics, self-employed workers and policy makers. First, we find that self-employed workers are significantly less likely than wage employees to go into early retirement, conditioned on a wide set of demographic and work-related characteristics. Second, we find differential effects of well-being for self-employed workers and paid employees, but only in terms of job satisfaction. Specifically, results suggest that, while higher levels of job satisfaction reduce the likelihood of early retirement for paid employees, the effect is not significant for the self-employed. We interpret these results as evidence of a lower sensitivity of self-employed workers to well-being, which could be driven by their power to make changes at work and their higher level of commitment and attachment to work.

The rest of the article proceeds as follows. In section 4.2, we review the pertinent literature on early retirement and its link to self-employment and well-being and develop our hypotheses. Section 4.3 describes the empirical approach. The data, sample construction, and measures used are described in section 4.4. Section 4.5 presents and discusses our findings and, finally, section 4.6 concludes this paper.

4.2 Literature Review and Hypotheses

4.2.1 Self-Employment and Early Retirement

Entrepreneurship at old ages—also called "*gray or senior entrepreneurship*"—has generated a special interest among academics and politicians in recent years (Morris et al., 2020; S. C. Parker & Rougier, 2007; U.S. Senate, 2014). Unlike the case of paid employees, whose retirement behavior has been widely explored, the number of studies focused on the retirement behavior of the self-employed workers is more limited (e.g. Axelrad and Mcnamara, 2018; Chevalier et al., 2018; S. C. Parker and Rougier, 2007). In fact, to the best of our knowledge, no other study has directly analyzed whether self-employed individuals are more likely than paid employees to engage in early retirement. However, despite the lack of direct evidence, the literature provides different reasons to expect that self-employed workers will be less likely to retire early.

Self-employment is a type of occupation that entails a series of nonpecuniary benefits that can cause changes in retirement plans (Benz & Frey, 2008a, 2008b; Blanchflower & Oswald, 1998; Hamilton, 2000; Hundley, 2001). *Autonomy* is one of the most prominent nonpecuniary characteristics of self-employment (Croson & Minniti, 2012; Hundley, 2001). As the self-employed are essentially their own bosses, they enjoy greater levels of autonomy than paid employees. The higher autonomy of the self-employed translates into an increased freedom to manage the work environment (Benz & Frey, 2008a), which also encompasses the decision of when and how to retire (M. A. T. Carter & Cook, 1995; Chevalier et al., 2013; Mutran et al., 1997). In general, autonomy is likely to positively influence the prolongation of the work stage, as older people show a high preference for working alone and having greater decision-making power at work (Wang & Shultz, 2010). Similarly, the increased *flexibility* associated with being self-employed is also expected to play a prominent role in adjusting retirement (K. A. Loscocco & Roschelle, 1991). Specifically, being able to decide the time and place of work, having the possibility of dealing with the issue of work-life balance or being able to delegate tasks as the years go by are adaptations that also favor a delay in retirement (Hurd & McGarry, 1993).

Such nonpecuniary aspects are behind the fact that the self-employed have higher levels of "procedural utility" (Benz & Frey, 2004, 2008a, 2008b), which implies that they enjoy what they do and not merely the outcome of it. This sense of joy and job control makes them more likely to develop a sense of entrepreneurial identity and to find meaning through their entrepreneurial work

(Hoang & Gimeno, 2010), which may lead them to show higher levels of organizational commitment and attachment to work (Adams & Beehr, 1998; Wanberg et al., 1999) and, ultimately, to postpone their retirement (J. E. Kim & Moen, 2002). Furthermore, other studies have highlighted the role of entrepreneurial passion, defined as a "*consciously accessible intense positive feeling that results from the commitment to activities with meaning of identity and notoriety for the entrepreneur*" (Cardon et al., 2009). This feeling translates into an involvement, and even love (Shane et al., 2003) to the entrepreneurial activity, as well as paternal feelings towards the venture (Hoang & Gimeno, 2010; Shepherd & Patzelt, 2015), which causes the entrepreneur to never fully retire, unless her health status becomes a serious hindrance (Morris et al., 2020).

In addition, when considering retirement and developing a strategy to leave the labor market, self-employed workers face a more complex process because they need to decide what to do with their firms. While self-employed workers may decide to liquidate their businesses in favor of a relatively rapid exit, other alternatives such as transferring or selling the business or even going public—all of which can be more attractive to the business owners—entail numerous time-consuming challenges such as assessing the state of the company, finding possible successors or buyers, as well as planning the replacement of their figure in the company (Wennberg et al., 2010) which generally lengthen the retirement decision.

In sum, the above arguments lead us to expect that self-employed workers will be less inclined to opt for early retirement. While some factors may prompt self-employed workers to precipitate their retirement—for example, some studies have linked retirement decisions of the self-employed to poor venture performance and family pressures (Raymo & Sweeney, 2006)—these are likely overshadowed by those mentioned above, as well as by other aspects ranging from age and experience (DeTienne & Cardon, 2012) to personal feelings and values (DeTienne & Chirico, 2013; Wang & Shi, 2014), all of which have the ability to motivate self-employed workers to continue with their businesses, even when there is risk of bankruptcy (DeTienne & Cardon, 2008; Holland & Shepherd, 2013) as well as in cases of poor health conditions. Our first hypothesis is, therefore, as follows:

> **Hypothesis 1:** *Compared to paid employees, self-employed workers are less likely to engage in early retirement.*

4.2.2 The Role of Well-Being on Retirement

The literature has explored multiple work-related and personal sociodemographic determinants involved in the retirement decision.[1] For instance, individuals at pre-retirement age are more likely to engage in early retirement when their overall health status is poor (Schalk et al., 2010), when their household finances are solid (De Wind et al., 2014; Forster-Holt, 2013; S. Kim & Feldman, 2000; Van Dam et al., 2009), or when they have grandchildren (Gerke & Lauridsen, 2013). In contrast, those who are highly educated (Blöndal & Scarpetta, 1999; G. G. Fisher et al., 2016) or have good prospects of climbing up the ladder at their current firms (Damman et al., 2013) tend to delay their labor market exit.

Among the many factors influencing retirement, recent studies have highlighted the relevance of psychological aspects, including individual well-being (Bender, 2012; Horner, 2014; J. E. Kim & Moen, 2002; Mein et al., 2000; Wang, 2007). Well-being can be defined as a state characterized by sustained feelings of happiness and satisfaction as well as by a generalized psychological stability (Ryan & Deci, 2001; Warr, 2013). The literature has approached the relationship between well-being and retirement in two different directions. In general, most studies on the field have focused on the impact of retirement on the well-being of the elderly (Bonsang & Klein, 2012; Gorry et al., 2018; Halleröd et al., 2013; Luhmann et al., 2012; Reitzes & Mutran, 2004), with the reverse analysis being far less underexplored. This is somewhat surprising given the growing global interest in understanding the drivers of early retirement and studying the well-being of workers (Bender, 2012).

Among the few studies that have indeed approached the analysis of the role of well-being on the decision to retire early, the main focus has typically been on how well-being at work modifies the probability of early retirement (Adams et al., 2002; E. Davies & Cartwright, 2011; Kautonen et al., 2012; Mein et al., 2000; Oakman & Wells, 2013). Work is a key element in workers' lives not only because it is the main income source, but also due to the opportunities and benefits it offers, for example in terms of personal development, establishing social relationships, acquiring new skills or avoiding functional loss (Houlfort et al., 2015). As such, it is unsurprising that the overall conclusion from such studies is that well-being at work is a key determinant of retirement decisions. Specifically, attitudes of positivity, commitment and attachment towards work, as well

[1] See, among others, Schalk et al. (2010), Topa et al. (2018), and Topa et al. (2009), Wang and Shultz (2010) for recent, in-depth reviews on the determinants of retirement intentions and behavior.

as high job satisfaction are negatively related to early retirement (Hayward et al., 1998; Houlfort et al., 2015). Conversely, if workers do not enjoy their work or do not feel identified with it, they tend to try to leave that job or even retire as soon as they can (E. M. M. Davies et al., 2017).

Importantly, the overall negative relationship between well-being and retirement behavior may be susceptible of heterogeneity. For example, E. M. M. Davies et al. (2017) recently found that, although increases in job satisfaction were related to a decrease in the likelihood of retirement for the case of low income employees, the relationship was non-significant for the case of high income employees. They argue that this result is explained by the lower freedom that lower income employees have to react to a situation of low satisfaction at work compared to higher income employees.

Along this line, a differential effect of well-being on the decision to retire early may also exist when comparing self-employed workers and paid employees. As stated in the previous section, self-employed workers enjoy higher levels of autonomy and flexibility which allow them to implement changes at work to a larger extent than paid employees. This should grant them more freedom to react to situations in which well-being is low, at least when such low well-being is driven by dissatisfaction at work. For instance, in cases of conflict with certain employees or discontent with work environment (e.g. material resources, establishment location, office arrangement…), they have a higher power to replace them, whereas paid employees might need to live with it or find another solution such as changing jobs or, when they are close to the retirement age, exit the labor market. In addition, the higher levels of emotional attachment, commitment, passion and identity that self-employed workers have towards their work arguably makes them more likely to decide to continue with their ventures even in cases when well-being is low and their power to influence it through changes at work is limited. Beyond these arguments, the fact that retirement plans tend to be more complex for self-employed workers than for paid employees can result in delayed retirement even when the intention to retire is equal among both groups.

In summary, while well-being —and particularly well-being at work— is expected to be negatively related to early retirement, we posit that the effect will be different for self-employed and paid employees. In particular, we hypothesize that the effect of well-being on early retirement will be less pronounced for the self-employed, as they have more tools to react to situations of low well-being without resourcing to abandoning the labor market, and due to their higher emotional attachment, feeling of identity and more complicated retirement strategies. Thus, our second and

last hypothesis refers to the moderating role of well-being on the relationship between type of occupation and early retirement:

> **Hypothesis 2:** *The effect of well-being on early retirement will be different for self-employed workers and paid employees. Specifically, the likelihood of early retirement for the self-employed workers is less sensitive to well-being than for the case of paid employees, thus making the difference in early retirement behavior between these two groups smaller as well-being increases.*

4.3 Empirical Approach

The goal of our analysis is to identify the role of occupational status (distinguishing self-employed workers and paid employees) and well-being on the decision to retire early. Empirically, we approach this analysis by estimating the probability of early retirement as follows:

$$Prob.(ER_{i,t}) = \beta_0 + \beta_1 SE_{i,t-1} + \beta_2 WB_{i,t-1} + \beta_3 X_{i,t-1} + u_{i,t} \tag{4.1}$$

where $ER_{i,t}$ takes value 1 when the individual i is an early retiree in the current time period t, and 0 otherwise, $SE_{i,t-1}$ is equal to 1 when the individual was a self-employed worker in the previous period and 0 when she was a paid employee, $WB_{i,t-1}$ represents the individual's well-being in the previous period, $X_{i,t-1}$ is a set of individual-level controls measured at $t-1$ and including demographic and employment characteristics as well as country, industry, and wave dummies, and $u_{i,t}$ captures the unobserved heterogeneity. Because of the binary nature of the dependent variable, we estimate the model in equation 4.1 through *logit* regressions and compute and report marginal effects.

Because we are not only interested in the isolated role of self-employment and well-being on the probability of early retirement, but also on their combined effect, we expand the model from equation 4.1 by adding an interaction term between these two independent variables. The extended model is thus the following:

$$Prob.(ER_{i,t}) = \beta_0 + \beta_1 SE_{i,t-1} + \beta_2 WB_{i,t-1} + \beta_3 SE_{i,t-1} \times WB_{i,t-1} + \beta_4 X_{i,t-1} + u_{i,t} \tag{4.2}$$

where the combined effect of previous self-employment and well-being on the current likelihood

of early retirement is given by $_3$. In robustness tests, we tackle the potential bias coming from reverse causality by incorporating a measure of early retirement intentions as an additional control variable.[2] The next section describes the data used to perform the analysis.

4.4 Data

In our analysis of the role of occupational status and well-being on the decision to retire early, we make use of the *Survey of Health, Ageing, and Retirement in Europe* (SHARE). SHARE is a longitudinal and cross-country database which gathers socioeconomic and health information on individuals aged 50 or older in Europe. More specifically, participants in SHARE are asked to provide details about their retirement, occupation, income, wealth, household finances, demographics, mental and physical health, as well as different aspects of well-being, among others. The first wave of this survey was run in the years 2004 and 2005 for 11 countries (Austria, Belgium, Denmark, France, Germany, Greece, Italy, Netherlands, Spain, Sweden, and Switzerland), with more countries being included in subsequent waves. In our case, we employ waves 1, 2, 4 and 5, covering the years 2004 to 2013, and restrict our sample to the EU-11 countries, due to data availability in the different waves.

We exploit the longitudinal dimension of the SHARE dataset to identify transitions from either self-employment or paid employment into early retirement. Hence, we focus on individuals whose age is below the country-specific mandatory retirement age, who we can observe in at least two consecutive waves[3] and who were either self-employed or paid employees in their first appearance. All these restrictions leave us with a total of 5,314 observations (5,204 individuals).

4.4.1 Measures and Variables

Our dependent variable is *early retirement*, and it indicates whether an individual is an early retiree or a non-retiree in the current time period. In the SHARE dataset, individuals self-report their occupational status by answering the question "*In general, which of the following best describes your current employment situation?*". The respondents must choose between (i) retired, (ii) employed or self-employed, (iii) unemployed, (iv) permanently sick or disabled, (v) homemaker, and (vi)

[2] See section 4.5.2 for further details on such robustness tests.

[3] Out of the total number of individuals, 97.94% appeared in two consecutive waves, while only 2.06% appeared in more than two consecutive waves.

other. We code individuals as early retirees when they answer "retired" and their age is below the country-specific mandatory retirement age.

Individuals who claim to be employed or self-employed are further asked the question "*In your main job, are you an employee, a civil servant, or a self-employed?*". We utilize the participants' answer to this question to precisely identify their occupational status, thus distinguishing between employees and self-employed workers.[4]

In order to measure well-being, we use two alternative proxies that have been widely used in the literature. Our first measure is *job satisfaction*, which is commonly considered an important component of overall well-being (Andersson, 2008; Binder & Coad, 2016; Böckerman & Ilmakunnas, 2012) and has been shown to be highly correlated with happiness (Blanchflower & Oswald, 1998; Seligman, 2002). Job satisfaction is measured as the extent to which participants agree to the item "*All things considered I am satisfied with my job*". The answer to this question is coded as a 4-point *Likert* scale ranging from "*strongly disagree*" (1) to "*strongly agree*" (4).

In addition to job satisfaction, we use *life satisfaction* as a proxy of well-being, following past studies (e.g. Binder and Coad, 2013, 2016; Johansson Sevä et al., 2016; Sim et al., 2011; Sohier et al., 2021). Life satisfaction has been established as a valid proxy for subjective well-being (Binder & Coad, 2016; Diener et al., 1999; Naudé et al., 2014; Sim et al., 2011), and although it is associated with job satisfaction (Seligman, 2002), these measures can be interpreted as complementary, as they encompass different aspects of an individual's well-being. SHARE includes the question "*How satisfied are you with your life?*", with the possible answers ranging from completely dissatisfied (1) to completely satisfied (4). Hence, we utilize the answers to that question to account for individuals' life satisfaction.

Beyond these variables of interest to our study, we further incorporate a wide range of control variables in our analysis. In terms of demographic characteristics, we include individuals' age and gender, whether or not they are foreigners, married, have children and grandchildren, provide help to other people (including family members, friends, and neighbors), their self-perceived mental and physical health status,[5] their education level, information on household financial situ-

[4] We do not include civil servants in our analysis, as they may have different motivations and be subject to special regulations in relation to early retirement.

[5] To measure mental health, we employ a dummy variable based on *EURO-D*, as provided by SHARE. The *EURO-D* variable lists 12 different symptoms of mental illness. When individuals report having 4 or more of these symptoms, they are classified as being depressed (Mehrbrodt et al., 2017). Hence, our measure of mental health takes value 1 when *EURO-D* is 4 or higher, and 0 otherwise. Our measure of self-perceived physical health is based on the SD-36 questionnaire (Mehrbrodt et al., 2017; Ware & Gandek, 1998) ranging from excellent (1) to poor (5).

ation and household savings for long-term investments, and country dummies. As for employment characteristics, we account for the respondents' number of working hours, prospects for job advancement, job security, whether they are entitled to pension benefits, as well as industry dummies, and whether they had early retirement intentions. Finally, we include wave and country dummies to capture variations at the macroeconomic level.

4.4.2 Descriptive Statistics

Table B1 exhibits descriptive statistics for the full sample, as well as for the groups of early retired and non-retired workers separately. Out of the total number of individuals in our sample, we observe 272 (5.12%) early retirees and 5,042 (94.88%) non-retirees. The share of non-retirees who were previously self-employed is 18%, whereas among early retirees it is just 9% (see table C1 in the Appendix for descriptive statistics by self-employment status). On average, satisfaction levels with the previous job appear to be higher among non-retired workers (3.41) than among those who retired early (3.28). Yet, there appears to be no difference in terms of life satisfaction in the previous period between non- and early retirees.

Regarding the demographic characteristics of the individuals in our sample, the average age of those who retire early is roughly 60 years old, whereas among non-retirees it is slightly below 57. The shares of women and foreigners are larger among non-retirees (49% and 9%, respectively) than among early retired individuals (42% and 7%). Early retired workers are married and have children and grandchildren more often than non-retirees. Moreover, early retirees tend to have individuals who need their help more often than non-retirees. This may suggest that early retirees have higher pressure from family members or other relatives in terms of caring obligations as compared to non-retirees. We also observe that the share of non-retirees who report a bad self-perceived mental health is higher than that of early retirees, but the latter score higher in our measure of poor physical health than the former. In terms of academic background, non-retirees seem to be more educated than early retired workers. Additionally, around 83% of early retired workers report a good household financial situation (measured as the ability of the household to make ends meet) while this figure is only 74% among non-retired workers. Yet, the latter seem to have higher household savings than the former.

Differences between non- and early retirees also exist as regards employment characteristics in the previous year. Early retired individuals worked fewer hours per week (36.27 compared to 37.55)

in the previous year, and they report having good prospects for job advancement less often (28% compared to 39%). However, the share of early retirees who report having good job security in the previous year is 83%, which is slightly higher than among non-retired workers (79%). Importantly, they differ substantially in terms of their access to pension benefits. While 85% of non-retirees are entitled to pension benefits, this figure is only 46% for early retirees. Cuts in the amount of pension benefits associated to early retirement are common in several countries (Blondal & Scarpetta, 1997), and this may prevent those workers who are entitled to it from retiring before the mandatory age. Differences are also found in relation to the industries where they worked in the previous year. Most notably, non-retirees were more represented in wholesale and retail trade, health and social work, and other social and personal services, whereas early retired were more prominent in construction, financial intermediation, and, especially, manufacturing.

In sum, there are numerous differences in terms of observable characteristics between individuals who retire early and those who do not. This highlights the relevance of accounting for a wide range of control variables in regression methods aiming at isolating the effects of previous occupational status as well as well-being levels (in terms of job and life satisfaction) on the probability of early retirement. Next, we present and discuss our results.

4.5 Results

4.5.1 Main Results

Results from the analysis of the probability of early retirement are presented in table B2. The table contains three different specifications (models I, II and III), each of them structured in two different columns. The first column of each model shows marginal effects—obtained from *logit* regressions—of the independent and control variables, while the second column displays the associated z-statistic. The predicted probability of early retirement estimated in each model is showed at the bottom of the table. All models include controls for demographic and employment characteristics, as well as industry, country and wave dummies.

Model I in table B2 shows the relationship between self-employment status in the previous wave and the probability of early retirement in the current wave. Compared to those who were paid employees the period before, the probability of retiring early among those who were self-employed

is 5.1 percent points smaller. This result is statistically significant at the 99% confidence level.[6] This result is supportive of previous studies. Self-employed workers have been found to retire later than the average worker (Axelrad & Mcnamara, 2018; Blöndal & Scarpetta, 1999; Kelley et al., 2014), and to be more likely to engage in partial retirement strategies (Ekerdt et al., 1996; Morris et al., 2020). Moreover, the literature provides evidence that early retirement is rare among the self-employed. For example, in a sample of Swiss workers, Dorn and Sousa-Poza (2005) found that only 2% of early retirees had been self-employed as their last occupation, and only around 18% of small business owners in the study performed by Morris et al. (2020) planned to pursue early retirement.

Results concerning the relationship between job satisfaction and the probability of early retirement are presented in model II. As expected, the relationship between job satisfaction and early retirement is negative. Specifically, an increase of 1 point in a 4-point liker scale of job satisfaction leads to a decrease of 1.1 percentage points in the probability of early retirement. Similar conclusions have been found in some past studies. For instance, lower levels of job satisfaction were associated to a higher likelihood of early retirement among British civil servants (Mein et al., 2000), and general practitioners (Sibbald et al., 2003). Similarly, individuals with higher levels of job satisfaction were less likely to retire early in a sample of high-school graduates from the Wisconsin Longitudinal Studies (Kubicek et al., 2010). In Finland, Kautonen et al. (2012) found that job satisfaction was positively related to delayed retirement, and (Böckerman & Ilmakunnas, 2020) reached similar results in terms of the intention and the decision to retire early when combining survey and panel register data. Similarly, Kalokerinos et al. (2015) gathered survey data of over 600 older employees at a large Australian organization and found that job satisfaction was negatively related to interest in phased retirement. In addition, in meta-analysis studies of early retirement antecedents, Topa et al. (2018), Topa et al. (2009) found negative relationships between job satisfaction and early retirement.

The third specification in table B2 (model III) suggests that life satisfaction is not directly associated with the probability that individuals engage in early retirement, conditioned on demographic and employment-related characteristics, as well as controlling for the individuals' previous self-employment status. Not much evidence has been documented in terms of the effect of life satisfaction on early retirement, with the work by Von Bonsdorff et al. (2010) in Finland being a

[6] The predicted probability of early retirement obtained from our estimation for the case of paid employees was 5.93%, whereas it was only 2.09% for the self-employed.

notable exception. Our results are in line with theirs.

In sum, results in table B2 support our first hypothesis, i.e. self-employment is negatively associated with the probability of early retirement. In all models, control variables remain stable and work as expected based on past studies. For example, we find a positive relationship between age and the probability of early retirement, which is in line with previous works by Gustman and Steinmeier (1986, 2000), among others. Moreover, having grandchildren (Gerke & Lauridsen, 2013) and good household financial situation (De Wind et al., 2014; Forster-Holt, 2013; Van Dam et al., 2009) are positively related to early retirement, whereas having tertiary education (Blöndal & Scarpetta, 1999; G. G. Fisher et al., 2016) and good prospects of job advancement (Damman et al., 2013) are negatively associated. Interestingly, although having a poor physical health status is positively related to early retirement in the next period, the relationship for the case of poor mental health is the opposite. This may suggest that individuals with poor mental health might seek refuge in their daily routine, or that they simply foresee a loss of overall well-being after retirement. This could be particularly true if the source of their mental distress comes from their personal rather than professional life. In this sense, research shows that retirees are more likely to suffer from poor mental well-being than those who are still working (Bossé et al., 1987), which probably has to do with a loss of financial stability, purpose and social activity (Moen, 1996). In addition, recent studies suggest that work can help older individuals to have a more active aging (World Health Organization, 2015). In any case, this goes beyond the scope of our analysis.

4.5.2 Robustness Tests

Although results in table B2 come from regression models in which information from previous periods is utilized to explain the current likelihood of early retirement, potential endogeneity concerns might still be present. In particular, the relationship between well-being and the probability of early retirement might be susceptible of reverse causality if the decision to retire in the next period is taken during the current one. Retirement planning is a long, complex and serious process (Benítez-Silva & Dwyer, 2005; Damman et al., 2011), which for the case of entrepreneurs also entails developing an exit strategy (DeTienne, 2010; DeTienne & Cardon, 2012). Given that this process likely happens during the individuals' last years in the labor market, their well-being—measured while still in the labor market—might be reflecting the effect of the plans to retire in the near future.

In order to alleviate such reverse causality concerns, we run additional tests in which we incorporate a variable capturing early retirement intentions into our models. Intentions of early retirement is a widely accepted predictor of the actual decision to retire early (e.g. Benítez-Silva and Dwyer, 2005; Damman et al., 2011; Morris et al., 2020). The SHARE survey includes the question "*Thinking about your present job, would you like to retire as early as you can from this job?*", which provides information about retirement intentions of individuals who are still active in the labor market. Descriptive statistics in table B1 hint that the decision and the intention to retire early appear to be rather correlated, as 65% of early retired workers were looking for early retirement in the previous year, compared to only 41% among those who are not retired. We thus incorporate that variable in our estimations to account for the potential influence of retirement intentions.

Results of these robustness tests are presented in table B3. Results indicate that having intentions to retire as soon as possible increases the probability of early retirement in 3.5 to 3.8 percentage points depending on the specification, which supports results of other studies (e.g. Riedel et al., 2015). Self-employment is still associated with a significantly smaller likelihood of engaging in early retirement, thus validating our first hypothesis. However, we observe that early retirement intentions absorb the significance of job satisfaction. Hence, we can conclude that our data supports the notion that self-employed workers are less likely to retire early even when controlling for early retirement intentions, but also that the significant result that we obtained in table B2 for job satisfaction was likely due to its relation with such intentions.

4.5.3 The Moderating Role of Well-Being

While results so far suggest that self-employed workers are consistently less likely to engage in early retirement, it is possible that the role of well-being is different for self-employed workers and wave employees, as theorized in hypothesis 2. In order to test that hypothesis, we add interaction terms in our models as in equation (2). Tables C2 and C3 report the estimates of the probability of early retirement when adding interaction terms between self-employment status and the different measures of well-being, while excluding and including early retirement intentions, respectively. In both tables, we find differential effects of job satisfaction for self-employed and paid employees on the probability of early retirement. Notably, the direct effect of job satisfaction regains its significance when including the interaction term, even in the presence of a control for

early retirement intentions. Yet, the interaction term of life satisfaction and self-employment status is not significant in either table.

Results are best appreciated in figures 4.1 and 4.2, which plot the predicted probability of early retirement for paid employees and self-employed workers for each level of job and life satisfaction. As before, the difference between figures 4.1 and 4.2 is the exclusion and inclusion, respectively, of early retirement intentions in the estimations. Consistent with the strong negative coefficient of self-employment in tables C2 and C3, we observe that the probability of early retirement is always significantly smaller for self-employed workers compared to paid employees across all graphs.

Focusing on the results for job satisfaction, we observe that the probability of early retirement decreases with higher levels of job satisfaction for the case of paid employees, while the trend appears to go slightly upwards for self-employed workers. Importantly, the upward trend of self-employment is not significantly different from zero, while the trend for paid employees is indeed significantly negative (p-value 0.08 in figure 4.2). Thus, it is the combination of both these converging trends what drives the significant result of the interaction term. That is, the gap in the likelihood of early retirement between self-employed and paid employees is significantly reduced as job satisfaction increases. For instance, when controlling for early retirement intentions (figure 4.2), the predicted probability of early retirement at the lowest level of job satisfaction is 8.13% for paid employees but only 0.88 for self-employed workers, meaning employees are roughly 9 times as likely as self-employed to retire early when job satisfaction is very low. Yet, when job satisfaction is the highest possible, the predicted probabilities are 5.31% and 2.74% respectively, making employees only twice as likely as self-employed to engage in early retirement. In contrast, when looking at life satisfaction, we find that the trends of self-employed and paid employees are parallel, thus driving a non-significant interaction term.

Therefore, we find partial support for hypothesis 2, as only work-related well-being appears to affect the likelihood of early retirement of self-employed workers and paid employees differently. Nevertheless, the non-significant result of life satisfaction provides an interesting picture. On the one hand, life satisfaction encompasses more aspects beyond job satisfaction, and self-employed workers and paid employees may be equally sensitive to those other aspects. On the other hand, this result reinforces the idea that self-employed workers enjoy a comparatively larger power to make changes in their jobs. As explained in section 4.2, self-employed workers have increased levels of autonomy and flexibility, which may allow them to improve their well-being at work to

a certain extent. For example, in situations of low job satisfaction, self-employed workers may decide to modify their time schedules, or even change their work environment in terms of both material and human resources. Thus, self-employed workers have a variety of alternatives at their disposal to improve their well-being without resourcing to early retirement options. Alternatively, the fact that business owners may feel identified with and have emotional attachment to their firms, and usually have to deal with more complex retirement plans, implies that retirement is a less easy option than for paid employees, which in turn hinders their intention to retire even if job satisfaction is very low.

4.6 Conclusion

The increase in longevity worldwide has led to a host of policies aimed at lengthening working life with the aim of maintaining positive national pension systems (OECD, 2006). Designing effective measures to discourage early retirement is not trivial, as there is a large number of factors that affect the retirement decision (Schalk et al., 2010; Topa et al., 2018; Wang & Shultz, 2010). Moreover, the retirement patterns of workers may be different based on their type of occupation, particularly when comparing self-employed workers and paid employees (Morris et al., 2020). This paper directly compares the likelihood of *early retirement* of self-employed workers to that of paid employees while simultaneously considering the moderating role of *well-being*, which has been identified as a relevant factor on the retirement of workers (E. M. M. Davies et al., 2017; Mein et al., 2000; Sohier et al., 2021; Wang, 2007).

Although the retirement behavior of the self-employed has been investigated in the past (e.g. Axelrad and Mcnamara, 2018; Chevalier et al., 2018; S. C. Parker and Rougier, 2007), to the best of our knowledge, a direct comparison between self-employed workers and paid employees in terms of their probability of engaging in early retirement has not been established yet. We argue that self-employed workers are less likely to retire early due to several reasons. First, the self-employed workers are more likely to report a feeling of procedural utility (Benz & Frey, 2004, 2008a, 2008b)—meaning that they enjoy what they do—, resulting in higher levels of job satisfaction compared to paid employees (Benz & Frey, 2008a; Binder & Coad, 2013; Blanchflower, 2004; Kautonen et al., 2017). This is related to the nonpecuniary benefits of being your own boss (e.g. Blanchflower and Oswald, 1998; Hamilton, 2000; Hundley, 2001)—such as increased levels of *autonomy*, *job*

control, and *flexibility*—, which should grant them more freedom to decide when and how to retire (Chevalier et al., 2013). Moreover, the self-employed workers tend to be driven by an entrepreneurial passion (Cardon et al., 2009) and to develop a strong sense of identity, attachment and commitment to their work (Adams & Beehr, 1998; Hoang & Gimeno, 2010; Wanberg et al., 1999).

In addition, we argue that such characteristics can also outweigh the role of well-being in the decision to retire early. While the literature firmly establishes that well-being—particularly well-being at work—is negatively related to early retirement (e.g. Mein et al., 2000), little is known as to whether its effects are different for different types of individuals, with only a few studies focused on finding such differential effects of well-being (e.g. E. M. M. Davies et al., 2017). In this paper, we posit that self-employed workers and paid employees exhibit a different degree of sensitivity to well-being when considering early retirement. We theorize that self-employed workers are less sensitive to well-being when evaluating the decision to retire early or continue working precisely because of their increased job control, and sense of identity, attachment and commitment. Thus, in situations of low well-being at work, self-employed workers close to retirement age may have more room to react than paid employees of similar age, being able to make changes to help improve such well-being rather than opting for exiting the labor market. Moreover, even when such power to make changes is limited, their personal attachment and their sense of identity towards their firm might prevent them from retiring even in cases of low well-being. In addition to that, the more complex retirement procedure for the self-employed (Morris et al., 2020) may represent an additional barrier to retirement.

We make use of the SHARE dataset to identify self-employed workers and paid employees close to the retirement age of their specific countries and we analyze their likelihood of engaging in early retirement. In addition, we test for differential moderating effects of well-being in the relationship between type of occupation and early retirement. Our results point to an interesting picture. First, we find support for the hypothesis that the self-employed workers are less likely to engage in early retirement. Second, our results suggest that the self-employed are indeed less sensitive to well-being when considering early retirement, compared to paid employees. In particular, while the negative relationship of well-being and early retirement is present for paid employees, we find no significant effect of well-being on the probability of early retirement for the case of self-employed workers. However, this is only observable when measuring well-being as job satisfaction, as we did not find

a differential effect when using life satisfaction as a proxy of well-being. This reinforces the idea that the power to make changes at work and the higher attachment to work of the self-employed may be behind these results.

All in all, the findings in this paper may be of interest for both policy makers and scholars. In particular, our results may be useful for the design of effective social and economic measures focused on lengthening working lives. In addition, we contribute to the literature in, at least, three ways. First, we make a direct test of differences between paid employees and self-employed workers in terms of their probability of engaging in early retirement. Second, this work provides the first empirical evidence of differential effects of well-being on early retirement behavior between paid employees and self-employed workers. Finally, our results suggest that such differential effects mostly come from work well-being rather than overall well-being, which further emphasizes the necessity of distinguishing between different components of well-being.

Notwithstanding the above contributions, this paper is not exempt of limitations. First, although our dataset allows us to control for a wide set of individual-level characteristics, including relevant aspects that are usually unobservable and that can explain the decision to retire early—such as early retirement intentions—we cannot rule out that other unobserved factors may influence to a certain extent our results. Second, our results might be hiding a more detailed picture due to the fact that we cannot distinguish between incorporated and unincorporated entrepreneurs in our sample, which have been shown to have different characteristics, goals, and motivations (Levine & Rubinstein, 2017), and who might also differ in terms of their retirement patterns. Thus, we suggest that our results are taken with a grain of salt and we avoid making causal statements. Finally, we encourage scholars to further deep into the potential differential effects of well-being on retirement decisions across different dimensions.

Table B1: Descriptive statistics.

	Full sample		Non-retirees		Early retirees	
Number of observations	5,614		5,042		272	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Dependent variable						
Early retirement [a]	0.05	0.22	0.00	0.00	1.00	0.00
Main independent variables						
Self-employed $_{t-1}$ [a]	0.17	0.38	0.18	0.38	0.09	0.29
Job satisfaction $_{t-1}$	3.40	0.66	3.41	0.65	3.28	0.70
Life satisfaction $_{t-1}$	3.35	0.58	3.34	0.58	3.34	0.55
Demographic characteristics						
Age	57.0	3.19	56.86	3.11	60.33	2.78
Female [a]	0.49	0.50	0.49	0.50	0.42	0.49
Foreigner [a]	0.10	0.29	0.09	0.29	0.07	0.25
Married $_{t-1}$ [a]	0.70	0.46	0.70	0.46	0.77	0.42
Children $_{t-1}$ [a]	0.91	0.28	0.91	0.28	0.94	0.24
Grandchildren $_{t-1}$ [a]	0.38	0.49	0.37	0.48	0.62	0.49
Help given to others $_{t-1}$ [a]	0.43	0.49	0.43	0.49	0.55	0.50
Poor mental health $_{t-1}$ [a]	0.19	0.39	0.19	0.40	0.13	0.34
Poor physical health $_{t-1}$	2.46	0.98	2.44	3.11	2.68	1.01
Education $_{t-1}$						
Basic [a]	0.27	0.45	0.27	0.44	0.37	0.48
Secondary [a]	0.42	0.49	0.43	0.49	0.41	0.49
Tertiary [a]	0.30	0.46	0.31	0.46	0.22	0.42
Good household financial situation $_{t-1}$ [a]	0.75	0.43	0.74	0.44	0.83	0.38
Savings for long-term investments $_{t-1}$ (logs)	5.79	5.14	5.80	5.15	5.60	5.02
Employment characteristics						
Working hours $_{t-1}$	37.49	14.26	37.55	14.25	36.27	14.31
Prospects for job advancement $_{t-1}$ [a]	0.38	0.49	0.39	0.49	0.28	0.45
Job security $_{t-1}$ [a]	0.79	0.41	0.79	0.41	0.83	0.38
Entitled to pension benefits $_{t-1}$ [a]	0.83	0.38	0.85	0.36	0.46	0.50
Industry $_{t-1}$						
Agriculture, hunting, forestry and fishing [a]	0.03	0.16	0.03	0.16	0.04	0.20
Mining and quarrying [a]	0.01	0.08	0.01	0.08	0.00	0.06
Manufacturing [a]	0.16	0.36	0.15	0.36	0.26	0.44
Electricity, gas and water supply [a]	0.01	0.12	0.01	0.11	0.02	0.15
Construction [a]	0.07	0.26	0.07	0.26	0.10	0.30
Wholesale and retail trade [a]	0.11	0.32	0.12	0.32	0.07	0.26
Hotels and restaurants [a]	0.03	0.18	0.03	0.18	0.01	0.13
Transport, storage and communication [a]	0.06	0.23	0.06	0.23	0.07	0.25
Financial intermediation [a]	0.04	0.19	0.04	0.19	0.06	0.24
Real estate, renting and business activities [a]	0.06	0.24	0.06	0.24	0.05	0.22
Public administration and defense [a]	0.05	0.23	0.05	0.23	0.05	0.21
Education [a]	0.07	0.26	0.07	0.26	0.07	0.26
Health and social work [a]	0.18	0.39	0.19	0.39	0.13	0.33
Other social and personal services [a]	0.11	0.31	0.11	0.31	0.06	0.24
Early retirement intentions $_{t-1}$ [a]	0.44	0.50	0.41	0.49	0.65	0.48

Table 4.1 continued: Descriptive statistics.

	Full sample		Non-retirees		Early retirees	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Country						
Austria [a]	0.10	0.30	0.09	0.29	0.19	0.39
Belgium [a]	0.05	0.23	0.05	0.22	0.07	0.25
Denmark [a]	0.13	0.33	0.13	0.33	0.11	0.31
France [a]	0.08	0.28	0.08	0.28	0.08	0.28
Germany [a]	0.06	0.24	0.06	0.24	0.06	0.24
Greece [a]	0.06	0.23	0.05	0.22	0.10	0.29
Italy [a]	0.10	0.30	0.11	0.31	0.05	0.22
Netherlands [a]	0.10	0.30	0.10	0.30	0.10	0.28
Spain [a]	0.05	0.21	0.05	0.22	0.03	0.17
Sweden [a]	0.13	0.33	0.13	0.34	0.06	0.24
Switzerland [a]	0.14	0.35	0.14	0.35	0.17	0.37

Notes: [a] Dummy variable.

Table B2: Estimates of the probability of early retirement.

	Model I			Model II			Model III		
Dependent variable: Prob.(early retirement)	*dy/dx*	*z*		*dy/dx*	*z*		*dy/dx*	*z*	
Main independent variables									
Self-employed $_{t-1}$	-0.051	-5.44	***	-0.051	-5.40	***	-0.045	-4.75	***
Job satisfaction $_{t-1}$				-0.011	-2.70	***			
Life satisfaction $_{t-1}$							3e-4	0.06	
Demographic characteristics									
Age	0.015	13.20	***	0.015	13.26	***	0.014	11.64	***
Female	0.013	1.95	*	0.013	1.98	**	0.018	2.61	***
Foreigner	-0.001	-0.12		-0.001	-0.14		-0.007	-0.59	
Married $_{t-1}$	-0.007	-1.06		0.007	0.95		0.009	1.21	
Children $_{t-1}$	-1e-4	-0.01		1e-4	0.01		0.004	0.38	
Grandchildren $_{t-1}$	0.018	3.35	***	0.018	3.44	***	0.012	2.12	**
Help given to others $_{t-1}$	0.012	2.19	**	0.011	2.09	**	0.011	1.83	*
Poor mental health $_{t-1}$	-0.016	-2.01	**	-0.018	-2.19	**	-0.012	-1.50	
Poor physical health $_{t-1}$	0.007	2.32	**	0.006	2.00	**	0.009	2.92	***
Education $_{t-1}$									
Basic (*ref.*)									
Secondary	-0.005	-0.76		-0.004	-0.63		-0.007	-0.90	
Tertiary	-0.018	-2.44	**	-0.017	-2.30	**	-0.015	-1.85	*
Good household financial situation $_{t-1}$	0.025	3.39	***	0.026	3.50	***	0.018	2.34	**
Household savings $_{t-1}$ (logs)	0.001	1.16		0.001	1.16		3e-4	0.54	
Employment characteristics									
Working hours $_{t-1}$	-1e-4	-0.46		-1e-4	-0.35		-2e-5	0.13	
Prospects for job advancement $_{t-1}$	-0.015	-2.48	**	-0.013	-2.15	**	-0.015	-2.38	**
Job security $_{t-1}$	0.009	1.25		0.011	1.56		0.010	1.30	
Entitled to pension benefits $_{t-1}$	-0.081	-14.63	***	-0.081	-14.67	***	-0.073	-12.19	***
Industry dummies		Yes			Yes			Yes	
Country dummies		Yes			Yes			Yes	
Wave dummies		Yes			Yes			Yes	
Number of observations		5,314			5,312			4,474	
Predicted probability		0.051			0.051			0.048	

Notes: Marginal effects from logit regressions. *** denotes significance at 1% level; ** denotes significance at 5% level; * denotes significance at 10% level.

Table B3: Estimates of the probability of early retirement. Robustness test: early retirement intentions.

	Model I			Model II			Model III		
Dependent variable: Prob.(early retirement)	*dy/dx*	*z*		*dy/dx*	*z*		*dy/dx*	*z*	
Self-employed $_{t-1}$	-0.047	-5.03	***	-0.047	-5.02	***	-0.041	-4.32	***
Job satisfaction $_{t-1}$				-0.005	-1.30	***			
Life satisfaction $_{t-1}$							0.003	0.62	
Early retirement intentions $_{t-1}$	0.037	2.06	***	0.035	6.04	***	0.038	5.88	***
Demographic controls		Yes			Yes			Yes	
Employment controls		Yes			Yes			Yes	
Industry dummies		Yes			Yes			Yes	
Country dummies		Yes			Yes			Yes	
Wave dummies		Yes			Yes			Yes	
Number of observations		5,293			5,291			4,467	
Predicted probability		0.051			0.051			0.048	

Notes: Marginal effects from logit regressions. *** denotes significance at 1% level; ** denotes significance at 5% level; * denotes significance at 10% level.

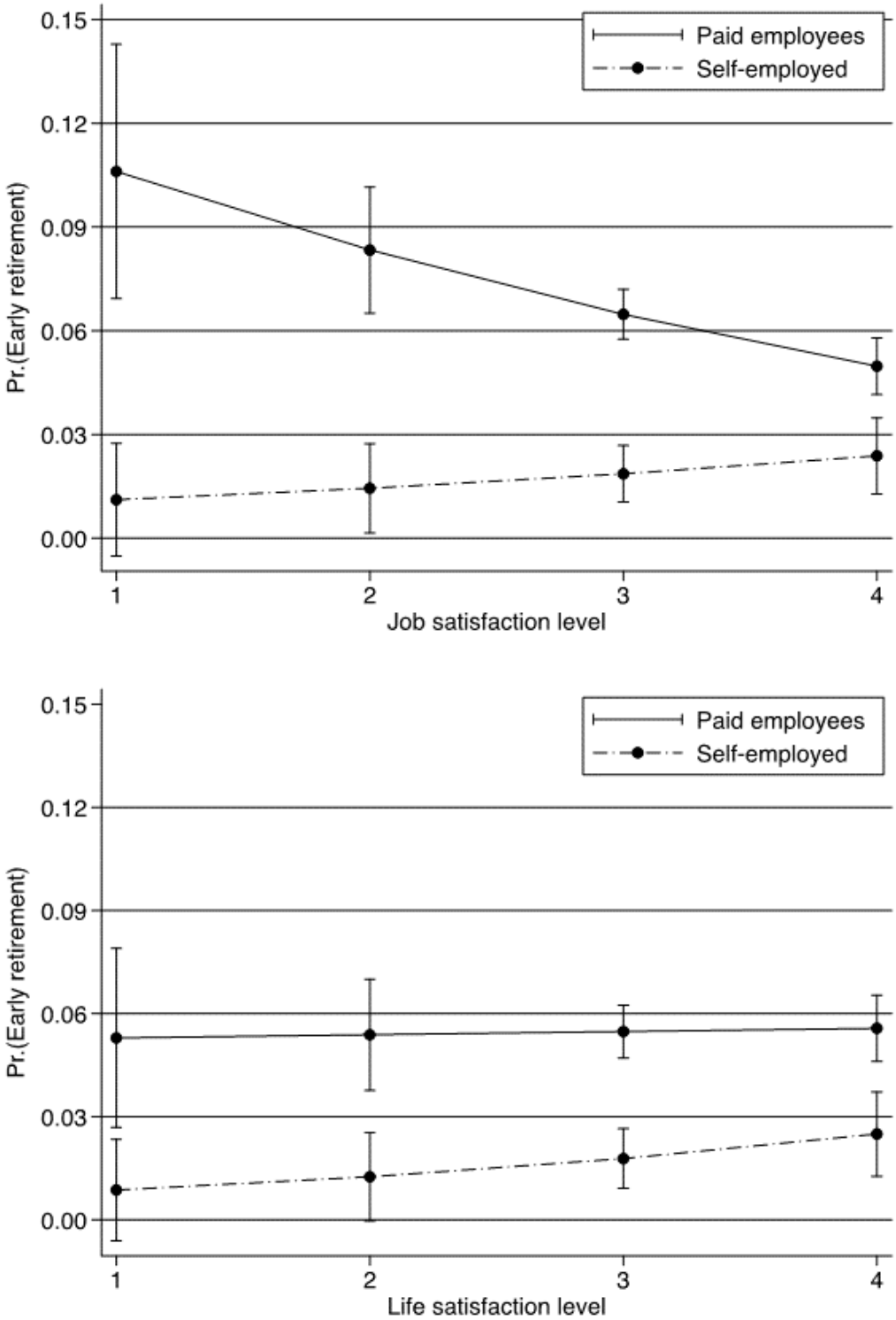


Figure 4.1: Predicted probability of early retirement Interaction effects.

Note: Predicted probabilities obtained from logit regressions. Controls included as in table B2.

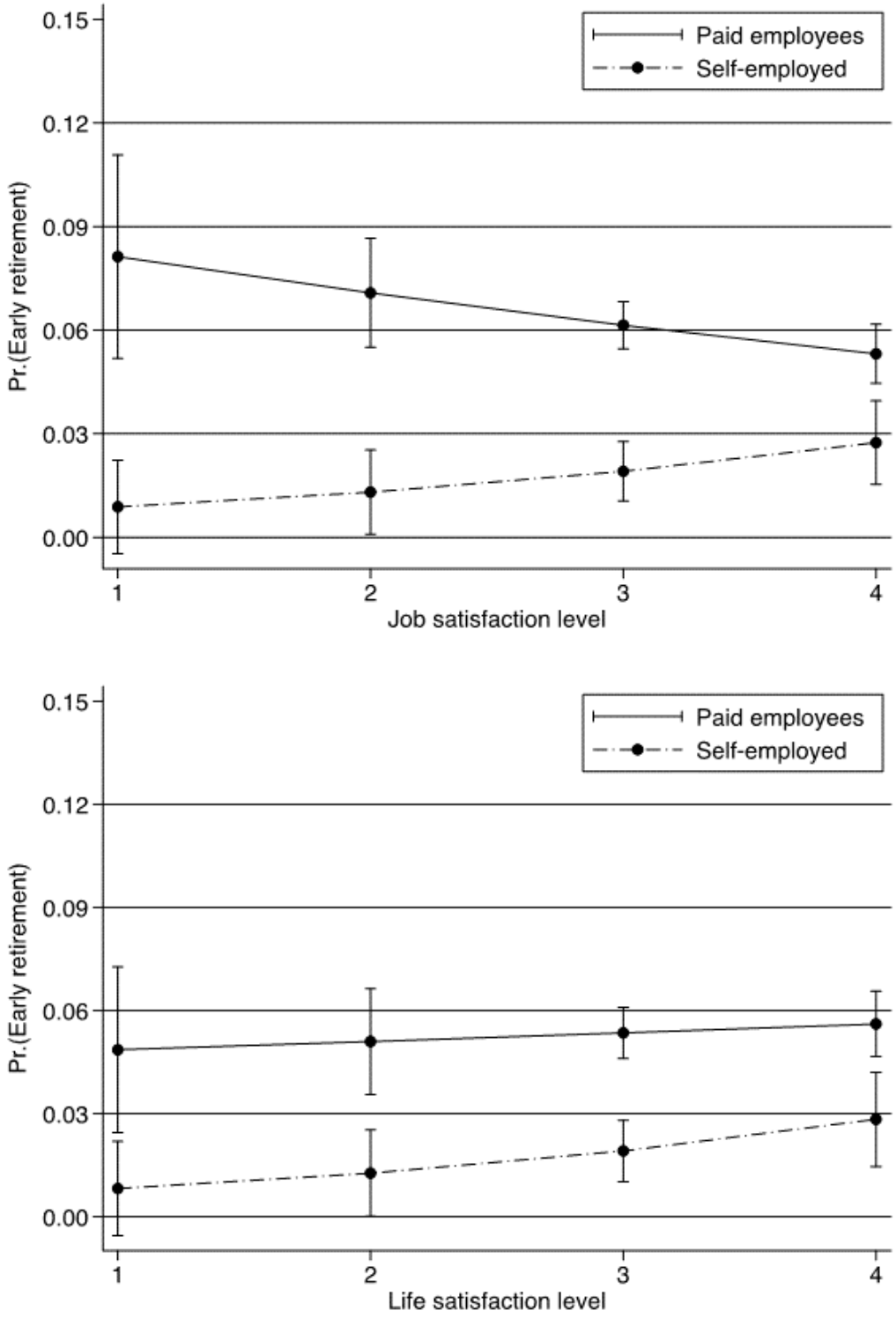


Figure 4.2: Interaction effects. Robustness tests: early retirement intentions.

Note: Predicted probabilities obtained from logit regressions. Controls included as in table B3.

Appendix C

Table C1: Descriptive statistics by self-employment status.

	Former employees		Former self-employed	
Number of observations	4,396		918	
	Mean	S.D.	Mean	S.D.
Dependent variable				
Early retirement [a]	0.06	0.23	0.03	0.16
Main independent variables				
Self-employed $_{t-1}$ [a]	0.00	0.00	1.00	0.00
Job satisfaction $_{t-1}$	3.39	0.66	3.45	0.66
Life satisfaction $_{t-1}$	3.34	0.57	3.37	0.61
Demographic characteristics				
Age	57.01	3.17	57.21	3.26
Female [a]	0.51	0.50	0.36	0.48
Foreigner [a]	0.10	0.29	0.08	0.27
Married $_{t-1}$ [a]	0.70	0.46	0.71	0.45
Children $_{t-1}$ [a]	0.91	0.28	0.91	0.29
Grandchildren $_{t-1}$ [a]	0.39	0.49	0.32	0.47
Help given to others $_{t-1}$ [a]	0.44	0.50	0.37	0.48
Poor mental health $_{t-1}$ [a]	0.19	0.39	0.18	0.39
Poor physical health $_{t-1}$	2.46	0.98	2.44	0.95
Education $_{t-1}$				
Basic [a]	0.27	0.45	0.28	0.45
Secondary [a]	0.43	0.50	0.38	0.49
Tertiary [a]	0.29	0.46	0.34	0.47
Good household financial situation $_{t-1}$ [a]	0.77	0.42	0.67	0.47
Savings for long-term investments $_{t-1}$ (logs)	5.98	5.08	4.88	5.35
Employment characteristics				
Working hours $_{t-1}$	36.06	12.56	44.27	19.13
Prospects for job advancement $_{t-1}$ [a]	0.35	0.48	0.55	0.50
Job security $_{t-1}$ [a]	0.79	0.41	0.78	0.42
Entitled to pension benefits $_{t-1}$ [a]	0.85	0.36	0.73	0.44
Industry $_{t-1}$				
Agriculture, hunting, forestry and fishing [a]	0.01	0.11	0.10	0.29
Mining and quarrying [a]	0.01	0.08	0.01	0.07
Manufacturing [a]	0.17	0.37	0.10	0.30
Electricity, gas and water supply [a]	0.02	0.13	0.00	0.06
Construction [a]	0.07	0.25	0.10	0.30
Wholesale and retail trade [a]	0.09	0.29	0.23	0.42
Hotels and restaurants [a]	0.03	0.17	0.05	0.22
Transport, storage and communication [a]	0.06	0.24	0.05	0.22
Financial intermediation [a]	0.04	0.20	0.02	0.15
Real estate, renting and business activities [a]	0.06	0.23	0.09	0.29
Public administration and defense [a]	0.07	0.25	0.00	0.07
Education [a]	0.08	0.28	0.03	0.16
Health and social work [a]	0.20	0.40	0.10	0.29
Other social and personal services [a]	0.10	0.30	0.13	0.34
Early retirement intentions $_{t-1}$ [a]	0.45	0.50	0.36	0.48

Table C.1 continued: Descriptive statistics by self-employment status.

	Former employees		Former self-employed	
	Mean	S.D.	Mean	S.D.
Country				
Austria [a]	0.09	0.29	0.13	0.34
Belgium [a]	0.06	0.24	0.03	0.17
Denmark [a]	0.15	0.36	0.01	0.09
France [a]	0.09	0.29	0.06	0.24
Germany [a]	0.05	0.22	0.11	0.31
Greece [a]	0.05	0.21	0.09	0.29
Italy [a]	0.11	0.31	0.09	0.28
Netherlands [a]	0.11	0.31	0.06	0.24
Spain [a]	0.03	0.16	0.16	0.36
Sweden [a]	0.13	0.33	0.13	0.34
Switzerland [a]	0.15	0.35	0.13	0.33

Notes: [a] Dummy variable.

Table C2: Estimates of the probability of early retirement. The role of well-being.

	Model I			Model II		
Dependent variable: Prob.(early retirement)	Coef.	*z*		Coef.	*z*	
Self-employed $_{t-1}$	-3.917	-3.00	**	-2.817	-1.90	*
Job satisfaction $_{t-1}$	-0.398	-3.11	**			
Job satisfaction $_{t-1}$ × Self-employed $_{t-1}$	0.721	1.92	*			
Life satisfaction $_{t-1}$				0.026	0.17	
Life satisfaction $_{t-1}$ × Self-employed $_{t-1}$				0.419	1.00	
Demographic controls		Yes			Yes	
Employment controls		Yes			Yes	
Industry dummies		Yes			Yes	
Country dummies		Yes			Yes	
Wave dummies		Yes			Yes	
Number of observations		5,312			4,473	
Predicted probability		0.051			0.048	

Notes: Coefficients from logit regressions. *** denotes significance at 1% level; ** denotes significance at 5% level; * denotes significance at 10% level.

Table C3: The role of well-being. Robustness test: early retirement intentions.

	Model I			Model II		
Dependent variable: Prob.(early retirement)	Coef.	*z*		Coef.	*z*	
Self-employed $_{t-1}$	-3.851	-2.78	**	-2.878	-1.92	*
Job satisfaction $_{t-1}$	-0.224	-1.74	*			
Job satisfaction $_{t-1}$ × Self-employed $_{t-1}$	0.721	1.84	*			
Life satisfaction $_{t-1}$				0.074	0.47	
Life satisfaction $_{t-1}$ × Self-employed $_{t-1}$				0.467	1.09	
Early retirement intentions $_{t-1}$	1.034	6.03	***	1.131	5.54	***
Demographic controls		Yes			Yes	
Employment controls		Yes			Yes	
Industry dummies		Yes			Yes	
Country dummies		Yes			Yes	
Wave dummies		Yes			Yes	
Number of observations		5,312			4,473	
Predicted probability		0.051			0.048	

Notes: Coefficients from logit regressions. *** denotes significance at 1% level; ** denotes significance at 5% level; * denotes significance at 10% level.

Chapter 5

Concluding Remarks

Improving Lives - Improving Health and Well-being in Society: How Can Organizations Help? This was the theme of the *2018 Annual Meeting of the Academy of Management*, motivated by the growing concern of academics about how companies can contribute to workers' health and well-being. Indeed, work is considered by academics and international institutions as a potential source of well-being, not only through its impact on household finances, but also by allowing individuals to fulfill certain psychological needs such as social interactions, recognition, and self-realization. However, not all individuals are equally likely to successfully satisfy such needs in wage employment, as they may value certain levels of autonomy or flexibility at work that are rarely offered by employers. Similarly, because well-being encompasses is a multidimensional concept, it is possible that a paid job helps to improve some of these dimensions while also negatively affecting others.

In this scenario, this thesis posits that self-employment may affect well-being in a different way than wage employment due to its nonpecuniary benefits—such as autonomy, flexibility, and job control—and, thus, can be a more enriching work alternative for certain individuals. In fact, it may serve as an entry route to the labor market for different groups of inactive individuals and it may encourage individuals to dismiss early exit from it. Indeed, throughout its different chapters, this dissertation provides evidence that self-employment is positively associated with various aspects of well-being in a myriad of situations and highlights the embedded heterogeneity in this relationship by analyzing multiple dimensions of well-being—including mental health as well as job and life satisfaction—in a variety of contexts and for several types of individuals at different stages of their lives and professional careers.

Chapter 2 is the first study to show transitions from inactivity to self-employment are associated with a more positive change in well-being—measured as satisfaction with one's main activity—than transitions to wage employment or continued inactivity. Furthermore, results reinforce the importance of distinguishing between the different types of inactive individuals, as the relationship between sorting into self-employment and the change in satisfaction varies across groups. For instance, while transitions to self-employment are associated with more satisfaction than remaining inactive for the case of homemakers and retirees, students who become self-employed have no significant change in satisfaction compared to those who keep studying but are better-off than students who sort into wage employment. This heterogeneous relationship between self-employment and well-being across the various types of inactive individuals could be particularly useful in the design of specific activation policies.

In line with the idea that the relationship between self-employment and well-being may vary depending on the characteristics of the individuals, chapter 3 demonstrates that different types of self-employed workers experience dissimilar levels of mental health, which is a dimension of well-being that is causing major concerns in today's society (European Commission, 2018). Results from the third chapter indicate that, although self-employed workers as a whole tend to enjoy better mental health than wage-employees, this is driven by opportunity self-employed workers, as the mental health of necessity self-employed is not significantly different from that of wage employees. Furthermore, this chapter shows that the ability to manage their schedule, together with the higher levels of participation in the decision-making process and the increased capability to apply their own ideas at work are the most relevant nonpecuniary aspects for self-employed workers and explain why opportunity self-employed are mentally healthier. Therefore, this chapter contributes to the entrepreneurship and mental health literatures by offering new insights that may be useful for the promotion of increased mental health levels, as well as by highlighting the presence of certain nonpecuniary aspects that can alleviate part of the economic, social, and individual burden derived from a poor mental health status.

Finally, chapter 4 addresses the general concern about the aging of the population, which is jeopardizing the pension systems in numerous countries. Since most government proposals have focused on lengthening working life and discouraging early retirement, this chapter evaluates to what extent self-employment may be an occupation that fosters the voluntary delay of retirement while also considering whether well-being—measured as job and life satisfaction—plays a differen-

tial role for wage employees and self-employed workers in the decision to retire early. Results from the analysis of the probability of early retirement indicate that self-employed workers are indeed less likely than wage employees to retire early and, interestingly, that they are less sensitive to job satisfaction in their decision to retire early or continue working. The fact that self-employed are less concerned about well-being at work when evaluating early retirement suggests that they can make use of their increased autonomy at work to make changes and improve their job satisfaction rather than resorting to retirement. These results have relevant implications for policy makers interested in encouraging prolonged working lives, particularly in contexts where satisfaction levels tend to be low among older workers.

All in all, this thesis provides new insights on the relationship between self-employment and well-being and accentuates the necessity of considering the various sources of heterogeneity ingrained in both concepts. Since successful entrepreneurs play a significant role in the economy through job creation and innovation (Audretsch & Thurik, 2001), their well-being ought to be of high meaning for society and policy makers in order to understand their motivations and decisions as well as to maintain the monetary and social benefits that entrepreneurship brings to society (Stephan, 2018).

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