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Why older workers become entrepreneurs? International evidence using fuzzy set methods<sup>☆</sup>Jorge Velilla<sup>a,\*</sup>, José Alberto Molina<sup>a,b,c</sup>, Raquel Ortega<sup>a</sup><sup>a</sup> University of Zaragoza (Spain), C. Gran Vía 2, 50005 Zaragoza, Spain<sup>b</sup> BIFI, Spain<sup>c</sup> IZA, Germany

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## ABSTRACT

In this paper, we empirically analyze the individual characteristics that drive older workers to become entrepreneurs, providing evidence of the differences between developed and developing countries. While OLS models provide limited conclusions, Qualitative Comparative Analysis and fuzzy set logic, at the country level, using GEM 2014 Adult Population Survey micro-data, show the importance of the various combinations of high and/or low presence of skills, opportunities, entrepreneurial perceptions, peer effects, and satisfaction with life and income. This indicates how entrepreneurship may be a potential source of income for older workers, in a range of contexts. Further, we find that all the possible combinations of higher proportions of individuals with the latter features are necessary conditions. Our results contribute by identifying certain aspects of the entrepreneurial behavior of older workers, highlighting certain causal patterns of the complex phenomenon that is entrepreneurship.

## Introduction

Entrepreneurship is an activity traditionally associated with economic growth and development, and public policies and institutions have, consequently, devoted efforts to promote such activity (Chang and Kozul-Wright, 1994; Minniti, 2008; Shane, 2009). Furthermore, the recent economic crisis has increased the role of entrepreneurship as a driver of development and economic recovery (see, for example, Fuentelsaz et al., 2015). It is well-established in the literature that institutions and the environment play a major role in determining entrepreneurship (i.e., the institutional theory, North, 1986), and it has been recently noted that entrepreneurship exhibits hysteresis (Congregado, Golpe and Parker, 2012). However, Fuentelsaz et al. (2015) show that entrepreneurship by necessity does not benefit from the actions of institutions, even when tax rates affect the probability of being an entrepreneur (Fossen and Steiner, 2009). In this context, individual attributes may play an important role in determining what forces workers to become entrepreneurs (see Arbia et al., 2015, for the case of Italian small food business). For instance, although some

authors have found that entrepreneurship is generally associated with younger individuals (Schott and Bagger, 2004; Kelley, 2009; Wennekers et al., 2010), third-age entrepreneurship cannot be considered to be a marginal activity (Kautonen, 2008; Kautonen et al., 2011).<sup>1</sup> Further, Kautonen (2008) reveals that the entrepreneurial activity of the elder population is an under-researched area and needs to be studied more deeply, and Schott et al. (2017) claim that “people may retire from jobs as employees or as self-employed, but may continue to pursue ventures”. Thus, the present paper bridges this gap, addressing the question of what are the individual characteristics that determine entrepreneurial behavior, by necessity, of older individuals, providing empirical evidence for both developed and developing countries.

We use the Global Entrepreneurship Monitor (GEM) 2014 Global Individual database, “the world’s foremost study of entrepreneurship” (<http://www.gemconsortium.org>). GEM experts provide to the scientific community high quality data and reports in order to analyze, promote, and understand entrepreneurial activity (see Singer et al., 2015, for a recent report on GEM analyses). Regarding the methodology, because classical quantitative regression analyses may offer a

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<sup>1</sup> In this line, Block and Koellinger (2009) find that youth is associated with entrepreneurial satisfaction and, consequently, age is positively related to necessity in Germany.

limited range of results, and causal effects cannot be derived from them, we also develop a fuzzy set Qualitative Comparative Analysis (fsQCA), which is a qualitative technique designed to find causal relationships that offers a different perspective from regression analyses (Woodside, Ko and Huan, 2012; Ragin and Stand, 2014). These techniques complement classical analyses and help to find results that, otherwise, could not be captured. From the point of view of inference and economic policy, fsQCA represents a major advantage, since it allows us to analyze causality, which cannot be determined using cross-sectional quantitative models. Fuzzy set logic is an underused tool in economic and business issues, although it has recently gained in importance (see Roig-Tierno et al., 2016). In spite of that, few analyses have used this technique to study entrepreneurship (Beynon et al., 2016; Kuckertz et al., 2016; Núñez-Pomar et al., 2016; Gieure and Buendía-Martínez, 2016; Hernández-Perlines et al., 2016), with Coduras et al. (2015), Castaño et al. (2016), Devecce et al. (2016), and Velilla and Ortega (2017) being among the first authors to apply this to GEM data.

We analyze the differences between developed and developing countries, in terms of entrepreneurial behavior of third-age workers, using the following variables of the GEM data: skills to be an entrepreneur, opportunities to become an entrepreneur, peer effects, entrepreneurial perception, income satisfaction, and life satisfaction, all aggregated at the country level. We find that, while regression analyses do not yield significant results, fsQCA offers a range of causal determinants of high levels of entrepreneurship by necessity among older individuals, for both developed and developing countries. Furthermore, we find that, in both developed and developing countries, high levels of all the possible combinations of the selected features are necessarily derived from high levels of entrepreneurship.

Contributions of the present research are threefold. First, we analyze entrepreneurship among the third-age population, using fuzzy set qualitative techniques that are underused in the literature. Second, we identify certain aspects of the entrepreneurial behavior of older workers that may have gone unnoticed in classical cross-sectional models. This is important from both academic and institutional points of view because it facilitates an understanding of the complex phenomenon that is entrepreneurship (Coduras et al., 2015). Finally, fsQCA results deal with causal relationships, which is especially important in developing efficient and effective policies (Naudé, 2016). In particular, the developed countries are characterized by the role of high levels of skill, fewer opportunities, and different combinations of high and low satisfaction. On the other hand, in the developing countries, more complex patterns emerge, indicating the importance and complexity of entrepreneurship, and how in this field, one size does not fit all. This sheds light on how entrepreneurial-related factors should be considered as inter-related determinants that interact, and can consequently affect entrepreneurship in different ways.

The rest of the paper is organized as follows. Section “Theoretical background” establishes the theoretical background from the existing literature. Section “Data and variables” describes our data and the empirical specification, and Section “Empirical analysis” contains results and discussions. Finally, Section “Conclusions” sets our main conclusions.

## Theoretical background

Prior literature has found that formation, entrepreneurial, and managerial skills are an important determinant of the entrepreneurial activity of workers (Kotsova, 1997; Ramachandran and Shah, 1999; Mengistae, 2006; Minniti, 2009; Levie and Autio, 2013; Rostam-Afschar, 2014; Brixiova et al., 2015; Kyrö, 2015). We expect to find that, for the particular case of older workers, the higher the managerial skills, the more prone are they to be entrepreneurs. We must note that in the most developed countries the formal entrepreneurial education at school or University, or specific programs, are more established, making that relationship especially important.

*Hypothesis 1: Higher entrepreneurial and managerial skills are positively related to entrepreneurship of older workers.*

Several concepts of entrepreneurship have appeared in the literature, but – especially in the last decade – a classification from the perspective of different motivations for becoming an entrepreneur has generated much interest. This classification is consolidated in the work of Reynolds et al. (2003), who distinguish between opportunity-driven and necessity-driven entrepreneurs (that is, between those who take advantage of a business opportunity, and those who have no other alternative for work). We are interested in analyzing whether these two motivations are disjointed, or not, among the third-age workers in the developed and developing countries.

*Hypothesis 2: Necessity-driven third-age entrepreneurs do not consider opportunities as a motivation to be entrepreneurs.*

Peer effects are extremely important in the study of social behaviors, and some authors have found evidence for the particular case of entrepreneurial activity (Holcomb et al., 2009; Okumura and Usui, 2016; Gimenez-Nadal et al., 2016). In the same line, learning processes (e.g., ‘learning by seeing’) have been found to determine the entrepreneurial behavior of individuals (Goedhuys and Sleuwaegen, 2000; Blumberg and Pfann, 2015; Viinikainen et al., 2016). We are interested in studying whether peer effects are also present among older entrepreneurs; that is to say, older workers who need income and have helped or met other entrepreneurs may be encouraged to establish a start-up.

*Hypothesis 3: Third-age workers who need income are more prone to be entrepreneurs under the influence of peer effects.*

Entrepreneurial perception, culture, and social norms have been heavily analyzed in the entrepreneurial literature (Minniti, 2005; Terjesen and Szerb, 2008; Roskrugue et al., 2016). We claim that the effect of the social valuation of entrepreneurship (i.e., whether being an entrepreneur is seen as a desirable career) over entrepreneurial activity does not depend on age, and then third-age workers in societies where entrepreneurship is highly-valued would be more likely to be entrepreneurs.

*Hypothesis 4: In societies where entrepreneurship is more highly valued there will be higher values of entrepreneurship among the third-age population.*

The financial and, consequently, psychological status of individuals have been found to significantly determine the entrepreneurial activity of workers, with a good financial situation encouraging individuals to assume risks and become entrepreneurs, but with excessive optimism being negatively correlated with success and outcomes (Sobel, 2008; Dawson et al., 2015; Molina et al., 2016; Schott et al., 2017). We are interested in the relationship between wellbeing and entrepreneurship among older individuals. However, it is not clear whether good conditions of life may positively or negatively influence entrepreneurship, even among those workers who need income. It may be that workers with the highest levels of wellbeing find it easier to become entrepreneurs due to optimism and psychological factors. However, it may also be that workers who are not satisfied with their life or jobs find in entrepreneurship a way to change their lifestyle (Schott et al., 2017, claim that elderly entrepreneurs report substantially higher degrees of wellbeing).

*Hypothesis 5: Individuals’ wellbeing may be positive or negatively related to third age entrepreneurship.*

## Data and variables

### Data

We use the GEM Adult Population Survey data for the year 2014 to analyze the relationship between entrepreneurship by necessity among older individuals, and a series of individual attributes related to individual entrepreneurial behavior. The database is produced annually by GEM and contains information on nine groups of variables of

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