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Late-career entrepreneurship, income and quality of life

Teemu Kautonen [a,c], Ewald Kibler [a], Maria Minniti [a,b,*]

[a] Aalto University, PO Box 21230, FI-00076 Aalto, Finland
[b] Syracuse University, 721 University Avenue, Syracuse, NY 13244, USA
[c] Anglia Ruskin University, East Road, Cambridge, United Kingdom

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ABSTRACT

Late-career transitions to entrepreneurship are discussed as a promising way to address some of the problematic implications of population aging. By extending employment choice theory to simultaneously account for career stage and for non-monetary rewards from entrepreneurship, we investigate how late-career transitions from organizational employment to entrepreneurship influence the returns from the monetary (income) and non-monetary (quality of life) components of an individual's utility. Using data from the English Longitudinal Study of Ageing, our empirical analysis shows that for late-career individuals, starting a business is positively associated with change in quality of life and negatively associated with change in income.

Executive summary

The promotion of late-career entrepreneurship—that involving individuals aged 50 or over starting businesses—is advocated as part of the portfolio of policy measures to tackle the grand challenge of population aging. The principal societal benefit of late-career entrepreneurship is that it can extend aging workers' careers: research shows that self-employed individuals tend to retire later than their employed counterparts, which generates savings in public pensions and the prolonged deployment of those individuals' human capital in the economy. However, to be socially sustainable, a career extension through entrepreneurship has to be an attractive option for the aging individual. To date, we lack knowledge of what benefits switching to entrepreneurship in the late career actually deliver to individuals.

Addressing this gap, the present article examines how switching from organizational employment to entrepreneurship affects the individual's level of income and quality of life. The theoretical approach combines employment choice theory with self-determination theory. The empirical analysis utilizes five biennial waves of panel data (collated 2002–2011) from the English Longitudinal Study of Ageing. Our econometric strategy is to apply propensity score matching to create quasi-experimental settings similar to randomized controlled trials. We compare individuals who switched to entrepreneurship with 1) those who remained in their original employment and 2) those who switched to another organizational job.

Our results show that on average, late-career workers who switch to entrepreneurship experience a significant increase in quality of life, measured as the satisfaction of the fundamental psychological needs of control, autonomy, self-realization, and pleasure. The increase in quality of life is also significantly greater than that experienced by individuals who switch to another organizational job. At the same time, individuals who switch to entrepreneurship experience a significant average reduction in income.

Our further analyses suggest that late-career entrepreneurship is not about a phased withdrawal from career employment into retirement with the objective of working less. In fact, the improvement in quality of life as a result of switching to

* Corresponding author.
E-mail addresses: teemu.kautonen@aalto.fi (T. Kautonen), ewald.kibler@aalto.fi (E. Kibler), mminniti@syr.edu (M. Minniti).

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entrepreneurship is greatest among individuals who increase their weekly working hours. Instead, our analyses point to the important role of the pursuit of self-realization in improving quality of life through entrepreneurship.

From a policy perspective, our findings suggest that promoting late-career switches to entrepreneurship can be socially sustainable because older workers undertaking such transitions are, on average, better off. Hence, the promotion of late-career entrepreneurship can provide an attractive opportunity for societies to move from aging models that emphasize economic inactivity and dependence on pension benefits toward *active aging* models that are better suited to address the personal needs of aging individuals.

Our study contributes to the entrepreneurship literature in a number of ways. First, we move the focus of late-career entrepreneurship research from expected utility —*ex ante* motivations and intentions—to one analyzing the utility of outcomes, or what the individuals actually achieve by starting a business. Second, our analysis adds to the employment choice theory applied to entrepreneurship by simultaneously considering non-monetary utility and career stage. Third, we contribute to the employment choice literature by expanding knowledge of the utility of outcomes with self-determination theory and the concept of quality of life as a career-phase specific, theory-driven conceptualization of non-monetary utility.

1. Introduction

Recent policy and academic discourses address the promotion of late-career entrepreneurship as part of the portfolio of policy measures to tackle the grand challenge of the aging population (Kulik et al., 2014; OECD, 2006, 2012). The principal societal benefit of late-career entrepreneurship is extending the career of older workers: self-employed individuals tend to retire later than their employed counterparts, which generates savings in public pensions and the prolonged deployment of those individuals' human capital in the economy (Botham and Graves, 2009; Engelhardt, 2012; Parker and Rougier, 2007). However, to be socially sustainable, the extension of working life through entrepreneurship has to be an attractive option for the aging individuals. Although prior research raises a number of potential benefits for late-career transitions in general (Dingemans and Henkens, 2014; Feldman, 2007) and of switching to entrepreneurship in particular (Curran and Blackburn, 2001; Kibler et al., 2015; Mallett and Wapshott, 2015), we have limited evidence on what specific outcomes older workers achieve when they leave their jobs to start a business. Adding this understanding to prior findings on the antecedents of starting a business at an older age (Kautonen et al., 2014; Minola et al., 2016; Zissimopoulos and Karoly, 2007) would provide a more holistic picture of late-career entrepreneurship and the kinds of social benefits this type of entrepreneurial activity can help sustain (Shepherd, 2015).

The present study contributes to our knowledge by taking up an economics lens and building upon existing employment choice models in entrepreneurship (Douglas and Shepherd, 2000, 2002; Hamilton, 2000; Parker, 2009). We begin our theorizing with the model of Lévesque and Minniti (2006), which adds the effect of career stage to the choice between salaried work and entrepreneurship. Their model explains how older workers are less likely to engage in entrepreneurship than their younger counterparts because the utility of starting a business decreases with age. Although the model provides a solid starting point for our analysis, it has two limitations that must be addressed. First, the model only considers monetary utility, that is, income from waged work versus entrepreneurial income. Second, being rooted in the tradition of employment choice models, the model focuses on what motivates individuals at different career stages to start a business, while not revealing what outcomes these individuals are actually likely to achieve. These limitations point to an important knowledge gap because prior conceptual and qualitative research emphasizes the central role of non-monetary outcomes in late-career entrepreneurship, such as opportunities for self-realization or achieving improved work–life balance (Mallett and Wapshott, 2015; Singh and DeNoble, 2003; Wainwright and Kibler, 2014).

To address this gap, our work expands Lévesque and Minniti's (2006) model by drawing from that of Douglas and Shepherd (2000), which conceptualizes utility as involving both monetary and non-monetary determinants. Whereas the latter model includes specific non-monetary determinants of utility, such as work effort and independence, we propose wellbeing as a holistic non-monetary utility enhancing outcome from employment choice (Andersson, 2008; Baron et al., 2016; Shepherd, 2015; Uy et al., 2013). We utilize self-determination theory (Deci and Ryan, 1985, 2000) to conceptualize wellbeing as a function of the degree to which people are able to satisfy their basic psychological needs. More specifically, we operationalize wellbeing with the construct of quality of life (Hyde et al., 2003), which is a holistic measure based on needs-satisfaction that is compatible with the self-determination theory and addresses aging individuals specifically (e.g., Knesebeck et al., 2007; Wahrendorf and Siegrist, 2010; Webb et al., 2011).

Using the resulting theoretical framework, we develop hypotheses that associate late-career transitions to entrepreneurship with monetary (income) and non-monetary (quality of life) outcomes. We test our hypotheses with five biennial (2002 − 2011) waves of survey data from the English Longitudinal Study of Aging (Marmot et al., 2013). Using propensity score matching to create quasi-experimental settings, we examine how the individuals' levels of income and quality of life change between two survey waves in response to a career transition. The focus of our analysis is on employed individuals making a voluntary late-career transition to entrepreneurship. Our analysis excludes transitions from unemployment to entrepreneurship because prior research findings suggest that very few older workers switch to entrepreneurship for lack of better job alternatives (Kautonen et al., 2014). Moreover, owing to data limitations, we do not consider older entrepreneurs switching from one business to another.

Our work generates several contributions. First, we move the focus of late-career entrepreneurship research from expected utility—*ex ante* motivations and intentions (Kautonen et al., 2011; Kautonen et al., 2014; Minola et al., 2016)—to analyzing the utility of outcomes, or what the individuals actually achieve by starting a business. Second, our study adds to the employment choice theory applied to entrepreneurship by simultaneously considering non-monetary utility (Douglas and Shepherd, 2000, 2002) and career stage (Lévesque and Minniti, 2006). Third, we contribute to the employment choice literature by expanding knowledge of the utility of outcomes with self-determination theory (Deci and Ryan, 2000) and the concept of quality of life

(Hyde et al., 2003) as a career-phase specific, theory-driven conceptualization of non-monetary utility. Our analysis shows that late-career switches from employment to entrepreneurship are positively associated with changes in quality of life and negatively associated with changes in income. We hope that this finding, together with the aforementioned theory extensions, encourages future multidisciplinary research that will add to our understanding of the relationship between entrepreneurship and wellbeing (Shepherd, 2015; Uy et al., 2013).

2. Theory and hypotheses

2.1. Employment choice, late-career stage, and non-monetary utility

Becker's (1965) theory of time allocation argues that individuals act to maximize, to the best of their ability, the returns (both monetary and non-monetary) they obtain from the various activities to which they allocate their time. To emphasize their heterogeneous and individual nature, these returns are encompassed under the term *utility*. In turn, building on Becker's classic model of time allocation between work and leisure, the employment choice literature focuses on a broad conceptual framework in which the focal action of the individual is the choice of employment type based on a set of characteristics associated with alternative jobs (Heckman, 1993). Within this context, models relevant to the study of entrepreneurship posit that rational individuals maximize their utility by comparing the expected income from employment to that available from entrepreneurship (Hamilton, 2000; Parker, 2009). A salient common feature of these models is that the individual chooses, rationally, the type of employment yielding the highest monetary returns. Importantly, however, with the exception of Lévesque and Minniti (2006), employment choice models emphasizing entrepreneurship have remained neutral with respect to career stage (see Parker, 2009, for a review of this literature). That is, when choosing between alternative types of employment, the decision maker is treated as being neutral with respect to the passing of time.

The omission of career-stage considerations in employment choice models is puzzling if we consider that a significant amount of literature has shown aging to have significant implications for individuals' motivations and actions in general, and on employment decisions in particular (Beehr, 2014; Biemann et al., 2012; Feldman, 2007; Kanfer and Ackerman, 2004; Ng and Feldman, 2009). Empirical evidence shows that the likelihood of being involved in start-up activities declines significantly as an individual approaches retirement age (Kelley et al., 2016; Parker, 2009). Lévesque and Minniti's (2006) employment choice model explains this effect by showing that, unlike wages that are realized in the present, the returns from entrepreneurship are realized over time in the future and, as a result, the opportunity cost of entrepreneurship depends on career stage. Individuals who are closer to retirement age have less time to benefit from their start-up investment or bring it to fruition. Although the Lévesque and Minniti (2006) model makes an important contribution to our understanding of employment choice as a function of career stage, it concentrates on the trade-off between employment and entrepreneurship based exclusively on monetary incentives, and does not account for the effects of non-monetary rewards (Douglas and Shepherd, 2000).

The entrepreneurship literature contains an abundance of evidence for the importance of non-monetary rewards from entrepreneurship (Andersson, 2008; Baron et al., 2016; Parker, 2009; Uy et al., 2013). Within the employment choice framework, Hamilton (2000) has provided robust empirical evidence showing that switching from waged employment to entrepreneurship is an employment choice that does not pay in financial terms. Accordingly, his work called into question the idea that only monetary rewards determine the choice of type of employment. Douglas and Shepherd (2000, 2002) addressed this issue by providing a more general model in which the individual's utility function is based on both monetary and non-monetary rewards and, by doing so, reconciled the employment choice approach with Hamilton's empirical evidence. We follow this perspective and conceptualize employment choice as a function of monetary and non-monetary rewards. However, compared to monetary rewards, the concept of non-monetary rewards is ambiguous and thus requires specification.

In the employment choice literature, the consideration of non-monetary rewards is still significantly underdeveloped. Theories grounded in disciplines other than economics provide arguments that can complement the standard employment choice theory with a more holistic conception of non-monetary outcomes than the very specific ones, such as work autonomy, used in the employment choice framework thus far (Croson and Minniti, 2012; Douglas and Shepherd, 2000). Suitable concepts for this purpose are the often synonymously-used notions of life satisfaction (Binder and Coad, 2013), happiness (Andersson, 2008) and wellbeing (Uy et al., 2013) that capture non-monetary utility in a very broad sense.

We build our definition of wellbeing on self-determination theory (SDT) (Deci and Ryan, 1985; Deci and Ryan, 2000; Ryan and Deci, 2000), which sees wellbeing as a function of the extent to which our psychological needs are satisfied (Deci et al., 2001). The conception of needs in SDT derives from theories that define psychological needs as innate, such as the works of Maslow (1943, 1954) and White (1959). The theory distinguishes between instant and fundamental needs (Deci and Ryan, 2000). In the context of work, instant needs are those that employees can satisfy through situational behaviors, such as by deriving gratification and appreciation from a job well done. In contrast, fundamental needs are relevant when individuals make major career-related decisions, such as leaving their present job to start a business. In such situations, individuals have to evaluate how the career move affects their ability to satisfy their basic long-term psychological needs, which in turn determine their psychological wellbeing (Ryan et al., 2008). Therefore, fundamental needs cannot be satisfied with situational behaviors, but require more permanent behaviors, such as changing a job or starting a business (Haivas et al., 2014). Accordingly, the choice of work activity is clearly a behavior that is associated with the satisfaction of fundamental needs and thus, with wellbeing. SDT identifies three fundamental needs essential for a person's psychological wellbeing: autonomy, competence, and relatedness (Deci and Ryan, 1985; Ryan and Deci, 2000). The need for autonomy relates to a person's sense of ownership of his or her actions; the need for

competence refers to the ability to achieve desired outcomes; and the need for relatedness reflects the desire to have close and enjoyable relationships.

Consistent with our research objective of assessing the impact of late-career transitions on wellbeing, we turned to the aging literature for a suitable operationalization of this concept. An established wellbeing measure in this literature is quality of life (QoL) (Hyde et al., 2003; for applications see e.g., Knesebeck et al., 2007; Wahrendorf and Siegrist, 2010; Webb et al., 2011; Wiggins et al., 2004), which is not only consistent with the needs-satisfaction approach in SDT, but also specifically designed as a holistic measure of wellbeing for aging individuals (Hyde et al., 2003). Hyde et al. (2003) operationalize QoL as the degree to which the needs for autonomy, control, self-realization, and pleasure are satisfied. Control and autonomy in the QoL construct refer to an individual's ability to do what they want to do, which corresponds to ownership of one's actions in the form of autonomy in SDT. Self-realization in QoL, or a feeling that the future is bright and life full of opportunities, reflects the need for competence in SDT. Similarly, pleasure is associated with relatedness in SDT, being defined in QoL as an individual being happy and enjoying the company of others.

2.2. Hypothesis development

Based on the previous discussion, we ground our analysis in an employment choice model where the total utility of aging individuals depends on the monetary and non-monetary outcomes of their work activities. To ensure the hypotheses are specific and empirically testable, we refer to the non-monetary outcomes as quality of life (QoL) and the monetary outcomes as income, which can comprise wages or returns from entrepreneurship. As pointed out earlier, few older workers switch to entrepreneurship out of necessity (Kautonen et al., 2014).[1] For this reason, we focus on the effects on income and QoL of (voluntary) transitions from paid employment to entrepreneurship.

Consistent with employment choice models, an individual's transition from paid employment to entrepreneurship is a utility-maximizing decision, meaning that an observed change in employment status generally produces the intended outcome (Douglas, 2013). Because income and QoL are the only two arguments of the utility function, transitions to a different job or to entrepreneurship need to generate an increase in income and/or QoL. It should be noted that individuals might not know *ex ante* exactly what outcomes a career transition will produce (Douglas, 2013). Individuals have differing abilities to make such evaluations and situational factors influence such judgments as well. For example, if a person has been working as a surgeon in a hospital for 30 years and then makes a transition to self-employment by becoming a partner in a private clinic, they can probably assess the outcome of the transition reasonably well. In contrast, if the same person made the move to start an online wine shop, the outcomes would be far less predictable. In spite of this variation, following the logic of rational behavior in employment choice models, we can assume individuals making career transitions achieve their desired objectives more often than not, because there is no reason to expect systematic errors to emerge and persist.

Therefore, we rely on the Lévesque and Minniti (2006) model to assume that age penalizes the income utility derived from entrepreneurship more than that derived from employment. Lévesque and Minniti (2006) argue that because older individuals have less time to harvest the expected future returns from entrepreneurship, this form of income has a lower present value for them than for younger people. Supporting this argument, empirical studies have shown that older entrepreneurs typically start very small businesses that involve a low level of risk and generate small but relatively immediate returns from work, such as income from freelancing (de Kok et al., 2010; Kautonen et al., 2014). For the present study, this means that on average, older workers will not associate transitioning from waged employment to entrepreneurship with an increase in income. Therefore, a compensating increase in QoL will be necessary for the transition to be utility enhancing and consistent with the tenet of rational decision making.

We further propose that a transition to late-career entrepreneurship can satisfy fundamental psychological needs and thus improve QoL (Deci and Ryan, 2000; Hyde et al., 2003). Entrepreneurship can increase a late-career worker's autonomy and control in life by allowing them to choose how much, when, and where to work (Curran and Blackburn, 2001; Wainwright and Kibler, 2014). It can also provide opportunities for self-realization and the flexibility in work–life balance necessary to engage in and maintain enjoyable social relationships at and outside work (Ainsworth and Hardy, 2008; Mallett and Wapshott, 2015; Singh and DeNoble, 2003).

In summary, we propose that when making a transition from waged work to self-employment, older workers are more likely to be motivated by non-monetary rewards and to expect an increase in QoL, than to be motivated by monetary rewards and to expect an increase in income. People can generally be expected to make rational decisions and achieve their desired outcomes, and we therefore formulate the following hypothesis:

Hypothesis 1. A late-career transition from employment to self-employment is associated with an increase in quality of life.

Further, we propose that although switching to a new job can improve a mature worker's quality of life (Dingemans and Henkens, 2014; Feldman, 2007; Kulik et al., 2014), it cannot do so to the same extent as transitioning to entrepreneurship. Although some forms of entrepreneurial activity can be restricted to certain times and locations, the autonomy and control to decide when, where, and how to perform work is recognized as the main utility of entrepreneurship compared to full-time organizational employment (Mallett and Wapshott, 2015; Parker, 2009; Rindova et al., 2009). An additional advantage of working for oneself compared to working for an employer is that working life is less subject to negative social interference from others (e.g., ageist

[1] The whole English Longitudinal Study of Ageing data set used in this research contains only 12 cases where an individual has transitioned from unemployment to entrepreneurship. This both supports the finding in Kautonen et al. (2014) and makes it impossible to analyze this group statistically. Furthermore, the data do not allow us to examine transitions to new businesses by individuals who are already entrepreneurs.

organizational practices), so allowing people to implement a preferred and personal style of working and to achieve their personal goals (Ainsworth and Hardy, 2008; Kibler et al., 2015). The greater flexibility in managing work and leisure afforded by entrepreneurship also enables mature individuals to maintain enjoyable social relationships and important care responsibilities (Wainwright and Kibler, 2014; Weber and Schaper, 2004). Together these arguments suggest that switching to entrepreneurship in the late-career stage has a stronger impact on quality of life than switching to a new job. Therefore, we hypothesize:

Hypothesis 2. A late-career transition from employment to self-employment is associated with a greater increase in quality of life compared to an employed individual switching to a new job.

We argued above that most late-career workers switching to entrepreneurship are unlikely to increase their level of income. We extend that argument further by proposing that individuals switching to another organizational job are more likely to experience an increase in income than those switching to entrepreneurship. This is because the accumulated work history of older workers delivers a higher salary and therefore, switching to a new organizational job is likely to be associated with increased income (Beehr, 2014; Biemann et al., 2012). Although people switch jobs for non-monetary reasons as well, we propose that it is more likely that individuals pursue an increase in income when transitioning from one organization to another, than when switching from paid employment to entrepreneurship. Following the logic of individuals making rational choices and achieving their desired outcomes more often than not, we hypothesize:

Hypothesis 3. A late-career transition from one organizational job to another is associated with a greater increase in income than a transition from employment to self-employment.

3. Data

We utilize unbalanced panel data from the first five biennial waves (2002–2011) of the English Longitudinal Study of Ageing (ELSA) (Marmot et al., 2013). ELSA is a long-term collaborative research effort coordinated by University College London, and funded by the National Institute on Aging and the UK government. The purpose of the study is to generate data useful for analyzing the dynamics of aging and the relationships between economic circumstances, physical and mental health, and social and psychological issues, among others (Banks et al., 2012). For this reason, the study covers a broad range of topics including household composition, employment and pensions, housing, income and wealth, diseases and symptoms, social contacts, health behaviors, and quality of life. The target population in ELSA are non-institutionalized individuals aged 50 or over who are domiciled in England. The fieldwork in each wave consists of a face-to-face interview and a self-administered form. Some waves also contain medical measurements conducted by a nurse. Each wave contains between 9432 and 12,099 responses: new respondents are added in each wave to compensate for attrition. The total number of observations in the five-wave panel used in the present study is 52,626.

Because the objective of our analysis is to examine transitions from organizational employment to late-career entrepreneurship, the analysis sample is limited to individuals aged 50–67 years who were in paid employment at the commencement of the survey. The lower age limit is set to accord with a common policy definition for late-career entrepreneurship (OECD, 2012) and the upper age limit reflects the UK government's planned increase to the retirement age from 65 to 67 due to take place in 2026–2028. The data also contained very few career transitions by individuals aged 68 or older.

We organized the data by following the procedure used by Zissimopoulos and Karoly (2007). Accordingly, we used the individuals self-reported primary employment status to determine whether they were employed, self-employed, or had another labor market status beyond the scope of the study. We used all observations that met the aforementioned employment and age criteria at the baseline (the wave of the survey before the possible career transition) and had non-missing responses to all relevant variables (very few observations had to be excluded due to missing values). For those individuals who were employees during any given wave (t), we estimated the effect of a potential career transition on change in quality of life and change in income by the next wave ($t + 2$ years). The resulting sample consists of 5293 observed pairs of consecutive waves for 2851individuals.

Although our data contain self-reported perceptual measures that can cause *common method bias* (Harrison et al., 1996; Podsakoff et al., 2003), we argue that this is not a major concern in the present analysis. We use two points of measurement two years apart to construct the dependent variables, thus avoiding the problem of using a single response provided by a single individual at a single point in time. In addition, our data are from a large-scale, multipurpose survey; this should reduce the effects of social desirability bias compared to small, single-purpose surveys where it is easier for the respondent to "outguess the survey goals and give socially desirable answers" (Binder and Coad, 2013, p. 1060).

4. Matching methodology

4.1. Matching as analysis strategy

Randomized controlled trials, where the allocation to treatment and control groups is random and people cannot self-select into either group are the gold standard for estimating treatment effects on outcomes. In such trials, the individuals in treatment and control 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 these groups (Austin, 2011). The setting of our study is similar

to a trial: we compare changes in outcomes (quality of life and income) in response to a "treatment" (switching from employment to entrepreneurship or a new job). However, the allocation to treatment and control groups is not random because individuals are likely to self-select into their preferred employment category (Binder and Coad, 2013). Therefore, it is realistic to assume that our treatment and control groups are systematically different.

We address the self-selection problem by using matching methodology, which allows researchers 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 pre-treatment characteristics (Caliendo and Kopeinig, 2008; Li, 2012). Once that is complete, there should be only minimal pre-treatment differences between the treatment and control groups, and the differences in the outcomes can be reliably attributed to the treatment (Austin, 2011).

We follow the guidelines suggested by Austin (2011), Caliendo and Kopeinig (2008) and Li (2012) on using propensity score matching (PSM) as the estimation technique. PSM entails estimating a single propensity score that expresses the likelihood of an observation belonging to the treatment group. Each observation in the treatment group is then matched with an observation from the control group with the closest propensity score match.

4.2. Dependent variables

4.2.1. Quality of life

Quality of life is measured using the 19-item, four-domain (control, autonomy, self-realization, and pleasure) CASP-19 scale developed specifically for aging individuals by Hyde et al. (2003). The scale contains six items for *control* (e.g., "I can do things that I want to do" and "I feel free to plan for the future"); five for *autonomy* (e.g., "I feel that I can please myself what I can do" and "I look forward to each day"); four for self-realization (e.g., "I feel that life is full of opportunities" and "I feel that the future looks good for me"); and four for pleasure (e.g., "I enjoy the things that I do" and "I feel full of energy these days"). Each item is measured on a Likert-style scale with options of *never* (0), *not often* (1), *sometimes* (2), and *often* (3), and items are coded such that a high score indicates the best QoL. The full psychometric properties of the scale are provided in Hyde et al. (2003) and reported in the specific context of the ELSA data by Wiggins et al. (2008). The developers of the scale argue that the four dimensions are equal and inseparable, and hence a summary score of all 19 items is appropriate (Hyde et al., 2003). This is also established practice in applications of CASP-19 in prior studies (Howel, 2012; Netuveli et al., 2006; Webb et al., 2011). We followed these recommendations and computed a composite index of quality of life as the average of the 19 items (Cronbach's alpha: 0.88). The outcome variable used in the analysis is the change in quality of life from t to $t + 2$ years.

4.2.2. Income

Income is measured as total equivalized income at the benefit unit level. Because the variable is leptokurtic, we use its natural logarithm in the analysis. The actual dependent variable used in the analysis is the change in the log of income from t to $t + 2$ years. It is important to note that for those who switch to entrepreneurship, this variable measures the new venture's immediate financial performance. It might thus underestimate the financial performance of ventures that take longer to develop before they generate significant income for the entrepreneur. However, we consider this a minor limitation because most of the businesses started by older individuals are very small (Kautonen et al., 2014): Seventy-five percent of the individuals in our sample who switched to entrepreneurship reported working for themselves or being subcontractors, freelancers, or partners in a professional practice (the remaining 25% reported running a business or professional practice). Moreover, income has the advantage of being comparable between those who switch to entrepreneurship, those who take on a new job, and those who stay in their present job.

4.3. Treatment: switching from employment to entrepreneurship

Our treatment variables are based on the individual's self-reported employment status. All individuals are in organizational employment at the baseline t. For $t + 2$ years, our treatment variables compare individuals who switched to entrepreneurship (as in reported being self-employed) to (1) those who stayed in the same job and (2) those who switched to a new job. Although only those two treatment variables are necessary to test our hypotheses, we also analyze the effect of switching to a new job compared to staying in the same job as a reference to the entrepreneurship effects.

4.4. Variables used in the matching process

Because the dependent variables capture *changes* in quality of life and income from t to $t + 2$ years, the baseline (t) values of these variables constitute obvious matching criteria to ensure that we compare individuals who have similar levels of income and quality of life prior to the potential switch to entrepreneurship. In addition to the baseline values of the dependent variables, our analysis includes a number of further variables that are measured at the baseline (t) (and thus not affected by the treatment) and, *ex ante*, associated either with the dependent or the treatment variables (Austin, 2011). These variables include gender, age, perceived financial situation, wealth, health, and social relationships (Table 1).

Gender is included as a dummy with the value 1 assigned to female respondents. Although prior studies do not find a systematic association between gender and quality of life (e.g., Netuveli et al., 2006; Webb et al., 2011; Wiggins et al., 2004), the entrepreneurship literature generally finds a negative relationship between being female and entrepreneurial activity (Kelley et al., 2016; Parker, 2009) and the gender earnings differential is well documented (e.g., Christofides et al., 2013; Gayle and Golan,

Table 1
Variable descriptions, means and standard deviations (SD).

Variable name	Description	Total	Employment status change between t and $t+2$		
			Stayed in the same job	Switched to a new job	Switched to entrepreneurship
QoL_t	CASP-19 at t (range: 1.47–4.00)	3.30 (0.40)	3.31 (0.40)	3.28 (0.39)	3.36 (2.26)
$\Delta QoL_{((t+2)-t)}$	Change in CASP-19 quality of life between t and $t+2$ (range: −1.58–1.53)	−0.01 (0.29)	−0.01 (0.29)	0.03 (0.32)	0.06 (0.32)
$Income_t$	Log of equivalized total income at the benefit unit level at t (range: 1.81–8.30)	5.84 (0.57)	5.85 (0.57)	5.77 (0.62)	6.01 (0.70)
$\Delta Income_{((t+2)-t)}$	Change in the log of equivalized total income between t and $t+2$ (range: −4.26–4.22)	0.06 (0.58)	0.06 (0.57)	0.10 (0.59)	−0.19 (0.85)
Female	Gender dummy (female = 1)	0.53	0.54	0.44	0.33
Age_t	Age in years at t (range: 50–67)	55.75 (3.68)	55.76 (3.68)	55.52 (3.68)	56.26 (3.54)
$Pfin_t$	Perceived financial situation at t				
Manage very/quite well		0.73	0.74	0.69	0.76
Get by alright		0.23	0.22	0.24	0.22
Difficulties		0.04	0.04	0.07	0.03
$Wealth_t$	Total net non-housing wealth for the benefit unit at t (tertiles)				
First tertile		0.29	0.29	0.31	0.17
Second tertile		0.37	0.37	0.39	0.37
Third tertile		0.34	0.35	0.30	0.46
$Health_t$	Perception of current health at t (1 = fair or poor, 0 = good or very good)	0.08	0.08	0.09	0.05
$Depression_t$	CES-D scale dummy (1 = experiences at least 3 out of 8 symptoms)	0.45	0.45	0.46	0.37
$Socrel_t$	Number of close social relationships at t				
None		0.02	0.02	0.04	0.05
One		0.09	0.09	0.09	0.12
2–4		0.59	0.59	0.58	0.50
5 or more		0.30	0.30	0.29	0.32
Total n (%)		5293 (100%)	4714 (89%)	464 (9%)	115 (2%)

2012). Age is included because prior research has shown that both quality of life and entrepreneurial activity decline as our focus group of late-career workers age (Knesebeck et al., 2007; Parker, 2009; Webb et al., 2011).

In addition to income, we use two alternative indicators of economic circumstances (Webb et al., 2011): 1) self-perception of the current financial situation and 2) the total net non-housing wealth at the benefit unit level. The former variable is included specifically to capture the potential push effect toward entrepreneurship of individuals perceiving their financial situation as poor. Net wealth is included as an indicator of the individual's longer-term financial situation, which is associated with a greater quality of life (Knesebeck et al., 2007; Webb et al., 2011). Its effect on entrepreneurship can be either positive or negative. Having a higher level of wealth can either enable entrepreneurship by making it easier financially to start a business, or it can serve as a disincentive, because earning additional income may not be a requirement to sustain the desired lifestyle (Singh and DeNoble, 2003).

Health is captured with two variables (Kalwij and Vermeulen, 2008): 1) the perception of current overall health (good or poor) and 2) mental health. The latter is measured with the Center for Epidemiologic Studies Depression (CES-D) scale (Radloff, 1977). The CES-D scale used in the ELSA survey comprises eight depression symptoms and respondents are considered to suffer from depression if they experience three or more of those symptoms. Those subjects meeting the criterion were coded as 1 in the dummy variable. Poor health is negatively associated with quality of life (Wahrendorf and Siegrist, 2010; Wiggins et al., 2004) and income (Arber et al., 2014; Ettner, 1996). Moreover, health conditions limiting the ability to work have been found to be positively associated with transitioning to entrepreneurship (Zissimopoulos and Karoly, 2007), probably because entrepreneurship provides the individual with the control over the pace, timing, and amount of work to accommodate the health condition. Social contact and relationships are measured as the number of close social relationships that previous research positively associates with quality of life (Netuveli et al., 2006; Webb et al., 2011). Social contacts can also facilitate starting a business and thus can be positively associated with the treatment variable (Hoang and Antoncic, 2003).

4.5. Descriptive statistics

Table 1 displays the name of each variable, a brief description, and the mean and standard deviation (continuous variables) or the column percentage (categorical variables; the percentages within a variable add up to 100) for the full sample as well as each

of the three treatment categories that we consider. Table 2 presents the correlation matrix. Because perceived financial situation, wealth, and social relationships are ordinal rather than continuous variables, the correlation coefficients reported are Spearman's rhos.

Table 2 shows that switching to entrepreneurship or to a new job are both positively and significantly correlated with change in quality of life. Moreover, switching to entrepreneurship is negatively and significantly correlated with change in income. However, Table 1 suggests that there are systematic differences between those who switch to entrepreneurship and those who remain in employment. We used analysis of variance (continuous variables) and chi-squared tests (categorical variables) to investigate whether the differences are statistically significant. These tests (not reported in Table 1) suggest that those who switch to entrepreneurship are more likely to be male and financially better off in terms of all three indicators (income, wealth, and perceived financial situation) than those who stay in their current job or switch to a new job. The matching procedure described next ensures that the baseline differences do not influence the treatment effect estimate.

4.6. Matching procedure

We used propensity score matching to estimate two scenarios following the procedure recommended by Caliendo and Kopeinig (2008). First, we compared those who switched to entrepreneurship with those who stayed in the same job between t and $t + 2$. Second, we compared the individuals who transitioned to entrepreneurship with those who switched to a new job between t and $t + 2$. We also performed the same procedure for the reference scenario of switching to a new job compared to staying in the same job. For reasons of brevity, we do not provide the full details of the reference scenario here (they are available from the authors upon request) but only note that we achieved a similarly good match as with the aforementioned two scenarios that are described in full below.

The first step in the matching process is to estimate the propensity score using the baseline variables in Table 1. Eq. 1 presents our propensity score estimation model, which is a logit model where the treatment indicator ($ENT^*_{((t+2)-t)}$; switches to entrepreneurship versus stays in the same job/switches to a new job) is regressed on the baseline values of quality of life (QoL_t) and income ($Income_t$) as well as a vector of the control variables listed above ($Controls_t$). The logit of the propensity score is then used for matching (Austin, 2011).

$$ENT*_{((t+2)-t)} = \alpha + \beta_{QoL} QoL_t + \beta_{Income} Income_t + \beta_{Base} Controls_t + \varepsilon \quad (1)$$

The second step involves choosing the matching algorithm to determine what propensity score is considered a good match. We apply nearest neighbor matching with a specified caliper distance. This means that we set a maximum distance for the difference in propensity scores, so as to avoid matching observations whose propensity scores are far apart but that are nevertheless the closest available match. The caliper is computed as 0.2 of the pooled standard deviation for the logit of the propensity score (Austin, 2011).

The third step involves checking the overlap and the region of common support. Essentially, common support means that any combination of characteristics observed in the treatment group can also be observed in the control group (Bryson et al., 2002). This is important because the treatment effect can only be defined in the region of common support. We follow Caliendo and Kopeinig (2008) and use two methods to test for common support. The first compares the minima and maxima of the propensity score distribution in the treatment and control groups: observations with a propensity score smaller than the minimum or larger than the maximum in the opposite group should be discarded. We used the *psmatch2* (Leuven and

Table 2
Correlations.

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. $\Delta QoL_{((t+2)-t)}$	1										
2. QoL_t	−0.32*	1									
3. $\Delta Income_{((t+2)-t)}$	0.02	−0.02	1								
4. $Income_t$	0.03*	0.15*	−0.39*	1							
5. Female	−0.00	0.04*	−0.01	−0.06*	1						
6. Age_t	0.00	0.01	0.01	−0.03	−0.12*	1					
7. $Pfin_t$	0.03*	−0.28*	0.03*	−0.23*	0.05*	0.01	1				
8. $Wealth_t$	0.02	0.17*	−0.02	0.32*	−0.03*	0.04	−0.29*	1			
9. $Health_t$	0.01	−0.21*	−0.01	−0.09*	−0.00	0.02	0.11*	−0.12*	1		
10. $Depression_t$	0.03*	−0.29*	−0.02	−0.07*	0.15*	−0.02	0.10*	−0.08*	0.14*	1	
11. $Socrel_t$	−0.01	0.15*	−0.00	0.03*	0.08*	0.02	−0.04*	0.01	−0.03*	−0.02	1
12. Employment status change											
a. Stayed in the same job	−0.05*	0.02	0.01	0.01	0.08*	0.01	−0.03	0.01	−0.01	0.00	0.01
b. Switched to a new job	0.03*	−0.03	0.02	−0.04*	−0.05*	−0.02	0.03*	−0.03*	0.02	0.01	−0.01
c. Switched to entrepreneurship	0.04*	0.02	−0.06*	0.05*	−0.06*	0.02	−0.01	0.04*	−0.02	−0.02	−0.01

Notes: Pooled data ($n = 5293$). Spearman's rhos. * denotes statistical significance at the 5% level.

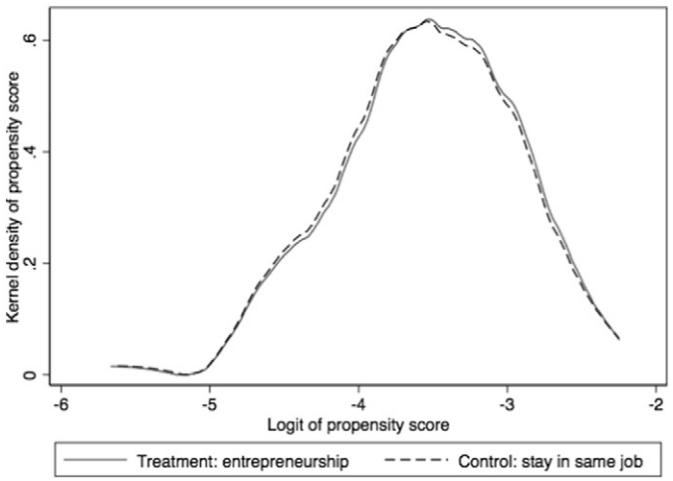

Fig. 1. Common support diagram: switching to entrepreneurship vs. staying in the same job.

Sianesi, 2003) module in Stata 14 to perform this test. According to this criterion, common support is found for all 115 cases in the treatment group in both scenarios. The second test entails a graphical inspection of the density distribution of the logit of the propensity score. Figs. 1 and 2 show that the density distributions in the control and treatment groups in both scenarios are highly overlapping, indicating common support. Therefore, we conclude that sufficient common support is present to justify proceeding with the analysis.

The fourth step involves examining the matching quality. We start by comparing the distribution of baseline variables between the treatment and control groups in the matched and unmatched samples. The more similar the distributions of the treatment and control groups are, the better the matching quality. Table 3 presents the balance diagnostics for both focal scenarios. The diagnostics show several statistically significant differences between the two groups prior to the matching process. However, the diagnostics also show that these differences are small and not statistically significant in the matched samples.

Following Austin's (2011) recommendation, we do not rely solely on statistical significance testing to examine matching quality, but also calculate the standardized difference score. This score compares the difference in means between the treatment and control groups in units of the pooled standard deviation and is not influenced by sample size. A standardized difference of 0.1 or less is suggested as a guideline value. Only one variable exceeds this threshold, and even in that case, the standardized difference is moderate (0.13).

Finally, we compare the fit of the propensity score estimation model (Eq. 1) between the unmatched and matched samples (Sianesi, 2004). The chi-squared tests of model fit for the unmatched samples are statistically significant, whereas those for the matched samples are not. This means that there are systematic differences in the distribution of the variables before matching, whereas there are none in the matched sample. The test thus demonstrates the properties of good matching quality. Overall, we conclude that the matching quality is satisfactory and we can proceed to estimating the treatment effects.

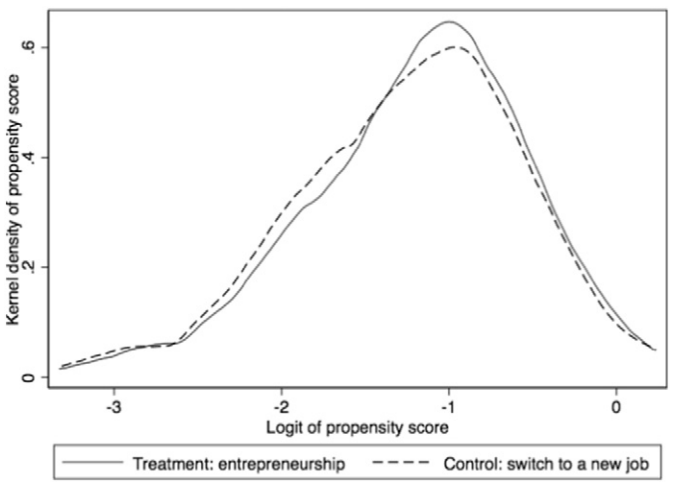

Fig. 2. Common support diagram: switching to entrepreneurship vs. switching to a new job.

Table 3
Balance diagnostics for matching estimates.

Variable	Sample	Switching to entrepreneurship vs. staying in the same job				Switching to entrepreneurship vs. switching to a new job			
		Treated	Control	*t*-Test (|t|)	Std. diff.	Treated	Control	*t*-Test (|t|)	Std. diff.
QoL_t	Unmatched	3.36	3.31	1.42		3.36	3.28	2.01*	
	Matched	3.36	3.34	0.43	0.04	3.36	3.37	0.81	0.02
$Income_t$	Unmatched	6.01	5.85	30.06**		6.01	5.77	360**	
	Matched	6.01	6.01	0.09	0.01	6.01	5.96	0.31	0.08
Female	Unmatched	0.33	0.54	4.42**		0.33	0.44	2.13*	
	Matched	0.33	0.33	0.00	0.01	0.33	0.35	0.41	0.04
Age_t	Unmatched	56.26	55.76	1.45		56.26	55.52	1.94	
	Matched	56.26	56.51	0.51	0.05	56.26	56.34	1.01	0.02
$Pfin_t$ (base: get by alright)									
Manage very/quite well	Unmatched	0.76	0.74	0.48		0.76	0.69	1.40	
	Matched	0.76	0.76	0.00	0.01	0.76	0.76	0.00	0.01
Difficulties	Unmatched	0.03	0.04	0.69		0.03	0.07	1.66	
	Matched	0.03	0.03	0.00	0.01	0.03	0.04	0.38	0.09
$Wealth_t$ (base: second tertile)									
First tertile	Unmatched	0.17	0.29	2.68**		0.17	0.31	3.01**	
	Matched	0.17	0.17	0.17	0.01	0.17	0.17	0.17	0.01
Third tertile	Unmatched	0.46	0.35	2.56**		0.46	0.30	3.31**	
	Matched	0.46	0.45	0.13	0.03	0.46	0.44	0.13	0.05
$Health_t$	Unmatched	0.05	0.08	1.14		0.05	0.09	1.46	
	Matched	0.05	0.05	0.00	0.01	0.05	0.07	0.28	0.09
$Depression_t$	Unmatched	0.37	0.45	1.59		0.37	0.46	1.69	
	Matched	0.37	0.42	0.67	0.07	0.37	0.38	0.27	0.02
$Socrel_t$ (base: 5 or more)									
None	Unmatched	0.05	0.02	2.24*		0.05	0.04	0.76	
	Matched	0.05	0.07	0.55	0.05	0.05	0.03	0.64	0.10
One	Unmatched	0.12	0.09	1.21		0.12	0.09	1.09	
	Matched	0.12	0.08	1.10	0.13	0.12	0.11	0.63	0.01
2–4	Unmatched	0.50	0.59	1.83		0.50	0.58	1.50	
	Matched	0.50	0.52	0.26	0.06	0.50	0.47	0.92	0.07
$Wave_t$ (base: wave 1)									
2	Unmatched	0.23	0.22	0.37		0.23	0.20	0.81	
	Matched	0.23	0.25	0.31	0.03	0.23	0.20	0.46	0.08
3	Unmatched	0.26	0.24	0.57		0.26	0.21	1.15	
	Matched	0.26	0.23	0.61	0.08	0.26	0.26	0.46	0.01
4	Unmatched	0.25	0.27	0.52		0.25	0.22	0.74	
	Matched	0.25	0.27	0.30	0.05	0.25	0.29	1.16	0.08

Notes: treated and control columns report the means for each group and the *t*-test tests the null hypothesis of these means being equal. Std. diff. stands for standardized difference (absolute value). * and** denote statistical significance at the 5% and 1% levels (two-tailed).

5. Results

5.1. Hypothesis tests

We test our hypotheses by estimating the treatment effect—the difference in the value of the dependent variable between the treatment and control groups in the matched sample. We do this by estimating the average treatment effect on the treated (ATT), which is the appropriate quantity because we are interested in the effect of the transition to entrepreneurship for those who actually made that transition (Binder and Coad, 2013). The standard errors are computed using the Abadie and Imbens (2009) procedure, which accounts for the propensity score itself being an estimate rather than an observed value.

Table 4 shows the treatment effect estimates for switching to entrepreneurship compared to staying in the same job or switching to a new one. It further shows the estimates for the reference scenario of switching to a new job compared to staying in the old one. For each scenario, Table 4 displays the ATT, standardized ATT, their standard errors, and the *p*-value of the significance test. The interpretation of ATT is similar to a linear regression coefficient (marginal effect): by how much does the dependent variable change in response to the treatment. The standardized ATT is the same except for the unit of measurement: ATT expresses the treatment effect in the outcome's unit of measurement, whereas standardized ATT expresses it in units of standard deviation. Thus, standardized ATT is an effect size measure allowing a direct comparison between all treatment effects in Table 4, notwithstanding the scale of the dependent variable (Breaugh, 2003).

The estimated treatment effect on quality of life of switching to entrepreneurship is positive and statistically significant in both focal scenarios. That is, transitioning to entrepreneurship increases quality of life significantly compared to staying in the same job or switching to a new organizational job. Moreover, the treatment effect in the reference scenario is positive and significant: switching to a new job increases quality of life compared to staying in the same job. However, the effect sizes for switching to entrepreneurship are considerably larger. These findings support Hypotheses 1 and 2.

Table 4
Effects of late-career transitions on change in quality of life and change in income: propensity score matched estimates.

	Dependent variable: $\Delta QoL_{((t+2)-t)}$			Dependent variable: $\Delta Income_{((t+2)-t)}$		
	ATT	Std(ATT)	$P > \|t\|$	ATT	Std(ATT)	$P > \|t\|$
Switching to entrepreneurship vs. staying in the same job	0.099	0.341	0.014	−0.159	−0.273	0.079
	(0.040)	(0.139)		(0.091)	(0.155)	
Switching to entrepreneurship vs. switching to a new job	0.075	0.259	0.037	−0.253	−0.433	0.001
	(0.036)	(0.124)		(0.074)	(0.127)	
Switching to a new job vs. staying in the same job	0.053	0.184	0.005	−0.029	−0.051	0.404
	(0.019)	(0.065)		(0.035)	(0.061)	

Notes: ATT = average treatment effect on the treated. Std(ATT) = average treatment effect on the treated in units of standard deviation. The standard errors of the ATT (in parentheses) are based on Abadie and Imbens (2009) and account for the propensity score being estimated rather than observed.

In terms of change in income, the only significant effect is switching to entrepreneurship being associated with a larger reduction in income compared to switching to a new job. The comparison with staying in the same job is also negative, but only significant at the $p < 0.10$ level. This result suggests that late-career transitions to entrepreneurship are associated with a significant reduction in income, which renders support to Hypothesis 3.

5.2. Robustness tests

We examined the robustness of the propensity score matched estimates in three ways. First, we estimated a series of models with *additional variables* that we did not include in the principal model specification because of missing values, which would have compromised the sample size in the treatment group. We chose variables that could qualify as confounders, such as marital status, the number of employees in the organization where the individual worked at the baseline, and the (log of the) average number of hours worked per week. The substantive results from the additional models are the same as from the principal ones: the directions and significances of the effects are the same as in Table 4 and even the effect sizes are nearly identical. Therefore, we are confident that the choice of variables for the principal model yields an adequate match and, thus, reliable treatment effect estimates.

Second, in order to account for *endogeneity* influencing our results, we tested whether treatment assignment is independent of outcome in our models. We used the *eteffects* module in Stata 14 to test the null hypothesis of the unobserved variables affecting treatment assignment and outcome being uncorrelated. The test does not reject the null hypothesis in any of our models, indicating that there is no significant correlation between the unobservables. This suggests that treatment assignment is independent of outcome. Moreover, we used the Heckman selection correction model to ensure that *sample selection bias* does not influence our findings. Maximum-likelihood and two-step estimations of the Heckman model clearly indicate that selection bias is not an issue in our analysis. Based on these tests, we conclude that the treatment effects in Table 4 are not unduly affected by endogeneity or sample selection bias.

Third, we estimated the treatment effect using a *regression model* instead of propensity score matching. The recommended regression technique for analyzing treatment effects is the conditional change model (Aickin, 2009), which not only adjusts for the baseline characteristics but also controls for changes in all predictors in the model (see the Appendix for the full model specification and results). The conditional change estimates tell the same story as the propensity score models. Compared to staying in the same job, switching to entrepreneurship ($\beta = 0.09$, $p = 0.001$) or taking a new job ($\beta = 0.04$, $p = 0.004$) are associated with significant improvement in quality of life. Whereas there is no statistically significant difference in change in income between staying in the same job or switching to a new one, switching to entrepreneurship is significantly associated with a reduced income ($\beta = -0.20$, $p = 0.001$).

Moreover, we used the conditional change model to explore our results further by estimating a number of interaction models to test for potential *moderating effects*. To do so, we interacted the treatment variable with the moderator and computed the simple slopes following Aiken and West (1991). The first moderator was age, which could influence the transition effects because age in general has been found to have a negative association with quality of life (Knesebeck et al., 2007; Webb et al., 2011). However, the interaction coefficient was not significant for either dependent variable.

Next, we looked into the perceived financial situation as a proxy for voluntary versus forced transitions. As such, the propensity score model ensures that individuals in a weak financial situation in the treatment group are compared with individuals in a similar situation in the control group. Nonetheless, there could be a moderating effect based on the assumption that a weak financial situation in t could motivate a forced transition in $t + 2$, which in turn would reduce the positive effect of a switch to entrepreneurship or a new job on quality of life. The interaction analysis showed that both transition effects are positive notwithstanding the baseline perceived financial situation. However, the magnitude of the positive effect is greater if the person "gets by alright" financially or has "difficulties," compared to "managing very/quite well" at the baseline. Thus, even if a weak financial situation was among the reasons for a transition to entrepreneurship or to a new job, the resulting effect on quality of life is still positive and significant.

We further explored any reduction in the time spent working as an explanation for the positive effect on quality of life of switching to entrepreneurship. To do so, we interacted the transition variable with change in the (log) number of weekly working hours. The results show that a switch to entrepreneurship leads to a greater change in quality of life when the number of working hours increases than if hours decrease or remain about the same. The implication is very interesting: switching to entrepreneurship would not seem to be about phasing out career employment and moving into retirement with the object of working less. Instead, this finding points to factors such as self-realization as being the primary motives for late-career switches from employment to entrepreneurship.

We examined this idea further by separately investigating the four sub-dimensions of control, autonomy, self-realization, and pleasure that constitute the overall construct of quality of life. The sub-dimensions are highly correlated among each other, so it is not surprising that the effect of switching to entrepreneurship has a positive and significant effect on each of them. This supports the argument by Hyde et al. (2003) that the construct should be used as a single entity. However, the magnitude of the effect on self-realization was somewhat greater than on the other three dimensions ($\beta = 0.15$ compared to the 0.07 to 0.10 range for the other coefficients). While not conclusive, this finding provides further support for self-realization being a central driving force for switching from employment to entrepreneurship in the late-career stage.

6. Discussion

This study is a first attempt to understand how late-career transitions from organizational employment to entrepreneurship influence an individual's utility of monetary and non-monetary outcomes. Our findings demonstrate that for late-career individuals, starting a business is positively associated with change in quality of life and negatively associated with change in income. Thus, our work provides several contributions.

First, our study moves the focus of research on late-career entrepreneurship from *ex ante* motivations and intention (Kautonen et al., 2011, 2014; Minola et al., 2016) to the analysis of the actual utility derived from switching to entrepreneurship. This knowledge fills a significant gap in our understanding of which outcomes older workers achieve when leaving a job for entrepreneurship. Next to enabling older workers to better control the amount and pace of work and to be more flexible in realizing their own work–life balance (Mallett and Wapshott, 2015; Wainwright and Kibler, 2014), our results suggest that switching to entrepreneurship in the late-career stage offers opportunities for self-realization that are reflected in an improved quality of life. Importantly, when comparing transitions to entrepreneurship with switches to another organizational job—which have been found to have a positive effect on a mature individual's wellbeing (Kim and Feldman, 2000)—we found that transitions to entrepreneurship result in a greater average improvement in quality of life. We suggest that this is because running one's own business offers more autonomy and control and more opportunities for self-realization than working in an organizational setting can (Hytti et al., 2013). Thus, our findings suggest that late-career entrepreneurship can serve as one substantive alternative to organizational bridge employment.

Second, the econometric results support our hypotheses arguing for extensions of existing models of employment choice in entrepreneurship. Specifically, we identified two significant limitations in the previous literature. First, the Lévesque and Minniti (2006) model suggests that late-career workers will not start businesses to produce monetary outcomes. Hence, the model misses an appropriate consideration for non-monetary incentives, and could be interpreted to mean that late-career workers would not start businesses at all. Second, Douglas and Shepherd (2000) introduce the role of non-monetary utility from entrepreneurship, but that model does not account for the individual's career stage and the relative balance of monetary and non-monetary outcomes in the utility from switching to entrepreneurship. Our research addresses both limitations and also expands the employment choice theory applied to entrepreneurship by simultaneously considering non-monetary utility (Douglas and Shepherd, 2000, 2002) and career stage (Lévesque and Minniti, 2006). By highlighting the positive role of non-monetary outcomes for older workers that switch to entrepreneurship, our findings support the need for these extensions.

Third, we add to the employment choice literature in general by expanding our understanding of the utility of actual outcomes. We do so by leveraging self-determination theory (Deci and Ryan, 2000) and the concept of quality of life (Hyde et al., 2003) as a career-phase specific, theory-driven, and holistic conceptualization of non-monetary utility. Our findings demonstrate that, contrary to predictions of models that focus solely on monetary utility (Lévesque and Minniti, 2006), late-career workers do switch to entrepreneurship, even if many of them experience a drop in income as a consequence. This finding is perfectly consistent with Hamilton's (2000) employment choice analysis, according to which switching to entrepreneurship does not pay in financial terms. Consistent with the growing literature in entrepreneurship associating running one's own business with wellbeing (Baron et al., 2016; Uy et al., 2013), our results suggest that older workers that switch to entrepreneurship compensate for the decrease in the level of income with improved quality of life, or by being better able to satisfy their fundamental need for autonomy, control, self-realization, and pleasure (Hyde et al., 2003). If we assume that generally the outcomes from switching to entrepreneurship are intended (Douglas, 2013), our findings are also consistent with standard neo-classical economic models of decision making.

Fourth, our findings add to the research stream applying self-determination theory by responding to Deci and Ryan's (2000) suggestion to not only address *why* the satisfaction of fundamental needs is essential for quality of life, but also to uncover *what* behavioral content affects the satisfaction of such fundamental needs. Specifically, we provide evidence that transitions from paid employment to entrepreneurship enable late-career individuals to satisfy their fundamental needs in ways that differ from those resulting from switching from one job to another. By showing that switching to entrepreneurship is associated with the greatest

improvement in quality of life, our results particularly highlight late-career entrepreneurship as an under-explored type of work explaining the satisfaction of fundamental needs in self-determination theory.

Finally, because macro-level implications of an aging population arise as the unintended consequences of individual action, our robust evidence at the individual level can inform recent debates on the policy challenges emerging as a result of an aging population (Kulik et al., 2014). Our results suggest that promoting late-career switches to entrepreneurship can be socially sustainable (OECD, 2012) because older individuals undertaking such transitions are typically better off. Hence, the promotion of late-career entrepreneurship can provide an attractive opportunity for societies to move from aging models that emphasize economic inactivity and dependence on pension benefits toward *active aging* models that are better suited to address the personal needs of aging individuals (Moulaert and Biggs, 2012). We contend that solutions supporting such active aging models are more likely to be socially and economically sustainable when institutional and organizational settings are designed to help aging people to maintain, or change, their desired work–life pattern in a way that contributes to a greater quality of life, and through that, to the potential for longer working careers.

7. Limitations and future research directions

Inevitably, our study is not without limitations. We use a broad range of relevant variables from a large multipurpose dataset in order to minimize the problem of omitted variables. Nonetheless, we did not have data on a number of factors that could be relevant to studying the effects of late-career switches on income and quality of life. It would be desirable if future studies of late-career entrepreneurship could also include factors such as the characteristics of the individuals' jobs before the switch, or the industry in which the subjects started their businesses and the type of business activity they engaged in. In addition, we were not able to empirically analyze the effect on quality of life of the potential discrepancy between the individuals' motivations driving the switch to entrepreneurship and the actual outcome they achieved (Deci and Ryan, 2000). In other words, we were not able to capture the contingencies that might affect the relationship between expectations and outcomes (Douglas, 2013). Future empirical research addressing this gap would add significantly to our understanding of the individual-level utility from late-career transitions into entrepreneurship.

Overall, our study paves the way for several extensions and additional investigations. First, our theoretical argument is consistent with the idea that employment choice may be non-neutral with respect to age (cf. Feldman and Bolino, 2000). In other words, the relationship between income, quality of life, and employment choice could be dependent on age and differ across age cohorts (Lévesque and Minniti, 2011). An investigation of how employment choice influences quality of life for various age cohorts could be informative because the demographic challenge we face is not limited to the aging population, but encompasses the growing problem of youth unemployment in many European and developing countries (OECD/European Union, 2015).

Second, although our theoretical argument and empirical approach have been cast in the context of employment choice theory, we did not present a formal mathematical model. However, much in the spirit of Becker (1965) and of our article, such a model could provide useful insight into the mechanisms linking employment choice, and human and social capital. In an alternative version, the individual-level quality-of-life functions could be aggregated across age cohorts and weighted by their relative size (Bönte et al., 2009; Lévesque and Minniti, 2011). This societal level model could provide important insights into the relationship between age distribution of the population, labor market dynamics, and welfare. In addition to testing such a model with real country data, it could be interesting to use simulation techniques as is often done in demography (Carroll and Harrison, 1998) and, more recently, in management research (Davis et al., 2007; Keyhani et al., 2015).

Third, future research should examine how the different personal features of late-career entrepreneurs and the types of entrepreneurial activity they engage in are associated with quality of life. Building on Kuhn's (2000) argument that self-knowledge (e.g., the understanding of one's own capabilities) improves with age, Baron et al. (2016) suggest that older entrepreneurs have higher levels of psychological capital (i.e., self-efficacy, optimism, hope, and resilience) that help them to manage risks and uncertainties, and thus the stress involved in entrepreneurship. It would be interesting to look into different older entrepreneurs' life histories and industry backgrounds and investigate how they affect the accumulation of psychological capital, stress management capabilities, new venture performance, and quality of life in the late-career stage. In addition, Shepherd (2015) raises the question of whether enterprising activities that are motivated by a desire to help others generate more positive wellbeing effects for the entrepreneur than can forms of entrepreneurship purely driven by self-interest. Future studies could add to late-career entrepreneurship and wellbeing research by examining whether and how commercial and pro-socially motivated entrepreneurship stimulate different cognitions and emotions (Douglas, 2013) and how these in turn affect quality of life.

8. Conclusion

The aging of the world population will be one of the grand challenges of the coming decades (Kulik et al., 2014). This article examines the consequences of late-career transitions to entrepreneurship on the individual's level of income and quality of life. It builds on and extends existing employment choice models to account for career stage and non-monetary motives. The empirical analysis provides novel and robust evidence that switching from organizational employment to entrepreneurship significantly increases a mature individual's quality of life. This evidence suggests that the promotion of late-career entrepreneurship could have a role in the portfolio of policy instruments for aging societies to facilitate the move from dependence-based aging models to active aging.

Conditional change model estimates

	Change in quality of life		Change in income	
	β	SE	β	SE
Treatment: $\Delta ES_{((t+2)-t)}$ (base: stayed in the same job)				
Switched to a new job	0.04**	0.01	0.02	0.02
Switched to entrepreneurship	0.09**	0.03	−0.20**	0.07
Baseline				
QoL_t	−0.35**	0.01	0.05*	0.02
$Income_t$	0.01	0.01	−0.59**	0.02
Female	0.02**	0.01	−0.04**	0.01
Age_t	0.00	0.00	−0.00	0.00
$Pfin_t$ (base: get by alright)				
Manage very/quite well	0.08**	0.01	0.10**	0.02
Difficulties	−0.03	0.02	−0.06	0.04
$Wealth_t$ (base: second tercile)				
First tercile	−0.02	0.01	−0.01	0.02
Third tercile	0.01	0.01	0.17**	0.02
$Health_t$	−0.14**	0.02	−0.05	0.04
$Depression_t$	−0.11**	0.01	−0.01	0.02
$Socrel_t$ (base: none)				
One	0.03	0.03	−0.06	0.04
2–4	0.07**	0.03	−0.05	0.04
5 or more	0.11**	0.03	−0.03	0.04
Change				
$\Delta QoL_{((t+2)-t)}$	–	–	0.03	0.02
$\Delta Income_{((t+2)-t)}$	0.01	0.01	–	–
$\Delta Pfin_{((t+2)-t)}$ (base: no change)				
Got worse	−0.09**	0.01	−0.09**	0.02
Got better	0.07**	0.02	0.08**	0.03
$\Delta Wealth_{((t+2)-t)}$ (base: stayed in the same tercile)				
Move up 1–2 terciles	0.01	0.01	0.08**	0.02
Moved down 1–2 terciles	−0.01	0.01	−0.07**	0.02
$\Delta Health_{((t+2)-t)}$ (base: no change)				
Got worse	−0.14**	0.02	−0.07*	0.03
Got better	0.13**	0.03	0.05	0.05
$\Delta Depression_{((t+2)-t)}$ (base: no change)				
Became depressed	−0.07**	0.01	0.01	0.02
No longer depressed	0.10**	0.01	0.01	0.02
$\Delta Socrel_{((t+2)-t)}$ (base: no change)				
Increased	0.04**	0.01	0.00	0.02
Decreased	−0.05**	0.01	−0.04*	0.02
Wave dummies included	Yes		Yes	
Intercept	1.01**	0.06	3.22**	0.13
R-squared	0.21		0.30	
F-test (degrees of freedom)	32.51 (29, 2850)		35.33 (29, 2850)	

Notes: $n = 5293$ observations (2851 individuals/clusters). SE = cluster-robust standard error. * and ** denote statistical significance at the 5% and 1% levels (two-tailed).

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