



# Exploring the Effects of Types of Early-Stage Entrepreneurial Activity on Subjective Well-Being

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## Abstract

Entrepreneurial activity has been seen as the single most important activity of individuals due to its role in the economic development of nations. However, little is known about the impact of entrepreneurial activity on the subjective well-being of nations beyond its economic impact. The purpose of this study is to explore the impact of different types of entrepreneurial activity – total entrepreneurial activity, opportunity-driven entrepreneurial activity and innovative entrepreneurial activity – on subjective well-being across nations. We consider three distinct mechanisms by which entrepreneurship may influence subjective well-being at the national level. Our panel data includes representative country-level data from 2008 to 2015 from five different data sources for 31 European countries. We employ four econometric models for analyzing the panel data: pooled OLS regression (POLS), fixed effects model (FE), random effects model (RE), and simultaneous equations model (3SLS). Our results suggest that opportunity-driven entrepreneurial activity has a positive impact on subjective well-being. In addition, we find that subjective well-being affects the level of opportunity-driven and innovative entrepreneurial activity. These findings have implications for policy-makers seeking to promote not only economic development but also subjective well-being in the nation.

**Keywords** National well-being · Subjective well-being · Opportunity entrepreneurship · Innovative entrepreneurship · Entrepreneurial activity

**JEL Classification** L26 · I31

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## 1 Introduction

Researchers and policy-makers alike have widely recognized the prominent role played by entrepreneurial activity in a national economy (van Stel et al., 2004; Acs, 2006; Thornton, 2011). On the whole, entrepreneurship is seen as the key mechanism for employment and productivity growth, making economies more competitive and innovative, and promoting social inclusion and equal opportunities. Accordingly, many countries have created institutional framework conditions to benefit entrepreneurialism among their citizens (Liebregts & Stam, 2019), based on a firm belief that individuals' entrepreneurial efforts have large-scale impacts on the economic conditions and social development of a nation. Indeed, entrepreneurs implement their business ideas through new venture creation (Wright & Marlow, 2012), which results in a significant contribution to national output (Stam & Van Stel, 2011), increased national competitiveness (Aparicio et al. 2016) and new job creation (Block et al. 2018; Van Praag & Versloot, 2007). Moreover, entrepreneurial individuals commercialize innovations and, hence, bring new and improved products and services to market. This may have a transformative effect on economic and social conditions, possibly for the better (Carree et al., 2002).

Despite the clear importance of entrepreneurship to national economies, there is still a need to understand the impact of entrepreneurial activity on the subjective well-being of nations. The lack of entrepreneurship research in the field of national well-being is surprising given that purely economic measures of well-being (e.g., index of economic growth, index of disposable income) have been for some time called into question by prominent economists (Stiglitz et al., 2009). Economic measures of well-being tell “an incomplete story of how people's lives are going and whether certain policies are making people better off” (Nikolova & Graham, 2020, p. 2). The most frequently used measures of well-being are gross national income (GNI) per capita and gross domestic product (GDP) per capita (McGillivray, 2007), which fail to account not only for the non-economic factors that add to well-being, but also for externalities in economic activity that may improve or deteriorate well-being (Nikolova & Graham, 2020).

High levels of national well-being, in addition to economic prosperity, have been one of the explicit goals of the European Union for some time now (Commission, 2013). Moreover, national governments have been paying more attention to the impacts of economic activity on subjective well-being. For example, in 2018, Scotland, Iceland and New Zealand initiated a federation of Well-being Economy Governments (WeGo) in order to promote policy-making that supports both economic development and subjective well-being.

To date, only a handful of studies have tackled the challenge of investigating the relationship between entrepreneurship and subjective well-being on a national level. Harbi and Grolleau (2012) explored how self-employment impacts subjective well-being using panel data from 15 OECD countries to find that self-employment had an overall negative effect on national well-being. Naudé and colleagues (2014) investigated how early-stage entrepreneurial activity relates to subjective well-being using a sample of 34 countries. They found an inverted U-shaped relationship between total entrepreneurial activity and subjective well-being and between opportunity-driven entrepreneurial activity and subjective well-being. The nonlinearity of the relationship was presumably driven by a few sampled countries dissimilar in their institutional conditions and level of economic development.

The lack of consensus on the nature of the relationship between entrepreneurship and subjective well-being at the national level is likely a result of using different measures of entrepreneurship. Self-employment does not represent entrepreneurship in its totality (Sevä

et al., 2016) and tends to coincide with necessity entrepreneurship (Burke et al., 2020; Margolis, 2014). Having said that, most entrepreneurial endeavors in developed economies are opportunity-driven (Reynolds et al., 2002), indicating that entrepreneurship is considered a good career opportunity rather than a forced choice (Angulo-Guerrero et al., 2017; Porfirio et al., 2020) for most of those engaged. Although many entrepreneurs are imitators, some partake in entrepreneurship to develop new products and markets. The latter receive the most attention from policy-makers, who consider innovative entrepreneurship essential in tackling major societal challenges. In addition, researchers consider innovative entrepreneurship to be the main source of economic growth (Galindo & Méndez, 2014) and possibly a driver of societal change – a research area that needs further investigation (Block et al., 2017).

This study aims to shed light on the relatively unexplored relationship between national subjective well-being and entrepreneurial activity. We test the impact of different types of entrepreneurial activity (total entrepreneurial activity, opportunity-driven entrepreneurial activity and innovative entrepreneurial activity) on subjective well-being at the national level. We consider three distinct mechanisms by which entrepreneurship may influence national subjective well-being: first, entrepreneurs contribute to aggregate national well-being by enjoying higher levels of well-being themselves; second, entrepreneurs shape markets by providing goods and services; and third, entrepreneurs provide jobs for themselves and others and co-create national economic conditions. In doing so, we contribute to the entrepreneurship and well-being literature by distinguishing between the quantity (total entrepreneurial activity) and quality (opportunity-driven and innovative entrepreneurial activity) of entrepreneurial activity when analyzing the effects of entrepreneurial activity on subjective well-being at the national level. Our study contributes empirical evidence to this underexplored area of research. Moreover, we consider entrepreneur-level, market-level and macro-level mechanisms to explain the relationships between entrepreneurial activity and subjective well-being at the national level.

To test the hypotheses, we conduct panel data analyses on a longitudinal sample of empirical data (spanning eight years) from 31 European countries. We control for the influence of the political, legal and economic characteristics of a national economy. We find support for our hypothesis that opportunity-based entrepreneurial activity has a positive impact on subjective well-being. Our analyses suggest that subjective well-being, in turn, has an effect on the level of opportunity-driven entrepreneurial activity and innovative entrepreneurial activity. We conclude by discussing the relevance of our findings for future researchers of well-being and policy-makers.

## 2 Literature Review and Hypotheses

### 2.1 Importance and Measurement of National Subjective Well-Being

Creating a more entrepreneurial society with an institutional and societal framework that is conducive to high levels of subjective well-being has been one of the explicit goals on the European Union's policy agenda for some time (European Commission, 2013). Ever since the United Nations' General Assembly in 2011 called for a "more inclusive, equitable and balanced approach to economic growth that promotes the well-being of all people" (United Nations, 2012), many global leaders have helped to bring about a paradigm shift in the approach to socio-economic progress, initiating projects designed to bring psychological

and subjective well-being to the forefront of societal goals. Subjective well-being accounts at the national level now complement traditional economic measures of progress and development (Diener et al., 2010; Lyubomirsky et al., 2005). Subjective well-being is an instrumental indicator of work-related productivity and effectiveness (Oswald et al., 2015), business performance (Edmans, 2012; Harter et al., 2010), individual creativity (Ceci & Kumar, 2016), job-related behaviors (Nikolova & Cnossen, 2020), and overall health and longevity (Lawrence et al., 2015). This implies that subjective well-being indicators at the regional and national level capture the extent to which the population is healthy and productive, which has important immediate effects on health and prosocial behavior. In this context, well-being represents not only a key psychological goal of a nation, but also a key social, economic and political objective. At the same time, several authors (Blanchflower & Oswald, 2011; Stutzer, 2010; Nikolova et al., 2020) in the field of happiness economics have emphasized that economic activity should not simply serve its own material welfare-related goals; rather, the value of economic activity should spring from its contribution to overall well-being.

An important challenge in scholarly research concerns the measurement of well-being. Several measurement instruments have been developed, ranging from subjective measures of affect, life satisfaction and psychological functioning to objective measures of physical health and social well-being (Wiklund et al., 2019). The most common approaches to measuring the material welfare of an economy are the GNI per capita and GDP per capita (McGillivray, 2007), even though there has been increasing consensus that these indicators reflect a very narrow view of a country's development and should include measurement of individuals' well-being (Naudé et al., 2014; Stiglitz et al., 2009). Psychologists concur that well-being refers to optimal functioning and experience (Diener, 2009), which revolves around two distinct perspectives: hedonism and eudaimonism. A hedonic perspective equates (subjective) well-being with pleasure and happiness (Ryan & Deci, 2002), while a eudaimonic perspective on (psychological) well-being involves the cultivation of personal strengths and a contribution to the greater good in order to realize one's true potential (Ryff & Keyes, 1995). At the national level, subjective well-being as an indicator has been most often captured as the degree to which people are satisfied with their lives and their jobs – the degree to which individuals judge the overall quality of their lives as favorable (Blanchflower & Oswald, 2011; Naudé et al., 2013). Another aspect of national well-being is based on the evaluation of objective components of a good life, including economic indicators (i.e., income level, education level, health, social net and others) (Alartseva & Barysheva, 2015). Although objective well-being differs conceptually from subjective well-being, objective well-being is indicative of subjective well-being (Western & Tomaszewski, 2016). This comes as no surprise because subjective well-being depends on an array of economic, social, political, cultural, institutional and other determinants (Fritsch et al., 2019; Želinský et al., 2018). Therefore, objective well-being measures represent the actual circumstances, while subjective measures of well-being reflect the actual experiences of people.

## 2.2 Entrepreneurial Activity and National Subjective Well-Being

On the individual level, entrepreneurship provides employment opportunities and opportunities for climbing the social ladder for those engaged in entrepreneurship, even those at the bottom (Sutter et al., 2019). Entrepreneurship also creates good conditions to satisfy some basic psychological needs, especially the needs for self-determination and autonomy

(Buttner & Moore, 1997; Gelderen, 2016; Nikolaev et al., 2020), which may explain why entrepreneurs are on average more satisfied (Shir et al., 2018) and healthier (Nikolova, 2019) than employees. Opportunity-driven entrepreneurs have been thought to enjoy higher levels of subjective well-being than necessity-driven entrepreneurs and employees (Binder & Coad, 2013; Larsson & Thulin, 2019). Recently, however, Amorós and colleagues (2021) found that necessity-motivated entrepreneurs report similar levels of well-being as opportunity-motivated entrepreneurs.

On the market level, new and young companies help to satisfy market needs and create value through both innovation and imitation (Najda-Janoszka, 2014). Both innovative and imitative entrepreneurship are integral to competitive markets, as they improve existing products and services, lower their prices, make them more available to consumers and increase people's standard of living in return.

Moreover, at the national level, new and young companies have proven to be short- and long-term job creators (Van Praag & Versloot, 2007), leading to a significant reduction in unemployment (Acs & Mueller, 2008; Block et al., 2018; Thurik et al., 2008). The relationship between unemployment and low well-being on the individual and national level has been well established. Unemployment affects the well-being of both the unemployed (McKee-Ryan et al., 2005) and the employed (Clark et al., 2010), possibly through the perception of poorer career prospects and higher job insecurity.

Finally, since entrepreneurial activity is often countercyclical, it helps to stabilize economies during economic downturns (Fritsch et al., 2015). This is partly due to the fact that economic crises go hand in hand with high levels of unemployment, pushing individuals toward self-employment out of necessity (Aceytuno et al., 2020). However, the role of opportunity-driven entrepreneurship during economic downturns is not to be underestimated, as these entrepreneurial ventures can create jobs during recessions (Devece et al., 2016), while also providing necessary products and services to households, businesses and governments.

**Hypothesis 1** *The level of total entrepreneurial activity at the national level positively affects the level of subjective well-being at the national level.*

Individuals engage in entrepreneurial activity for one of two reasons: to act upon an identified opportunity or out of economic necessity. This motivation depends on determinants such as the individual-level characteristics of entrepreneurs (Cunningham & Lischeron, 1991; Mota et al., 2019), the economic context in which the individuals live and work (Mota et al., 2019; Schoonhoven & Romanelli, 2001), and the institutional environment (Amorós et al., 2019; Galindo-Martín et al., 2019). Because an individual's motivation to become an entrepreneur affects entrepreneurship-related goals, venture performance and perceived subjective well-being (Hessels et al., 2008), it is important to differentiate between opportunity- and necessity-driven entrepreneurship. At its core, opportunity entrepreneurship is related to improving one's job characteristics and increasing one's earnings relative to available employment. Therefore, it is not surprising that opportunity entrepreneurs enjoy high levels of well-being (Kautonen et al., 2017; Wiklund et al., 2019). Furthermore, research (Binder & Coad, 2013; Larsson & Thulin, 2019) has shown that the above-average level of subjective well-being among opportunity entrepreneurs can entirely explain the positive relationship between total entrepreneurship activity and subjective well-being. This may indicate that opportunity entrepreneurs and not necessity entrepreneurs might be the ones benefiting from entrepreneurship in terms of well-being.

Moreover, opportunity entrepreneurship implies a discovery and exploitation of unexploited or underexploited market opportunities. Opportunity exploitation results in supplying those products and services to the market that are especially valuable to customers, thereby creating value for customers and increasing their quality of life. Such ventures create more jobs and have higher growth potential than necessity-driven ventures (Devece et al., 2016). In fact, the effect of entrepreneurship on economic growth can be attributed solely to opportunity entrepreneurship (Acs, 2006; Aparicio et al., 2016), indicating that opportunity entrepreneurship may play a much more important role than necessity entrepreneurship in creating a successful economy and improving well-being.

In analyzing the determinants of subjective well-being at the national level, it is therefore important to differentiate between opportunity and necessity entrepreneurship, given that the relationship between entrepreneurship and national well-being may be attributed mostly or even entirely to opportunity entrepreneurship (Amorós & Bosma, 2014).

**Hypothesis 2** *The higher the share of opportunity-based entrepreneurial activity at the national level, the higher the level of subjective well-being at the national level.*

Innovation has an important place within the entrepreneurship literature. Theories of entrepreneurship suggest that entrepreneurship contributes to economic development and social change through innovation (Schumpeter, 1934) and that innovation is crucial in exploiting opportunities arising from changes in the environment (Drucker, 1985). Innovative entrepreneurship implies exploitation of unexploited opportunities. In the narrower sense (as defined by Global Entrepreneurship Monitor [GEM] for example), this means introducing new products or services to the market. However, in a broader sense, innovation includes introducing new methods of production, introducing different resources into production, innovating modes of conducting business, and creating new markets (Dekkers et al., 2014). Only a smaller proportion of entrepreneurial activity is truly innovative entrepreneurial activity (Low, 2015). The nature of innovative entrepreneurship also differs between countries according to their economic development. In high-income countries, innovative entrepreneurship involves the invention of new products and the commercialization of new products, while in low-income countries, it tends to revolve more around improvements (Low, 2015).

Research has shown that innovative entrepreneurship has a positive and significant impact on economic growth (Szabo & Herman, 2012). Research has also found that successful innovative new ventures are the biggest job creators (Aulet & Murray, 2013; Henrikson & Johansson, 2010; Wong et al., 2005). That being said, some researchers have suggested that the short- and medium-term effects of innovative entrepreneurship may differ from the long-term effects. Van Stel and Storey (2004) explained that new firms may have negative short-term effects, but positive long-term effects on employment growth, as they put pressure on incumbent firms. Although Baptista et al. (Baptista et al., 2008) found negative short-term effects, these were not statistically significant. The positive effect of entrepreneurship on employment growth was only evident years after initial entry. Tang and Koveos (2004) even reported a negative relationship between the innovation index and economic growth in high-income countries, a result that corroborated that of Crudu (2019). However, Andersson and colleagues (2012) found support for positive long-term effects of entrepreneurship on productivity, although the immediate effects were negative. This suggests that many positive effects of innovative entrepreneurship occur several years after new firm entry.

As new and young innovative enterprises place competitive pressure on incumbents to increase their innovative endeavors (Aghion et al., 2009), these competitive pressures can result in increased uncertainty and employment contraction, which in turn may decrease subjective well-being, at least in the short-term (Aghion et al., 2016). However, in the long run, successful innovative new ventures are job creators (Dolan & Metcalfe, 2012) and contribute to the reduction of unemployment. Innovative companies may also create better jobs compared to other types of business ventures (Dolan & Metcalfe, 2012) and improve people's well-being through access to better products and services (Hussinki et al., 2019).

**Hypothesis 3a** *The higher the share of innovative entrepreneurial activity at the national level, the lower the level of subjective well-being at the national level in the short term.*

**Hypothesis 3b** *The higher the share of past innovative entrepreneurial activity at the national level, the higher the level of subjective well-being at the national level.*

The breadth and wealth of entrepreneurial opportunities depend on the interplay among the macroeconomic environment, industry conditions and financial environment conditions (Cuervo, 2005 for a review). Van Stel et al. (2005) suggested that the roles played by entrepreneurial activity vary for countries at different stages of economic development. Furthermore, institutions provide an overarching framework of behaviors that facilitate not only the discovery of entrepreneurial opportunities, but also their exploitation. Such institutional frameworks are reflected in the developmental differences between firms across contexts (Moran & Ghoshal, 1999). Overall, it is reasonable to conclude that various combinations of factors affect the level and quality of entrepreneurial activity across countries (Beynon et al., 2016), and those patterns also influence the nature of the relationship between the level of entrepreneurial activity and level of subjective well-being at the national level. Consequently, it is important to consider and control for economic and institutional factors when examining this relationship.

### 3 Methodology

#### 3.1 Variables and Data

To test our hypotheses, we constructed a nationally representative country-level database, containing data for European countries from 2008 to 2015 from five different data sources. The timeframe and countries included in the sample were the consequence of the availability of data in the chosen databases. The countries in our sample were Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Our *dependent variable* was the subjective well-being measure from the World Happiness Report (WHR). The WHR reports individuals' responses to the Cantril ladder (Cantril, 1965), aggregated at the country level. The Cantril ladder requires respondents to rate their life on a scale from 0 to 10, where the best possible life is represented by 10 and the worst possible life is represented by 0. This widely used measure of the cognitive



aspect of subjective well-being has proved to be reliable and valid across various contexts and age groups (Levin, 2014; Burckhardt, 2003).

Our *independent variable* was entrepreneurial activity. We used three different measures of entrepreneurial activity from the GEM (Reynolds et al., 2002): total early-stage entrepreneurial activity (TEA), opportunity-driven TEA (TEAopp) and innovative TEA (TEAnpm). TEA is the percentage of the population aged 18–64 who are either nascent entrepreneurs or owner-managers of a new business. TEAopp is the percentage of those involved in TEA who claim to be driven by opportunity, as opposed to finding no other option for work or just maintaining their income. TEAnpm represents the percentage of those involved in TEA who claim a new product-market combination.

We also employed a set of *control variables*. We controlled for the economic environment using GDP per capita (logGDPpc; World Happiness Report). To control for the political environment, we used the democracy index (Economist Intelligence Unit, GapMinder). The legal environment was controlled for using the economic freedom index (Fraser Institute). The control variables were chosen based on the results of previous research (Ferreira et al., 2017; Larsson & Thulin, 2019) in which these variables have been shown to predict both entrepreneurial activity and well-being.

### 3.2 Hypotheses Testing

Equation (1) represents the relationship effect of total early-stage entrepreneurship (TEA, represented by  $E_{it}$ ) on subjective well-being ( $SWB_{it}$ ) (H1), early-stage opportunity entrepreneurship (TEAopp, represented by  $E_{it}$ ) on subjective well-being (H2), and early-stage innovative entrepreneurship (TEAnpm, represented by  $E_{it}$ ) on subjective well-being (H3).  $C_{it}$  describes a set of control variables (logGDPpc, economic freedom index and democracy index).

$$SWB_{it} = \beta_0 + \beta_1 \cdot E_{it} + \beta_2 \cdot C_{it} + u_{it} \quad (1)$$

We also tested the mid-term effects of innovative entrepreneurship on subjective well-being in addition to short-term effects. We created several lagged variables of innovative early-stage entrepreneurial activity (TEAnpm, represented by  $E_{it-k}$ ). The difference ( $k$ ) between the current well-being ( $SWB_{it}$ ), control variables ( $C_{it}$ ) and lagged entrepreneurship variable was one to five years.

$$SWB_{it} = \beta_0 + \beta_1 \cdot E_{it-k} + \beta_2 \cdot C_{it} + u_{it} \quad (2)$$

To test the hypotheses, we employed three models for analyzing the panel data: pooled OLS regression (POLS), fixed effects model (FE) and random effects model (RE). Before proceeding with the panel data analyses, we tested the assumptions of non-multicollinearity, homoscedasticity and non-serial correlation. All the assumptions were met, except for non-serial correlation. We also tested for multivariate outliers and found that observations pertaining to the Russian Federation consistently appeared as multivariate outliers due to the score on the democracy index and its relationship with other variables in our model. We proceeded with the robust standard error estimators for panel models (Wooldridge, 2010), but excluded the Russian Federation from our analyses. We performed the Breusch-Pagan LM test of random effects and Hausman test for endogeneity to guide our interpretation of the results.



**Table 1** Summary of descriptive statistics for dependent, independent and control variables

	SWB	TEA	TEAopp	TEAnpm	logGDPpc	EconFree	M	SD	Min	Max
SWB							6.26	0.96	3.84	8.02
TEA	-0.2607*						7.17	2.56	2.35	14.94
TEAopp	0.5983*	-0.0803					73.65	10.57	34.72	91.79
TEAnpm	0.2909*	0.1030	0.3639*				27.47	8.69	4.55	54.13
logGDPpc	0.8562*	-0.2301*	0.6833*	0.4180*			10.33	0.45	9.31	11.46
Economic free- dom	0.5069*	0.1399	0.4230*	0.3742*	0.5233*		7.57	0.41	6.32	8.46
Democracy	0.7438*	-0.1048	0.6503*	0.4000*	0.7523*	0.6024*	7.80	1.28	2.94	9.93

\*Correlation is significant at the  $p < 0.05$  level (2-tailed)

### 3.3 Reverse Causation Testing

To test the potential bidirectional or reverse causation between entrepreneurship and subjective well-being, we used three-stage least squares (3SLS). 3SLS was able to account for the endogenous nature of subjective well-being and entrepreneurship and allow for the estimation of a simultaneous system of equations with endogenous variables.

Equation (3) and Eq. (4) express the simultaneous relationship between subjective well-being ( $SWB_{it}$ ) and different types of early-stage entrepreneurial activity (TEA, TEAopp and TEAnpm, represented by  $E_{it}$ ).  $X_{it}$  represents a vector of control variables related to the economic ( $\log GDPpc$ ), legal (economic freedom index) and political (democracy index) environment.  $W_{it}$  is a vector of control variables, which includes the economic freedom index (Fraser Institute), unemployment rate (World Bank), entrepreneurial training (GEM), and cultural and social norms (GEM). The control variables in Eq. (3) were chosen based on previous research on the predictors of entrepreneurial activity (Acs et al., 2012; Busenitz et al., 2000; McMullen et al., 2008; Valdez & Richardson, 2013).

$$SWB_{it} = \beta_0 + \beta_1 \cdot E_{it} + \beta_2 \cdot X_{it} + \varepsilon_{it} \tag{3}$$

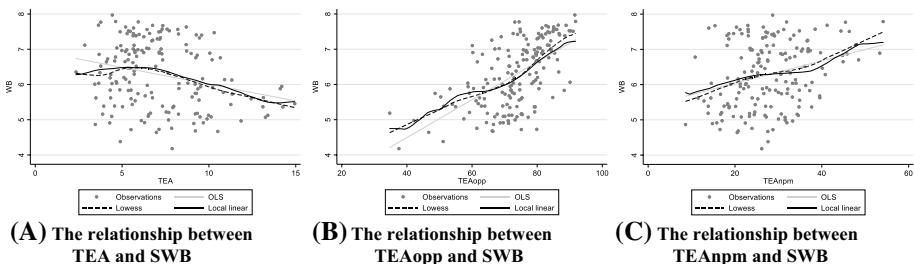
$$E_{it} = \beta_3 + \beta_4 \cdot SWB_{it} + \beta_5 \cdot W_{it} + \eta_{it} \tag{4}$$

## 4 Results

### 4.1 Descriptive Statistics

The relationship between total early-stage entrepreneurial activity and country-level subjective well-being was negative ( $r = -0.261, p < 0.001$ ). At the same time, this relationship was moderately strong and positive for opportunity-driven early-stage entrepreneurial activity ( $r = 0.598, p < 0.001$ ), and weak and positive for innovative early-stage entrepreneurial activity ( $r = 0.291, p < 0.001$ ) (Table 1). The correlation between innovative early-stage entrepreneurial activity and lagged innovative early-stage entrepreneurial activity was moderately strong and positive ( $0.429 \leq r \leq 0.624, p < 0.001$ ).

The relationship between total early-stage entrepreneurial activity and subjective well-being was negative and linear (Fig. 1a), whereas the relationships between opportunity-driven entrepreneurial activity and well-being (Fig. 1b) and between innovative entrepreneurial activity and well-being (Fig. 1c) were positive and linear. However, it seems



**Fig. 1** Scatterplot of the relationship between different types of early-stage entrepreneurial activity and country-level subjective well-being

that subjective well-being in countries with a high proportion of innovative entrepreneurship and countries with low levels of opportunity-driven entrepreneurship may have been slightly underestimated by the OLS regression due to few observations.

#### 4.2 The Estimation of the Effect of Entrepreneurial Activity on Subjective Well-Being

Table 2 shows the results of the panel data analysis of the effects of total early-stage entrepreneurial activity on subjective well-being. The Hausman test for endogeneity was statistically significant ( $\chi^2 = 14.79$ ,  $p = 0.005$ ), which indicates the presence of fixed effects; therefore, we interpreted the fixed effects model. Total early-stage entrepreneurial activity had no statistically significant impact on country-level subjective well-being ( $b_1 = 0.02$ ,  $p = 0.241$ ). However, the impact of democracy on subjective well-being was statistically significant and positive.

Table 3 shows the results of the panel data analysis of the relationship between opportunity-driven early-stage entrepreneurship and country-level subjective well-being. The Hausman specification test was statistically significant ( $\chi^2 = 57.61$ ,  $p < 0.001$ ), indicating that interpretation of the fixed effects model would be appropriate. The results of the fixed effects model showed a marginally significant positive impact of opportunity-driven early-stage entrepreneurial activity on subjective well-being ( $b_1 = 0.01$ ,  $p = 0.030$ ).

Table 4 shows the results of the panel data analysis of the effect of innovative early-stage entrepreneurship on subjective well-being. Considering the results of the Hausman

**Table 2** The effect of total early-stage entrepreneurial activity (TEA) on subjective well-being (31 European countries, 150 observation points)

	POLS (cluster id)		FE (vce robust)		RE (vce robust)	
	<i>b</i> ( <i>se</i> )	<i>p</i>	<i>b</i> ( <i>se</i> )	<i>p</i>	<i>b</i> ( <i>se</i> )	<i>p</i>
TEA	-0.032 (0.023)	0.179	0.017 (0.014)	0.241	0.009 (0.014)	0.529
logGDPpc	0.740 (0.428)	0.094	2.714 (1.439)	0.069	1.188 (0.508)	0.019
Economic freedom	0.373 (0.204)	0.109	-0.543 (0.278)	0.060	-0.087 (0.200)	0.663
Democracy	0.518 (0.149)	0.002	0.401 (0.179)	0.033	0.405 (0.163)	0.013
R <sup>2</sup> total	0.800		0.741		0.777	
R <sup>2</sup> within			0.257		0.220	
R <sup>2</sup> between			0.760		0.800	
F(4, 31)	57.072	0.000	4.994	0.003		
Wald $\chi^2(5)$					142.173	0.000
Sigma $\alpha_i$			0.824		0.400	
Sigma $\epsilon$			0.224		0.224	
Rho			0.931		0.761	
Hausman test					14.790	0.005
Breusch and Pagan LM test					132.370	0.000

**Table 3** The effect of opportunity-driven early-stage entrepreneurial activity (TEAopp) on subjective well-being (31 European countries, 150 observation points)

	POLS (cluster id)		FE (vce robust)		RE (vce robust)	
	<i>b</i> ( <i>se</i> )	<i>p</i>	<i>b</i> ( <i>se</i> )	<i>p</i>	<i>b</i> ( <i>se</i> )	<i>p</i>
TEAopp	-0.009 (0.005)	0.121	0.007 (0.003)	0.030	0.007 (0.003)	0.047
logGDPpc	0.844 (0.482)	0.090	2.517 (1.420)	0.086	1.110 (0.489)	0.023
Economic freedom	0.266 (0.204)	0.203	-0.465 (0.273)	0.099	-0.066 (0.185)	0.722
Democracy	0.584 (0.168)	0.002	0.325 (0.178)	0.078	0.367 (0.168)	0.028
R <sup>2</sup> total	0.798		0.740		0.773	
R <sup>2</sup> within			0.269		0.235	
R <sup>2</sup> between			0.759		0.795	
F(4, 31)	58.518	0.000	6.263	0.001		
Wald chi <sup>2</sup> (4)					135.035	0.000
Sigma $\alpha_i$			0.759	0.383		
Sigma $\epsilon$			0.222	0.222		
Rho			0.921	0.748		
Hausman test					57.610	0.000
Breusch and Pagan LM test					129.690	0.000

specification test ( $\chi^2 = 10.66$ ,  $p = 0.031$ ), we interpreted the fixed effects model. The results showed that innovative early-stage entrepreneurial activity had a statistically significant negative effect on subjective well-being ( $b_1 = -0.01$ ,  $p = 0.036$ ).

The analyses of the lagged effects of innovative entrepreneurial activity were consistent, in that, the effect of innovative early-stage entrepreneurship on subjective well-being was no longer statistically significant, but remained negative until the fifth year. Table 5 shows the results of the panel data analysis of the three-year lagged effect of innovative early-stage entrepreneurship on subjective well-being. The results of the panel data analysis show that the innovative early-stage entrepreneurial activity had no lagged effect on subjective well-being ( $b_1 = -0.001$ ,  $p = 0.680$ ). The effect of GDPpc on subjective well-being was statistically significant and positive. In the fifth year, the effect of innovative early-stage entrepreneurship became positive, but remained statistically non-significant ( $b_1 = 0.008$ ,  $p = 0.327$ ).

### 4.3 The Estimation of the Simultaneous System of Equations

Table 6 shows the results of the estimation of three simultaneous equation models using 3SLS. We found that neither total early-stage entrepreneurial activity ( $b_1 = 0.04$ ,  $p = 0.421$ ) nor innovative early-stage entrepreneurial activity ( $b_1 = 0.01$ ,  $p = 0.650$ ) was a significant predictor of country-level subjective well-being in the specified model; however, opportunity-driven early-stage entrepreneurial activity was a positive predictor of subjective

**Table 4** The effect of innovative early-stage entrepreneurial activity (TEAnpm) on subjective well-being (31 European countries, 150 observation points)

	POLS (cluster id)		FE (vce robust)		RE (vce robust)	
	<i>b</i> ( <i>se</i> )	<i>p</i>	<i>b</i> ( <i>se</i> )	<i>p</i>	<i>b</i> ( <i>se</i> )	<i>p</i>
TEAnpm	-0.009 (0.007)	0.216	-0.009 (0.004)	0.036	-0.011 (0.003)	0.002
logGDPpc	0.911 (0.454)	0.054	2.652 (1.357)	0.060	1.637 (0.456)	0.003
Economic freedom	0.270 (0.205)	0.198	-0.345 (0.306)	0.269	0.015 (0.191)	0.935
Democracy	0.515 (0.163)	0.004	0.292 (0.159)	0.077	0.336 (0.151)	0.027
R <sup>2</sup> total	0.798		0.751		0.786	
R <sup>2</sup> within			0.286		0.254	
R <sup>2</sup> between			0.767		0.804	
F(4, 31)	52.471	0.000	8.217	0.000		
Wald chi <sup>2</sup> (4)					180.588	0.000
Sigma $\alpha_i$			0.710		0.401	
Sigma $\epsilon$			0.219		0.219	
Rho			0.913		0.769	
Hausman test					10.660	0.031
Breusch and Pagan LM test					150.870	0.000

well-being ( $b_1=0.04$ ,  $p=0.022$ ). Democracy index consistently predicted country-level subjective well-being.

Conversely, country-level subjective well-being positively predicted opportunity-driven early-stage entrepreneurial activity ( $b_4=7.65$ ,  $p<0.001$ ). It was also a marginally significant predictor of innovative early-stage entrepreneurial activity ( $b_4=1.94$ ,  $p=0.087$ ). Meanwhile, country-level subjective well-being was a negative predictor of total early-stage entrepreneurial activity ( $b_4=-2.32$ ,  $p<0.001$ ). Economic freedom and cultural and social norms that encourage entrepreneurship were positive predictors of total early-stage entrepreneurial activity. Entrepreneurial training was a positive predictor of innovative early-stage entrepreneurial activity. Unemployment was a negative predictor of total early-stage entrepreneurial activity and opportunity-driven early-stage entrepreneurial activity.

## 5 Discussion

With this research, we sought to shed light on the relationship between subjective well-being and entrepreneurial activity at the national level. To empirically explore the relationship, we accounted for the heterogeneity of entrepreneurial activity: total entrepreneurial activity, opportunity-driven entrepreneurial activity and innovative entrepreneurial activity. In order to estimate subjective well-being at the national level, we used rich panel data on life satisfaction from 31 countries, aggregated at the national level. Our analyses account for the potentially delayed effect of innovative early-stage entrepreneurial activity on

**Table 5** The lagged effect of innovative early-stage entrepreneurial activity (TEAnpm (t-3)) on subjective well-being (31 European countries, 123 observation points)

	POLS (cluster id)		FE (vce robust)		RE (vce robust)	
	<i>b</i> ( <i>se</i> )	<i>p</i>	<i>b</i> ( <i>se</i> )	<i>p</i>	<i>b</i> ( <i>se</i> )	<i>p</i>
TEAnpm (t-3)	0.002 (0.007)	0.832	-0.001 (0.003)	0.680	-0.001 (0.004)	0.802
logGDPpc	1.003 (0.446)	0.032	2.988 (0.680)	0.000	1.850 (0.407)	0.000
Economic freedom	0.120 (0.199)	0.552	-0.519 (0.280)	0.073	-0.207 (0.187)	0.269
Democracy	0.479 (0.149)	0.003	0.174 (0.154)	0.265	0.111 (0.132)	0.403
R <sup>2</sup> total	0.824		0.737		0.751	
R <sup>2</sup> within			0.336		0.331	
R <sup>2</sup> between			0.782		0.792	
F(4, 31)	45.598	0.000	6.546	0.001		
Wald chi <sup>2</sup> (4)					76.105	0.000
Sigma $\alpha_i$			0.754		0.350	
Sigma $\epsilon$			0.210		0.210	
Rho			0.928		0.735	
Hausman test					36.780	0.000
Breusch and Pagan LM test					221.740	0.000

subjective well-being and for potential bidirectional or reverse causation between entrepreneurial activity and subjective well-being.

We argue that the lack of a significant relationship between the level of entrepreneurial activity and subjective well-being may be attributed to the heterogeneity of entrepreneurial activity. In effect, the quality of entrepreneurial activity contributes significantly to national subjective well-being, while the quantity of the activity does not.

Our findings that the share of opportunity-driven early-stage entrepreneurial activity has a positive effect on subjective well-being at the national level could be driven by several mechanisms elaborated in previous empirical findings. First, prior research has indicated that opportunity-based entrepreneurs may experience higher levels of satisfaction than necessity-based entrepreneurs and those who are employed (Kautonen et al., 2017). The level of personal satisfaction thus positively contributes to aggregated well-being. Second, opportunity-based entrepreneurs exploit unexploited or underexploited market opportunities to meet latent market needs or address existing market needs better (Ardichvili et al., 2003; Huggins & Thompson, 2011). In this respect, opportunity-based entrepreneurship positively enhances national productivity and competitiveness (Aparicio et al., 2016), which positively contributes to the quality of life and life satisfaction among citizens when controlling for heterogeneity in economic and institutional development.

Our empirical results point to a negative impact of innovative entrepreneurial activity on national well-being, suggesting that creative destruction may be present in a national economy. Innovative entrepreneurial activity may have disruptive effects on final customer markets and wealth distribution in a national economy (Spencer et al., 2008). Innovative

**Table 6** Bidirectional relationship between the different types of early-stage entrepreneurial activity and subjective well-being (31 European countries, 137 observation points)

	TEA		TEAopp		TEAnpm	
	<i>b</i> ( <i>se</i> )	<i>p</i>	<i>b</i> ( <i>se</i> )	<i>p</i>	<i>b</i> ( <i>se</i> )	<i>p</i>
<i>Subjective Well-Being (SWB)</i>						
Entrepreneurial activity	0.035 (0.044)	0.421	0.035 (0.015)	0.022	0.013 (0.028)	0.650
logGDPpc	0.730 (0.460)	0.001	0.272 (0.144)	0.058	0.774 (0.535)	0.148
Economic freedom	0.102 (0.218)	0.639	0.135 (0.170)	0.425	0.162 (0.174)	0.353
Democracy	0.610 (0.103)	0.000	0.480 (0.125)	0.000	0.515 (0.170)	0.003
<i>Entrepreneurial activity (E)</i>						
SWB	-2.319 (0.310)	0.000	7.653 (1.207)	0.000	1.944 (1.134)	0.087
Economic Freedom	2.006 (0.789)	0.011	0.226 (2.852)	0.937	2.754 (2.881)	0.339
Unemployment	-0.075 (0.038)	0.046	-0.335 (0.139)	0.016	-0.079 (0.132)	0.551
Entrepreneurship training	0.981 (0.668)	0.142	2.552 (1.622)	0.116	6.452 (2.381)	0.007
Culture	2.239 (0.564)	0.000	-1.183 (1.430)	0.202	-1.016 (1.978)	0.607
R <sup>2</sup> total (SWB)	0.767		0.654		0.758	
R <sup>2</sup> total (E)	0.354		0.335		0.122	
Chi <sup>2</sup> (SWB)	461.910	0.000	356.050	0.000	479.280	0.000
Chi <sup>2</sup> (E)	83.130	0.000	118.290	0.000	28.720	0.000

new ventures pose threats to existing markets by shortening the life cycles of products and services (Komlos, 2016) and increasing production efficiency (Erumban & Timmer, 2012). In doing so, innovative enterprises may endanger the existence of incumbent companies if they are not quick enough to react to changing markets and innovate their business models accordingly. Consequently, existing companies may be forced to shrink the size of their operations or exit, leading to short-term market destabilization and job destruction (Aghion et al., 2016; Fritsch, 2008).

In line with the above ideas, some researchers have suggested that the short-term impact of innovative entrepreneurial activity on national subjective well-being may be negative, even though innovation has been shown to have positive long-term economic and non-economic effects (Fritsch, 2008). To address this issue, we tested the immediate and the lagged effects of early-stage innovative entrepreneurship on subjective well-being. We found that the negative effects of innovative entrepreneurial activity on subjective well-being in a nation do not persist. In addition, we did not find any support for positive lagged effects. This empirical finding runs contrary to the assumed beneficial role of innovative entrepreneurship in increasing quality of life by solving the most pressing social problems. Innovative entrepreneurship has positive long-term effects on productivity and economic



growth (Andersson et al., 2012), but innovative entrepreneurial activity also increases the gap in income distribution by accelerating the income growth of those who are more educated (Lewellyn, 2018) and wealthier (Aghion et al., 2019; Marinoni & Voorheis, 2019). This disparity has a negative impact on the level of subjective well-being in a nation (Buttrick et al., 2017) and may suppress other positive effects of innovative entrepreneurship on subjective well-being.

We performed additional analyses to explore the effects of national subjective well-being on the level of entrepreneurial activity, as indicated in previous research (Naudé et al., 2013). There are several reasons as to why national well-being may positively impact opportunity-based entrepreneurial activity and innovative entrepreneurial activity. Entrepreneurs who experience high levels of personal satisfaction are more productive in exploring and exploiting entrepreneurial opportunities. This is because, according to the broaden and build theory (Fredrickson, 2013), positive psychological states expand cognitive capabilities, thereby facilitating entrepreneurial proactivity (Baron, 2008), creativity (Dolan & Metcalfe, 2012), optimism (Augusto-Landa et al., 2011) and risk-taking (Ifcher & Zarghamee, 2014), which are entrepreneurial behaviors that have been shown to facilitate the exploration of entrepreneurial opportunities. Furthermore, it is likely that higher levels of national well-being may positively impact investors' readiness to support entrepreneurial ventures and facilitate the commercialization of innovation, given that positive psychological states expedite the decision-making processes of users and early adopters (Daghfous et al., 1999).

## 5.1 Implications

We contribute to the literature in a growing and promising field of well-being and national happiness. Despite the increasing interest of researchers and public policy in this important topic, the relationship between entrepreneurship and subjective well-being at the national level has remained largely unexplored. With this research, we go beyond the work of Naudé and colleagues (2014) to test different types of entrepreneurial activity and their impact on subjective well-being, using panel data spanning eight years and controlling for economic, political and institutional differences. Our research suggests that, when exploring the effects of entrepreneurial activity on national well-being, it is important to differentiate among various types of entrepreneurial activity both in terms of quantity and quality.

Our findings have important implications for policy-makers who recognize that well-being is the ultimate goal of economic policy. Government policy can certainly foster economic and non-economic prosperity through high-quality entrepreneurial activity. To this end, a government could actively support measures that positively affect opportunity-based entrepreneurial activity, as this type of activity can significantly strengthen the level of national subjective well-being, as opposed to the quantity of entrepreneurial activity per se. To progress toward this goal, policy-makers should develop measures that are specifically conducive to opportunity-based entrepreneurial activity. Finally, innovative entrepreneurial activity can result in short-term disruptive effects on national well-being.

## 5.2 Limitations and Future Research

Although our results provide intriguing insights and are supported by robust empirical evidence, we need to acknowledge several potential limitations. The first limitation concerns the data sample analyzed. We included 31 European countries in our analyses, which limits

the generalizability of our results to the Russian Federation, which we found to be an outlier in our sample, and non-European countries. Several authors (Amorós & Bosma, 2014) have pointed to the fact that the relationship between entrepreneurial activity and national subjective well-being may differ across countries based on the level of economic development. Furthermore, innovative entrepreneurial activity has a less negative impact in countries with more generous unemployment protection (Aghion et al., 2016). Given that the level of entrepreneurial activity also depends on determinants shaped by the institutional environment (Baumol, 2006), the relationship we find may not hold across different socio-economic contexts. The second potential limitation of our research concerns the dependent variable included in the empirical analyses. Life satisfaction represents only one facet of well-being. Recently, authors have emphasized that both the hedonic (happiness and life satisfaction) and eudaimonic facets are complementary in the overall concept of well-being (Hahn et al., 2012; Seligman, 2018). Eudaimonic well-being includes aspects of life purpose and contribution to the community. Unfortunately, data concerning eudaimonic well-being are only available at the national level for a few countries. Therefore, aspects of eudaimonic well-being could not be included in our sample.

The third limitation concerns the econometric methods used to analyze the relationship between subjective well-being and the level of entrepreneurial activity. We used three different methods to analyze the panel data and one method to assess a set of simultaneous equations, which provides good evidence of the robustness of our results. We could have used an instrumental variable, which can provide a good interpretation if there are omitted variables and an interpretation of direction when testing causal relationships (Becker, 2016). Unfortunately, we could not identify an appropriate instrumental variable for this set of variables. Prior authors have used variables such as distance to equator (Harbi & Grolleau, 2012) or share of age groups within a population (Acs et al., 2012). However, these variables would not have made much sense in the dataset analyzed. Finally, we tested relationships among key variables within a given data period. We observed that average subjective well-being dropped significantly in 2009 and has been steadily growing since then. Meanwhile, we found different measures of early-stage entrepreneurial activity to be more stable during this time period.

Despite these potential shortcomings, our findings open up several opportunities for future research. Upcoming research could focus on identifying potential mediators and moderators of the relationship between the level of entrepreneurial activity and national well-being. As we find opportunity-driven early-stage entrepreneurial activity to be a robust predictor of subjective well-being at the national level, we suggest that future research should explore the mediators of this relationship. Larsson and Thulin (2019) found that the frequently reported higher well-being of entrepreneurs compared to employees can be fully explained by the high subjective well-being of opportunity entrepreneurs. Future research could investigate whether opportunity entrepreneurs alone drive higher levels of subjective well-being in nations or whether high levels of opportunity-driven entrepreneurship increase subjective well-being through market activity and job creation. We still do not quite understand the effects of socio-economic determinants that moderate the positive effects of entrepreneurial activity on well-being. Previous research has shown that European countries with different welfare-state regimes systematically differ in subjective well-being (Dominko & Verbič, 2021; Samuel & Hadjar, 2016). It has also found that welfare-state regimes moderate the impact of creative destruction on subjective well-being (Aghion et al., 2016). Therefore, future research could investigate the differences in the relationship between entrepreneurship and well-being among clusters of European countries based on their welfare-state regimes. Another interesting question concerns the nature

of entrepreneurial opportunity, for example, whether the effects of entrepreneurial activity on well-being vary according to the type of the opportunity itself. Along with the inclusion of instrumental variables, future studies should take into account the heterogeneity of entrepreneurial activity and consider the bidirectional relationship between the level of entrepreneurial activity and level of subjective well-being.

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