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"Surfeiting, the appetite may sicken": entrepreneurship and happiness

Wim Naudé · José Ernesto Amorós · Oscar Cristi

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Abstract Do the presence and nature of entrepreneurship impact on national happiness, and are nations with happy citizens better for entrepreneurs to start new businesses? To provide tentative answers we survey the literature on entrepreneurship and subjective well-being and use various data sources to uncover the first evidence of the relationship between entrepreneurship and happiness at the country level. We find that opportunity-motivated entrepreneurship may contribute to a nation's happiness but only to a certain point, at which the effects of happiness begin to decline. Moreover, our results suggest that a nation's happiness affects early-stage opportunity-driven entrepreneurial activity.

W. Naudé (✉)
Maastricht School of Management, University of Maastricht and United Nations University (UNU-MERIT), Maastricht, The Netherlands
e-mail: naude@msm.nl

W. Naudé
IZA—Institute for the Study of Labour, Bonn, Germany

J. E. Amorós
School of Business and Economics, Universidad del Desarrollo, Santiago, Chile
e-mail: eamoros@udd.cl

O. Cristi
School of Business and Economics, Universidad San Sebastián, Santiago, Chile
e-mail: oscar.cristi@uss.cl

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1 Introduction

Material welfare, as measured by gross domestic product (GDP), is only one dimension of a country's development. Subjective well-being (SWB), which refers to the degree to which people are satisfied with their lives and their jobs, is acknowledged to be an essential but neglected dimension. Measures of "gross national happiness"[1] are being employed to augment traditional indicators of development, such as GDP per capita (Angner 2010). The *Commission on the Measurement of Economic Performance and Social Progress* recommended[2] that "the time is ripe for our measurement system to shift emphasis from

[1] This measure was termed as such after the Kingdom of Bhutan introduced the concept of gross national happiness as its overarching development goal (see http://www.grossnationalhappiness.com/).

[2] This commission, which was appointed by President Nicholas Sarkozy of France, is available at http://www.stiglitz-sen-fitoussi.fr/en/index.htm.

measuring economic production to measuring people's well-being" (Stiglitz et al. 2009). Advances in the measurement of SWB (or "happiness") that enable happiness to be compared across countries have increased the feasibility of such an approach (Bolle et al. 2009; Bolle and Kemp 2008; Blanchflower and Oswald 2007).

Not surprisingly, there is a burgeoning body of literature that attempts to identify what makes the citizens of various countries happy and to compare this happiness between countries. The literature has thus far failed to consider whether and how entrepreneurship may affect happiness at the country level. Many academics and policy makers believe that entrepreneurs may contribute to economic growth and enhance productivity and competitiveness[3] (Naudé 2010, 2011a, b; van Stel et al. 2005; Wong et al. 2005). However, do entrepreneurs contribute to happiness at the country level? In other words, may the happiness of nations be influenced by their entrepreneurs?

There are many reasons to suppose, *ex ante*, that entrepreneurs may contribute to national happiness. For instance, entrepreneurs create jobs and provide the goods that are consumed by households, including innovative products that contribute to health and experiential activities (Csíkszentmihályi 2003). A comparison of countries' positions on the Global Entrepreneurship Development Index (GEDI—see Ács and Szerb 2011) with their happiness scores as measured by the Gallup 2005 World Poll suggests a relationship between entrepreneurship and happiness.

Figure 1 suggests that the relationship between entrepreneurship and happiness appears to be non-linear: countries with higher GEDI scores appear to report higher levels of happiness. If this relationship indeed exists, then it would be a remarkable result, given that most determinants of happiness at the national level, especially income per capita, show declining marginal benefits.[4] Without completely dismissing this possibility, however, there are three reasons to doubt this inference.

First, because happiness scores tend to be stable over time, the direction of causality may run from happiness to entrepreneurship. Happy societies may be entrepreneurial: happiness has been found to contribute to success in marriage, income, work performance, health and creativity (Amabile et al. 2005; Lyubomirsky et al. 2005). Using a controlled experiment, Oswald et al. (2009) established that happiness may increase productivity by up to 12 %.

The second reason to be cautious in interpreting Fig. 1 as implying that entrepreneurship causes nations to be happier is that the GEDI does not actually measure entrepreneurship; rather, the GEDI measures the "entrepreneurial economy" as reflected in entrepreneurial attitudes, actions, and aspirations. These factors may not only be associated with entrepreneurship alone but also with happiness more broadly.

Third, both entrepreneurship and national happiness could be determined by an omitted third factor—such as institutions. For instance, cross-national studies have found that countries tend to report greater happiness when there is less unemployment and inflation (Clark and Oswald 1994; Clark 2010), better overall health, less inequality (Bolle et al. 2009) and when there exist participation and process freedoms, such as living in a democracy and having a voice in political matters (Frey and Stutzer 2005; Hayo and Seifert 2003; Konow and Earley 2008; Lelkes 2002). The GEDI strongly captures institutional quality.[5] In the empirical analyses that follow in Sect. 4, we attempt to control for this factor.

Hence, to determine the relationship between entrepreneurship and the happiness of nations, we must focus on entrepreneurship—business ownership and start-up rates—by investigating the likely bi-directional causality between entrepreneurship and happiness and, controlling for and disentangling the effects of strong institutions on happiness. This aim is precisely the object of this paper, which we believe represents the first attempt to identify the independent effect of entrepreneurship on national happiness levels

[3] In a survey of 38 studies on the relationship between entrepreneurship and economic production, Nyström (2008) concluded that there is generally a positive relationship between entrepreneurship and economic production, at least over the long term.

[4] A rigorous finding in the economics of happiness literature is that increasing per capita incomes contribute positively to the happiness of individuals and countries, but after a certain level, which some believe is approximately US $ 15,000 (Frey and Stutzer 2005), additional income appears to contribute little to overall happiness (Easterlin 1995; Layard et al. 2008).

[5] We are grateful to an anonymous referee for this insight.

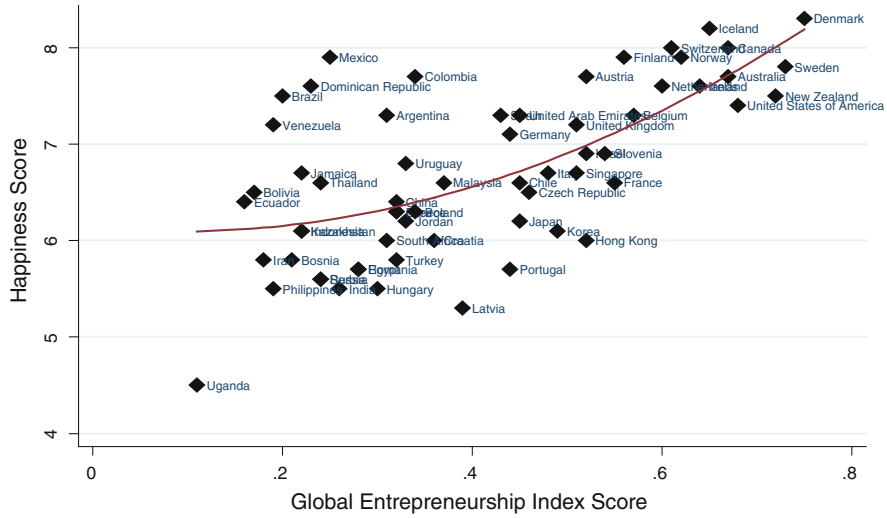

Fig. 1 Relationship between Happiness and the Global Entrepreneurship Index. *Source*: Authors' calculations based on the GWP and the GEINDEX; see Ács and Szerb (2009)

and in turn evaluate the effects of a happy environment on entrepreneurship.

This paper is structured as follows. We clarify some key concepts in Sect. 2 and analyse the relevant literature in Sect. 3. In Sect. 4, we present our hypotheses and explain our methodology. The results are presented and discussed in Sect. 5. Section 6 concludes the paper.

2 Concepts and definitions

We define an entrepreneur as a person who is a self-employed business owner (e.g. Van der Loos et al. 2010). The "job" of an entrepreneur is to conceptualise, start, own and manage a firm with the aim of exploiting a perceived opportunity[6] (Gries and Naudé 2011).

We consider happiness to be a component of SWB; in other words, happiness can be defined as "the degree to which an individual judges the overall quality of his or her life as favourable" (Blanchflower and Oswald 2004, p. 1360). Strictly speaking, however, SWB encompasses both short-term affect (emotions) and more general cognitive assessments of one's life (i.e., life satisfaction) (Howell and Howell 2008). For this research we use data on *life satisfaction* like a proxy of SWB that include happiness. We use scores across countries. This measure has been subjected to empirical testing and validation and is widely considered to be a reliable measure of personal utility.

Life satisfaction can be measured using both single-item and multiple-item measures.[7] Single-item measures involve asking people questions such as the following[8]:

> All things considered, how satisfied are you with your life as a whole these days?
>
> Now taking everything about your life into account, how satisfied or dissatisfied are you with your life today?

Generally, respondents must provide a response ranging from 1 (dissatisfied) to 10 (satisfied). Major surveys reporting on life satisfaction from various countries include the World Database on Happiness, the Gallup World Poll, the Eurobarometer Surveys, and the German Socio-Economic Panel. These surveys tend to be rather consistent in their findings and facilitate comparisons of life satisfaction across time and countries (Sacks et al. 2010). In this paper, we primarily draw on happiness data from the World Database on Happiness and the Gallup World Poll, as these surveys cover the countries for which we have entrepreneurship data from the Global Entrepreneurship Monitor (GEM).

[6] These elements are common to most definitions of entrepreneurship that are used in economics and management (e.g. Shane and Venkataraman 2000; Casson 1982).

[7] See Diener et al. (2010).

[8] As Di Tella and MacCulloch (2008) note, the term 'life satisfaction' is used in these surveys rather than 'happiness', as the latter cannot always be translated precisely in all languages.

There is substantial variation in happiness across individuals and countries. As we are primarily interested in the latter, we note that happiness scores in the GEM sample (which by 2009 covered 65 countries) ranged from approximately 4.3 for Angola to 8.4 for Denmark.

3 Literature review

3.1 The broader happiness literature

Happiness (or SWB) refers to people's feelings, whether positive or negative—people who are happy "feel good" (Layard 2003). What are the determinants of happiness? Over the past three decades, a growing body of research has attempted to identify the drivers of SWB and offer recommendations both for how individuals should live their lives (and increase their happiness) (Seligman 2002) and for public policy (Stiglitz et al. 2009). This research has found that the drivers of happiness are found at the personal (genetic) level, at the level of society and environment, and at the level of the daily life choices (Layard 2003).

Most of this research has been conducted in psychology and sociology (Diener 1984; Diener and Biswas-Diener 2002, 2008; Diener et al. 2010; Kahneman et al. 1999; Seligman 2002; Van Boven 2005). This research has particularly contributed to establishing the concept, measurement and comparison of SWB levels over time and across individuals and countries; establishing that there are many different causes of happiness (or, along a continuum, unhappiness); and exploring how the various drivers can affect that happiness in a transient and more enduring manner. Moreover, many of these drivers can be influenced by policy and individual choices; thus, happiness may be improved (Layard 2003; Seligman 2002). A full discussion of this literature is outside of the scope of the current paper; however, useful surveys and updates may be found in the works of Diener and Biswas-Diener (2008), Hupperty et al. (2005), Layard (2011) and Seligman (2011).

Beginning with the seminal contribution by Easterlin (1974), economists have offered notable contributions to the happiness literature (Frey and Stutzer 2002; Stutzer and Frey 2010; Sacks et al. 2010). These scholars have established that material progress in the West has not been accompanied by continued increases in happiness levels and thus suggested that there is an income level above which additional increases do not necessarily raise happiness further (Layard 2011; Stutzer and Frey 2010). Economists have also determined that the manner in which one's income is obtained may be relevant, as job satisfaction is an important component and predictor of happiness or life satisfaction (Seligman 2002).

Despite these contributions and the growth in cross-country happiness studies, we observe that research on the potential contribution of entrepreneurship to happiness has thus far been lacking. This omission may be significant, given that a substantial proportion of individuals across the globe spend their daily lives as entrepreneurs or attempting to become entrepreneurs; in fact, many of the goods and services that we consume or strive to consume are provided and marketed by entrepreneurs, and creative entrepreneurs may even be generating what we perceive as needs beyond the subsistence level. Moreover, entrepreneurs are disproportionately found amongst the super-rich, reflecting that entrepreneurship is often incentivised by the desire for material wealth. Finally, if societies grudgingly accept that social well-being depends on more than GDP and economic growth, should the promotion of entrepreneurship remain as highly regarded as it is today? The remainder of this paper is an attempt to address some of these inquiries.

3.2 Entrepreneurship and national happiness

Why would entrepreneurship, as defined, be important for national happiness? The answer is complex because, a priori, entrepreneurship in some circumstances may increase happiness and in other situations may reduce overall happiness in a country. We briefly review each of these possibilities.

3.2.1 Positive influence on happiness

Entrepreneurs may increase overall national happiness by (1) being happier themselves as entrepreneurs and (2) increasing the happiness of others.

For instance, by exercising the choice to become entrepreneurial, entrepreneurs are themselves happier if they are able to engage in entrepreneurial activities than if they are not. With between 10 and 30 % of a country's labour force typically being business

owners, the presence of a group with greater happiness may significantly raise aggregate happiness scores.

There is a robust body of evidence indicating that entrepreneurs experience higher levels of job satisfaction than employees[9] (Andersson 2008; Benz and Frey 2008; Blanchflower 2004; Lange 2012; Parker and Ajayi-Obe 2003). The circumstantial evidence strongly suggests that entrepreneurs also enjoy higher life satisfaction. Not only does job satisfaction contribute substantially to life satisfaction (after all, work is the place that we spend most of our lives), but entrepreneurs have also been found to be healthier, less prone to negative feelings and depression, and more likely to experience flow than regular employees (Bradley and Roberts 2004; Ceja 2009; Graham et al. 2004; Patzelt and Shepherd 2011).

Moreover, aggregate happiness can also be indirectly increased if entrepreneurs are happier because the happiness of individuals at the country level is interdependent[10] (Bolle et al. 2009): the happiness of entrepreneurs can affect the happiness of non-entrepreneurs.

Entrepreneurs can also increase the happiness of others by providing them with consumption goods and employment opportunities. The goods that entrepreneurs offer to the market contribute to health and experiential activities (Csíkszentmihályi 2003; Grinde 2002; Goetz et al. 2007; Bolle et al. 2009). More importantly, however, entrepreneurs often create jobs. Existing evidence suggests that a lack of employment is a major and significant cause of unhappiness (Clark and Oswald 1994; Clark 2010).

[9] Job satisfaction is not synonymous with happiness per se, although there is a strong and positive correlation between people's happiness and job satisfaction (Seligman 2002). Thus, why are entrepreneurs generally happier than employees on the job? Empirical evidence suggests that the former are happier because they value the independence and lifestyle flexibility of operating their own business (Benz and Frey 2004; Lange 2012; Moskovitz and Vissing-Jørgensen 2002; Taylor 2004). Furthermore, they experience "procedural utility"; that is, the *process* of being an entrepreneur provides enjoyment beyond the material success of actually being such a person (Block and Koellinger 2009; Gries and Naudé 2011). Entrepreneurs that are better endowed with human capital also tend to be happier than those with less (Carree and Verheul 2012).

[10] Consistent with this assertion, Stutzer and Frey (2010) showed that high unemployment rates in a country also reduce the happiness of people.

3.2.2 *Negative influence on happiness*

Entrepreneurs may also negatively affect national happiness. An obvious case would be "destructive" or "non-productive" entrepreneurs (Baumol 1990) who engage in rent seeking, corruption, organised and "white-collar" crime, tax evasion and even fuelling violent conflict (Brück et al. 2013). These are types or allocations of entrepreneurship, as their negative effects on society are unambiguous and uncontroversial. A more complex and ambiguous issue concerns why and how materially productive entrepreneurship, as defined here, can detract from a nation's overall happiness. Another possible explanation could involve situations in which entrepreneurs are not entrepreneurs by choice but rather by necessity (Amóros and Cristi 2011). The GEM measures "necessity-driven" entrepreneurship by including the following question: "Are you involved in this start-up [this firm] to take advantage of a business opportunity or because you have no better choices of work?" When people turn to entrepreneurship (self-employment) by necessity, they essentially lose their "agency" or free will with regard to their employment and this loss is experienced as a loss of SWB (Gries and Naudé 2011). GEM methodology cannot distinguish *à la* Baumol among productive, unproductive or destructive entrepreneurship. Then for our further empirical analysis, GEM measures could include all types of entrepreneurial activities.

Many people would indeed be happier as employees in a hierarchical organisational arrangement than as independent entrepreneurs. For example, Fuchs-Schündeln (2009) noted that individuals attach varying levels of utility to the greater freedom, choice and responsibility that entrepreneurs tend to derive from their jobs; furthermore, the author explained that "taking decisions independently, immediately feeling the consequences of one's actions, or receiving feedback from a superior might be perceived as positive job attributes by some and as negative ones by others" (Ibid, p. 162).

Consequently, some individuals should not become entrepreneurs—this implication is also important for policy makers, who often attempt to maximise the number of entrepreneurs. If more people become entrepreneurs but some do not experience greater job satisfaction (and thus happiness), then we may infer that overall national happiness may decline. We find

tentative evidence in support of the notion that as more people become entrepreneurs, there will be more entrepreneurs in the population who report lower overall job satisfaction in the EU data. In Fig. 2, we plot the relationship between the average job satisfaction scores of entrepreneurs from a sample of EU countries and the extent of entrepreneurship as measured by the business ownership rate.

In Fig. 2, there appears to be a robust negative relationship between the business ownership rate and the average job satisfaction of entrepreneurs across nations; recall that job satisfaction is significantly correlated with happiness (Seligman 2002). In countries such as Denmark, in which entrepreneurs report high job satisfaction scores in excess of 8 (out of 10), the business ownership rate is relatively low, i.e. people without the propensity to enjoy the independent entrepreneurial lifestyle simply do not elect to become entrepreneurs. Elsewhere, however, people may not have the same choices; thus, a larger proportion of the pool of entrepreneurs is not serving in this role by choice. We may expect that their loss of happiness translates into reduced happiness at the national level.

In the "economics of happiness literature" (see, e.g., Frey and Stutzer 2002) and in psychology (see, e.g., Seligman 2002), it is recognised that increasing material wealth (or opportunities) is associated with increases in individual aspirations. To the extent that the actual goals or performance of individuals do not fulfil these aspirations, their happiness may decline. At certain levels of opportunity entrepreneurship and accompanying higher income and wealth levels, happiness may stagnate or even decline when the material aspirations of entrepreneurs and their societies begin to rise to such an extent that most individuals' high aspirations will surpass their achievements. This situation will lead to a feeling of dissatisfaction and frustration, as such individuals become "frustrated achievers" despite their success (Cooper and Artz 1995; Stutzer 2004; Becchetti and Rossetti 2009; Stutzer and Frey 2010).

At high levels of opportunity entrepreneurship, persons with high and growing aspiration levels may self-select into entrepreneurship. In the presence of a number of opportunity entrepreneurs, competition will increase—specifically competition to fulfil rising aspirations. In such a socially competitive environment, according to Hill and Buss (2008, pp. 64–65), the "negative" emotion of envy (or fear) could be helpful in motivating and focusing an entrepreneur by causing him or her to become more "competitive", although this effect could be accompanied by the consequence of negative SWB. As Hill and Buss (2008, p. 65) explained, "individuals who experience envy in response to a social competitor's advantage would be appropriately alerted to the advantage and motivated to commence corrective action". Therefore, more competitive-minded entrepreneurs may experience more negative states of mind and report lower

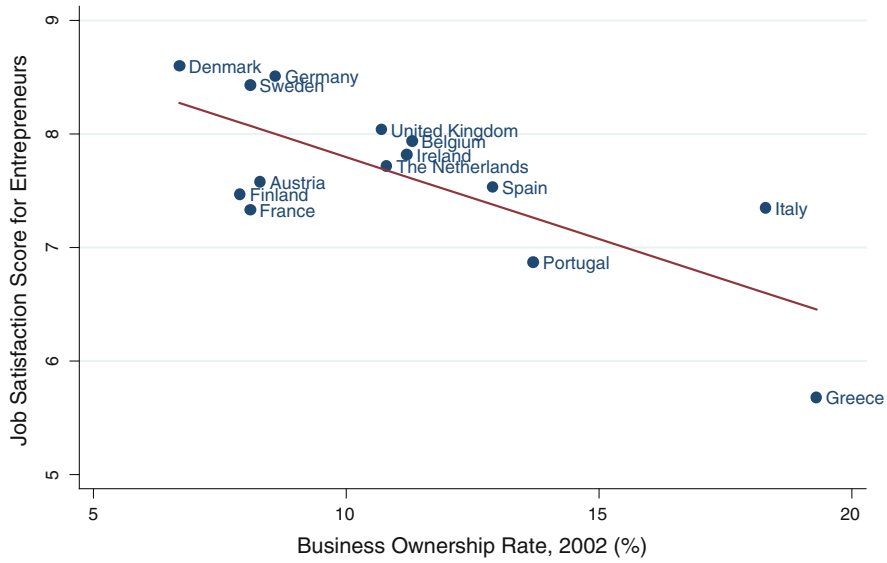

Fig. 2 Business ownership rates and the job satisfaction of entrepreneurs in selected European countries. *Source*: Authors' construction based on data from Blanchflower (2004) and Van Stel (2004)

levels of happiness than others. Higher levels of opportunity entrepreneurship may increase the likelihood of this outcome. Many negative spillover effects could also result. For instance, in highly competitive and materialistic societies with high aspirations, we observe the disintegration of "family solidarity and community integration" (Lane 2000). Diminishing social and family relationships (relational goods) constitute a well-recognised cause of reduced happiness across countries and individuals.

Third, because of the interdependence between individual happiness, one must exercise caution regarding the assumption that individual-level of happiness can simply be aggregated to obtain national-level happiness. That interdependency between individual happiness can imply that increases in the happiness of some individuals may reduce the happiness of others. For instance, entrepreneurship may detract from national happiness when this form of work contributes to widening income and wealth inequalities in a country. Such inequalities are strongly associated with reduced levels of overall happiness in the literature (Bolle et al. 2009). The literature refers to these effects as "reference group effects", as what is often important for happiness is not a person's absolute income or status but rather his or her income or status in reference to some comparison group (i.e., "keeping up with the Joneses"). If all incomes rise and one's relative position remains the same, then individual happiness should be unaffected; however, if one's relative position declines despite a higher absolute income, then one may experience a decline in happiness (Howell and Howell 2008). An entrepreneur may perceive his or her status in society as depending on the extent of (even excessive) consumption of "positional" goods, which indicates relative status and the values of which depend on their exclusivity (Dean 2007; Sarracino 2010). In the presence of more opportunity entrepreneurs, one may observe increased income and wealth inequalities and greater variability in entrepreneurial performance. Some may be highly successful "superstars". As relatively less successful entrepreneurs become aware of the greater success of these "superstars", the former individuals may unrealistically shift their happiness reference group to that of the more successful entrepreneurs; according to Hill and Buss: "we need only to turn on our televisions or gaze up at a billboard to be exposed to people who are, literally, the richest and most attractive in the world"—(2008, p. 68). Graham (2005, p. 47) posited that as a result of information technologies and globalisation, "aspirations may be driven by new global reference norms, while opportunities are constrained by local conditions".

3.3 National happiness and entrepreneurship

In the previous sub-sections, we explored how individual entrepreneurship may affect happiness at the national level. However, as we indicated in the introduction, the relationship between entrepreneurship and national happiness may be bi-directional rather than unidirectional; we may expect the aggregate level of happiness in a country to also influence the individual decision to become an entrepreneur. Thus, it may not be unreasonable to associate happy societies with entrepreneurial societies.

Nevertheless, how and why this association may occur has not yet been researched in depth. There is some literature in the area of psychology and management that may assist in clarifying that relationship. For example Amabile et al. (2005), Lyubomirsky et al. (2005), Mohanty (2009) and Oswald et al. (2009) have found that happiness is a causal factor in success in various domains, including work performance, productivity and creativity. Because all of these domains are pertinent to entrepreneurship, we suggest that one can extend such arguments to state that happiness also contributes to success in new entrepreneurial activities. Moreover, the positive affect that is associated with happiness may crucially contribute to different ways of thinking and thus allow for greater creativity and optimism (Seligman 2002), which are associated with entrepreneurship. Relying on those findings, we hypothesise that happiness is a driver of entrepreneurial activity at the individual and aggregate levels.

However, to the best of our knowledge, few studies have explored whether the overall state of a nation's happiness is significantly influenced by entrepreneurship. In the remainder of the paper, we attempt to contribute to filling this gap.

4 Methodology

4.1 Recapitulation of the argument

Before describing our methodology, we must summarise our key arguments thus far. Such a summary is

intended to aid in the development and substantiation of our hypotheses.

In the previous section, we argued that by having more and stronger entrepreneurs, a country may increase its national happiness through both the function of entrepreneurs (because individuals who appreciate self-reliance and independence may become happier because of opportunities for self-actualisation) and the possibility that entrepreneurs may be happier than employees. The latter possibility was shown to have both theoretical and empirical support. However, we have also cautioned, again based on theory and the scant evidence currently available, that necessity-motivated entrepreneurship (in which entrepreneurship loses its value as a human behaviour), growing aspirations and reference group effects, and increasing income and wealth inequalities may lead to the apparent paradox in which a country's overall happiness may decline as a result of increased entrepreneurial and economic success. Therefore, the motivation that is attached to entrepreneurship may be particularly important for happiness, and the relationship may be non-linear, as reference group effects and inequalities begin to occur at higher income levels.

In the previous section, we also argued that not only is it likely that entrepreneurship influences national happiness, but national happiness may also influence entrepreneurs. Although happier nations may be likely to inspire more entrepreneurs, particularly opportunity-driven and high-impact forms of entrepreneurship, we also noted that there is no direct empirical evidence to allow for a more conclusive judgement. It is perhaps to be expected that there will be a bi-directional relationship between happiness and entrepreneurship at the country level.

4.2 Hypotheses

Based on the problem statement in Sect. 1, the literature review in Sect. 3, and the recapitulation above, we propose the following two hypotheses:

H1: The relationship between entrepreneurship by choice and the national level of happiness exhibits an inverted U shape: an increase in national happiness is associated with an increase in entrepreneurship to a certain point, after which it is then associated with a declining level of happiness

H2: Happier countries have a higher level of entrepreneurial activity

Hypothesis 1, *H1*, follows from our discussion of Fig. 2 in the previous section, in which we deduced that entrepreneurs are generally happier (higher job satisfaction) than employees but only if people can make the decision of whether to become entrepreneurs. Moreover, from the conclusion in the previous section, there is indication that there are reasons to suspect that entrepreneurship can both contribute to and detract from happiness and that the negative effects that result from increased aspirations and inequality (reference effects) may apply only in countries with high levels of entrepreneurship. Thus, we expect the relationship between entrepreneurship and happiness to be initially positive, with a decreasing marginal return to happiness from opportunity entrepreneurship, to the extent that happiness may begin to decline after a certain level. See also discussion Sect. 4.1.

Hypothesis 2, *H2*, follows from our previous argument that happier countries may be associated with the free, creative and encouraging environment that is required for entrepreneurship to flourish. Entrepreneurs who are opportunity-driven and have high-growth expectations would be the types of entrepreneurs that are associated with a happier national environment, particularly because happiness and high-growth expectations may share the common trait of optimism. The positive affect and optimism that are associated with happiness may crucially contribute to different ways of thinking that allow for greater creativity and risk taking (Seligman 2002), which are associated with entrepreneurships that are opportunity-driven and associated with high-growth expectations (Gries et al. 2013).

4.3 Estimating equations

To test our hypotheses, we performed a number of regressions. Hypotheses are tested by estimating the following standard type of "happiness equation" (see, for instance, Di Tella and MacCulloch 2008; Blanchflower and Oswald 2004; Rehdanz and Maddison 2003; Sarracino 2010) with measures of entrepreneurship included on the right-hand side:

$$H_{it} = \alpha + \beta' \boldsymbol{E_{it}} + \delta' \boldsymbol{C_{it}} + u_{it} \quad (1)$$

H_{it} is our measure of happiness (life satisfaction) for country i at time t. The parameter E_{it} represents our measures of entrepreneurship in country i at time t, and $\boldsymbol{C_{it}}$ is a vector of control variables. The parameter E is entered in quadratic form. We expect $\beta > 0$ for E and $\beta < 0$ for E^2 to capture the hypothesised inverted U-shaped relationship between entrepreneurship and happiness (*H1*). We use simultaneous equation techniques in the estimation of (1) to account for the expected causality loop between entrepreneurship and happiness (*H2*). Thus, we propose a model composed of two equations, one for each of these variables.[11] The entrepreneurship equation assumes that entrepreneurship is a function of happiness and a set of control variables.

The unknown parameters in this system of simultaneous equations are estimated using three-stage least squares (3SLS). In the first stage, each endogenous covariate in the equation of interest is regressed on all of the exogenous variables in the model, including both exogenous covariates in the equation of interest and the excluded instruments. The predicted values are obtained from these regressions. In the second stage, the regression of interest is estimated as usual, except that in this stage, each endogenous covariate is replaced with the predicted values from its first-stage model. In the third stage, the error terms of the second stage are used to construct the variance–covariance matrix of the residuals that allow for contemporaneous correlation among the error terms of the equations, and this matrix is then used to perform feasible generalised least squares in each equation. The 3SLS method provides more efficient estimators than the 2SLS approach for a system that is overidentified. We use a pooled 3SLS estimator because data limitations unfortunately do not permit panel data estimation.

4.4 Variables and data

Our dependent variable is the *life satisfaction scores* of the countries in the GEM sample. As we noted above, among the main global surveys of happiness are the *World Database on Happiness* and the *Gallup World Poll*. For the countries in the GEM, we use life satisfaction scores from 2000 through 2007 from the *World Database on Happiness*. The survey questions employed to calculate those scores vary across countries and from one year to another within a single country. These survey questions are those described previously in this paper. Despite these changes to the survey, we consider the questions and scores to be comparable. When countries employ two or three of these survey questions in a single year, we use a simple average of the scores.

For our entrepreneurship measures, we employ the rates reported by the GEM. First, we use a composite index called total early-stage entrepreneurial activity (TEA). TEA is the percentage of individuals between the ages of 18 and 64 who are starting a new business or are currently owner-managers of a new business that has paid salaries, wages or any other payments to the owners for more than three months but not more than 42 months. Following the GEM methodology (Bosma and Levie 2010), there are two types of motivations for individual entrepreneurial activity: opportunity or necessity. Therefore, our second measure is opportunity-driven entrepreneurship (OPP), which is the percentage of individuals involved in TEA (as defined above) (1) who claim to be driven by opportunity, as opposed to having no other option for finding work, and (2) who report that the main driver for their involvement in this opportunity is the desire to be independent or increase their income. The third measure, necessity-driven entrepreneurship (NEC), is the percentage of individuals involved in TEA (as defined above) who are involved in entrepreneurship activities because they had no other option for work. The "Appendix" provides a summary of the GEM countries using the available data.

The selection of control variables was influenced by our previous argument in the sense that institutions could determine both entrepreneurship and the national level of happiness. We believe that more inclusive institutions, *à la* Acemoglu and Robinson (2012), may drive both entrepreneurship and happiness. As proxies for inclusive institutions, we use a measure of the rule of law and a measure of economic freedom. For the rule of law, it can be hypothesised that when the legal structures governing the economic environment improve, such improvements result in more and better formal job opportunities and

[11] For the other endogenous variables of the model (E^a with $a = 2$ or $a = 3$ and the squared value of happiness), we use a set of equations in which these variables are a function of the exogenous covariates raised to power a and their cross products.

Table 1 Variables and data sources

Variable	Description	Source
Total early-stage entrepreneurial activity (TEA)	Percentage of adult population (aged 18–64) starting a new business or currently an owner-manager of a new business that has paid salaries, wages, or any other payments to the owners for fewer than 42 months	1
Opportunity-driven entrepreneurs (OPP)	Percentage of those involved in TEA (as defined above) who claim to be driven by opportunity as opposed to finding no other option for work, indicating the main driver for being involved in this opportunity is being independent or increasing income rather than simply maintaining income	1
Necessity-driven entrepreneurs (NEC)	Percentage of those involved in TEA (as defined above) who are involved in entrepreneurship because they had no other option for work	1
Life satisfaction	The national level of life satisfaction score	6
GDP per capita	Gross domestic product per capita PPP $ 2008	2
Income Gini	Gini coefficient for income distribution	4, 5
Income aspiration	GDP per capita PPP $ in 2008 multiplied by income Gini	
Education index	Component of human development index-adult literacy rate (percent age 15 and above)	7
Rule of law	Perceptions of the extent to which agents have confidence in and abide by the rules of society, particularly the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence (Kaufmann et al. 2009, p. 6)	8
Total economic freedom	Index of economic freedom	3

Sources: (1) GEM Survey, (2) IMF Economic Outlook Database, (3) Index of Economic Freedom of the Wall Street Journal and the Heritage Foundation, (4) UNU-WIDER databases, (5) Source-OECD, (6) World Database on Happiness, (7) Human Development Report-UNDP, and (8) World Bank Worldwide Governance Indicators

consequently a reduction in entrepreneurship activity. However, this improvement also contributes to the security of property rights that drives entrepreneurship (Autio and Acs 2010). Hence, the effect of the rule of law on the entrepreneurial activities of countries is ambiguous and may differ according to the effectiveness of the rule of law in a given country's economy. To empirically capture these effects in our models of entrepreneurial activity, we include the rule of law and its squared value as controls.

Other controls are national education indices, a variable that measures income aspiration and GDP per capita and squared GDP per capita to capture a curvilinear relationship between life satisfaction and income that is consistent with the theory regarding the diminishing marginal utility of income. Data for the control variables were obtained from several sources.

Table 1 summarises the variables and data sources that were used for the 3SLS regressions. Tables 2 and 3 present the descriptive statistics and correlation matrix, respectively.

5 Results

We estimate three models[12] (see Table 4). In Model I, we explore the relationship between life satisfaction and TEA. Model II relates life satisfaction to OPP. Model III relates life satisfaction to NEC. Our results for models I and II indicate that a country's entrepreneurial activity positively contributes to its life satisfaction score until a certain threshold is met. Indeed, as we stated in Sect. 3.2, the effects of TEA and OPP on life satisfaction are represented by a U-shaped curve in which entrepreneurial activity has a positive effect on happiness until a certain threshold is met, when the relationship is inverted because of a heavily competitive environment in which OPP evolves and because of "reference group" effects. This finding supports hypothesis 1.

[12] The rank conditions of the equation systems in each model were verified using the option checkreg3 in Stata (http://fmwww.bc.edu/repec/bocode/c/checkreg3.ado).

Table 2 Summary of variables (only observations used)

Variable	*N*	Mean	Median	Mode	Standard deviation	Max	Min
Early-stage entrepreneurial activity (TEA)	74	7.16	5.56	5.39	4.75	26.87	1.63
Opportunity-driven entrepreneurship (OPP)	74	5.31	4.46	4.54	3.14	17.88	1.13
Necessity-driven entrepreneurship (NEC)	74	1.50	0.94	0.37	1.79	9.29	0.17
Life satisfaction	74	7.12	7.21	7.44	0.83	8.48	5.31
Gross domestic product per capita PPP ($US year 2008)	74	27,263	29,186		10,545	53,152	2,563
Income aspiration	74	8,229,127	7,982,815		297,284	1,865,594	94,330
Education index	74	0.96	0.97	0.99	0.05	0.99	0.64
Rule of law	74	1.23	1.46	1.75	0.74	2.02	−0.71
Economic freedom	74	68.30	68.85	69.01	7.11	80.93	54.08

Table 3 Correlations of variables used in the pooled 3SLS estimation

Number	Description	1	2	3	4	5	6	7	8	9
1	Early-stage entrepreneurial activity (TEA)	1								
2	Opportunity-driven entrepreneurship (OPP)	0.97	1.00							
3	Necessity-driven entrepreneurship (NEC)	0.89	0.75	1.00						
4	Life satisfaction	−0.07	0.03	−0.25	1.00					
5	Gross domestic product per capita PPP ($US year 2008)	−0.45	−0.31	−0.64	0.65	1.00				
6	Income aspiration	−0.26	−0.13	−0.44	0.53	0.88	1.00			
7	Education index	−0.40	−0.29	−0.47	0.46	0.65	0.51	1.00		
8	Rule of law	−0.55	−0.40	−0.71	0.60	0.84	0.60	0.63	1.00	
9	Economic freedom	−0.15	−0.03	−0.34	0.58	0.59	0.56	0.46	0.73	1.00

The relationship between NEC and life satisfaction is more complex. When we include NEC and its squared value in the life satisfaction model, none of the coefficients for those variables are statistically significant. Nevertheless, this result is counterintuitive and may suggest model specification issues. Therefore, we include the cubed form of NEC in the model as a control. The results for that modification are presented in Table 4 and indicate that NEC has a negative effect on life satisfaction until an initial threshold is met (86 % of our sample observations are in this part of the curve), at which point the effect becomes positive and then becomes negative again after a second threshold is met. As we discussed in Sect. 3.2.2, the negative effect of NEC on life satisfaction can be explained through the following argument: when people engage in entrepreneurship (self-employment) out of necessity, they essentially lose their "agency" or free will with respect to their employment, and this loss is experienced as a loss of SWB (Gries and Naudé 2011). The positive effect of NEC on life satisfaction after an initial threshold is met is an unexpected result and may suggest that for certain levels of NEC, although necessity entrepreneurship is not entrepreneurship by choice, it may nevertheless increase an entrepreneur's independence and self-determination and therefore increase happiness. Figures 2, 3, 4, 5 illustrate these relationships.

The marginal effect of entrepreneurship on life satisfaction differs among TEA, OPP and NEC. Our point estimates of the marginal effect of TEA, OPP and NEC are as follows: $\partial H/\partial \mathrm{TEA} = 0.36 - 2 * 0.007 * \mathrm{TEA}$,

Table 4 3SLS model results

Variables	Model I		Model II		Model III	
	Equation for life satisfaction	Equation for TEA	Equation for life satisfaction	Equation for OPP	Equation for life satisfaction	Equation for NEC
Constant	2.57**	−12.3	2.1*	−9.22	3.67***	−1.82
	(1.17)	(8.5)	(1.15)	(6.78)	(1.15)	(3.11)
Life satisfaction		1.55**		1.13**		−0.019
		(0.72)		(0.57)		(0.24)
TEA	0.36***					
	(0.09)					
TEA squared	−0.007**					
	(0.003)					
OPP			0.56***			
			(0.13)			
OPP squared			−0.019***			
			(0.006)			
NEC					−1.32***	
					(0.45)	
NEC squared					0.58***	
					(0.13)	
NEC^3					−0.05***	
					(0.011)	
GDP	0.0002***	−0.0008***	0.0002***	−0.0006***	0.00011**	−0.00008*
	(0.00005)	(0.0002)	(0.00005)	(0.0002)	(0.00005)	(0.00005)
GDP squared	−2.34E−09***	9.02E−09***	−2E−09***	6.11E−09***	−7.644E−10	
	(6.54E−10)	(2.96E−09)	(6.06E−10)	(2.33E−09)	(5.28E−10)	
Education index		11.63		8.25		3.23
		(8.73)		(7.05)		(3.20)
Income aspiration	−1.67E−06**	4.89E−06	−2.12E−06***	4.02−06	−8.15E−07	1.05E−06
	(7.39E−07)	(3.22E−06)	(7.23E−07)	(2.57E−06)	(6.98−E07)	(1.16E−06)
Rule of law	0.42	−7.23***	−0.009	−4.24***	0.24	−3.55***
	(0.31)	(1.72)	(0.31)	(1.39)	(0.32)	(0.55)
Rule of law squared		2.53***		1.74***		1.21***
		(0.84)		(0.66)		(0.29)

Table 4 continued

Variables	Model I		Model II		Model III	
	Equation for life satisfaction	Equation for TEA	Equation for life satisfaction	Equation for OPP	Equation for life satisfaction	Equation for NEC
Total economic freedom index	−0.013	0.17**	0.003	0.10	0.027	0.05*
	(0.02)	(0.082)	(0.019)	(0.67)	(0.02)	(0.03)
χ^2	61.55***	168.26***	58.92***	104.63***	54.33***	54.33***
Number of observations	76	76	74	74	74	74

Standard deviations in brackets

*** Significance at the 1 % level; ** Significance at the 5 % level; * Significance at the 10 % level

$\partial H/\partial \mathrm{OPP} = 0.56 - 2 * 0.019 * \mathrm{OPP}$, and $\partial H/\partial \mathrm{NEC} = -1.32 + 2 * 0.58 * \mathrm{NEC} - 3 * 0.05 * \mathrm{NEC}^2$, respectively. These marginal effects depend on the respective values of TEA, OPP and NEC. We also estimate the elasticities between life satisfaction and our alternative measures of entrepreneurship as $\frac{\partial H}{\partial E} * \frac{E}{H}$. These marginal effects and elasticities are calculated using the means, medians and modes of H and of our measure of entrepreneurship. Table 5 summarises our estimations.

Using the various central tendency measures for entrepreneurial activity and life satisfaction, we observe that the elasticity between life satisfaction and OPP is positive, whereas the elasticity between life satisfaction and NEC is negative for the mean, the median and the mode values of NEC and of life satisfaction. This is consistent with our hypothesis 1 that states that the *entrepreneurship by choice is the one that may contribute to the national level of happiness.*

The results from models I and II further suggest that the relationship between income and life satisfaction is curvilinear with decreasing marginal utility at higher income levels. This result is consistent with theory (e.g., Diener et al. 1993; Diener and Biswas-Diener 2002). As expected, the income aspiration proxy has a negative effect on happiness. This finding implies that although increases in income inequality may spur entrepreneurship, they will also reduce national happiness; moreover, this effect is greater at higher levels of GDP per capita. The education index control is not statistically significant, which may result from a problem of co-linearity with GDP.

Regarding the effect of life satisfaction on entrepreneurial activity, in our first two models, we find that as the former increases, the latter also increases. This result is consistent with hypothesis 2. The estimates from model III suggest that life satisfaction does not necessarily affect the rate of entrepreneurial activity by necessity.

Moreover, our results indicate that the relationship between GDP per capita and entrepreneurial activity can be described by a non-linear curve in the case of TEA and OPP. In the case of NEC, this relationship is linear and inverse. This result is consistent with the body of literature that finds that as income per capita increases, entrepreneurial activity declines until a particular income level is reached, at which point the former will

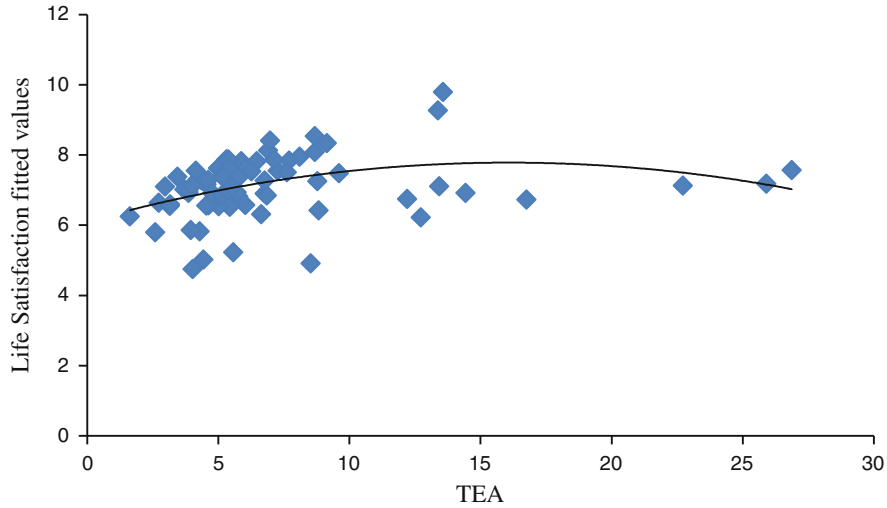

Fig. 3 Fitted national life satisfaction values against total early stage entrepreneurial activity (TEA)

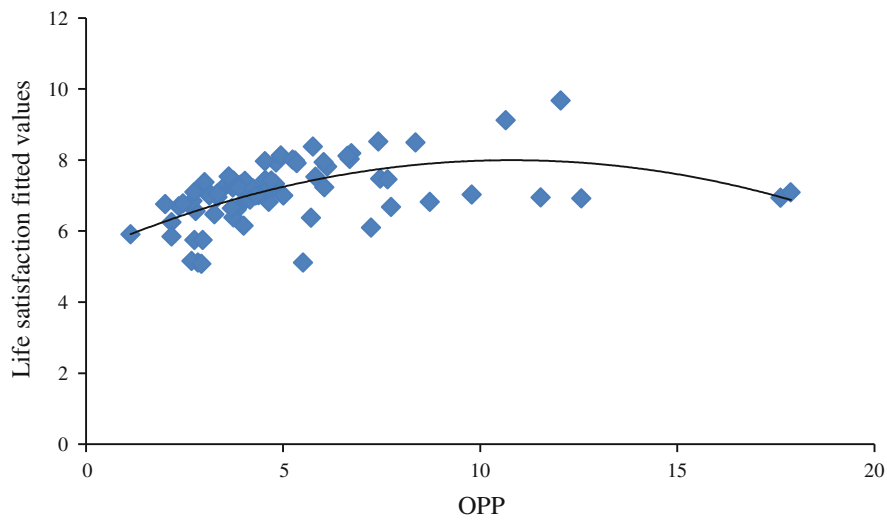

Fig. 4 Fitted national life satisfaction values against opportunity entrepreneurship (OPP)

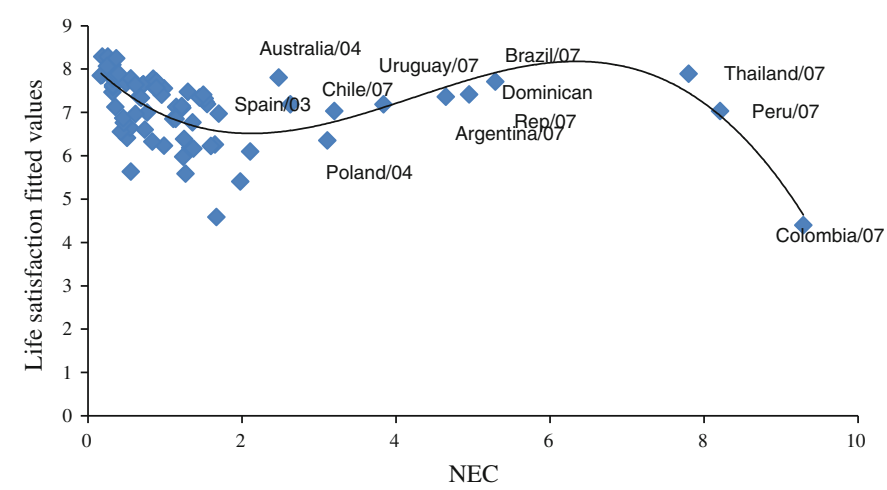

Fig. 5 Fitted national life satisfaction values against necessity entrepreneurship (NEC)

Table 5 Elasticities between life satisfaction and alternative measures of entrepreneurship

	Model I Effect of TEA on life satisfaction	Model II Effect of OPP on life satisfaction	Model III Effect of NEC on life satisfaction
Marginal effect using the mean value of the entrepreneurial measurement	0.26	0.35	−0.38
Marginal effect using the median value of the entrepreneurial measurement	0.29	0.39	−0.35
Marginal effect using the mode value of the entrepreneurial measurement	0.29	0.38	−0.91
Elasticity using the mean values of life satisfaction and of the entrepreneurial measurement	0.27	0.26	−0.08
Elasticity using the median values of life satisfaction and of the entrepreneurial measurement	0.22	0.24	−0.05
Elasticity using the mode values of life satisfaction and of the entrepreneurial measurement	0.21	0.23	−0.05

begin increasing again because of an increase in OPP (Carree et al. 2002; Wennekers et al. 2005; Ács and Amorós 2008; Amorós and Cristi 2008).

Additionally, better governance, as measured by the rule of law, is not statistically significant in the models for life satisfaction. In the equations for entrepreneurial activity, we find a relationship between that variable and the rule of law that is described by a U-shaped curve. Based on our previous discussion in Sect. 4.4, this result suggests that until a certain threshold is met, the negative effect of the rule of law on entrepreneurial activity (resulting from an increase in formal jobs) offsets its positive effect because the security of property rights drives entrepreneurship. Upon reaching that threshold, the latter effect offsets the former, and the relationship between the rule of law and entrepreneurial activity becomes positive. As expected, economic freedom, our second proxy for inclusive institutions, is statistically significant and positive in the equation for entrepreneurial activity measured as TEA.

6 Concluding remarks

This paper began by noting that the relationship between entrepreneurship and national happiness has been neglected in the literature, although a sizeable proportion of a country's population consists of entrepreneurs who contribute to the creation of jobs, the provision of consumer goods and greater incomes, all of which contribute to national happiness to a certain point. Recently, Gries and Naudé (2010, 2011) provided fresh theoretical models to illustrate that entrepreneurship can be more important for individual and societal development, beyond mere increases in GDP per capita.

Based on a survey of the literature, we posited that (1) an increase in entrepreneurship by choice will be associated with an increase in national happiness but only to a certain point, after which it may be associated with a declining level of happiness (*H1*); and happier countries have a higher level of entrepreneurial activity (*H2*).

Using data on early-stage entrepreneurial activity from the GEM surveys as our primary data source, we obtained tentative support for our hypotheses. Thus, entrepreneurship motivated by opportunity may contribute to national levels of life satisfaction and happiness, and this relationship may be curvilinear. An excessive amount of entrepreneurship can indeed be counterproductive. This relationship fits Shakespeare's words in Twelfth Night: "If music be the food of love, play on; give me excess of it, that, surfeiting, the appetite may sicken, and so die".

Our results also reveal that higher levels of life satisfaction increase entrepreneurial opportunity-driven activities. Considering both *H1* and *H2*, the results suggest that although happiness promotes OPP, such activity contributes to a country's happiness only to a certain point, beyond which the ability of increased OPP to contribute to national happiness seems to decline. Thus, as stated in Sect. 2, some individuals are not well suited for entrepreneurship, and when the total number of entrepreneurs exceeds the number of

entrepreneurs who can attain greater satisfaction (and thus SWB and happiness) from their work, overall national happiness may decline. This implication is also relevant for policy makers, who occasionally attempt to maximise the number of entrepreneurs through a variety of policies and programmes without considering externalities. Although our results are intriguing, supported by the available evidence and consistent with the existing literature, we must caution that our conclusions are still tentative. Data availability remains a significant obstacle. Our sample was restricted to only 34 countries, generally countries with moderate to high happiness and GDP levels. In this vein, a useful future extension of the GEM survey would include questions on life and job satisfaction to study the relationship between happiness and entrepreneurial activity at the individual level. Additionally, future research should more adequately address the institutional quality within countries and the level of inclusiveness provided by a those institutions (Acemoglu and Robinson 2012).

Despite these shortcomings, we agree with Layard (2003, p. 3), who claimed that "GDP is a hopeless measure of welfare". Hence, the rather narrow focus in the entrepreneurship-development literature on the relationship between GDP and entrepreneurship can explain only part of the role of entrepreneurship in human development. Although the results in this paper are tentative, they suggest that entrepreneurship scholars should venture beyond GDP in future research. This broadening of focus may be rewarding from the scientific, societal and policy-making perspectives.

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Appendix: List of the GEM countries used on the estimations

Argentina	Italy
Australia	Japan
Belgium	Netherlands
Brazil	Norway
Chile	Peru
Colombia	Poland
Denmark	Portugal
Dominican Republic	Romania
Finland	Slovenia
France	Spain
Germany	Sweden
Greece	Switzerland
Hungary	Thailand
Iceland	Turkey
India	United Kingdom
Ireland	United States
Israel	Uruguay

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