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Entrepreneurial self-efficacy and success: the effect of experience on their evolution and relationship

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Abstract

In this article we attempt to explain the failure of many efforts to show, empirically, a link between entrepreneurial self-efficacy and success. At the same time, we reconcile the literature on entrepreneurial self-efficacy and overconfidence. By analysing GEM data, we show that early-stage entrepreneurs' self-efficacy is consistently inflated, albeit in a variety of ways. Entrepreneurial overconfidence fades gradually and its form changes as business owners learn and gather experience by running their own ventures. By using Ajzen's Theory of Planned Behaviour, we show that, depending on the form of overconfidence, the link between self-efficacy and growth projections may be mediated by product quality expectations. However, the huge decline in growth expectations associated with the aging of ventures seems to be due not to the changes in skill beliefs but rather the experience induced adjustments on entrepreneurial expectations. In addition, we have found that, at country level, experience moderates the relationship between expected firm growth and actual economic growth. Our results suggest that early-stage entrepreneurs' overconfidence may –at least to some extent- function as a useful heuristic in an uncertain entrepreneurial world.

Highlights

- Early-stage entrepreneurs' self-efficacy does not reflect real entrepreneurial skills.

- As entrepreneurs learn by doing, overconfidence fades and its form changes.

- Depending on the form of overconfidence, the link between growth projections and self-efficacy is direct or mediated by product quality expectations.

- Our results seem to suggest that many studies failed to link entrepreneurial self-efficacy to growth expectations and actual growth due to the effects of experiential learning, or, more precisely, to the inconsistently inflated nature of self-efficacy and the changing form of overconfidence throughout the stages of the business life-cycle, together with adjustments on market rivalry and other entrepreneurial expectations as businesses age.

- Our results also indicate that, at macro-level, early-stage entrepreneurs' overconfidence may – at least to some extent – function as a useful heuristic in an uncertain entrepreneurial world.

Introduction

Today, there is no doubt about the importance of entrepreneurship in the economic development and growth (Acs et al 2018, Naude, 2014). However, only a small fraction of ventures expand dynamically and these firms contribute disproportionately highly to growth in employment (BERR, 2008; Henrekson & Johansson, 2010; Nanda, 2016). In a meta-analysis, Henrekson and Johansson (2010) showed, for example, that around four percent of all firms are responsible for most growth in employment across economies. The intensity of the ongoing debate on what makes a high-growth venture reflects both the importance of the issue and the ambiguity in its explanations (e.g.: Audretsch, 2012). One possible influential factor of high corporate growth is the confidence of owners/managers in their entrepreneurial skills. Based on Bandura's Social Learning Theory (1977), the notion of entrepreneurial self-efficacy was proposed to label someone's self-perceived abilities to accomplish entrepreneurial tasks. The potential role of self-efficacy in outcome expectations and actions is frequently examined and explained in the framework of the Theory of Planned Behaviour (TPB; Ajzen, 1991; 2005; Fishbein & Ajzen, 2010). The theory states that behaviours and behavioural intentions are guided by three kinds of belief: (1) belief in the likely outcomes of the behaviour (behavioural beliefs); (2) belief in descriptive and injunctive norms and motivation to comply with them (normative beliefs); (3) belief in factors and their power which may support or hamper the performance of the behaviour (control beliefs). In the TPB, the behavioural intention is an immediate predecessor of the actual behaviour and the above beliefs are direct drivers of the behavioural intention. In addition, the control beliefs, if they closely reflect real control, also influence the realized behaviour directly. Hence, in this framework, self-efficacy

functions as a control belief. It also means that self-efficacy directly influences the behavioural intention and, via the behavioural intention, indirectly shapes the actual behaviour. Moreover, if self-efficacy reflects real abilities and a powerful part of the control beliefs, it may also have a direct effect on the realized behaviour.

In general, outcomes of actions and outcome expectations depend largely on how people evaluate their skills (see Bandura, 2006). By analogy, and based on the TPB, it would be reasonable to suppose that higher entrepreneurial self-efficacy is coupled with higher corporate growth expectations (see also: Delmar & Wiklund, 2008; Wiklund & Shepherd, 2003). However, only a handful of studies have examined this relationship (see Levie & Autio, 2013), and, the majority of these could not confirm it. By analysing GEM (Global Entrepreneurship Monitor) data, Tominc and Rebernik (2007) found that self-efficacy does not play a role in the variances of growth aspirations in the post-socialist countries. Bosma and Schutjens (2009) could not establish a link between high self-efficacy and the rate of ambitious early-stage entrepreneurship across European regions. The analyses of Stenholm et al. (2013) did not show a connection between the cognitive dimensions of entrepreneurship -including self-efficacy- and entrepreneurial aspirations. The link between expected growth and self-efficacy is especially interesting, as, in turn, expected growth was found to be positively linked to actual growth both at both corporate (Miner et al. 1994; Stam & Wennberg, 2009; Wiklund & Shepherd, 2003) and macro-economic levels (Autio, 2007; Hessels et al., 2008; Stam et al., 2011). Further, some studies examined the direct relationship between self-efficacy and actual growth. In a meta-analysis of 26 studies, Miao et al. (2017), found a moderate correlation (0.309) between entrepreneurial self-efficacy and company performance. The authors were looking for moderators of this

relationship to rationalize the low explanatory power of self-efficacy, but found none. Specifically, despite their expectations, prior experience, company age and contextual factors were not confirmed as moderators. Nevertheless, this study furnishes further clues supporting a relationship between self-efficacy, growth expectations and actual growth. Why were many studies unable to ascertain the seemingly so obvious and theoretically well supported relationship between self-efficacy, growth expectations and growth? In this paper, we aim to answer this question based on the TBP. With this in mind, we think it necessary to examine whether entrepreneurial self-efficacy reflects real abilities. In general, studies of the effects of entrepreneurial self-efficacy do not examine the connection between the self-reported skill beliefs and the actual skill level of entrepreneurs. At the same time, another line of research concentrates on entrepreneurial overconfidence. Indeed, cognitive researchers have suggested that entrepreneurs are especially predisposed to make biased decisions (Baron, 1998). Among the biases observed, overconfidence is considered to be the most prevalent (e.g., Baron, 1998, Costa et al., 2017; Cooper et al., 1988; Johnson & Fowler, 2011). However, despite the large body of research on overconfidence, entrepreneurship researchers rarely differentiate or systematically confuse the distinct forms of overconfidence (Moore & Schatz, 2017). Moreover, to the best of our knowledge, researchers have not yet empirically examined either the evolution of overconfidence with experience or the subsequent variations in its relationship with entrepreneurial expectations. Based on the experiential learning theory (Kolb, 2014) and overconfidence empirics (Moore & Schatz, 2017), we argue that these are the important factors which we have to consider to explain the relationship between self-efficacy, growth expectations and actual growth.

Our study contributes to the research into entrepreneurial self-efficacy, expectations and growth in several ways. We present new empirical evidence on the forms of entrepreneurial overconfidence, its relationship with expected and realized growth and the moderating effect of experience in the early stages of a business start-up. By doing so, we reconcile the literature on self-efficacy and overconfidence and place this entrepreneurial perception into the context of entrepreneurial expectations and economic growth (see Wales et al., 2013). Our findings contribute to the theoretical debate on the rationality of entrepreneurial behaviour by claiming that overconfidence may act as a useful heuristic in an uncertain word or decision bias.

Theory and Hypotheses

In this section, we formulate our hypotheses on the evolution of entrepreneurial self-efficacy in the early-stages of business start-ups and the forms of entrepreneurial overconfidence. We also explore the moderating role of experience in the relationship between self-efficacy, growth expectation and economic growth.

Nascent entrepreneurs' overconfidence

A large number of theoretical and empirical studies have concluded that nascent entrepreneurs' self-efficacy is inflated. Therefore, market entry is positively associated with overconfidence (Artinger & Powell 2016; Gutierrez & Astebro, 2016; Hayward et al., 2006; Koellinger et al., 2007; Navis & Ozbek, 2017; Robinson & Marino, 2015; Wu & Knott, 2006). Nevertheless, even if nascent entrepreneurs' overconfidence seems to be axiomatic, the entrepreneurship literature rarely differentiates or systematically confuses

the three distinct forms of overconfidence (Moore & Schatz, 2017, Zhang & Cueto, 2017). The first type of overconfidence is overestimation, believing that one is better than reality justifies. In general, people tend to overestimate the outcome of complex tasks whilst underestimating their performance in easy ones (Lichtenstein & Fischhoff, 1977). By market game experiments, Bolger et al. (2008) found that market entry is driven by overestimation. In their experiments, disregarding market size and the potential number of competitors, together with exaggerated self-esteem, were responsible for too many market entries in skill-based games. The second, and the most common, form of overconfidence is overplacement. Overplacement is the distorted belief that one is better than others (Chamorro-Premuzic, 2013). Overplacement works in the opposite direction to overestimation across task difficulty level; i.e., under-placement is typical in difficult tasks (Moore & Haely, 2008). Contradicting Bolger et al. (2008), Moore and Cain's (2007) results suggest that market entries are based on overplacement. Cain et al. (2015) reconciled the psychology and entrepreneurship literature by showing that people choose markets considered easy-to-enter. According to their argumentation, as a result of that self-selection process, nascent entrepreneurs feel the tasks associated with market entry relatively simple and easy. Thus, overplacement may be responsible for excessive market entries into competitive fields with low boundaries and high fluctuations. Other plausible explanations exist of course.

Entrepreneurs may neglect their reference group, i.e. ignore their competitors (Dosi & Lovallo, 1997; Camerer & Lovallo, 1999) or have a preference towards competition (Holm et al., 2013). And finally, the third and the most persistent form of overconfidence is overprecision. This manifests itself in a too narrow confidence interval on the truth; i.e. too

high certainty in one's own beliefs. In this study, we are interested in the first two forms of overconfidence as those basically present inflated self-efficacy.

In sum, supposing that nascent entrepreneurs' self-efficacy statements are inflated is in line with many studies. But then, there is a debate on the relative or absolute nature of overconfidence at market entry (Bolger et al., 2008; Moore & Cain, 2007). On the one hand, the results and argumentation of Cain et al. (2015) seems reasonable. On the other hand, one may suppose that even if someone creates a new venture in a field considered relatively easy-to-enter, she may feel it a hard task. On an individual level, establishing a new business can be a difficult task even in a market with low entry boundaries. In this case, the psychological theories on overconfidence (Lichtenstein & Fischhoff, 1977) would support Bolger et al. (2008); i.e.: that market entry is driven by overestimation. Therefore, we formulate two competing hypotheses:

H1a: Nascent entrepreneurs over-place themselves. Hence their over-confidence is relative to others.

H1b: Nascent entrepreneurs overestimate themselves. Thus, their overconfidence is absolute.

The effect of experience on overconfidence

In general, the promise of experience is that, by reflecting on feedback from our actions, we can learn about our abilities According to Kolb's experiential learning theory (ELT; 2014), the learner goes through consecutive cycles of concrete experience, abstract conceptualization, reflective observation and active experimentation to achieve and apply generalized knowledge from an experience. Entrepreneurship scholars also recognize that

learning-by-doing is the way entrepreneurs learn (Dalley & Hamilton, 2000; Minniti & Bygrave, 2001).

How entrepreneurial experience relates to the evolution of overconfidence is not empirically evidenced though (see for summary Zhang & Cueto, 2017). In line with the ELT, theoretical models usually argue that nascent entrepreneurs are unsure about their entrepreneurial abilities and gradually learn about them over time by considering the responses to their actions (Jovanovic, 1982; Konon & Kritikos, 2015). However, the feedback is confusing, and entrepreneurs need to apply their deductive talents and to re-formulate their belief in their own skill if based on factors such as revenue and market successes or failures (see Konon & Kritikos, 2015). In addition, if entrepreneurs apply the Bayes Rule to reassessing their belief in their own skills, they overrate successes and underrate failures (Gervais & Odean, 2001), and many studies provide evidence of the existence of entrepreneurial overconfidence at later stages of entrepreneurship also (Betzer et al., 2017; Invernizzi et al., 2016; Lowe & Ziedonis, 2006; Shepherd, 2009; Simon & Houghton, 2003).

All in all, therefore, we hypothesize that, as experience is gained, self-efficacy becomes gradually more closely related to the real skill level of early-stage entrepreneurs. Therefore, all early-stage entrepreneurs are likely to be over-confident, but the excessive confidence does fade

H2: As experience is gained, early-stage entrepreneurs gradually become less over-confident.

There is a debate on the form of overconfidence at market entry, and, according to our knowledge, researchers have not directly examined the form of overconfidence in the later stages of entrepreneurship.

We hypothesize that, even if nascent entrepreneurs overestimate their entrepreneurial skills (see the competing hypotheses H1a and H1b), entrepreneurs' overconfidence will be relative to others after some experience. First, the ELT implies that as entrepreneurs are learning-by-doing, they will gradually feel that running their business is less difficult. Results concerning the association between task difficulty and the forms of overconfidence suggest that overplacement is typical with easy tasks (Chamorro-Premuzic, 2013; Lichtenstein & Fischhoff, 1977; Moore & Schatz, 2017). Second, whilst running their business, entrepreneurs make inferences regarding their entrepreneurial skills based on revenue, market successes or failures (see Konon & Kritikos, 2015). As competitors play a significant role in business outcomes, entrepreneurs' judgment of the quality of their products or services and their skill, as inferred from this, must contain an increasing amount of relative information.

H3: After market entry, early-stage entrepreneurs overplace themselves.

Effect of overconfidence on growth expectations

Self-efficacy - or overconfidence, if it is inflated - must be differentiated from outcome expectations. The perceived skill designates a judgement on capacities to execute tasks. Expectations are projections on the outcome of those tasks. The TPB suggests that an entrepreneur's growth expectations should rise if he develops a more favourable attitude towards running his venture, thinks that the social norms and acquaintances would be

supportive towards the behaviour, and feels that he can control his actions. In general, higher self-efficacy is indeed associated largely with higher outcome expectations of actions (Bandura, 2006). Nevertheless, the attempts to empirically link entrepreneurial self-efficacy (Bosma & Schutjens, 2009; Levie & Autio, 2013; Tominc & Rebernik, 2007; Stenholm et al., 2013) or overconfidence (Hermans et al., 2015) to growth expectations habitually fail. As a matter of fact, entrepreneurship research usually accentuates the negative impact of overconfidence in decision-making (Malmendier & Tate, 2015). Excessive confidence was suggested or shown to lead to excessive risk-taking in entrepreneurial decisions (Grichnik, 2008; Hayward et al., 2006; McCarthy et al., 1993, Simon & Houghton, 2003), to prolonging or failing to diagnose poor performance (Lowe & Ziedonis, 2006; Shepherd, 2009), to investing in failing projects (Betzer et al., 2017) and, finally, to destroying the company's value - leading to failure (Ahmed & Duellman, 2013; Camerer & Lovallo, 1999; Invernizzi et al., 2016; Hayward et al., 2006; Wu & Knott, 2006).

At the same time, based on motivational theories, some scholars believe that overconfidence helps to overcome failures and increase resilience. (Everett & Fairchild, 2015; Hayward et al., 2010; Simon & Shrader, 2012). Cognitive theories on decision-making also emphasise that overconfidence may have positive effects on performance expectations. Gigerenzer and Gaissmaier (2011) differentiate three realms with distinct rational decision-making strategies. Under certainty, logic leads to a rational decision in the neoclassical sense. Under risk, when any outcome is coupled with a specific probability, statistical calculations direct us towards the solution with the highest probable satisfaction. Thus, the application of simplifying heuristics results in biases (Kahneman,

2011; Kahneman & Tversy, 1979). Finally, in the third realm, under uncertainty, where an optimal outcome and the risk associated with outcomes are not quantifiable, fast and frugal heuristics help to reach an optimal (Gigerenzer & Gaissmayer, 2011) or satisfying (Newell & Simon, 1972) outcome. Gigerenzer and Gaissmayer (2011) see heuristics as "adaptive tools that allow people to make accurate, efficient, and robust decisions under uncertainty" - and, indeed, starting a new venture or running a business means to operate in a large and equivocal problem space where it is usually impossible to maximize as the Expected Utility theory would predict.

All in all, therefore, we propose that overconfidence produces high growth expectations.

H4: Early-stage entrepreneurs' overconfidence positively influences growth expectations.

The form of overconfidence determines how entrepreneurs relate to their competitors. If entrepreneurs overplace themselves they compare themselves to other entrepreneurs (Moore & Schatz, 2017).

We think that this means that, in this case, overconfidence must be positively linked to the expectations on the relative qualities of the offered product or service (see also argumentation under H1 and H3). In turn, based on the TPB, the relative product or service qualities are also supposed to be part of the control beliefs.

H5: If entrepreneurs overplace themselves -contingent upon H1a, H1b and H3- overconfidence has a substituting or additional indirect effect on growth expectations via the underestimation of the competitors' services or products.

When starting a business, nascent entrepreneurs encounter uncertainties not merely concerning their skills, but also the value of their ideas, the growth potential of their business and the income it will generate (Kerr et al., 2014). By gaining experience, entrepreneurs learn not only about their entrepreneurial skills, but also about other factors which can function as control beliefs in the TPB, such as market changes, their competitors and the expectations of their customers. In the TPB, the perceived behavioural control is equal to the aggregated value of the strength of each control belief multiplied by its perceived power. Hence, entrepreneurs, based on their experience, adjust not only their self-efficacy but other control beliefs and their power. Indeed, skill beliefs are adjusted via inferences from direct market feedback - following Bayes Rule (Gervais & Odean, 2001; Konon & Kritikos, 2015). In addition, normative and behavioural beliefs are also expected to be adjusted (Ajzen, 2005).

Taken together, we assume that the influence of overconfidence on growth expectations varies as a business ages. Expectations may become considerably more realistic even if overconfidence weakens slightly, and so experience may moderate the effect of overconfidence on growth expectations. In this way, experience makes the TPB dynamic and becomes the driver of the gap between the perceived and actual behavioural control.

H6: In early-stage entrepreneurship, the effect of overconfidence on growth expectations declines with experience.

Relationship between expected and actual growth

Several studies linked expected growth to actual growth both at company (Autio, 2005; Miner et al. 1994; Stam & Wennberg, 2009; Wiklund & Shepherd, 2003) and macro-

economic level (Hessels et al., 2008; Stam et al., 2011). The potential role of growth aspirations in actual growth is usually explained by the TPB (Ajzen, 1991; Delmar & Wiklund, 2008; Wiklund & Shepherd, 2003).   In fact, the TPB postulates that the behavioural intention is the immediate antecedent of the actual behaviour. Moreover, if the perceived behavioural control is close enough to the actual behavioural control, the perceived control also has a direct effect on behaviour.

Therefore, we assume that growth aspirations, expectations and intentions are preconditions of actual company growth, which, in turn, results in macro-economic growth. Hence, via growth expectations, early-stage entrepreneurs' overconfidence has an indirect effect on actual macro-economic growth. We also postulate that in the framework of our dynamic TPB, experience as the driver of the gap between the perceived and actual behavioural control moderates the effect of growth expectations on the actual growth.

H7: Early-stage entrepreneurs' growth expectations are positively related to actual growth. In consequence, overconfidence, by fuelling inflated growth expectations, has an indirect positive effect on actual growth.

H8: The effect of expected growth varies as business owners gain more experience. Based on Ajzen's TPB, it is expected to increase as entrepreneurs become more experienced and control beliefs come closer to the actual behavioural control.

In sum, early-stage entrepreneurs' overconfidence influences growth expectations which, in turn, are positively linked to real growth. Depending on its form, the effect of overconfidence on growth expectations materializes directly/and/or indirectly via the relative expectations concerning product quality. Further, the relationship between

overconfidence and growth expectations is moderated by experience. Moreover, experience, as the principal factor among the drivers of the authenticity of control beliefs, also moderate the effect of growth expectations on actual growth (Figure 1).
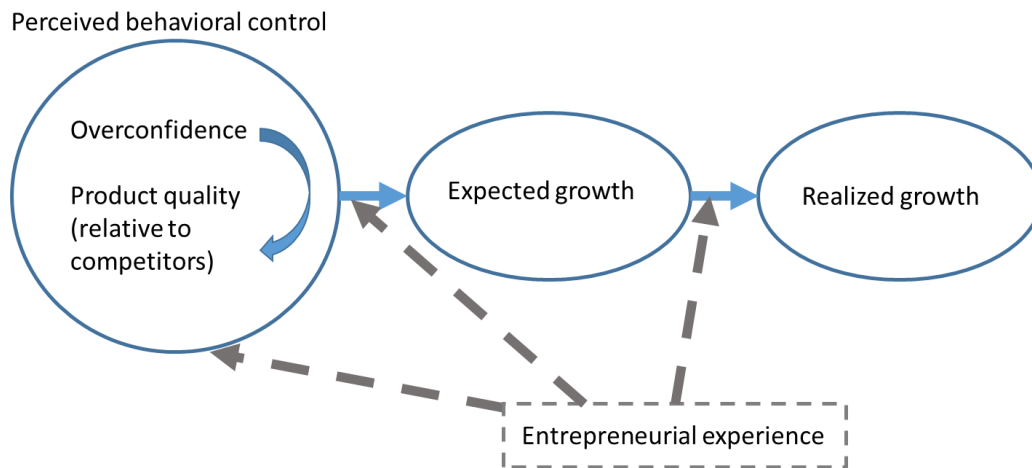
Figure 1. The hypothesized effect of overconfidence on expected and actual growth: a dynamic model based on the TPB.

Research design

Empirical studies use various methodologies when establishing overconfidence and assessing its effect on entrepreneurial expectations and actions. Some apply an experimental market game design (e.g.: Bolger, 2008; Camerer & Lovallo, 1999; Moore & Cain, 2007); some use proxies, such as the overestimation of positive future events or past behaviour (e.g.: Everett & Fairchild, 2015; Invernizzi et al., 2016; Malmendier & Tate, 2002); some apply questionnaires to estimate subjects' self-efficacy (e.g.: Forbes, 2005); some draw conclusions based on socioeconomic and other contextual background information (Koellinger et al., 2007); others compare novice entrepreneurs to serial entrepreneurs, non-entrepreneurs or managers (e.g.: Koellinger et al., 2007; Forbes, 2005;

Ucbasaran et al., 2010; see for summary Astebro et al., 2014). These methods, however, have their own weaknesses (see Zhang & Cueto, 2017 for details).

We argue that the stages of the business life-cycle may be used as a proxy for experience (see Kolb, 2014). Hence, a comparison of business ventures at different stages of their life-cycle makes it possible to study the evolution of an overall confidence level and the interaction of experience and skill beliefs on entrepreneurial expectations. Alternatively, entering the life-cycle stage into our models makes it possible to filter out the effect of experience and other life-cycle- related changes on growth expectations when studying the impact of overconfidence.

We think that the reasons for the neglect of this methodology are threefold. First, numerous entrepreneurship scholars define entrepreneurship in terms of opportunity recognition and exploration via new venture creation (Ardichvilia et al, 2003; Kirzner, 1973; Shane & Venkataraman, 2000). Second, even if a common definition of entrepreneurship were available across the business life-cycle (see Bosma et al., 2012), it is not really clear how to obtain good data to undertake a comparison. Using longitudinal data and following the same businesses over their life would be an option. To the best of our knowledge, besides Panel Study of Entrepreneurial Dynamics (PSED) there is no other large-scale panel study of entrepreneurship, and PSED assesses self-efficacy by a direct question only in their first interview. Another option is to compare a large number of businesses categorized in different age cohorts. As far as we know, the Global Entrepreneurship Monitor (GEM; Reynolds et al., 2005) is the only project that provides a uniformly designed data collection over the stages of business life-cycle, and in this study, we use GEM individual data to test our hypotheses. Compared to longitudinal studies, the advantage of cross-sectional data is

that the exogenous changes in market and economic conditions do not influence the results. The inconvenience of using cross-sectional data - and the potential third reason why the comparison of ventures across the business life-cycle stages is not frequently applied- is that one has to calculate with the profound selection effect taking place in the early-stages of entrepreneurship. About half of the ventures fail[1,2] and half of the entrepreneurs give up that occupation within the first three to five years. Changes are more intense in the first year of the start-up (Quatraro & Vivarelli, 2014). Therefore, a more experienced cohort of business owners is more skilled - not simply because of the experiential learning effect, but because of the survival of the better performing ventures and the more skilled entrepreneurs (See also Konon & Kritikos, 2015).

The TPB (Ajzen, 1991; 2005; Fishbein & Ajzen, 2010) is frequently drawn on to explain the link between growth intentions and actual growth. Even if the theory also enumerates the drivers of the behavioural intention, we have found only one study which applies it to explain the variations in entrepreneurial growth intentions as well (Lecuna et al, 2017). In contrast to our research, the authors of that paper concentrated on Latin-American countries and the focus of their research differs from ours. Here, we propose to extend the use of the TPB to examine the role of entrepreneurial overconfidence and experience in growth intentions and real growth.

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[1] https://www.bls.gov/bdm/entrepreneurship/bdm_chart3.htm
[2] http://ec.europa.eu/eurostat/statistics-explained/index.php/Business_demography_statistics

Applied variables and data

GEM Adult Population Survey (APS) is a representative, national survey to measure and examine entrepreneurial activity and their influential factors (Reynolds et al., 2005). In the GEM APS, all the questions about entrepreneurial traits and business characteristics are asked in the same way from all the potential and existing business owners from nascent via baby to established businesses. Therefore, these data provide an appropriate base to compare the entrepreneurial characteristics across business life-cycle stages. However, GEM data are not longitudinal, and so we have different cohorts of entrepreneurs at the different stages of business development.

In Table 1, there is a list of the variables we use to test our hypothesis. Next to the name, type and description of each variable, the table contains a short explanation of how the variables are linked to the TPB.

Role in the TPB	Type of the variable	Variable name	Variable description	Possible values
Background information				
Control Belief; represent and proxy for entrepreneurial experience, makes the model dynamic (Audretsch, 2012)	IV	LICY	The stage of the business life-cycle (see definitions under the table)	(1)Nascent, (2)Baby, (3)Established
Entrepreneurial Attitudes				
Control belief (BERR, 2008 Bosma & Schutjens, 2009; Levie & Autio, 2013; Stenholm et al., 2013; Tominc & Rebernik, 2007)	DV or IV	SKILL	Startup skills: Respondent claiming to possess the required knowledge/skills to start a business.	(0)No, (1)Yes
Entrepreneurial Ability				
Control belief (BERR, 2008; Terjesen & Szerb, 2008)	DV or IV	NEWP	New product: The number of (potential) customers that will consider product new/unfamiliar.	(0)Nobody, (1)Few or all customers
Entrepreneurial Aspirations				
Behavioural intention (Ajzen, 1991, 2005; Lecuna et al., 2017, Miao et al, 2017)	DV	GREXP[3]	Growth aspiration: Businesses having high job growth expectation over 10 more employees and 50% in 5 years.	(0)Lower than 50% and 10 employee, (1)Over 50% and 10 employee

Table 1. GEM variables directly linked to our hypothesis.

To separate the businesses into age groups, we followed GEM categorization (Reynolds et al., 2005):

1. Nascent start-ups are those whose owners are actively involved in setting up a business they will own or co-own. These businesses have not paid salaries, wages or made any other payments to the owners for more than three months.

2. Baby businesses have paid salaries, wages or made other payments to the owners for more than three but less than 42 months. Their owners are actively participating in the management of the business.

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[3] We should mention here that our measure of growth combines a relative and an absolute growth value, and so well-established large and small start-up business ventures have about the same chance to reach the applied threshold value.

3. Established businesses have paid salaries, wages or made other payments to the owners -who also manage their business- for more than 42 months.

Nascent and baby entrepreneurs were considered early-stage entrepreneurs.

In all models, we filtered out the socio-economic – that is to say that our models always included the education level, income, work status, gender and age variables- and other effects which can influence the market conditions (e.g.: country, year, market rivalry expectations, opportunity beliefs). Table 2 lists the control variables.

Role in the TPB	Role in the Analyses	Variable name	Variable description	Possible values/Categories
Background information				
All beliefs; represent norms, wealth, development, taxation & legal system, constraints and possibilities etc…(Acs et al., 2014; Autio & Pathak, 2010; Autio, 2011)	Control	CTRY	The country where the business resides.	See the list of countries in Annex A.
All beliefs; any changes in economy, market, norms and any other variables during the examined period (see the other variables)	Control	Y	The year when the survey was administered.	2010-2014
All beliefs, socioeconomic background (Autio, 2011; BERR, 2008; Terjesen & Szerb, 2008)	Control	AGE	Calculated age range of the respondent.	(2)18-24, (3)25-34, (4)35-44, (5)45-54, (6)55-64
	Control	INC	GEM income recoded into thirds.	(1)Lowest 33%tile, (2)Middle 33%tile, (3)Upper 33%tile
	Control	EDAT	GEM harmonized educational attainment.	(0)None, (1)Some secondary, (2)Secondary Degree, (3)Post-Secondary, (4)Grad Exp
	Control	WOST	GEM harmonized work status.	(1)Working full or part time, (2)Not working, (3)Retired or Student
	Control	GEN	Gender of the respondent.	(1)Male, (2)Female
Entrepreneurial Attitudes				
Behavioural belief; beliefs on market situations (Aparicio et al., 2016; Kelley et al., 2014)	Control	OPPORT	Opportunity perception: In the next six months there will be good opportunities for starting a business in the area where you live.	(0)No, (1Yes
Control belief; entrepreneurship involves risk (Autio & Pathak, 2010, Lecuna et al., 2017, Wyrwich et al., 2016)	Control	NONFEAR	Non-fear of failure of start-up: Respondent stating that the fear of failure would not prevent starting a business.	(0)No, (1)Yes

	Knowing an entrepreneur:	
Normative Descriptive belief (BERR, 2008; Terjesen & Szerb, 2008; Wyrwich et al., 2016)	Control	KNOWEN	Knowing an entrepreneur: Respondent knowing someone who started a business in the past 2 Ys.	(0)No, (1)Yes

Entrepreneurial Ability				
Behavioural belief (Terjesen & Szerb, 2008)	Control	COMPET	Competition: The number of other businesses currently offering the same products.	(0)Few and no competitors, (1)Many competitors

Table 2. Control variables used in our models.

To test our company-level hypotheses, the pooled 2010-2014 GEM APS individual data set was used. For the purpose of this study, we used only the population of innovation driven countries (Annex A) aged between 18 and 64 . Habitual (both portfolio and sequential) business owners were omitted from the analyses.

Table 3 shows the descriptive statistics of the GEM variables. According to the VIF values, multicollinearity across the entrepreneurial trait variables is not a concern.

Variables	Nascent			Baby			Established			Total			
	N	M	SD	N	M	SD	N	M	SD	N	M	SD	VIF
WOST (1-3)	10987	1.22	.515	8155	1.05	.273	19218	1.03	.204	38359	1.09	.346	
INC (1-3)	10987	2.20	.805	8155	2.31	.773	19218	2.35	.759	38359	2.30	.778	
EDAT (0-4)	10987	2.50	.935	8155	2.49	.937	19218	2.30	.981	38359	2.40	.964	
AGE (2-6)	10987	3.87	1.161	8155	3.92	1.115	19215	4.66	1.031	38357	4.28	1.153	
GEN (1/2)	10987	1.37	.481	8155	1.35	.477	19218	1.32	.465	38359	1.34	.473	
OPPORT (0/1)	9760	.56	.497	7202	.52	.500	16997	.35	.476	33959	.44	.497	1.071
SKILL (0/1)	10780	.82	.382	8040	.85	.361	18910	.82	.385	37730	.83	.379	1.047
NONFEAR (0/1)	10965	.29	.454	8143	.27	.446	19162	.32	.466	38270	.30	.459	1.060
KNOWEN	10902	.62	.486	8116	.68	.467	19021	.44	.497	38040	.54	.498	1.045
NEWP (0/1)	10987	.47	.499	8155	.38	.485	19218	.25	.433	38359	.34	.473	1.046
COMPET (0/1)	10987	.46	.499	8155	.58	.493	19218	.68	.466	38359	.60	.490	1.028
GREXP (0/1)	10987	.20	.402	8155	.09	.293	19218	.03	.169	38359	.09	.291	1.016

Table 3. Descriptive statistics.

As GEM does not record the actual company growth, we could only analyse the macro-level growth effects of entrepreneurial traits and expectations. We used World Bank data on GDP and unemployment[4] as macro-level indicators. The descriptive statistics for the macro-level analyses are in annexes B.

Methodology

At first, we would like to test that early-stage entrepreneurs are over-confident. To do so, we compare entrepreneurs' self-efficacy statements across the stages of the business life-cycle to see how the self-evaluation of the actual entrepreneurial skills varies as entrepreneurs gain experience. Therefore, we regress SKILL on LICY. As a second step, we check whether or not self-efficacy statements are related to the relative product quality expectations (NEWP) 0, i.e.: whether entrepreneurial overconfidence is relative or absolute. We also examine whether the form of overconfidence change with experience or, more specifically, whether SKILL and LICY have an interaction effect on NEWP. Additional analyses by life-cycle group are also performed. As a third step, growth expectations (GREXP) are regressed on SKILLS, LICY and NEWP –whether entrepreneurs over-place themselves. Interaction effects and analyses by life-cycle group are then run again, and, finally, growth expectations are linked to actual growth.

We have run binary logistic regressions to test our individual level hypotheses, and models always integrated a constant. For all analyses, the GEM 18-64 age census weight was used to fit the data to the population distribution. Missing data were considered missing.

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[4] http://data.worldbank.org/indicator

In the tables under the related texts, the model effects and Nagelkerge's R squares are included to indicate the explanatory power of the models. The estimates (B) of the coefficients, their standard error as well as the exponentiated estimates (Exp(B)) of the coefficients are also presented in those tables. Exp(B) reflects the extent to which, relative to the performance of the reference category of an independent variable, belonging to a given lower category increased or decreased the chances of fitting in the group represented by the higher value of the dependent variable.

As a consequence of the large number of control variables, we only detail the results concerning the variable or variables of interest. The significance level of the control variables are also indicated in the tables. The reference category of the variables is always the highest value, as shown in Tables 1 and 2.

As we suppose a logarithmic relationship between the macro-economic data on employment and GDP and the examined entrepreneurial traits, to test hypotheses H7 and H8, we log transformed the independent variables and applied linear regression by the stepwise entry method to check their effects. We regressed the 2011-2015 average annual changes in GDP per capita (PPP constant current international $) and employment data on our pooled dataset -, i.e, the average value of 2010-2014 GEM country-level data. Some countries did not participate in the GEM project every year (see Annex A). Missing data were considered missing.

Results

According to a binary logistic model, both baby and start-up owners, even if they have much less entrepreneurial experience than the owners of established businesses, are as

confident of their entrepreneurial skills as their more experienced peers (Table 4). The model chi-square statistic is significant at the 0.000 level ($X^2 = 3617.666$). Hence, it seems that as entrepreneurs are learning by running their business, their overall confidence level in their skills does not change. Based on Kolb's experiential learning theory, and bearing in mind the profound market selection process underway during the first years of entrepreneurship, this is a clear sign of early-stage entrepreneurs' overconfidence. At the same time, it also denotes that, in parallel with becoming more skilled, entrepreneurs become less over-confident. Hence, H2 can be accepted.

DV		SKILL			NEWP			GREXP		
IV with rc	Category	B	S.E.	Exp(B)	B	S.E.	Exp(B)	B	S.E.	Exp(B)
LICY (established)	Nascent	-.065	.041	0.937	0.671***	.033	1.955	1.800***	.057	6.052
	Baby	.067	.044	1.069	0.386***	.034	1.471	0.861***	.064	2.365
SKILL (yes)	No				-0.15***	.036	.861	-0.252***	.059	.777
NEWP (few or all)	None							-0.503***	.043	.605
Model	Chi-square	3617.666***			5145.084***			4042.019***		
	Nagelkerke R Square	.171			.199			.242		
	N	33905			33905			33905		
	Predicted %	83.3			71.4			90.1		
Control variables		WOST***, INC***, EDAT***, AGE***, GEN***,CTRY***, Y***, OPPORT***, NONFEAT***, KNOWEN***			WOST***, INC, EDAT***, AGE***, GEN, CTRY***, Y**, OPPORT***, NONFEAR***, COMPET***, KNOWEN***			CTRY***, WOST*, INC***, EDAT***, AGE***, GEN***, Y***, OPPORT***, NONFEAR***, COMPET***, KNOWEN***		

p<0.05*, p<0.01**, p<0.001***

Table 4. Models including all ventures.

As Table 4 shows, early-stage business owners are more likely to think that their product will be new for some or all consumers. In general, the expected novelty of their product also depends on the self-reported confidence in their own skills of the business owners. However, more detailed analyses revealed that believing in ones own skills is coupled with

a higher likelihood of assuming that the offered product will be new for at least some consumers only at the baby and established life-cycle stages (Table 5). Consequently, nascent owners' overconfidence is absolute. They overestimate themselves. Therefore, H1a is rejected and H1b is proved. Meanwhile, at the baby life-cycle stage, entrepreneurs evaluate their skills relative to others; they over-place themselves. Hence, H3 can be accepted.

DV		NEWP								
LICY		Nascent		Baby			Established			
IV with rc	Category	B	S.E.	Exp(B)	B	S.E.	Exp(B)	B	S.E.	Exp(B)
SKILL (yes)	No	-.102	.061	.903	-0.188*	.079	.829	-0.165**	.055	.848
Model	Chi-square	1298.460***			1030.962***			1753.793***		
	Nagelkerke R Square	.170			.184			0.149		
	N	9334			7018			17553		
	Predicted %	65.9			68.6			76.9		
Control variables		WOST**, INC, EDAT**, AGE***, GEN, CTRY***, Y***, OPPORT**, NONFEAR, SKILLS, COMPET***, KNOWEN			WOST**, INC, EDAT***, AGE***, GEN, CTRY***, Y, OPPORT*, NONFEAR, SKILLS*, COMPET***, KNOWEN**			WOST, INC, EDAT***, AGE***, GEN, CTRY***, Y*, OPPORT***, NONFEAR***, SKILLS**, COMPET***, KNOWEN***		

p<0.05*, p<0.01**, p<0.001***

Table 5. Effect of overconfidence on the product novelty expectations.

The business lifecycle stage has an enormous impact on the expected growth of business ventures (Table 4). Compared to the established entrepreneurs, both nascent and baby businesses are highly likely to overestimate their growth potential. The 5 year-long expectation of high growth declines from 20% to 9% in about 1-2 years, moving from the nascent to the baby stage. Shortly after, it declines still further to 3% during the life-cycle. According to our model, entrepreneurs who think that they do not possess the required skills to start a business are less likely to expect high growth than their counterparts. In

addition, those entrepreneurs who think their product will be new at least to some consumers are more likely to expect higher growth than their peers. Consequently, H4 is accepted.

The analyses by life-cycle group show that, unlike at the two other life-cycle stages, baby business owners' skill beliefs have no direct effect on growth expectations, although, as baby entrepreneurs over-place themselves, their overconfidence influences their growth aspirations via their product novelty expectations (Table 6). Hence, H5 is accepted. Moreover, adding the NEWP*LICY interaction effect to the model indicated that those nascent entrepreneurs who do not think that their product will be new to at least some customers expect more growth than the original model would predict (B=0.456 (0.106), p<0.000). Nascent entrepreneurs' overconfidence is absolute, however. So, in respect of nascent entrepreneurs, this finding does not influence the effect of overconfidence on growth. At the same time, it means that the indirect effect of overconfidence is stronger for baby and established entrepreneurs. In sum, H6 cannot be accepted, although it should not be rejected. Additional data should decide whether he balance of all the changes in the relationship between overconfidence and growth expectations is negative or positive.

DV		GREXP								
LICY		Nascent		Baby			Established			
IV with rc	Category	B	S.E.	Exp(B)	B	S.E.	Exp(B)	B	S.E.	Exp(B)
SKILL (yes)	No	-0.25**	0.075	0.782	-0.156	.131	.856	-0.316*	0.152	0.729
NEWP (few or all)	None	-0.329***	0.055	0.720	-0.725**	.090	.485	-0.737***	0.101	0.479
Model	Chi-square	787.976***			604.229***			615.550***		
	Nagelkerke R Square	0.122			0.172			0.153		
	N	9334			7018			17553		
	Predicted %	78.6			90			97		
Control variables		WOST**, INC***, EDAT***, AGE**, GEN***,CTRY***, Y**, OPPORT***, NONFEAR***, COMPET**,KNOWEN**			WOST, INC***, EDAT, Age***, GEN***,CTRY***, Y, OPPORT**, NONFEAR*, COMPET***, KNOWEN			WOST*, INC***, EDAT*, Age***, GEN***,CNTRY***, Y***, OPPORT, NONFEAR*, COMPET**, KNOWEN***		

p<0.05*, p<0.01**, p<0.001***

Table 6. Effect of overconfidence on growth expectations by life-cycle stage.

Linear regression models were used to test whether the log transformed 2010-2014 average value of the examined entrepreneurial traits significantly predicted the average changes in GDP and unemployment during 2011-2015 in the examined countries (see the descriptive statistics in Annex B). In general, 16% and 19% of economic variations of the macro-economic indicators were explained. Nascent entrepreneurs' growth expectations explain 19% and 18% of the changes in GDP per capita and unemployment. At the same time, baby owners' growth expectations explain 20% of the fluctuations in GDP per capita and 39% of the unemployment (Table 7). The growth expectations of established businesses were not associated with the macro-economic indicators examined. Hence, H7 and H8 are partially accepted.

Changes in GDP (ppp per capita, Current international $)			
Life-cycle stage	predictor	Beta	Model Fit (R square)
Nascent	GREXP	0.435*	0.189
Baby	GREXP	0.449*	0.202
Established	GREXP	0.113	0.013
Total	GREXP	0.399*	0.159
Changes in unemployment rate			
Nascent	GREXP	-0.419*	0.175
Baby	GREXP	-0.62***	0.385
Established	GREXP	-0.132	0.017
Total	GREXP	-0.433*	0.188

$p < 0.05$*, $p < 0.01$**, $p < 0.001$***

Table 7. Effect of overconfidence and growth expectations on the macro-economic indicators.

Discussion

In sum, our research should contribute to the "black box" (See Bosma et al., 2012) of interactions between entrepreneurial attitudes, activity and aspirations. By extending the application of Ajzen's TPB and showing that early-stage entrepreneurs' self-efficacy is systematically inflated, we have produced new evidence on the relationship between entrepreneurial self-efficacy, growth expectations and economic growth.

Showing that early-stage entrepreneurs are over-confident is in line with many studies (e.g: Artinger & Power, 2015; Invernezzi et al., 2016; Malmendier & Tate, 2015; Robinson & Marino, 2015 Robinson & Marino, 2015; Ucbasaran et al, 2010). In addition, our results also reveal that the overall confidence level in their own entrepreneurial skills stagnates even if entrepreneurs become more experienced and a fundamental selection of the more skilled entrepreneurs occurs. It implies that, as entrepreneurs learn by running their business (Kolb, 2014) and progressively adjust their beliefs in their skills (Gervais &

Odean, 2001; Jovanovic, 1982; Konon & Kritikos, 2015) their overconfidence fades gradually.

Moreover, the form of overconfidence is also changing over the life-cycle. Contradicting Cain et al. (2015) and Moore and Cain (2007), our results indicate that nascent entrepreneurs' overconfidence is absolute (see also Bolger et al., 2008) whilst baby entrepreneurs over-place themselves. Overall, our findings imply that even if market entrants self-select themselves into easy-to-enter fields (see Cain et al., 2015), nascent entrepreneurs still find the task of starting a venture relatively difficult (see Lichtenstein & Fischhoff, 1977 on the hard-easy effect). Nevertheless, after surviving the first few months or years in the business – meanwhile realizing that the market had become more competitive and the product was less novel to the customer than expected and seeing many other companies fail - baby entrepreneurs believe themselves to be relatively successful. As early-stage entrepreneurs learn by running their business, they are also supposed to feel that task less difficult (Kolb, 2014). Moreover, entrepreneurs revise their skill-beliefs based on market feedbacks that contain elements relative to others (Konon and Kritikos, 2015). In consequence, they over-place themselves. This theory on the evolution of the form of overconfidence is in harmony with the experiential learning theory and the results of the psychology of overconfidence; the hard-easy effect (Lichtenstein & Fischhoff, 1977) and the forms of overconfidence across task difficulties (Moore & Schatz, 2017; Moore & Small, 2008). Further experimental studies should verify the reasons behind the changes of the form of overconfidence alongside the ageing of businesses.

Additionally, nascent entrepreneurs' overconfidence was revealed to directly influence the expected company growth, whilst baby entrepreneurs' overconfidence was confirmed to

be indirectly linked to it. The effect of baby entrepreneurs' overconfidence was fully mediated by their product novelty expectations. Hence, we were unable to assess the changes in the strength of the overall impact of overconfidence on growth expectations through early-stage entrepreneurship. Further, we have found that established entrepreneurs' self-efficacy has both a relatively strong direct and indirect effect on growth expectations. We think that this may be due to the fact that established entrepreneurs' self-efficacy closely reflects their real entrepreneurial abilities. All in all, additional data would be needed to determine the complete effect of overconfidence on growth expectations. Overall, our results show, that the huge decline in growth expectations is a result of experiential learning about several factors. Growing market rivalry, declining product novelty projections and other factors represented by the life-cycle stage in our study play a powerful role in this. In theory, the changes in growth expectations attributed here to life-cycle stages may be caused by the decline of the real growth potential of aging ventures. However, statistical data shows that, whereas it is true that young firms may grow faster than their more established counterparts (Evans, 1987), a very small number – some 2-4%- of ventures - more than 10 employees and 50% in 5 years (BERR, 2008; Henrekson & Johansson, 2010; Nanda 2016).Hence, both nascent and baby entrepreneurs hugely overestimate the growth potential of their ventures. In addition, recent studies question whether young firms grow at a faster rate than well established, older companies (Acs et al., 2008, Audretsch, 2012; Satterthwaite & Hamilton, 2017). It is, therefore, more likely that the changes in growth expectations are driven by the gradual adjustment of perceptions and expectations to an increasingly more realistic level.

Finally, a positive association was detected between early-stage entrepreneurs' exaggerated growth expectations and changes in GDP per capita. Moreover, a negative connection was revealed between growth expectations and the changes in unemployment in the countries examined. The relationships between growth expectations and actual growth are in agreement with many empirical studies (Hessels et al., 2008; Miner et al. 1994; Stam et al., 2011; Stam & Wennberg, 2009; Wiklund & Shepherd, 2003) and the TPB (Ajzen, 1991, 2005). Moreover, as the TPB would predict, experience, as the driver of the gap between the perceived and actual behavioural control, moderates the effect of growth expectations on our macro-economic indicators.

Despite our expectations, we have found that the explanatory force of baby entrepreneurs' growth expectations is the highest. The growth expectations of nascent entrepreneurs are less closely related to actual growth, and the effects of established business owners' growth projections are not significant. These results imply an inverted U or skewed relationship between entrepreneurial growth expectations and real growth. Therefore, overconfidence may be useful up to a point. A too high or a too low level of overconfidence and exaggerated growth may hinder macro-level growth. In a larger context, contradicting Ajzen (1991, 2005), this implies that is not always sure that, as perceived behavioural control comes closer to the real control, it becomes a better predictor of actual behaviour. Future research should aim to clarify this issue.

Finally, our research is limited to the innovation driven economies. It would be interesting to see how overconfidence functions in other economies and also varies across them.

Conclusions

Overall, we hope that our study contributes to the entrepreneurship literature in several respects. Our results show how important it is to bear in mind that perceptions may not reflect actual abilities. In addition, our paper draws attention to the significance of distinguishing the different forms of overconfidence and assessing them appropriately. By extending the typical use of the TBP, we have demonstrated that entrepreneurial actions and expectations are linked to perceptions. In the framework of the TPB, we showed that early-stage entrepreneurs' overconfidence, depending on its form, has a direct or indirect effect on growth expectations. We have also provided a potential answer to why many studies failed to link entrepreneurial self-efficacy to growth expectations and actual growth. Based on our results, it seems that this is because its inconsistently inflated nature and changing form across business life-cycle stages, the adjustments of expectations on market conditions -i.e.: the effect of experiential learning – and, in all probability, other issues related to the business life-cycle.

In addition, by suggesting an indirect positive effect of young entrepreneurs' overconfidence on macro-economic growth, our results provide support to the idea of Gigerenzer and Gaissmayer (2011) on the usability of heuristics to reach an optimal solution in an uncertain realm. Unfortunately, GEM data does not allow the comparison of expected and realized growth at company level. Based on previous results, it seems possible that, on the one hand, as biased decisions in situations involving risk (Tversky and Kahneman, 1974), exaggerated growth expectations may cause disappointment in the subsequent performance and failure of the business venture (Shepherd et al., 2016; Simon

& Shrader, 2012) in some cases. On the other hand, at macro-level, overconfidence, up to a point at least, may function as a useful, fast and frugal heuristic (Gigerenzer & Gaissmayer, 2011). In this line, additional research should examine what heuristics support (e.g., the illusion of control, confirmation bias) overconfidence at the different stages of the business life-cycle, how they change with experience and what are their specific advantages and disadvantages at macro- and micro-levels.

Finally, our analyses indicate the importance of considering the experience gained by the owners in running their venture when analysing the effect of entrepreneurial perceptions and expectations. There are considerable differences even between baby and nascent entrepreneurs. Therefore, it seems that the widely used total early-phased (TEA) rate (See Bosma et al., 2012) as an entrepreneurship activity measure would better fit the data and reflect real entrepreneurial activities if it were cut into two parts, into nascent and baby businesses.

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Annex A

Table I. GEM participants per country and year.

		Year				
		2010	2011	2012	2013	2014
Country	United States	9.8%	27.5%	24.7%	23.6%	14.4%
	Greece	21.8%	23.1%	14.7%	18.4%	22.0%
	Netherlands	17.0%	21.8%	25.6%	19.7%	15.9%
	Belgium	11.7%	23.9%	18.6%	25.6%	20.2%
	France	17.2%	17.5%	34.0%	14.4%	16.9%
	Spain	20.4%	17.7%	21.0%	20.1%	20.7%
	Italy	24.7%		23.9%	20.3%	31.2%
	Switzerland	16.4%	21.0%	18.0%	21.7%	23.0%
	Austria			50.8%		49.2%
	United Kingdom	12.4%	11.8%	12.9%	50.9%	12.0%
	Denmark	26.9%	24.1%	24.5%		24.5%
	Sweden	12.8%	24.4%	18.3%	24.1%	20.3%
	Norway	17.2%	22.6%	21.8%	20.8%	17.5%
	Germany	18.4%	17.5%	19.3%	24.5%	20.3%
	Australia	27.4%	32.5%			40.1%
	Singapore		18.0%	29.2%	27.2%	25.6%
	Japan	16.7%	29.9%	18.9%	17.2%	17.4%
	South Korea	26.9%	26.5%	23.5%	23.1%	
	Canada				56.6%	43.4%
	Portugal	12.0%	21.1%	20.0%	21.2%	25.6%
	Luxembourg				48.5%	51.5%
	Ireland	21.7%	19.9%	19.2%	18.3%	21.0%
	Iceland	100.0%				
	Finland	22.4%	22.9%	21.0%	16.8%	17.0%
	Slovenia	21.1%	15.4%	20.3%	24.2%	19.0%
	Czech Republic		31.2%		68.8%	
	Slovakia		43.7%	28.8%		27.5%
	Trinidad and Tobago	18.2%	19.1%	17.7%	26.0%	19.0%
	Taiwan	17.9%	17.9%	21.1%	19.8%	23.3%
	Israel	21.3%		29.4%	49.2%	
	Qatar					100.0%
Total		16.5%	19.3%	20.2%	22.2%	21.7%

Annex B

Table I Descriptive statistics for the macro-level analyses.

Country	Ln average high growth aspiration rate 2010-14			2011-15 average yearly changes in	
	Nascent	Baby	Established	GDP	Unemployment
Australia	3.376	2.150	1.994	0.035	0.170
Austria	2.341	0.929	0.037	0.034	0.181
Belgium	2.694	2.106	0.058	0.026	0.038
Canada	3.170	2.345	1.707	0.020	-0.240
Czech Republic	3.171	2.630	1.481	0.041	-0.447
Denmark	3.054	2.318	0.298	0.026	-0.259
Finland	2.733	1.915	0.735	0.017	0.196
France	3.166	2.272	0.545	0.027	0.211
Germany	2.929	2.170	1.032	0.041	-0.468
Greece	2.378	-0.859	-0.259	-0.013	2.437
Iceland	2.959	2.786	0.856	0.044	-0.717
Ireland	3.316	2.556	0.895	0.100	-0.892
Israel	3.120	2.270	1.987	0.049	-0.646
Italy	1.966	1.545	0.713	0.012	0.707
Japan	3.525	2.867	1.618	0.031	-0.340
Luxembourg	2.853	1.187	0.174	0.040	0.462
Netherlands	2.578	1.702	0.969	0.021	0.484
Norway	2.500	2.128	0.960	0.015	0.155
Portugal	2.833	2.359	0.868	0.017	0.335
Qatar	3.372	3.027	3.313	0.008	1.661
Singapore	3.588	3.188	1.827	0.041	-0.282
Slovakia	3.298	2.701	1.154	0.036	-0.580
Slovenia	3.219	2.346	1.978	0.028	0.345
South Korea	3.415	2.252	1.314	0.025	-0.020
Spain	2.482	1.380	0.341	0.017	0.439
Sweden	2.638	1.654	1.086	0.028	-0.236
Switzerland	2.506	1.646	0.807	0.034	0.001
Taiwan	3.623	3.272	2.209	0.046	-0.286
Trinidad and Tobago	2.900	2.305	1.820	0.017	-0.508
United Kingdom	3.087	2.128	0.958	0.032	-0.497
United States	3.339	2.526	1.060	0.030	-0.860