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Abstract

In this article, we seek to answer why many attempts to empirically link entrepreneurial self-efficacy to growth expectations and realized growth have failed. While doing so, we reconcile the literature on entrepreneurial self-efficacy and overconfidence. By analyzing GEM data, we show that early-stage entrepreneurs' self-efficacy statements are systematically inflated. Our results also indicate that entrepreneurial overconfidence is fading its form changes as business owners learn and gather experience. In addition, by using Ajzen's Theory of Planned Behavior (2006) as a modeling framework, we illustrate that overconfidence results in overly high firm growth expectations. However, the changes in the form of overconfidence and the adjustments of expectations on market conditions as a venture ages alter the relationship between overconfidence and growth expectations across the business life-cycle stages. In addition, our results suggest an inverted U or kinked shaped relationship between the ratio of ventures with high growth expectations at the divers life-cycle stages and our macro-level growth indicators (GDP and unemployment) in the examined countries. Overall, our outcomes suggest that, in all probability, the usually missing or weak link between self-efficacy statements and expected and realized growth is due to the variations in the relationship between self-efficacy statements and real entrepreneurial skills, the form of entrepreneurial overconfidence and the entrepreneurial expectations on market conditions. Moreover, our results reveal that on the macro-level, early-stage entrepreneurs' overconfidence –at least to some extent- may function as a fast and frugal heuristic in the ambiguous entrepreneurial world.

Keywords

Self-efficacy, overconfidence, growth, growth expectations, entrepreneurship, theory of planned behavior, GEM

Introduction

Based on Bandura's social learning theory (1977), entrepreneurship researchers proposed the notion of entrepreneurial self-efficacy to label someone's self-perceived abilities to fulfill entrepreneurial tasks. In general, outcome expectations depend largely on how people evaluate their skills (see Bandura, 2006). By analogy, it would be reasonable to suppose that higher entrepreneurial self-efficacy is coupled with higher firm growth expectations and intentions as well. Yet, only a handful of studies have examined this relationship (see Levie & Autio, 2013). Moreover, the majority of them could not confirm it. By analyzing GEM (Global Entrepreneurship Monitor) data, Tominc and Rebernik (2007) found that self-efficacy does not play a role in the variances of growth aspirations among 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. We could identify only one study confirming a positive relationship between self-efficacy and growth expectations in Latin American countries (Lecuna et al., 2017). The link between the expected growth and self-efficacy is especially interesting as in turn, the expected growth was found to be positively linked to the actual growth both on firm (Miner et al. 1994; Stam & Wennberg, 2009; Wiklund & Shepherd, 2003) and macroeconomic levels (Autio, 2007; Hessels et al., 2008; Stam et al., 2011). Moreover, in a meta-analysis of 26 studies, Miao et al. (2017), found a moderate correlation (0.309) between entrepreneurial self-efficacy and firm performance. The authors were looking for moderators of this relationship to explain the low explicatory power of self-efficacy. They did not find any. Namely, despite their expectations, prior experience, firm age and contextual factors were not confirmed as moderators. Nevertheless, next to Bandura's theory (1977, 2006), this research furnishes further clues supporting a relationship between self-efficacy, growth expectations and realized growth.

Based on Bandura's theory (1977, 2006), we think that first, we need to examine the connection between self-efficacy and growth expectations. Why were the studies mentioned above not able to ascertain this seemingly so apparent relationship? Here, we try to answer this question. With this goal, we think that the first issue we need to examine is how distorted the picture depicted by self-efficacy statements is. In general, studies on the effects of entrepreneurial self-efficacy do not examine how close self-reported skill beliefs are to the actual skill level of entrepreneurs. At the same time, another line of research concentrates on entrepreneurial overconfidence. Indeed, cognitive researchers have been suggesting for a while that entrepreneurs are especially predisposed to make biased decisions (Baron, 1998). Among the observed biases, overconfidence is considered the most prevalent and damaging (e.g., Baron, 1998, Costa et al., 2017; Cooper et al., 1988; Johnson & Fowler, 2011). In an interview, Kahneman once famously said overconfidence is the bias he would eliminate if he had a magic wand¹. In general, entrepreneurship studies also accentuate the disadvantage impact of

¹ <https://www.theguardian.com/books/2015/jul/18/daniel-kahneman-books-interview>

overconfidence in decision making (Malmendier & Tate, 2015). On one hand, overly high confidence was proposed or shown to lead to excessive risk-taking in entrepreneurial decisions (Grichnik, 2008; Hayward et al., 2006; McCarthy et al., 1993; Simon & Houghton, 2003), prolonging or failing to diagnose poor performance (Lowe & Ziedonis, 2006; Shepherd, 2009), investing in failing projects (Betzer et al., 2017) and finally, the destruction of the company's value and failure (Ahmed & Duellman, 2013; Camerer & Lovallo, 1999; Invernizzi et al., 2016; Hayward et al., 2006; Wu & Knott, 2006). On the other hand, based on motivational theories, overconfidence is believed to help overcome failures, increase resilience and motivations to entrepreneurial actions (Everett & Fairchild, 2015; Hayward et al., 2010; Simon & Shrader, 2012). Therefore, Everett and Fairchild (2015), for example, proposed a U-shaped curve to describe the relationship between overconfidence and performance. Overconfidence, such as self-efficacy (Bosma & Schutjens, 2009; Levie & Autio, 2013; Stenholm et al., 2013; Tominc & Rebernik, 2007) was suspected, but not empirically proven, to play a significant role in high growth expectations as well (Hermans et al., 2015).

Despite this large body of research, until now, entrepreneurship researchers failed to come up with a generally accepted definition, rarely differentiate or systematically confuse the distinct forms of overconfidence (Moore & Schatz, 2017) and estimate it with diverse, often misconstrued methodologies (see for details: Zhang & Cueto, 2017). Moreover, to the best of our knowledge, researchers did not examine either the evolution of overconfidence with experience or the subsequent variations in its relationship with self-efficacy and effect on growth expectations. We think that these are the other factors that we have to consider in this study to corroborate the relationship between overconfidence, growth expectations and realized growth.

Theory and Hypotheses

Entrepreneurial overconfidence and its forms

Even if entrepreneurial overconfidence seems to be axiomatic (e.g., Baron, 1998, Costa et al., 2017; Cooper et al., 1988; Johnson & Fowler, 2011), the entrepreneurship literature rarely differentiates or systematically confuses (see Zhang & Cueto, 2017 for details) the three distinct forms of overconfidence (Moore & Schatz, 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 while underestimate their performance on easy ones (Lichtenstein & Fischhoff, 1977). Invernizzi et al. (2016) showed for example that overestimation is associated with firm failure. By market game experiments, Bolger et al. (2008) found for example, that market entry is driven by overestimation. An absolute higher than justified self-esteem is responsible for excess market entry and the imperviousness of the number of competitors. However, if entrepreneurs overestimate their abilities most market entries would happen into difficult markets where the competition is driven by few agents feeling that they are better than average (see Cain et al., 2015; Lichtenstein & Fischhoff, 1977). 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 than overestimation across task difficulty levels, i.e. underplacement is typical on difficult tasks (Moore & Haley, 2008). Moore and Cain's (2007) suggest that market entries are based on overplacement. Cain et al., (2015) reconciled the psychology and entrepreneurship literature by showing that people self-select themselves into market entry that they feel simple and easy. Thus, overplacement is responsible for excessive market entries into competitive but easy-to-enter fields with high fluctuations. Other plausible explanations exist of course, such as entrepreneurs simply neglect their reference group, i.e. ignore their competitors (Dosi & Lovallo, 1997; Cramerer & Lovallo, 1999) or have a preference toward 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. Forbes (2005) showed that founder-managers are more prone to overprecision than managers who did not found their ventures. In contrast to the other two forms of overconfidence, it seems to be unaffected by task difficulty (Mannes & Moore, 2013). Thus, the form of overconfidence is an especially interesting question for us as it is supposed to determine how entrepreneurs relate to their competitors, i.e. if they evaluate their skills relative to others or on an absolute scale (see further down for a more detailed explanation).

In addition, the assessment of overconfidence often raises questions. Studies use various methodologies when establishing overconfidence and assessing its effect on entrepreneurial expectations and decisions. Some apply 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 behavior (e.g.: Everett & Fairchild, 2015; Invernizzi et al., 2016; Malmendier & Tate, 2002), some apply questionnaires to estimate subjects' self-efficacy or self-perceived overconfidence (e.g.: Forbes, 2005), some draw conclusions based on socioeconomic and other contextual background information (Koellinger et al., 2007) and 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 have their own weaknesses, however. Experimental game design, for example, does not have external validity, does not represent a real entrepreneurial situation, and the subjects are not entrepreneurs. The comparison of serial entrepreneurs to novice entrepreneurs is also questionable when applied in some contexts as studies suggest that entrepreneurs with certain characteristics tend to return to create new companies (Heyward et al., 2010). The most frequently used questionnaire measures overprecision (Forbes, 2005; Zhang & Cueto, 2017), which is not the type of overconfidence usually intended to be evaluated. Finally, proxies can be linked to general optimism or risk propensity as well (Astebro & Cedric, 2017).

Here, we define entrepreneurial overconfidence as someone's miscalibrated and inflated trust in his entrepreneurial abilities which boost the belief of the positive outcome of his business decisions. Thus, we are especially interested in entrepreneurial overestimation and overplacement that are more closely related to self-efficacy than overprecision. We

can conclude that at first we need to establish that early-stage entrepreneurs' self-efficacy statements are inflated. Consequently, they are overconfident.

H1a: Early-stage entrepreneurs are overconfident.

There is a debate on the relative or absolute nature of overconfidence at market entry (see Bolger et al., 2008; Moore & Cain, 2007), but based on Cain et al (2015) and the psychological theories of overconfidence, we feel that early-stage entrepreneurs' overconfidence is more likely to be relative to others. According to our knowledge, research failed to directly examine the type of overconfidence in other entrepreneurial contexts. By extension, we propose that early-stage entrepreneurs overplace themselves.

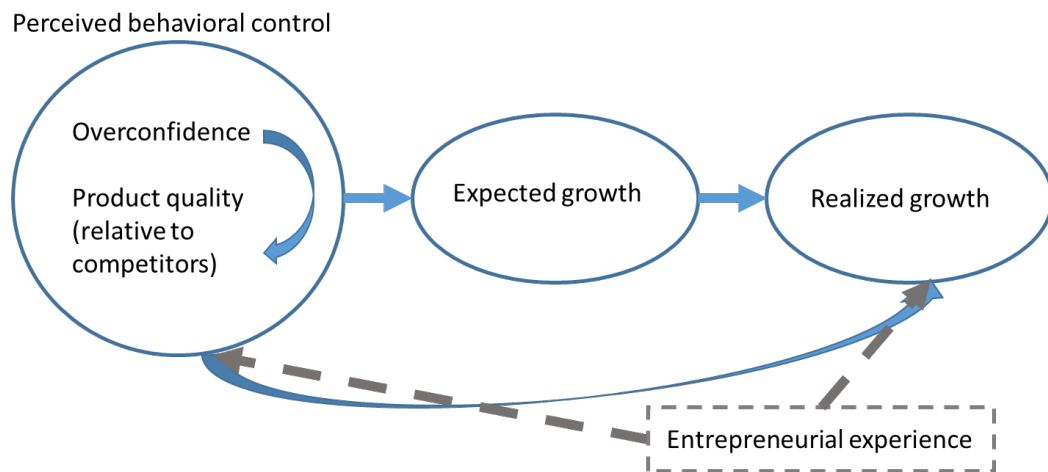
H2: Early-stage entrepreneurs overplace themselves. Thus, their overconfidence is relative to others.

The effect of overconfidence on high 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. In general, higher self-efficacy is associated largely with higher outcome expectations of actions (Bandura, 2006). Along with the perceived skill level, Ajzen's Theory of Planned Behavior (TPB; Ajzen, 1991; 2005; Fishbein & Ajzen, 2010) enumerates the other drivers of behavioral intentions and realized actions (Figure 1). It states that behaviors and behavioral intentions are guided by three kinds of beliefs: (1) beliefs on the likely outcomes of the behavior (behavioral beliefs); (2) beliefs on descriptive and injunctive norms and motivation to comply with them (normative beliefs); (3) beliefs on factors and their power that may support or hamper the performance of the behavior (control beliefs). The perceived behavioral control is equal to the aggregated value of the strength of each control belief multiplied by its perceived power. Thus, in this framework, self-efficacy or, if it is systematically inflated, self-reported overconfidence functions as a control belief. It also means that self-efficacy influences the behavioral intention.

Moreover, the TPB suggests that an entrepreneur's growth expectations should rise if he develops a more favorable attitude toward running his venture, thinks that the social norms and acquaintances would be supportive toward the behavior, and feels that he can control the behavior. Nevertheless, general overconfidence in entrepreneurial skills (Hermans et al., 2015), such as entrepreneurial self-efficacy (Bosma & Schutjens, 2009; Levie & Autio, 2013; Tominc & Rebernik, 2007; Stenholm et al., 2013) was proposed, but not proven, to be associated with high growth expectations.

Figure 1. The hypothesized effect of overconfidence of expected and realized growth: a dynamic model based on TPB



Certainly, cognitive theories on decision making reinforce that under certain circumstances, overconfidence may have positive effects on performance. 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 toward the solution with the highest probable satisfaction. Thus, the application of simplifying heuristics results in biases (Kahnemann, 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.

Taken together, we propose that overconfidence results in high growth expectations.

H3: Overconfidence positively influences high growth expectations.

As mentioned earlier, the form of overconfidence determines how entrepreneurs relate to their competitors. If entrepreneurs overplace themselves (H2), their judgments on the quality of their product or service will be relative to others. In this case, overconfidence is positively linked to the expectations on the relative qualities of the offered product or service. In turn, based on the TPB, product quality judgements also function as control beliefs.

H4: Contingent upon H2, overconfidence has a substituting or an additional indirect effect on growth expectations via the underestimation of the competitors' services or products.

The effect of experience on overconfidence and entrepreneurial expectations

According to Ajzen's theory (1991; 2005), self-efficacy, depending on how accurate it is, may have a direct influence on actual behavior as well. We think that the accuracy of the perceived behavioral control depends on the experience of the entrepreneurs. How experience relates to overconfidence is not empirically evidenced though (see for summary Zhang & Cueto, 2017). In the entrepreneurship literature, studies on the evolution of overconfidence and entrepreneurial expectations with the aging of a business are scarce. Jovanovic (1982) argued that nascent entrepreneurs are unsure about their entrepreneurial abilities and will gradually learn about them over time by considering the feedbacks on their actions. In addition, if entrepreneurs apply Bayes Rule, at the revision of their beliefs on their skills, they overweight successes and underweight failures. Consequently, they slowly but surely converge to an unbiased self-perception (Gervais & Odean, 2001). Gervais and Odean's (2001) model also supposed that inexperienced traders are not overconfident at the beginning; they become overconfident first by attributing their initial successes to their abilities. Opposing this, we think that entrepreneurs are already overconfident at market entry (see Artinger & Power, 2015; Bolger et al, 2008; Cain et al., 2015; Cooper et al., 1988; Hayward et al., 2006; Koellinger et al., 2007; Robinson & Marino, 2015) and by gathering experience, self-efficacy gets gradually more closely related to the overall self-perceived skill level.

H5: By gathering experience, entrepreneurs become less overconfident.

Indeed, the promise of experience is that by reflecting on the feedback of our actions we can learn not only about our skills but about external factors as well. According to Kolb's experiential learning model (2014) the learner goes through the consecutive cycles of concrete experience, abstract conceptualization, reflective observation and active experimentation to achieve and apply generalized knowledge from an experience. By gathering experience, entrepreneurs are supposed to learn about, among other factors, market changes, their competitors and the expectations of their consumers as well. As a result, the influence of overconfidence on the growth expectations may vary as a business ages. Expectations may become considerably more realistic even if overconfidence persists or weakens slightly. Thus, experience may moderate the effect of overconfidence on the growth expectations. In this way, it makes the TPB dynamic and becomes one of the drivers of perceived behavioral control.

H6: Entrepreneurial expectations on firm growth weaken with experience.

H7: The effect of overconfidence on growth expectations declines with experience.

The relationship between expected and realized growth

Several studies linked the expected growth to the actual growth both on firm (Miner et al. 1994; Stam & Wennberg, 2009; Wiklund & Shepherd, 2003) and macroeconomic levels (Hessels et al., 2008; Stam et al., 2011). The potential role of growth aspirations in the actual growth is usually explained by the TPB that links behavioral intentions to actual behavior (Ajzen, 1991; Delmar & Wiklund, 2008; Wiklund & Shepherd, 2003).

The TPB postulates that the behavioral intention and the perceived behavioral controls are antecedents of the actual behavior. The perceived control has a direct and, via the intention, an indirect effect on the realized acts. Thus, the perceived control can moderate the effect of intentions on the performed behavior. In the entrepreneurial context, it means that growth aspirations, expectations and intentions are preconditions of the actual firm's growth, which in turn, results in macroeconomic growth. Thus, it is supposed that via growth expectations, overconfidence has an indirect effect on actual macroeconomic growth. In addition, we propose that experience, as one of the drivers of perceived behavioral control and the principal factor of the gap between the control beliefs and the actual behavioral control, moderate the effect of behavioral intention on subsequent behavior.

H8: Growth expectations are positively associated with realized growth. In consequence, overconfidence, via fueling inflated growth expectations, has an indirect positive effect on realized growth.

H9a: The effect of expected growth varies as business owners gather more experience. Based on Ajzen's TPB, it is expected to increase as entrepreneurs become more experienced and control beliefs get closer to the actual behavioral control.

In sum, overconfidence influences growth expectations which in turn, are positively linked to real growth. The effect of overconfidence on growth expectations materializes directly or indirectly via the relative expectations on product qualities. Alternatively, the direct and indirect effects of overconfidence may both exist and complement each other. Besides, the relationship between overconfidence on growth expectations is moderated by experience. Moreover, experience, as the principal factor among the drivers of the authenticity of control beliefs, moderate the effect of overconfidence -or control beliefs- on actual growth as well (Figure 1).

Research design

We propose a novel approach to establish early-stage entrepreneurs' overconfidence and test our other hypotheses. We think that the stages of the business life-cycle may be used as proxy for experience (see Kolb, 2014). Thus, the comparison of business ventures at their different stages of life-cycle makes it possible to study the evolution of overall

confidence level and the interaction of experience and skill beliefs on entrepreneurial expectations. Alternatively, it makes 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 twofold. On one hand, numerous entrepreneurship scholars define entrepreneurship in terms of opportunity recognition and exploration via new venture creation (Ardichvilia et al, 2003; Kirzner, 1973; Shane & Ventakamaran, 2000). The main focus of interest of these researchers is on the early stages of entrepreneurship. In fact, several studies examined the role of overconfidence at market entry (Artinger & Power, 2015; Hayward et al., 2006; Koellinger et al., 2007; Robinson & Marino, 2015). Meanwhile, others believe that entrepreneurship is also important at the later stages of the business life-cycle. These researchers emphasize that it is irrelevant if entrepreneurship is pursued by individuals inside or outside of an existing business organization (Davidsson, 2004; Stevenson & Jarillo, 1990). The conceptualization and the examination of the entrepreneurial behavior of the established businesses started to flourish in the 1990s (Covin & Sleiver, 1991; Zahra, 1993). Over years, the concept of corporate entrepreneurship (CE), i.e. entrepreneurship in the established business sector, has gained increasing recognition (Kuratko, 2010). CE interprets entrepreneurship not only as opportunity exploitation but also as a process of organizational renewal (Ucbasaran et al., 2001). An important dimension of CE is corporate venturing that involves the establishment of a new business inside or outside of an already existing business. Intrapreneurship refers to the launch of a new start-up as a part of the internal renewal of the business (Antoncic & Hisrich, 2001; Pinchot, 1985). Another important dimension of CE is strategic entrepreneurship, the restructuring, and/or the redefinition of the existing business concept (Zahra & Covin, 1995; Ireland et al. 2003). One of the most frequently used concepts in strategic entrepreneurship is entrepreneurial orientation (EO) (Lumpkin & Dess, 1996; Wiklund 1999). EO involves processes, structures, and behaviors. GEM gives a definition that is commonly interpretable for all the stages of the business life-cycle. It defines entrepreneurship as “Any attempt at new business or new venture creation, such as self-employment, a new business organization, or the expansion of an existing business, by an individual, a team of individuals, or an established business.” (Bosma et al., 2012).

On the other hand, even if a common definition of entrepreneurship is available across the business life-cycle it is not really clear how to get proper data to conduct the comparison. There are two potential options. First, using longitudinal data and following the same businesses over their life from idea formulation via business establishment to existing business management and strategy. The Panel Study of Entrepreneurial Dynamics (PSED) project follows and examines those individuals who are in a business start-up process (Reynolds et al, 2004), but does not deal with the later phase of business development. According to our knowledge, besides PSED there is no other panel study on entrepreneurship. The second option is to compare a large number of businesses categorized in different age cohorts. Compared to longitudinal studies, the advantage of this methodology is that the exogenous changes in market conditions do not influence the

results. According to our knowledge,² the Global Entrepreneurship Monitor (GEM) is the only project that provides a uniformly designed data collection over the stages of business life-cycle and a large number of countries. In this study, we use GEM data to test our hypotheses.

Ajzen's TPB (Ajzen, 1991; 2005; Fishbein & Ajzen, 2010) is frequently drawn on to explain the link between growth intentions and the realized growth. Even if it also enumerates the drivers of behavioral intentions we have found only one study that applies it to explain the variations in entrepreneurial growth intentions as well (Lecuna et al, 2017). In contrast to our research, the authors of this paper concentrated on Latin-American countries and the focus of their research was not overconfidence. Here, we propose the extension of the usage of the TPB to examine the role of entrepreneurial overconfidence in growth intentions and realized growth.

Analyses

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 the entrepreneurial traits and business characteristics are asked the same way from all the potential and existing business owners from nascent via start-ups to established businesses. Therefore, these data provide a proper base to compare the entrepreneurial characteristics across the business life-cycle stages.

In Table 1, we list the variables used to test our hypothesis. Besides the name, the type and the description of variables, the table contains a short description how these variables are linked to TPB.

² <http://www.gemconsortium.org/>

Table 1 GEM variables directly linked to our hypothesis.

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, (5)Baby, (10)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				
Behavioral 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

Following the GEM categorization, the definitions of business life cycle categories are based on the ownership characteristics and the age of the ventures (Reynolds et al., 2005):

Nascent start-ups are those whose owners are actively involved in setting up a business they will own or co-own. An important distinction from the baby businesses is that this business has not paid salaries, wages or any other payments to the owners for more than three months.

Baby businesses has paid salaries, wages or any other payments to the owners for more than three but less than 42 months. Their owners are actively participate in the management of the business as well.

Established businesses are those whose owners are currently own and manage an established business. Established businesses have paid salaries, wages or any other payments to the owners for more than 42 months.

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

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

Table 2. Control variables used in our models.

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				
Behavioral 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, (1)Yes
Control belief; entrepreneurship involves risk (Autio & Pathak, 2010, Lecuna et al., 2017, Wyrwich et al., 2016)	Control	NONFEAR	Nonfear of failure of start-up: Respondent stating that the fear of failure would not prevent starting a business.	(0)No, (1)Yes
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				
Behavioral 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

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

Table 3 Descriptive statistics.

Variables	Nascent			Baby			Established			Total			VIF
	N	M	SD	N	M	SD	N	M	SD	N	M	SD	
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

As GEM does not record the actual firm growth, we could only analyze the macro level growth effects of entrepreneurial traits. We used the World Bank's data on GDP and unemployment⁴ as macro level indicators. The descriptive statistics for the macro level analyses are in annex B.

⁴ <http://data.worldbank.org/indicator>

Methodology

At first, we would like to prove that early-stage entrepreneurs are overconfident. To do so, we compare entrepreneurs' self-efficacy statements across the stages of business lifecycle to see how the self-evaluation of the actual entrepreneurial skills varies as entrepreneurs gather experience. Thus, we will regress SKILL on LICY. In a second step, we check if self-efficacy statements are related to the relative product quality expectations (NEWP) or not, i.e.: entrepreneurial overconfidence is relative or absolute. We also examine if the form of overconfidence changes with experience. More specifically, if SKILL and LICY have an interaction effect on NEWP. Additional analyses by life-cycle groups will be performed as well. In a third step, growth expectations (GREXP) will be regressed on SKILLS, LICY and NEWP –if entrepreneurs overplace themselves. Interaction effects and analyses by life-cycle groups will be run again. Finally, growth expectations will be linked to actual growth.

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

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 presented in those tables as well. 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 supposed a logarithmic relationship between the macroeconomic data on employment and GDP and the examined entrepreneurial traits, to test hypotheses H4a and H4b, we log transformed the trait variables and applied linear regression to check their effects. We regressed the 2011-2015 average annual changes of the 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 startup owners, even if they have much less entrepreneurial experience than the owners of established businesses, are as confident in their entrepreneurial skills as their more experienced peers (Table 4). The model chi-square statistic is significant at the 0.000 level ($X^2 = 3617.666$). Thus, 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, this is a clear cut signs of early-stage entrepreneurs' overconfidence. Thus, H1 is approved. At the same time, it also denotes that parallelly with becoming more skilled, entrepreneurs become less and less overconfident. Hence, H5a is approved.

Table 4. Models including all ventures.

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***

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 depends on the self-reported confidence in own-skills of the business owners as well.

However, more detailed analyses revealed that believing in own skills is coupled with 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, contrary to our expectations, nascent owners' overconfidence is absolute. They overestimate themselves. Meanwhile, at the baby and established life-cycle stages, entrepreneurs evaluate their self-efficacy relative to others; they overplace themselves. Therefore, H2 is partially approved.

Table 5 Effect of overconfidence on the product novelty expectations.

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	9334.000			7018.000			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***

The business lifecycle stage has an enormous impact on the expected growth of the business ventures (Table 4). Compared to established entrepreneurs, both nascent and baby businesses are highly likely to overestimate their growth potential. The 5 year-long expectation of high growth lessens from 20% to 9% in about 1-2 years, moving from the nascent to the baby stage. Shortly after, it declines again to 3% during the life-cycle. According to our model, those 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. Besides, those entrepreneurs who think their product will be new at least for some consumers are more likely to expect higher growth than their peers. Consequently, H3, H4 and H6 are approved.

The analyses by life-cycle groups show that, unlike at the two other life-cycle stages, baby business owners' skill beliefs do not have a direct effect on growth expectations. Still, as baby entrepreneurs overplace themselves, their overconfidence influences their growth aspirations via their product novelty expectations (Table 6). 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 at least for some consumers 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 the case of the nascent entrepreneurs, this finding does not shape 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, H7 cannot be approved. It should not be rejected either, however. Additional data would need to decide if the balance of all the changes in the relationship between overconfidence and growth expectations is negative or positive.

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

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**	.075	.782	-0.156	.131	.856	-0.316*	.152	.729
NEWP (few or all)	none	-0.329***	.055	.720	-0.725**	.090	.485	-0.737***	.101	.479
Model	Chi-square	787.976***			604.229***			615.550***		
	Nagelkerke R Square	.122			.172			0.153		
	N	9334.000			7018.000			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***, CTRY***, Y***, OPPORT, NONFEAR*, COMPET**, KNOWEN***		

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

Linear regression models were used to test if 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 the variations of the macroeconomic 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 macroeconomic indicators examined. So, H8 is fully while H9 is partially approved.

Based on the TPB, we did not formulate a hypothesis on the direct effect of overconfidence on macroeconomic growth. We have tested this interaction, however. Our analyses show, that overconfidence, as a single predictor, does not influence macroeconomic growth.

Table 7 Effect of overconfidence and growth expectations on the macroeconomic indicators.

Changes in GDP (ppp per capita, Current international \$)			
Life-cycle stage	predictor	Beta	Model Fit (R square)
Nascent	SKILL	-2.05	0.042
	GREXP	0.437*	0.191
Baby	SKILL	-0.096	0.009
	GREXP	0.450*	0.202
Established	SKILL	-0.32	0.001
	GREXP	0.113	0.013
Total	SKILL	-0.91	0.008
	GREXP	0.399*	0.159
Changes in unemployment rate			
Nascent	SKILL	0.179	0.32
	GREXP	-0.419*	0.175
Baby	SKILL	0.052	0.003
	GREXP	-0.62***	0.385
Established	SKILL	0.001	0
	GREXP	-0.132	0.017
Total	SKILL	0.058	0.003
	GREXP	-0.433*	0.188

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

Conclusion and discussion

By comparing entrepreneurs' general entrepreneurial self-efficacy statements across the different stages of the business life-cycle, we have directly showed that early-stage entrepreneurs' self-efficacy statements are systematically inflated; they are

overconfident. According to our results, nascent entrepreneurs, even if they are only setting up their venture and have hardly got any income from it yet- are as confident in their entrepreneurial skills as the owners of established businesses. Baby owners are also as self-assured regarding their entrepreneurial skills as their more experienced counterparts. According to Kolb's (2014) experiential learning theory, these results are clear-cut signs of the inflated nature of early-stage entrepreneurs' self-efficacy statements. Our outcome is in line with many studies suggesting a widespread presence of entrepreneurial overconfidence (e.g: Invernezzi et al., 2016; Malmendier & Tate, 2015; Ucbasaran et al, 2010; Tipu & Arain, 2011) and research showing that market entries are not driven by objective success probabilities but by entrepreneurial overconfidence (Artinger & Power, 2015; Bolger et al, 2008; Cain et al., 2015; Cooper et al., 1988; Hayward et al., 2006; Koellinger et al., 2007; Robinson & Marino, 2015).

Thus, according to our results, the overall confidence level in own entrepreneurial skills stagnates even if entrepreneurs get more experienced. It implies that as entrepreneurs learn by running their business (Kolb, 2014) and progressively adjust their beliefs on their skills (Gervais & Odean, 2001; Jovanovic, 1982) their overconfidence fades gradually. Unfortunately, from our data, it is not possible to quantify the extent to which the differently experienced entrepreneurs are overconfident. Experimental studies should address this issue.

The outcomes of our analyses also reveal that entrepreneurs' product novelty expectations decline progressively. Moreover, at the baby and established stages, these expectations are influenced by the self-reported skill beliefs. Consequently -contradicting our hypothesis H1b, Cain et al. (2015) and Moore and Cain (2007) - nascent entrepreneurs' overconfidence is absolute (see also Bolger et al., 2008) while baby entrepreneurs overplace themselves. Based on the results of previous studies (e.g.: Camerer & Lovallo's, 1999), we did not hypothesize that overconfidence affects the expected number of competitors. Therefore, market rivalry expectations were used as a control variable in this study. However, we have tested the relationship between the projections on the number of competitors and overconfidence. We found that the expectations on market rivalry grow intensively as a venture ages but overconfidence is not a driver of this change. Overall, it seems that even if market entrants self-select themselves into easy-to-enter fields (see Cain et al., 2015), our results suggest that nascent entrepreneurs still find the task of starting a venture hard (see the hard-easy effect). Nevertheless, after surviving the first few months or years in the business – meanwhile realizing that the market became more competitive and the product is less novel to the consumers than it was expected and in all probability, seeing other companies fail- baby entrepreneurs believe themselves to be relatively successful and the task itself less difficult. As a consequence, they overplace themselves. This theory is in harmony with the results on 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 along the aging of businesses.

In line with Kolb's experiential learning theory (2014), we have found a gradually decreasing link between experience and the unreliability of expectations on its potential growth. In general, this outcome is consistent with studies showing that entrepreneurs tend to overestimate the potential gain on and growth of specific projects (Betzer et al., 2017; Hayward et al., 2006; Invernizzi et al., 2016; Simon & Houghton, 2003). Our data indicate that about twenty percent of nascent entrepreneurs aspire for high growth within the next five year. Yet, when the same question is asked from a one-two year older ventures, only a third the amount would hope for such fast progress. Finally, high growth expectations decline to 3 percent by the established life-cycle stage. Statistical data shows that, whereas it is true that young firms may grow faster than their more established counterparts, a very small number of ventures grow more than 10 employees and 50% in 5 years (BERR, 2008; Evans, 1987; Henrekson & Johansson, 2010; Nanda, R., 2016). In a meta-analysis of empirical studies, Henkerson and Johansson (2010) showed that a very low proportion, around 4% of all firms is responsible for most of the job growth across economies. The analyses of the Department for Business Enterprise and Regulatory Reform (BERR, 2008) uncovered that in the UK about 2-4% of all ventures creates the majority of new jobs. In the USA, most of the new business fail within a few years and the median surviving venture hardly shows any growth in terms of employment (Nanda, R., 2016). In addition, some recent studies also question if young firms grow in a faster rate than well established, older companies (Acs, Parsons & Tracy, 2008, Audretsch, 2012).

Additionally, nascent entrepreneurs' overconfidence was revealed to directly influence the expected firm growth while baby entrepreneurs' overconfidence was confirmed to be indirectly linked to it. This indirect link is carried out by means of product novelty expectations. However, against our expectations, we could not prove that the effect of overconfidence is decreasing along the business life-cycle. At the same time, this hypothesis should not be rejected either. A study estimating the exact degree of overconfidence at the different stages of the business life-cycle would shed more light on this matter as well. Overall, our results show, that the huge decline in growth expectations is a result of several factors. Growing market rivalry, declining product novelty projections and other factors related to the aging of businesses all contribute to the decreasing growth expectations.

Finally, a positive association was detected between early-stage entrepreneurs' exaggerated growth expectations and the changes in the GDP per capita. Moreover, a negative connection was revealed between the growth expectations and the changes in the unemployment in the examined countries. The association 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 one of the drivers of the overall perceived behavioral control, moderates the effect of growth expectations on our macroeconomic indicators. Despite our expectations, however, we have found that the explanatory force of baby entrepreneurs' growth expectations are the highest. The growth expectations of nascent entrepreneurs are less closely related to the actual growth and the effects of established business owners' growth projections are not significant. These results imply an inverted U or

kinked shaped relationship between the entrepreneurial growth expectations and the real growth. Thus, overconfidence and exaggerated growth expectations are useful up to a point. A too high or a too low level of overconfidence and exaggerated growth may hinder macro level growth. In larger context, contradicting Ajzen (1991, 2005), it implies that it is not always sure that as the perceived behavioral control gets closer to the real control it becomes a better predictor of the actual behavior. Future research should furnish clarification on this relationship.

By suggesting an indirect positive effect of young entrepreneurs' overconfidence on macroeconomic 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 on the firm level. Based on previous results, it seems possible that, 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). Additional research should examine what heuristics are supporting (e.g.: 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 (see Gigerenzer & Gaissmayer, 2011) and disadvantages (see Kahneman, 2011) on macro and micro levels.

At the same time, we could not show the direct effect of young entrepreneurs overconfidence on the macroeconomic indicators used. We think that the macro-level lack of the micro-level link between overconfidence and growth expectations is due to contextual factors and the systemic nature of entrepreneurship (Acs et al., 2014). In all probability, next to concurrence and product novelty projections, other country level variables –such as culture, institutions, taxation, socioeconomic composition of the country, etc.- alter the relationship between overconfidence and growth across countries. The fact that, in general, the country was one of the most important independent variables in all our models confirms this presumption. Additional research should look for contributing country-level factors in multilevel analyses.

Furthermore, our analyses also show how important it is to consider the experience gathered by the owners in running their venture when analyzing the effect of entrepreneurial traits. 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, and reported accordingly.

Overall, our study is the first to empirically link young entrepreneurs' overconfidence to their growth expectations at the firm level and to macroeconomic growth. By examining the effect of overconfidence in the framework of TPB, we showed that 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 realized growth. Based on our results, it seems that

this is because its variedly inflated nature and changing form across the business life-cycle stages and the general learning effect of experience on entrepreneurial expectations.

In sum, our research contribute to the “black box” (see Bosma et al., 2012) of interactions between entrepreneurial attitudes, activity and aspirations.

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

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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
