

Universität Passau

Wirtschaftswissenschaftliche Fakultät

Lehrstuhl für Volkswirtschaftslehre mit Schwerpunkt Wirtschaftstheorie

Dozent: Dr. Manuel Schubert

Seminar: Behavioral Economics and the Seven Sins

Sommersemester 2017

Overconfidence and entrepreneurial behavior

Sophia Stutzmann

Sophia.Stutzmann@web.de

B.A. International Cultural and Business Studies

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1 Introduction

Hubris is classified as one of the seven deadly sins, which represent bad or excessive character traits of human beings for the Catholic Church. Although hubris has a negative connotation, it is often part of daily life, even in the movie industry. When asked why so many blockbuster movies are released on the same weekend, the chairman of Walt Disney Studios, Joe Roth, replied:

Hubris. Hubris. If you only think about your own business, you think, "I've got a good story department, I've got a good marketing department, we're going to go out and do this." And you don't think that everybody else is thinking the same way. (Los Angeles Times 1996 in: Camerer/Lovallo 1999: 315).

But excess entry and the often resulting failure in markets do not only apply to the movie industry, but also to new businesses in general. Empirical studies indicate that there is a very high rate of failure among new ventures within few years. More specifically, about 62 percent of new businesses leave the market within five years and after ten years, the rate rises to even 80 percent (cf. Camerer/Lovallo 1999: 306). Keeping this evidence in mind, one might wonder why there are still so many people launching new businesses. Similar to the movie industry, Moore and Cain (2007) argue that most important business decisions such as entering an existing market are often biased by hubris in the form of overconfidence (cf. 197).

This analysis will take a closer look at the role that the behavioral model of overconfidence plays in shaping entrepreneurial behavior. Yet, it will not only consider the effects of too much self-confidence, but also the influence of underconfidence on entrepreneurial activity. Therefore, four experimental studies and one empirical paper will be analyzed with respect to how confidence affects entrepreneurial decisions.

2 Behavioral Economic Model

In contrast to the *homo economicus* model which assumes people to always behave rationally by maximizing their utility, the following behavioral economic model deals with cognitive biases. Displayed in the thinking of most people, they are defined as “thought processes that involve erroneous inferences or assumptions” (Forbes 2005: 623).

2.1 Overconfidence, reference group neglect and the inside view

Overconfidence is one of the most widespread cognitive bias as most people think they are above average concerning positive traits like driving ability or longevity, even though mathematically only half can be. Yet, there is no uniform definition used in literature, since for Camerer and Lovallo (cf. 1999: 306), overconfidence simply means the overestimation of one's own relative abilities. Pikulina et al. (cf. 2017: 176) differentiate between *overestimation* "when subjects assess their ability, achievements, level of control, or probability of success to be higher than they actually are and *overplacement* or *better-than-average*, meaning that subjects overestimate their skills relative to others. Finally, Cain et al. (cf. 2015: 2) add a third type of overconfidence to this dichotomy which they call *overprecision*, defined as the "excessive faith that one knows the truth".

In the wake of overestimating their abilities, individuals also seem to forget that they are competing with people holding the exact same cognitive bias. This phenomenon is defined by Camerer and Lovallo (cf. 1999: 307) as *reference group neglect*, leading competitors to neglect the competition while focusing too much on their own performance, and is a byproduct of the so-called *inside view*, specified by Kahneman and Lovallo (1993: 25). According to them, inside view forecasts tell colorful stories by focusing on the skills and resources of a certain group and ignoring similar cases or competition. On the other hand, the *outside view* uses a more statistical approach by comparing the case at hand to similar groups.

2.2 Implications for entrepreneurial behavior

Koellinger et al. (2007) argue that in microeconomic models of entrepreneurial behavior, there are objectively measurable variables such as age, gender, cultural and economic characteristics as well as subjective preferences and perceptions like risk tolerance, an illusion of control and self-confidence that influence the decision to start a business (cf. 504f.). Like all other human beings, founders of new businesses are prone to cognitive biases. Indeed, interviews with close to 3,000 entrepreneurs conducted by Cooper et al. (1988) revealed that 81 percent estimated their chance of success to be 70 percent or higher and 33 percent even believed their probability of success to be 100 percent (cf. 97). In view of the high probabilities of failure, this evidence indicates that founders of new businesses are often overconfident concerning their own skills. But why do entrepreneurs let overconfidence affect such important and supposedly risky decisions in life as starting a new

venture? One possible explanation is that entrepreneurs are very likely to regard their situation as unique, leading them to ignore existing statistics and accurate forecasts of their likelihood of success. (cf. Koellinger et al. 2007: 520). Thus, they fall victim to the above mentioned inside view. The consequences of this behavior will be discussed in the following analysis of empirical evidence.

3 Empirical Evidence

In this part of the paper, five empirical and experimental studies will be discussed with respect to their contributions to the characteristics and impact of overconfidence on market entry decisions.

3.1 Camerer and Lovallo (1999): Overconfidence and Excess Entry

Camerer and Lovallo (1999) designed a laboratory experiment to verify the idea of overconfidence leading to excess market entry. They conducted experiments with students in which individuals had to decide whether or not to enter a market with a certain limited capacity. The subjects were recruited either randomly or by self-selection in which the individuals knew that their payoff would be based on their own and others' performances on trivia questions. The participants' payoffs in the case of market entry depended on their ranking which was determined by their relative skill. The rankings were assigned in two different ways: either by a random allocation (random-rank condition) or by having the participants answer trivia questions or solve logic puzzles (skill-rank condition). Two sequences of twelve rounds – the first with random-based ranking and the second with skill-based ranking – were carried out with a different market capacity in each round. For the first four experimental groups, participants were selected randomly while the last four experiments drew on self-selection (cf. 308f.). As a result, Camerer and Lovallo found that when participants' payoffs depended on their abilities, excess entry was much larger than in the case of randomly assigned ranks. This effect was even stronger when subjects self-selected into the experiment, although they knew that their competitors thought they were very skilled, too. The reason for this behavior was not an underestimation of the competition but rather an overconfident estimation of their own abilities which led to the above-mentioned reference group neglect (cf. 314f.). Even though this experiment empirically proves the excessive effect of overconfidence on market entry, the actual skills of the participants were not measured. Thus, one might argue that all the participants could also be

extraordinarily smart and therefore estimated their high abilities correctly without being overconfident. Additionally, there were no professionals but only students among the participants which might lead to the question whether the reported findings can be applied to the actual entrepreneurial environment as most people who start new businesses are more experienced than students.

3.2 Koellinger et al. (2007): “I think I can, I think I can”. **Overconfidence and entrepreneurial behavior**

Complementary to Camerer and Lovallo’s (1999) experimental study, Koellinger et al. seek to provide further empirical evidence for the possibility of overconfidence as an explanation for excess entry by analyzing field data. Therefore, they study what variables affect an individual’s decision to start a business using large data obtained from surveys conducted in 18 countries for the Global Entrepreneurship Monitor of 2001. After identifying individuals that had started or were in the process of starting a new business, these subjects were asked questions regarding variables often associated with entrepreneurial behavior like their perceived skills (cf. 504ff.). Indeed, Koellinger et al. found that entrepreneurial confidence has a major impact on the decision to start a business. This is even more true for nascent entrepreneurs than for established business founders (contrary to the intuition that self-confidence increases with successful persistence in the market for some time), supporting the hypotheses of the perception of entrepreneurial skills being biased by overconfidence (cf. 513ff.). As a possible explanation for these findings, Koellinger et al. argue that entrepreneurs take decisions that are largely based on predictions generated by the inside view because they perceive their situation as unique and therefore think that statistics on similar cases do not apply to theirs (cf. 520f.). One inherent shortcoming of these empirical findings is that the level of self-confidence is not determined by concrete tasks but rather non-specifically via a questionnaire. Consequently, overconfidence is not measured directly but deduced from the available evidence.

3.3 Moore and Cain (2007): Overconfidence and Underconfidence

Building on the paper by Camerer and Lovallo (1999), Moore and Cain (2007) conducted two laboratory experiments with undergraduate students to further investigate the role of overconfidence for market entry. For the first experiment, the main difference to Camerer and Lovallo was that skill-dependent payoffs were now either based on an easy or a difficult trivia game. Furthermore, by giving participants full feedback after each round, they hoped

to prevent them from ignoring or neglecting the competition (cf. 198f.). Again, in twelve rounds for each experimental session, participants chose between entering or not entering a market where only the top-three entrants would actually make money. After their entry decision, they answered questions predicting their own and their competitors' performances (cf. 199). The results showed that the participants' confidence regarding their competitive performance depended on the ease of the task. In rounds with difficult trivia questions, people overestimated others' performances which led them to avoid entry although they correctly forecasted few other entrants. Therefore, skill-based tasks did not always bring overconfidence on scene and entry rates varied with the tasks' difficulty. What was new for the second experiment was that participants were given full feedback about their own and others' performances (cf. 204ff.). Moore and Cain found that participants attached more importance to their beliefs of their own performance than to their estimations of the others' scores (cf. 207f.). This is another evidence of the reference group explanation as individuals primarily based their entry decision on their own estimated performance and less on their competitors' behavior. Yet, the body of participants was only composed of students and not actual founders of businesses which raises doubts about the applicability of the findings to the "real" world of entrepreneurs.

3.4 Cain et al. (2015): Making sense of overconfidence in market entry

With their two laboratory experiments and one field study, Cain et al. (2015) seek to identify which form of overconfidence (overplacement and overestimation) contributes most to the choice of market entry. In the first experiment, participants had to decide which of two markets to enter whereas they also had an opt-out possibility in the second experiment. The markets were characterized by different levels of task (trivia quiz) difficulty and varied possible payoffs. Again, subjects had to report estimations of their absolute and relative performance after making their entry decision. Overestimation was measured as the difference between the reported and the actual score while overplacement was calculated as the difference of estimated relative placement minus actual relative placement (cf. 4f.). Results showed that, consistent with the above-mentioned empirical evidence, entry was much larger for the easy quiz compared to the difficult one although participants correctly anticipated that there would be more entry for the easier market. The driving force behind the entry decision was not overestimation but rather overplacement as they believed they would outdo their competitors on easy tasks and be worse than them on difficult tasks (cf. 8). In the second experiment, participants were strongly encouraged to consider the

competition before making their entry choice. However, this did not lead to them correcting their overplacement bias. With respect to the phenomenon of reference group neglect, Cain et al. conclude that the main reason behind overplacement is not forgetting about the competition but rather underestimating it (cf. 15). Lastly, they conducted a field study using data on market entry in 118 different industries as well as evaluations of the perceived ease of competing in these industries by nearly 300 students. The results of the regression show that industries perceived as easy have higher market entry rates than industries classified as difficult, which provides empirical evidence to their prior experimental findings (cf. 13). However, one might question the validity of this empirical result as it is doubtful whether the consulted students can provide an accurate estimation of the actual difficulty of an industry. Therefore, these estimations do not give a definitive picture of the actual confidence exhibited by real market entrants.

3.5 Pikulina et al. (2017): Overconfidence and investment

The previous studies were only conducted with students which raises the question whether professionals differ in their level of overconfidence and their behavior in economic situations. Focusing on investment decisions, Pikulina et al. aimed to address this problem by carrying out a study with students participating in lab experiments and professionals taking paper- or web-based tests (cf. 180). To measure their skill level, participants had to answer 20 financial knowledge questions. After that, they had to make investment decisions where their payoffs were maximized when their investment decisions were in line with their actual skill level. As subjects did not know their scores in the questionnaire, they had to take the investment decisions based on their beliefs about their skills (cf. 178). Results showed that on average, subjects were significantly overconfident with students overestimating their financial knowledge to a greater extent than professionals. This led to excessive investment levels for students and accurate investment choices made by professionals who also performed better on the skills test (cf. 183ff.). Yet, this experimental design did not provide any feedback to its participants although in reality, market entrants do at least partly get feedback about their performance, also in comparison to their competitors, via their profit margins, giving them the opportunity to improve their behavior.

4 Discussion

All studies deal with the issue of overconfidence leading to biased and inefficient business decisions. The general outcome by Camerer and Lovallo (1999) is that overconfident estimation of their abilities leads participants to excess entry. This effect increases when subjects self-select into the competition because they neglect the skills of their reference group. Koellinger et al. (2007) support this finding by proving empirically that overconfidence influences business entry decisions. They also analyze that due to their inside view, nascent entrepreneurs exhibit more confidence in their abilities than more experienced business owners. Moore and Cain (2007) complement this general result by adding that the level of overconfidence displayed by individuals depends on the ease of the task. For difficult tasks, subjects underestimate their abilities and avoid market entry while the opposite is true for easy tasks. They also provide another evidence for reference group neglect by showing that individuals attach a greater value to their estimated skills than to the estimated abilities of others. Cain et al. (2015) shed an even more nuanced light on the issue by identifying overplacement rather than overestimation as being the specific type of overconfidence that influences market entry decisions. Concerning the reference group neglect phenomenon, they conclude that the issue does not consist in the participants simply forgetting about the competition but rather neglecting it. As all the above discussed experimental studies were conducted with students, the paper by Pikulina et al. (2017) experimentally answers the question whether there is a difference in the level of overconfidence between professionals and students. Results showed that students indeed overestimated their abilities more than professionals did which also affected the respective economic decisions. This evidence questions the applicability of the experimental findings of the previously analysed papers to actual entrepreneurs. Nevertheless, even the professionals in the study by Pikulina et al. exhibited a certain amount of overconfidence so that all papers indeed prove that there is an existing influence of over- and also underconfidence on entrepreneurial decisions, especially market entry.

5 Conclusion

An analysis of the presented papers leads to the conclusion that there is an existing influence of overconfidence on entrepreneurial behavior, especially for nascent entrepreneurs. Generally, when individuals perceive a competition to be easy, they overestimate their skills and enter a market too often. The exact opposite holds true for difficult tasks, leading to

inefficiently few entry. An explanation for this behavior is that individuals neglect or under- or overestimate the competition by generating an inside view forecast about their possible success.

However, one problem of the literature regarding overconfidence is that there is not one definitive definition of this cognitive bias. Instead, almost each paper uses another definition; some of them being very detailed (for example overoptimism and judgmental overconfidence (cf. Herz et al. 2014: 1)) while others remain very general like the one used by Camerer and Lovallo (1999). Furthermore, Camerer and Lovallo conducted their self-selection experiments only with male participants as they argued – based on the findings by Barber and Odean (2001) – that men are generally more overconfident than women. Yet, the fact that all other experiments were carried out with male and female subjects makes it difficult to compare the results of the studies. The same problem applies to some papers analyzing only the behavior of students while others focus on both students and professionals. Future research should therefore re-examine the results of the presented studies with respect to gender and professional experience of the participants.

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Eidesstattliche Erklärung

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Sophia Stutzmann