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OVERCONFIDENCE IN SMEs

Conceptualisations, Domains and Applications

Anna Chiara Invernizzi

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Foreword

The Effectiveness of Accuracy in Judgment

Personal predictions are often biased and the sign of the bias is often toward overconfidence. The impact of such overconfident attitudes is a moot point in the literature. Overconfidence can encourage people to try new things and persevere when things become difficult (Koellinger, Minniti and Schade 2007; Robinson and Marino 2015) but it can also lead individuals to overestimate their own abilities, the potential of opportunities and performance (Cassar and Gibson 2007; Shepherd, Wiklund and Haynie 2009). This manuscript explores the overconfidence concept and the author discusses specifically overconfidence in the managerial domain highlighting the advantages and the drawbacks that are prevalent when an overconfident attitude is taken.

A growing literature questions the generality of a beneficial association between positive perspectives and motivation that, previously, was often assumed in the literature (Taylor and Brown 1998). This is the starting point of her book and the subsequent chapters explore the construct through a variety of analyses to enhance current thinking and offer new experimental findings. The book, therefore starts from

the premise that while considerable literature has debated the notion of overconfidence, its actual impact upon decisions that are taken still lacks clarity and aspects of its configuration remain unexplained. These issues are the scope of this book.

Chapter 1 explores the overconfidence construct and identifies reasons, self-swerving bias, the Valance effect, wishful-thinking, and anchoring, that contribute to such an attitude evolving. It then goes on to consider the factors within the human personality that promote a tendency to be overconfident and reflects on how the construct has affected decision-making and traces the evolution of its academic development from financial markets, into general management, and the more specialized function of entrepreneurship. In Finance it has been proven that agents base their judgment of estimates upon antecedent factors and are, therefore, hindsight-biased when making decisions (Bias and Weber 2009). In management, power is a key influence upon the propensity to be overconfident and this, potentially, has significant impact upon investment policy, capital spend, and the corporate governance of organizations. In entrepreneurship, the decision to start and continue to run business overconfidence can also be very influential. Rates of failure among new business are very high and an entrepreneur often requires considerable confidence to believe they can "beat the odds", survive and prosper. However, this can quickly turn into overconfidence, if entrepreneurs fail to recognize/accept poor performance and its underlying reasons. The extent to which any context is more susceptible to overconfidence or whether the impact from overconfidence is more significant is a moot point and this issue is raised at the end of the chapter.

Chapter 2 investigates in more detail the overconfidence of entrepreneurs and how this may be controlled by the use of technology systems. The extant literature identifies that when an individual is asked to predict the probability of an event occurring, their assessment is generally higher than the calculated assessment offered by probability theory. To determine the level of overconfidence, it is necessary to consider the difference between personal expectation and the reality that ensues (Klayman et al. 1999). With this approach, the overconfidence is the positive difference Od=C(Id)-P(Id), where d is the domain and O the

overconfidence. Confidence and proportion are then become a function of the overall information available over time. This chapter uses the latter approach and the budgetary forecasts of SMEs are employed to compare and contrast planned with actual results based upon three financial measures EBITDA, equity, and borrowing costs. The findings suggest that those responsible within SMEs were less likely to employ heuristic approaches when using technological systems and as a consequence the forecasts that result are much closer to actual, suggesting a reduction in overconfidence.

Chapter 3 focuses upon individual performance rather than the performance of the firm and uses the sporting context to analyze, how confidence impacts upon the performance of women undertaking a predominantly male task. This study begins to evolve the discussion of overconfidence into concepts of less confident and under confident and the findings show that women tend to underestimate their performance, essentially to protect themselves from possible failure. This is similar to findings in the entrepreneurship field, where female owned businesses are more likely to underestimate performance than their male counterparts but actually provide more reliable forecasts when comparing forecasts to actual performance. In both, contexts this conscious method employed to handle the anxiety associated with uncertainty does not actually lead to underperformance but a more realistic assessment of what is actually achieved. Interestingly, this chapter goes on to posit that people that are overconfident in their forecasts tend to experience a lower enjoyment from their outcomes because they have a higher reference point and not have met expectations (McGraw et al. 2004). This introduces an interesting conundrum for sports and business people alike, is it more satisfying to achieve a higher than expected absolute performance or a higher than expected relative performance (percentile position). Such assessment may also be important to external stakeholders, like finance providers, coaches, etc.

To conclude this monograph provides considerable insight into the role and implications of overconfidence/confidence within the context of business and sport and while many positive activities originate from the ability of the individual to perceive, with conviction, a positive future state these same tendencies can lead to negative outcomes.

It is therefore important to note, as the author identifies across studies in different contexts, that a calibrated assessment of one's performance achieves a better outcome. Incidentally, this may also have a positive impact on the happiness and wellbeing of the individual as the result of actual performances being closer to perceived expectations. This book therefore offers rich theoretical and applied implications for academics and practitioners informed by the author's international expertise (Invernizzi et al. 2016).

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Contents

List of Figures

List of Tables

Introduction

As companies begin to look at how to start or improve upon their own businesses, there are several key factors to keep in mind. This book will focus on the managerial aspects to ensure the lasting of their businesses.

The business world is rapidly changing and so must the tactics businesses deploy to their employees. Businesses are now noticing that older managerial tactics might not be coincide with their needs, which ultimately causes a road block for improvement. In order to overcome this, businesses need to first look at what type of management they need, as well as the ones who are fit for the job. A background in business, especially the business processes, is needed to understand what this book entails. Henceforth, the material covered in this book is targeted for those in the academics of business, practitioners, and students. The takeaway from this book is to have a better understanding of management with the aid of data to back up the claims this book will make with applied statistics.

This book will cover a degree of explanations as to why certain characteristics of a management personal, or group, leads to success, or downfalls from Chap. 1, as well as uncontrollable factors play a critical role in deciding who or what type of manager they are in search for.

The evidence collected from Chaps. 2 and 3 will provide a better insight through the use of statistics. This book is not limited to the business world, and expands its findings through other examples.

The first chapter of this book, will provide a better understanding of what "overconfidence management" means, as well as provide a background understanding of the psyche behind it as well as some scenarios of common business practices. This chapter will focus on the difference between "overconfident management" and "optimistic management" through the Big Five Model, and focuses extensively on case analysis as to what experts believe makes or breaks a business from management.

The second chapter takes on a different approach to this with the use of actual data in the business context. This chapter will go over four hypotheses, as well as identify major independent and dependent variables in hopes to find a correlation between those variables and the proposed hypotheses.

The third and final chapter of this book, will take these findings to another domain by analyzing soccer teams, and how gender plays a critical role in how a person takes action. This chapter is meant to emphasize the findings from Chap. 2 in a different setting to see if there is a difference between activates, or if skills such as management can be used in other aspects of life.

This book provides the reader with an array of insight from professional inputs and observations to understand the causal link between an overconfidence attitude and performance. It will also specifically investigate the SMEs realm as an environment mainly characterized by overconfident behaviors. Doing such, the book is directed to a wide public, practitioners, academics, and students.

Overconfidence is a human personality trait that, we have all experienced directly or indirectly in every day of our life. When we plan things ahead and we set optimistic goals without thinking of possible delays, when we think, we will be able to meet a deadline and then we fail it or when we imagine to know more things that we actually know. To put it simple, overconfidence hampers the quality of our judgments like if we were wearing Sun colored eyeglasses. Even, when submitting the final draft of a project like this one, there overconfidence can kick in and then authors are forced to ask an unplanned deadline extension

to the publisher prior to final submission. With the goal of unclosing the existence and extent of this phenomenon, the present manuscript systematizes the overconfidence construct theoretically and practically, showing its seriousness in business decisions and beyond. After reading the manuscript, the reader is empowered and will be able to learn strategically how to avoid too optimistic predictions.

1

Managerial Overconfidence

Abstract This chapter presents an overview of the overconfidence construct. Stemming from the behavioral finance literature, the overview discusses overconfidence as a result of several cognitive biases. In particular, there is a detailed discussion on the self-serving bias, the valence effect, the wishful thinking bias, and the anchoring effect. These biases have a detrimental effect in business and financial decisions. The chapter then presents the Big Five Model, as a model of interpretation for human personality. This model encompasses extroversion, friendliness, conscientiousness, emotional stability, and open-mindedness. All these elements are salient when determining overconfidence. After a discussion on the implications of an overconfident attitude in the stock market, there is a clear discussion on the behavior of the overconfident manager. The chapter concludes with the impact of overconfidence for small and medium enterprises. The ideas developed here are a base for the in-depth contextual analysis of the subsequent chapters.

Keywords Overconfidence · Cognitive bias · Behavioral finance

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1.1 Behavioral Finance and Cognitive *Bias*

The term "behavioral finance" refers to an area of business which sets aside the financial aspects and embraces the cognitive psychology aspects. Together with Vernon Smith and Hersh Shefrin, Daniel Kahneman, the Israelian psychologist who won the 2002 Economics Nobel prize, explained why the branch of behavioral finance shapes business decisions. The findings of Kahneman informed the scientific community in the area of management decision-making by implementing notions of cognitive psychology to economical decisions.

The main areas of cognitive finance are the following:

1. The framing: The way a problem or a decision to take is presented and how different ways of presenting it have an impact on the subsequent actions of the decision maker;
2. Market Inefficiency: Contrary to rational (myopic investment evaluation, distorted decisional processes, biased returns, etc.);
3. Heuristics: Simple proposed rules which explain the process of how people make judgment, take decisions, and face complex problems or incomplete information. Through heuristics processes a problem is decomposed in its constituent elements so that decisions that are not completely rational might be considered fully satisfying.

Continuing the last point, we can say that if heuristics goes well in the daily life and in financial ambit through simplification and intuition, they can bring to mistakes and cognitive prejudices. This may even lead to the much costly, so-called *bias*. By the term *bias* it is indicated, in fact, a predisposition to a sort of cognitive mistake. Three examples are as follows:

- Excessive optimism: People start to overestimate the frequency of pro-results and to underestimate that one of against-results;
- Illusion of control: People begin to overvalue the grade of control they have about the results, forgetting that the outcome of a decision is a mix of fortune and personal abilities;

- *Overconfidence*: People excessively trust in their resources and overestimate them.

And it is about this last concept, *overconfidence*, that this work will be based. First of all, it is important to emphasize that *overconfidence* is a cognitive *bias's* definition, as can be considered a distortion in the perception reality. In fact, people show a certain tendency to overestimate the trustworthiness and the precision of acquired information and they strain to overestimate their ability to elaborate them.

Overconfidence can be decomposed in different cognitive *biases*, such as:

- *Self-serving bias*: People ascribe their success to interior or personal factors, but they ascribe their failures to external or situational factors. For example, if target sales have been reached, the seller has developed his mission in a good way. Instead, if they are not reached, the fault is the bad course of the economy. There is the tendency to emphasize own success and to minimize own failures. Having *bias self-serving* primes the *overconfidence*.
- *Valence effect*: The tendency to overestimate the probability to gain positive results instead of negative ones. Differently from *bias self-serving*, the manager sensitive to the *valence effect* simply believes in the high probability of the success compared to the failures, without connecting necessarily the positive results to his own management.
- *Wishful thinking*: People tend to attribute importance to desirable aspects rather than realistic aspects. In this way, then, there is a risk of giving preference to decisions that probably won't produce any benefit with, on the contrary, the possibility to produce a contradictory result compared to the expectations.
- *Anchoring*: People tend to rely on irrelevant or not completely known information. Since all the available information has not been considered, it is possible to reach wrong decisions. This is especially dire when very important information is omitted. Under some points of view, *anchoring* and *overconfidence* tend to prevail once over the other. In fact, some managers omit part of information.

1.2 The Approach of Big Five Model

In psychology, there are five factors that are used to describe the human personality. The theory at the base of these factors is called *Big Five Model*. There are two starting points for this theory. The first point identifies the dimensions which characterize the individual differences through statistical factorial analyses (factorial approach). The second point considers the vocabulary of the common language similar to a storage of elements which are able to describe the individual differences (theory of linguistic settling). Using factorial analysis, examination of relationships between the different personality descriptors has repeatedly highlighted the emergence of five great factors:

- Extroversion: The trait which reflects the wish to have power and influence on the others. An outgoing person expresses sympathy, stimulating feelings such as the enthusiasm and the euphoria. But when, in the same group there are two people with the same extroversion levels, there is the risk of a conflict;
- Friendliness: The trait that reflects the strong desire to be accepted to the others. Friendly people focus on getting along rather than being in the lead. Therefore, this factor is not suitable for managers who must reorganize the proper holding, but it is appropriate for positions in service enterprises;
- Conscientiousness: The trait that more influences the work's performance because of its effects on the motivation and on the stress. In fact, conscientious people tend to give priority to the effort for the results, which is reflected in the desire to reach the work's targets as a mean to express own personality;
- Emotional stability: Emotionally people think they do determine the events with their behavior;
- Open-mindedness: The trait which is more suitable for work which require high levels of creativity and is definable as capacities to create new and useful ideas and solutions.

Various researchers have demonstrated the significance of *Big Five Model* for its ability to identify personality's features in the

organizational environment context and finding a connection between these features and overconfidence.

Pallier et al. (2002) had highlighted how the lack of an association between *overconfidence* and extroversion would reflect a lack of power.

Schaefer et al. (2004) defined overconfidence as the difference between *confidence* and accuracy by pointing out that the extroversion of a subject is positively associated to the *overconfidence*. Since extroversion is connected to an optimistic attitude, it is reasonable to assume that the latter increases even more *overconfidence*. In addition, friendliness is negatively associated to *overconfidence*, given that it is more linked more to accuracy.

- Extroversion and conscientiousness are significantly connected with the open-mindedness and the *confidence*.
- Open-mindedness is positively connected to the confidence, but even with accuracy and not always to *overconfidence*.

The intrinsic variance to the *Big Five*'s factors should lead to a wrong connection between *overconfidence* and the five elements of the model. To solve this problem, Schaefer et al. (2004) utilized a series of partial correlations, have reached a similar result, examining the connection between every *Big Five*' s factor and verifying at the same time the influence of the other elements. They conclude that just the extroversion, but no *accuracy*, has a significant positive correlation with the *overconfidence*.

1.3 The Behavioral Business Finance

Relatively to business implications, behavioral finance plays a very important role. Business finance has the primary target to improve the company's value ensuring that the return on capital is higher than the cost of capital, without exposing to undue risks. A complete explanation about decisional models requires, however, a knowledge of the managers' convictions and preferences, because they are on the head of the company.

The study of business finance assumes that the company's managers have a full rationality, which is that, after analyzing and valuing information at their disposal, they act in such a way to maximize the business usefulness. Not always, though, this hypothesis is consistent with the reality: it is more plausible that people act with a limited rationality, because they often are not able to solve the function of maximization.

Behavioral business finance, based on the assumption that company managers are not fully rational, studies the effects that some psychological phenomenon can lead to any levels of prejudices and distortions in the business decision judgement.

According to the traditional theory, based on the essential assumption that all the actors of market act in a rational way, the investments undertaken by managers which have been revealed damaging for the company, are linked to the so-called conflict of interests. This is the situation that happens when a high decisional responsibility is handed by a subject who has personal or professional interests in conflict with the impartiality required by that responsibility. We can consider, for example, the establishment of corporate empires through numerous acquisitions of other corporates or the use of business assets for personal purposes. As claimed by Jensen and Meckling (1976), the higher the percentage of risk capital held by a corporate manager is, the lesser their noise behaviors for the company will be. So, a solution might be the utilization of incentives based on a variable remuneration based on the results gained or the utilization of actions assigned free of charge, with the intention of involving mostly the manager.

In 1986, if the company's management once sustained the necessary costs to complete the projects tends to dissipate the remaining cash flow through unproductive acquisitions, Jensen supports further his thesis. Less cautious behavior in companies with high available cash flows are expected. The debt, then, represents a benefit, since it limits the top management to dissipate their resources, forcing them to make fixed payments for the interests, that reduce the cash flow and limit their own interests. It is evident that, increasing the exposure of managers to the company's capital can limit the emerging of personal interests and opportunistic behavior.

Differently from the traditional theory, the behavioral business finance is not just interested in investments made because of conflict of interests, but also in those ones caused by behavioral mistakes and psychological traps in which the managers drop. In particular, these last ones, stemming from excessive optimism and adopting an *overconfidence* attitude, often lead to assuming that companies are undervalue and encourage overinvestments. Although *overconfidence* is often connected to excessive optimism, it should be noted that these two aspects are not the same thing. "Excessive optimism" can be seen as the tendency of managers to overestimate the frequency of the results to their favor and underestimate the ones against them: for this reason, a lot of people tend to believe that they are going to face probably more positive future events that negatives ones. *Overconfidence*, instead, can be associated to managers' trust in their own abilities. This leads them to get overconfident, since they think that their point of view is the only one correct. A manager may be pessimist, but, however, confident. Furthermore, even if a manager is not confident at the beginning of his career, he (or she) might become over time, given that there is the tendency to take more credits and responsibilities for a project's success rather than for a failure.

There are two macro factors that explain why managers tend to be *overconfident*.

1. The "above average" effect. When a manager must face a complex problem, the perception of his own competence is stimulated, and the grade of *overconfidence* showed is proportional to his conviction to be above average. Because the manager expects his behavior produces a success, he associates the results to his actions in the event of a success, and to external events in the event of a flop: if his decision is winning, he is predisposed to increase further the confidence in his own abilities. Camerer and Lovallo (1999) show that this effect is especially strong in subjects with higher abilities, because of the insufficient consistence of a comparable reference group. As claimed by Gervais (2010), very often who is optimistic by nature and place trust in own abilities, is more inclined to apply for a kind of managerial task.

2. The control perception. *Overconfident* managers believe that a project started by them is more verifiable and then, by their supervision, is less risky than how it is in reality. Sometimes, the increase in control perception leads to an excessive optimism and it can even lead to choices that involve higher business costs.

Furthermore, it is necessary to take into consideration that in most companies the most important business decisions are not much frequent and that the timeframe that elapses between the decision and the visible result might also be very long and often be superior to a mandate of a single manager. Consequently, it is not always easy learning by own mistakes, especially, if the manager tends to ignore the feedbacks resulting from previous decisions. This makes *overconfidence* persistent at company level.

As previously mentioned, the first behavior adopted by an *overconfident* manager is to overestimate the cash flows and to make investments that are above average. Different studies have shown that companies directed by *overconfident* managers finance own investments mostly through the cash flows and the internal resources. Furthermore, the companies that have to rely less on external investments and that have a greater availability of liquidity are those ones that make greater investments compared to the other ones. As already highlighted by the classic theory, though, just this is not enough to justify an *overconfident* attitude, because it could be interpreted as a behavior guided by conflicts of interests, in which the managers invest hoping to have personal interests. Another possible explanation is information asymmetry, in which, for example, the manager does not use the external funding to change the number of company's shares, preserving in that way also investors.

When a manager overestimates the cash flows, he often incurs in a series of other issues, such as the underestimation of the risk connected to a project and the incorrect assessment of the metrics of the project. Usually, one of the most important use of the metrics is that to measure the advancement of a project: a wrong assessment about the time necessary to the completion of a project. In fact, not only decreases automatically the value of the same project, but it also increases the management costs connected to it, such as the administration costs, the maintenance of facilities and instruments available, personnel costs, etc.

The key role of a manager is, definitively, to estimate in a correct way some unknown variables—such as the question, the cash flows, etc.—and to use these estimates as a starting point to outline the company policies. *Overconfidence* makes this task more difficult than it actually is, because the manager overestimates his own ability to predict the future or under value the precarity of casual events. Ben-David et al. (2007) have measured *overconfidence* of managers relying on distortion of the assessment about their self-confidence. Every three months, from March 2001 to June 2007, have interviewed hundreds of managers in charge of the financial asset management of their company, asking them to predict the stock market returns in a year and ten years from the interview and treating these data as they were the 10° and the 90° percentile of the distribution of stock returns. Their study discusses on *overconfident* manager versus an optimistic manager: the first one overestimates the average of the company cash flows, while the second one either undervalues the instability of the next company cash flows or he overestimates the next cash flows. The authors document that the waited stock market returns and the pauses of confidence depend on the more recent returns and on the company returns. It is interesting to note that people with inferior levels of confidence have been shown more sensible to past market returns than the ones with superior levels of confidence: consequently, more *confident* managers follow the high market returns periods and less *confident* managers follow the low market returns periods. Furthermore, the managers' *confidence* is a personal persistent characteristic that increases in a proportional way depending on the accuracy in forecasting.

Managers' *overconfidence* is connected to several company decisions. A list of the more frequent follows.

First, managers decide how many resources to invest: for an overconfident manager, the investment projects seem safer than they actually are, and he is going to value them with a low discount rate. Therefore, unlike the investment projects assessed by a less confident manager, a large number of investments is going to have a positive net present value and the overconfident manager is going to invest more.

Second, a manager decides in respect of the structure of his company's capital. An *overconfident* manager believes that investors underestimate

the value of the project, and consequently they don't value properly the company's shares. To remedy this, he or she will try to maximize the current profit of the investors extremizing market prices received: in that way, he must identify the "right" price of the share (that is, the price the investors are willing to pay to get the share), working backwards to determinate the effective company costs. So, applying the price based on the value, it can be shown a clear difference between the value perceived by the investor and that one of the received share.

Third, an *overconfident* manager is less likely to pay dividends to investors, given that he prefers to use the internal resources to finance investments.

In sum, it seems that an overconfident attitude doesn't give any benefit at company level. Team work is one of the key points of the company activity. Hiring an *overconfident* manager rather than a rational one, for example, can help to solve out the *free-riding* problem, when in a work group, a member decides to not contribute because he believes the group can produce irrespective of his or her work. To explain better the solution for this kind of problems, suppose that a project is assigned to two managers, independently from each other (the first one has no information about the other's project and vice versa). Obviously, the better results the project will obtain, the higher monetary incentives will be given to them: this produces a sort of competition between the two managers and, in turn, it increases each other their effort to gain the best possible results, making the company more productive.

Gervais and Goldstein (2007) explains how the marginal productivity of a work group member is increased thanks to the other group members' efforts. Given that each effort of the member is not observed by the others, the general performance of the group might be suffering from a *free-riding* problem and from a lack of coordination among the members. In a similar contest, an *overconfident* member who overestimates his marginal productivity will work harder, increasing consequently the marginal productivity of the remaining group members and those, in turn, would tend to work more. Consequently, not only the whole group's performance will be increased, but it will be created, at individual level, a Paretian improvement, according to whom the reallocation of the resources improves the condition of a least member of the team

without getting worse the one of others, thus having an improvement of the system's overall efficiency. Although the *overconfident* member works hard, he will also benefit from the positive results gained by the other members of the group.

It is interesting that, even in the long run, the *overconfident* member attributes the teamwork success to his own ability, and not to the contributions that the other members of the group have produced during the project.

Since the presence of an overconfident member within a group leads the other members to work more, it is necessary that the company motivates mainly the first one with respect to the others, with fees or higher incentives. Obviously, that doesn't mean that not *overconfident* managers do not need to have any incentive. If not, they will not be willing to collaborate.

Another interesting aspect connected to *overconfidence* has been studied by Englmaier (2004), who analyzed, with two different models, the strategic reasons that lead a company to hire an *overconfident* manager. Although in different contexts, the company wants to delegate certain tasks to an *overconfident* manager. In fact, in a competitive market, hiring a manager with these characteristics, might reflect the will to go against the flow of other competing companies, creating a competitive gap. An *overconfident* manager, for example, expects that a new product placed on the market by the company he works for, will bring more profits than its real value. Furthermore, given that an *overconfident* manager doesn't have risk aversion, the investments undertaken will be surely less cautious than those ones undertaken by a "normal" manager, creating a more dynamic company policy. In this regard, looking for a correct balance, a bit of *overconfidence* can be good: the important thing is to not exceed on over—investments.

1.4 The Beginning of *Overconfidence*: The Stock Markets

Overconfidence has been defined as the more pervasive and potentially catastrophic distortion of whom human beings are victims. It is on the basis of many lawsuits, strikes, and stock market falls.

If we consider the investors' behavior about their investment portfolio, *overconfidence* emerges from the asymmetry regarding the importance that investors give to the information available to them. Practically, when you have an idea of an investment, information supporting that thesis is considered more reliable than information going in the opposite direction, even if the thesis doesn't come true as time goes by.

In the period 1991–1996 two American academic researchers, Terrance Odean and Brad Barber, based on a study of over 66.000 investor subjects, investigated trading activities. The results gained by them proved that who has an intense trading activity, which resembles an excessive confidence in own judgement, tends on average to collect a lower performance, regardless of market development, or investment style.

Various authors have concluded that given that *overconfident* individuals tend to overestimate the results of their decisions and to underestimate the associated risks, overconfident investors simply underestimate the risk of an investment. To test that, Schiller, in 1999, defines the *overconfidence* as an attitude for what nothing can go wrong with the investment and investors, since there is nothing to worry about. Before him, Benos (1998) think that *overconfidence* derives from the fact that investors think they are better than they are in reality.

In 2005, Deaves, Luders and Schroder consider professional education and experience as moderators of *overconfidence*. Through a monthly survey of financial market agents in Germany, they show how the market forecasters are extremely *overconfident* and how overconfidence is increased by success resulting from correct forecast.

A similar result was already obtained by Griffin and Tversky (1992), who showed how *overconfidence* is more prevalent among experts compared to first-timers in difficult operations with a low predictability.

Finally, it should be noted how the studies carried out have shown that men tend to be more *overconfidence* than women, probably because such attitude is mostly present in typically male domains, such as precisely investment decisions.

1.5 *Overconfidence* in the Management Area

In the literature, there are different studies about the effect that *overconfidence* has on entrepreneurs, managers, and managing directors regarding the principal business aspects: investment policy, capital structure, financing contracts structure, *corporate governance*, merger/acquisition operations, degree of innovation of the company, and future forecasts of turnover and costs structure.

Overconfidence is very important in those actors who hold the company power, given that most of high impact decisions are based on the subject's knowledge. Power, in fact, produces a greater *overconfidence,* increasing the perceived level of subject knowledge with respect to those who hold less power. Subjects holding the power show an extreme confidence in their own knowledge, a behavior that is required by the chiefs.

A recent study carried out by Professor Nathanael Fast, with co-authors Niro Sivanathan and Adam Galinsky (2012), explains how the power can feed the excess of security and this influences adversely to the decisional process. The objective of this study was helping the managers to become aware of pitfalls that fall into the sensation of general control that supports the power and makes people too self-confident in their capacity to make good decisions.

In one of the experiments carried out by Fast and his research team, it was asked to subjects to bet money on the precision of their knowledges. Those who felt themselves superior and bet on their own knowledge wasted the money, while those who didn't feel powerful and took less risk, they didn't lose money. This result, together with the others gained by similar experiments, has led Fast to conclude that in power situations keepers feel themselves more powerful than vulnerable, being too self-confident on the decisional process.

The paradox is that the more powerful the managers become, the less they think they need help.

There are different reasons that lead the managers to overestimate their own capacities and to become too optimistic with regard to their decisional processes.

First, a manager is usually given the final say regarding great strategic decisions: this can induce him or her to believe he or she can control even the result, without considering the possibility of a failure.

Second, a huge part of managers' rewards depends on business performances: managers are naturally incentivized to increase the results connected to their own business decisions.

Finally, the more a manager goes up in the corporate hierarchy, the more he must be able to face decision-making processes.

The literature offers two great ways out in regard to the possibility for managers to be *overconfidence*:

1. Irrational managers are removed from their office naturally through acquisitions or other similar mechanisms. If the managerial irrationality was a systematic phenomenon, there wouldn't be any criticism to argue that the new manager will not suffer from *overconfidence*;
2. The managers, through experience, learn to be more rational, even if they rarely go back on the financial decisions already taken.

1.6 *Overconfidence* in Small and Medium Enterprises

The global crisis has pointed out the necessity, for companies, to develop some appropriate tools to be competitive on the market. In a similar context, the small and medium enterprises have had to seek out new markets not yet reached by big multinationals.

For structural reasons, small enterprises are characterized by growth and switching rates higher than the ones of big enterprises: precariousness becomes a constant of their life. From this follows that it is fundamental, especially in the small and medium enterprises, that the entrepreneur recognizes the symptoms of a crisis as soon as possible, by investing in competences and internal resources, orienting them on the new value generation. In this way, although it may seem a paradox, the crisis might represent a real opportunity for development.

However, in entrepreneur's mentality, the concept of crisis is not practically covered, because a lot of entrepreneurs, even when they are

involved in it, have a reluctant attitude until they don't find themselves at the point of failure. It is thus necessary, in all the small and medium enterprises to keep an economic measurement instrumentation adequate so to check the cost components and avoid any optimistic interpretations by the entrepreneur that can weaken the company further.

It is also fundamental that, before undertaking any intervention to face the crisis, there is a detailed knowledge about the reasons that are at the basis of such crisis, to make possible fighting them as soon as possible.

There are two opposed theses about the causes that can generate a crisis: on one side, the trigger of the degenerative process is given by managerial strategic mistakes, while, on the other side, external factors, such as the fiscal system and the high cost of labor might also be an alternative reason.

In reality, neither changes in managerial board nor environmental issues, can for themselves explain the crisis. In general, in fact, it can be argued that the beginning of the decline is the result of both the inadequacy of the entrepreneurial and managerial resources and the complexity of the problems to handle (Arcari 2004).

The refusal of the entrepreneur to contemplate a state of crisis can be explained through the need to justify the goodness of past decisions: consequently, this argument influences his or her own present strategic decisions.

In a study carried on by Koellinger et al. (2007), it has been pointed out that, although in general, an *overconfident* attitude is common to everyone (Hoffrage 2004; Weinstein 1980), it is more prominent for entrepreneurs. For example, Busenitz and Barney (1997) have shown that overconfidence among entrepreneurs is higher than *overconfidence* among managers.

Also, Cooper et al. (1988) have found a strong evidence of *overconfidence* among the entrepreneurs. They concluded that 81% of entrepreneurs believe that their possibilities of success are at least of 70% and that a third of entrepreneurs believe they are going to have a success surely. Therefore, they believe their chances of survival on the market is higher than the ones of their competitors.

Camerer and Lovallo (1999) has shown that an excess of trust in their own competences leads to exaggerated access in no stable market conditions and that new participants refuse to review their own expectations even after a first evidence. Therefore, the importance of perceptions, and the *bias* connected to it, when someone decides to start a new business, can explain some of the observable inconsistencies in the decision processes.

Why has the entrepreneurial behavior to be characterized by *overconfidence*? A possible reason is that entrepreneurs have a strong tendency to consider unique their condition. After all, for definition, the entrepreneurs are individuals who deviate from the rule. When they identify a profit opportunity, they isolate their current situation, i.e., the decision to start a new business, and they behave as the event is entirely original and unique. Consequently, they don't consider the available statistics about the similar past and future situations that might help them to formulate more accurate forecast about their probability of success but they base their judgment on heuristics.

Kahneman and Lovallo (1993) defines "internal point of view" a situation in which entrepreneurial forecast is based on the arguments at hand. In this perspective, the entrepreneur approaches a problem with the idea to have an exhaustive knowledge specifically regarding its peculiar characteristics. In opposition, Kahneman and Lovallo defines "external point of view" a situation in which entrepreneurial forecast is based on the statistics resulting from a set of cases similar to a current one. People, in general, and entrepreneurs in particular, tend to base their choices on forecasts generated by an internal point of view. This leads to the idea that entrepreneurs take their decisions based on the subjective perceptions.

Furthermore, also historical, cultural, institutional, and innovative changes have contributed to generate such an entrepreneurial behavior. In fact, they influence individual perceptions and incentives to turn the opportunities perceived by them into facts. Therefore, an institutional environment leading to a strong perception of control over its own domain can lead to a larger number of business activities.

Finally, it is relevant to investigate what kind of contribution *overconfidence* can bring in the entrepreneurial decisions. Hoffrage (2004)

claims that, at an individual level, there may be situations where the benefits to be overconfident have higher relevance compared to the drawbacks linked to this attitude. In entrepreneurial activities, some entrepreneurs might start their business with the wrong confidence to have the experience and the necessary competences to bring it forward. However, the commitment and the necessary actions to start might help them to gain the competences and the experience they need.

Busenitz and Barney (1997) claim that the use of bias and of heuristics may be an efficient aid for uncertain and complex decisions, such as starting a new business. Busenitz and Barney themselves claim that *overconfidence* can serve as a boost benefit to implement a specific decision and persuade others to be equally excited as the entrepreneur himself.

Overconfidence may also be seen positively at a global level. Without an optimistic attitude, we would see far less new businesses, although with a higher success rate. Is the excess of new entries desirable in terms of social gain? Entrepreneurial failure leads to serious negative consequences if the cost of failure is absorbed, at least in part, by other subjects. However, overconfidence and a potential failure of the entrepreneur may also generate important information that would have been unknown otherwise. Furthermore, the beginning of new enterprises, even if they don't have success, might stimulate the competition and lead the established enterprises toward a greater efficiency.

As mentioned previously, an important contribution to overconfidence in the context of the small and medium enterprises has been given by Busenitz and Barney (1997). According to them, the entrepreneurs and the managers of big enterprises have different approaches as regard to the business decisions. They start from the idea that *bias* and specific heuristics exist, and they wonder to what extent they can affect the decisional process. Among all *biases* and heuristics, they chose to consider the *overconfidence*, because it is somehow considered a characteristic of other biases and heuristics.

Overconfidence exists when those who are responsible for the decisional process are too overconfident in their initial assessments, but afterwards, they are reluctant to introduce additional information in their assessments. Most of the decision makers have an *overconfident* attitude in the estimates of their capacities and they do not consider

the uncertainty that exists (Bazerman 1990). Furthermore, the decision makers generally incorporate additional information slowly because of their confidence in the estimates already done (Phillips and Wright 1977; Russo et al. 1989).

Overconfidence seems to influence mainly the decisions taken by the entrepreneurs rather than those taken by the managers of big enterprises.

Overconfidence allows the entrepreneur to move on with his or her initial idea, before all the elements of the business initiative are revealed. Although in a similar decision situation it exists a huge uncertainty (for example, the presence or absence of a real economic opportunity, what is the consistence of this opportunity, in which way competitors can react to this opportunity), a high level of *confidence* encourages the businessman to act before having all the elements at hands.

Being more optimistic than the reality would suggest, might help to convince other potential *stakeholders* (such as investors, the providers, customers, staff employed) about the opportunity given to them if supporting the business.

Managers of big enterprises, however, must not decide based on their self-confidence. Rather they must learn on decisional programs and historical patterns and then convince top managers that their projects are more important than others.

These observations lead to the following hypothesis: businessmen must have more *overconfidence* than managers of big organizations. This argument has produced some empirical confirmation. For examples, Cooper et al. (1988) have noted that overconfident businessmen have better chances of success to their initiatives rather than to those of their competitors. This argument does not apply instead to managers of big enterprises.

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2

Managerial Overconfidence of Entrepreneurs: Contextual Explanations and the Aid of Technological Developments

Abstract This chapter uses budget forecasting to highlight (i) if entrepreneurs make on average inaccurate predictions, (ii) the possible drivers of inaccuracy, (iii) the managerial implication of this biased attitude. The study empirically analyzes a sample ($N = 151$) of a peculiar context: small and medium non-financial Italian firms. We argue that what drives inaccuracy is an overconfidence attitude. Several independent variables are collected to capture and explain the potential underlying mechanisms: individual characteristics, such as entrepreneur's gender, age, and educational level and contextual characteristics, such as the firm's organizational structure and the processes of administration and control. The variation between budget and final balance sheet of EBITDA, equity, and borrowing costs are used as dependent variables. We find that when entrepreneurs decide without a joint committee, biases are more pronounced. Interestingly, we show how the proper implementation of an integrated software system increases substantially forecasting accuracy. Focusing on a peculiar geographical area affected by the recent crisis, this chapter elicits for the first time overconfidence in SMEs through forecast predictions in the annual budget.

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Keywords Accuracy · Overconfidence · Entrepreneurs · SMEs Budget · Forecasting · Contextual characteristics

2.1 Introduction

The global economic crisis of these recent years has highlighted the need to develop defensive techniques to face the market.

Small businesses are characterized by variable rates of growth and change, more intense than those of large enterprises, making unpredictability a constant in their business. Furthermore, internal efficiency, competitive position, and profitability have to be constantly defended (Arcari 2004). On the one hand, SMEs require control over cost components to prevent imbalances. On the other hand, changes in market conditions and the need to regain profitable production levels often dictate choices which necessarily involve investments with a corresponding increase in the degree of risk (Panizza 2011).

The study of forecasting within small firms is important because forecasts and expectations have a vital influence on many commercial decisions and the subsequent profitability and survival of the firm. For example, as highlighted by Diamantopoulos and Winklhofer (1999), the consequences of inaccurate predictions involve flows in capital investments and financing decisions while in Dechow and Dichev (2002), it is shown that forecasting quality is positively related to earnings persistence. An attempt here is made to explain the effect of some entrepreneurial cognitive processes in a specific context (Wright and Stigliani 2012).

The previous literature discusses the relationship among risk perception, overconfidence, the illusion of control, and the related planning fallacy (Barnes 1984; Simon et al. 2000; Keh et al. 2002).

Entrepreneurs often fail to recognize crises and have substantial difficulty in admitting decline, even when they are already involved, at least as long as it is not painfully obvious (Arcari 2004; Shepherd et al. 2009). In this context, evidence suggests that some owner–managers decide to persist in carrying on their business and delay business failure

despite poor performance, resulting in negatives outcomes (Karlsson et al. 2005; Garland et al. 1990; Ross and Staw 1986, 1993). As suggested by Shepherd et al. (2009), this behavior is generally explained also by the individual's need to justify previous decisions to self and others, because owner–managers are often confident that their businesses will be successful and this confidence likely influences their strategic decisions (Hayward et al. 2006).

Considerable literature exists on the potential for entrepreneurs to be overconfident in their expectations of firm performance but the majority of this evidence is derived from self-reported attitudinal surveys. In addition, this literature has offered no empirical evidence that identifies an association between overconfidence and firm performance and only limited information on the attributes of the entrepreneur, or firm, that may lead to such behaviour (Ucbasaran et al. 2010).

The following sections, focusing on SMEs, investigate the factors that could influence the accuracy in forecasting; as a result, the chapter analyzes some of the variables that can influence the attitude of the entrepreneur to make decisions leading to an overconfidence bias in the preparation of the annual budget. Eliciting systematic overconfidence through budget reports is, to the best of our knowledge, a new empirical approach. If entrepreneurs are overoptimistic in starting a business or unable to predict their own managerial and financial performance, resource allocation decisions may be wrong (Lowe and Shaw 1970), with a subsequent risk of accounting frauds (Hope 2003), lower rates of subsequent duration (Dawson and Henley 2012) and bankruptcy (Shumway 2001). We particularly investigate the turbulent context of Piedmont, an area of Italy recently characterized by a high rate of failures of small and medium firms (Cerved 2013).

The remainder of the chapter is as follows: Sect. 2 investigates the role of overconfidence on entrepreneurial decisions, clarifying the boundaries of defeat and business failure, and then identifying ways to recognize an entrepreneur's overconfident attitude. Sections 3 and 4 present the hypotheses and the methodology we used, while Sects. 5 and 6 present our results and leave open rooms for discussion, conclusion, and further research.

2.2 Literature Review

2.2.1 Overconfidence

Economists, psychologists, and other authors involved in management have tried to understand the advantages and the drawbacks of an overconfident attitude. As argued by Tipu and Arain (2011), entrepreneurs' judgment can be influenced by different cognitive biases and heuristics such as: overconfidence, i.e., the cognitive bias to overweigh the probability of a positive outcome of an event (Busenitz and Barney 1994) and counterfactual thinking, defined as imagining outcomes or events different from those that actually happened (Baron 2000).

In finance, almost all decisions require an estimate. It has been found that agents are hindsight-biased when they judge (Biais and Weber 2009). In accounting, more empirical support for theories is needed, in fact the subject of overconfidence is studied only theoretically because it concerns metaknowledge, an understanding of the limits of our knowledge. It remains a hidden flaw in managerial decision-making.

The moment in which one applies overconfidence is crucial. It is demonstrated that this positive bias could be effective in implementing the decision but it does not have to play a role in the decision itself (Russo and Schoemaker 1992).

For an individual who starts a new business, the sum of the perceived potential outcomes weighted by their respective probabilities has to be larger than the perceived outcome of a salary job, weighted by their respective probabilities. Therefore, the role of perception is crucial in the decision to start a business and may be systematically distorted by overconfidence (Moore and Kim 2003). In this context, Koellinger et al. (2007) found that there is a significant negative relationship between entrepreneurial confidence and survival rates of newly founded firms (Simon et al. 2000; Andersen 2010). Overall, growing literature questions the generality of the beneficial association between positive illusions and motivation (Paulhus 1998).

In this prolonged period of crisis, the effect of biased prevision can also lead the management to hide the truth once results differ from

the expected ones. In this context, various authors have defined different models to understand the quality of *financial statement disclosure* (Beattie et al. 2004). The amount of disclosure provided is also highly related to *management disclosure behavior*; in fact, a number of studies point to the severe communication challenges facing management in financial difficulties (Frost 1997; Mutchler et al. 1997; Uang et al. 2006). For example, various authors (Beretta and Bozzolan 2008; Campra et al. 2011) have focused their studies on the analysis of enterprises' concern, comparing companies' information provided within the financial statement with the economic and financial performance, often finding an attempt to "cover" the true state of health of the company.

Taking this into account, companies require an analysis to assess *management's conduct and objectivity* on the *development of the business prospects*, materialized in the *annual budget* prepared by individual companies. The aim is to verify whether the predictions—often successful—projected in the corporate budget were subsequently proved as accurate or were inflated by a good dose of overconfidence. In the latter case, we would assist at a costly overestimation, as inaccurate predictions lead to wrong investment allocations (Bennouna et al. 2010). We therefore operationalize overconfidence as a systematic inaccurate overestimation of performance.

2.2.2 What Factors Could Lead to a Situation of Business Failure in SMEs

As argued by Lussier and Pfeifer (2001), in free market economies, new and small businesses have long been recognized as a major source of jobs, technical innovation, economic flexibility, and growth. However, the survival rate of these firms is an important issue of concern and many survivors achieve only marginal performance (Cooper et al. 1991).

The ability to identify those factors associated with survival and non-survival outcomes of particular businesses is therefore of great interest to public policy makers who are concerned with economic development (Reynolds 1987). Politis and Gabrielsson (2009) suggest that previous

start-up experience is strongly associated with a more positive attitude toward failure and a positive attitude toward failure might be a significant asset for entrepreneurs as it might help them to deal with and learn from their mistakes and to move forward.

There have been studies investigating the determinants of business failure of SMEs in Central and Eastern European countries (Hisrich and Szimal 1993; Lipton and Sachs 1990; Peng and Hearth 1996), and these determinants can be found either in bad management, in strategic mistakes, in a scarce competence of the entrepreneur, or in contextual factors, such as the state of the industry, the high labor costs, and the tax system (Coda 1987). Neither management nor the environmental variables alone can give reasons for business failure. Yet, it can actually be argued that the degenerative process is related to the inadequacy of entrepreneurial and managerial resources to face the complexity of the problems (Arcari 2004; Shepherd et al. 2009).

Building on previous literature (Levesque and Minniti 2006; Lovallo and Kahneman 2003; Morrell and Ezingeard 2002), we identified four determinants in SMEs that deserve further investigation: individual variables, such as entrepreneur's gender, age, and educational level and contextual variables, like the organizational structure which processes and makes business decisions and the processes of administration and control.

i. *Individual differences*

Demographic differences among entrepreneurs may account for differences in the degree to which they are overconfident. Gender and age have been shown to play some role in entrepreneurial decisions. For example, individuals' ages have been shown to affect their cognitive processes (Hagestad and Neugarten 1985) and as argued by Forbes (2005), younger entrepreneurs will be more overconfident than the older ones. Moreover, men have been shown to be more active than women in starting a business (Blanchflower 2004), while the relation with age is an inverted U shape, which peaks at middle age (Levesque and Minniti 2006). Yardanova and Boshnakova (2011) argued that although female and male entrepreneurs have similar risk perceptions,

female entrepreneurs are likely to have a lower risk propensity than that of male entrepreneurs. Risk propensity mediates the effect of gender on risk behavior. The effect is mediated partially by risk preference, outcome history, and age. Gender has an indirect effect on risk perception via overconfidence and risk propensity.

The role of education in becoming an entrepreneur is controversial. It is positive in rich countries where graduate business training has positive effects but it is negative in others, where being self-employed is related to low levels of education (Reynolds et al. 2003). In this context, Kropp et al. (2008) argued that, since older and less educated entrepreneurs have a greater likelihood of starting ventures, entrepreneurial training programs might provide greater returns by targeting this age and education group. An interesting issue under investigated is also the relation between education and managerial overconfidence, which was shown to be small and slightly negative (Koellinger et al. 2007), requiring further examination. In any case, the effort to provide entrepreneurship education seems to pay in terms of effectiveness (Heinonen and Poikkijoki 2006)

ii. *Contextual differences*

A major drawback of inexperience is that entrepreneurs tend to make their own decisions, overestimating the results of their businesses, attributing the chances of success to themselves and the chance of failure to others. A possible explanation of this consistent biased behavior is, the so-called selection bias, is offered by Einhorn and Hogarth (1978): It is because of overconfidence that prospect entrepreneurs are more likely to apply for these risky types of jobs. In other words, the sample of entrepreneurs is not a random sample of the whole population, because deciding to start an entrepreneurial carrier is related to the level of overconfidence.

Moreover, in small firms, fewer people are involved in the decision-making processes and biases may be more stagnant. Koellinger et al. (2007) showed that entrepreneurs of small firms who exhibit a high degree of overconfidence have more starting-up activity but also a higher failure rate. One explanation is the reference group neglect

(Camerer and Lovallo 1999), a behavior where agents fail to take competition into account. Among small entrepreneurs, there is also a general underestimation of the project costs, as well as the completion time (Lovallo and Kahneman 2003).

Biased calibration of probabilities in business decisions is more present among entrepreneurs than among managers (Alpert and Howard 1982; Cooper et al. 1988), due to a general entrepreneurial tendency of overestimating the degree of responsibility for success.

Strategy literature (Castaldi and Wortman 1984; Watkins and Shen 1997) indicates that boards and managerial teams may have a more important role in small businesses than in corporations. Nevertheless, introducing externally recruited members is perceived as a risk from family business companies (Johannisson and Huse 2000).

By focusing on the mechanisms and processes of administration and management control, besides making strategic decisions and implementing them, an organization must also set up appropriate administrative and operating mechanisms to control and evaluate its performance (Sharma et al. 1997). Often, entrepreneurs, having no useful information to support critical decision-making processes, lose control of the business and are not in a position to bring the situation back into balance. As argued by Morrell and Ezingeard (2002), significant benefits are indeed attainable for the SME by adopting and developing information systems to increase their efficiency and effectiveness, helping in reducing the bias of human predictions.

In contrast to large organizations, Information Technology (IT) management in small organizations appears to be negligible (Fink 1998) and in some cases lacking (Ogbonna and Harris 2005). Smaller firms are reluctant to engage the services of in-house IT managers in the manner larger firms had done. Although lack of in-house IT expertise is not the only reason why "smaller organizations have been shown to have different technology adoption patterns than large ones" (Iacovou et al. 1995), there are ranges of factors that have influenced the IT adoption behavior of smaller firms. The unique characteristics of SMEs with respect to IT can be identified as environmental, organizational, decisional, and psycho-sociological (Blili and Raymond 1993). In fact, SMEs are usually characterized by high level of environmental uncertainty, and SMEs

are also regarded as poor in human, financial, and material resources. This has caused them to rely more extensively than larger organizations on outside help (Yap et al. 1992).

Essentially, there is a need to investigate how information flows are designed within organizations to meet their information needs (Gunasekaran et al. 2001).

2.2.3 Identify a Proxy to Recognize an Entrepreneur's Overconfident Attitude

Entrepreneurs might not know exactly how good they need to be in order to survive in the market. They should be able to identify a proxy to recognize the threat of a potential overconfident attitude. Gervais et al. (2011) provide a theoretical model, where capital budgeting can be used as a proxy for overconfidence for what concerns decision on managers' type and compensation. The "post" phase is much more developed. Empirically, as argued by Chiao et al. (2006), previous studies have adopted objective approaches to measure firms' performance, such as return on assets (ROA), return on sales (ROS), return on equity (ROE), or sales growth. Although some researchers (Aaker and Jacobson 1987) have criticized the accounting-based measures of performance, managers, and analysts often use ROA and ROS as measures of management efficiency and effectiveness (Grant et al. 1988; Robins and Wiersema 1995).

Ben-David et al. (2008) and Sautner and Weber (2009), in the attempt to uncover the relation between overconfidence and investment, identified that a tight prediction of the distribution of forecast returns is a signal of overconfidence; this measure is also related to the tendency to predict higher cash flows, even controlling the CEO's incentives. The invested cash flows were also shown to be an explanatory variable of overconfidence (Malmendier and Tate 2008).

Here, we investigate the differences between budget prediction and the final balance sheet. Through simple and row variables to control for some minimum requirements in the preparation of a budget: (i) the accuracy in predicting the operating results of the core business,

(ii) the impact that these results will have on the company's equity, (iii) the financial charges arising from borrowing.

That said, we offer a within-firm measure of overconfidence. Also, by using an aggregated index, it would not be possible to advise a company whether or not entrepreneurial overconfidence can damage a specific growth goal (Andersen 2010). Therefore, we analyze three main different indicators of the well-being of small firms:

i. EBITDA,
ii. Equity,
iii. Borrowing costs.

The difference in these three measures between budget and balance sheet are signals of the entrepreneur's ability to predict respectively: (i) the performance of the core business of the firm, (ii) the firm's self-financing capability, and (iii) the level and the costs of debt.

In this regard, EBITDA is an earnings performance measure, in addition to those defined by general accepted accounting principles (Moehrle et al. 2003), which shows the income of a company based only on its core business: Earnings before Interest, Taxes, Depreciation, and Amortization. Koller et al. (2005) refer to EBITDA also as a good measure of extremely low short-term ability to meet interest payments. We consider the level of equity as an indicator of an increase or decrease in the company's wealth, influenced only by the net result of the income statement.

A decrease of EBITDA/equity and an increase in borrowing costs, compared with forecasts, might mean that entrepreneur has been overconfident in the budgeting process. For all these reasons, these three measures are important indicators of performance that entrepreneurs must be able to predict with accuracy, especially in a short period (one year).

2.3 Hypotheses

The framework we presented allows us to test two groups of hypotheses. The first (H1 and H2) based on individual differences and the second (H3 and H4) based on the contextual differences

Hypothesis n.1 (*H1*): Demographic variables play a role: Older entrepreneurs have more experience and tend to be less biased; women are less prone to start a business and less biased when they do so.

Hypothesis n.2 (*H2*): Lack of education, which represents also a weaker relationship with universities and research centers, increases the fallacy of managerial predictions.

Hypothesis n.3 (*H3*): Entrepreneurs who work alone are more overconfident than entrepreneurs supported by a board due to a more tendency to overestimate the probability of success when making decisions.

Hypothesis n.4 (*H4*): An adequate implementation of an integrated budgeting system improves the accuracy of the balance sheet predictions.

2.4 Research Method: Empirical Analysis to Test Overconfidence

We use descriptive statistics and regression analysis based on the collection of several variables, described in the following section.

2.4.1 Data

While Italy is somehow similar to EU average for what concerns small and medium enterprises (SMEs) in terms of value-added creation (37.4 vs 36.3%), it greatly differs as far as the contribution of micro-enterprises and big enterprises. The contribution of micro-enterprises to total value is 29.6% in Italy versus 21.2% in EU, while the weight of large firms in the value-added creation is 33% in Italy and 42.3% in EU. Micro and small firms represent the great majority of enterprises in the investigated area.

We took a representative random sample ($N = 151$) of the population of small and medium Italian firms, belonging to the non-financial industry. Data used in this research were retrieved in May 2013, from three chartered accountant firms in western Piedmont. They informed their customers of the use of capital budgeting information for research

analyses in an anonymous form. Forty-three customers refused to offer their data for this research, leaving a final sample of 108 firms (71.5% positive response rate). The dimension of the firms ranges from 1 to 26 employees, with a volume of business between 100,000 and 5500,000 Euros. At the cost of a relative small sample of firms, we collected a piece of information which is very difficult to retrieve. In fact, the database collected is quite unique for the presence of capital budgeting information for small firms.

The dataset contains the following variables:

i. Basic demographic information for each respondent, including age (*agedecisor*), gender (*gender*), and the age of the firm (*firmage*);
ii. Two dummies to capture the effect of the level of education of the main responsible of the firm (*highedu* and *lowedu*);
iii. A dummy to capture if the entrepreneur is the only responsible or he or she is a part of a board or managerial team who makes decisions (*entralone*);
iv. The presence of an integrated control software system helps to reduce the biased predictions (*integr*).

Three measures to capture forecast bias are operationalized in this study: the percentage difference of the EBITDA (diffEBITDA), the percentage difference of the equity (*diffequity*), and the percentage difference of borrowing costs (*diffborrcosts*). These differences are computed as percentage differences between what was set in the budget and what was observed in the final balance sheet. Equation 1 helps the reader to see in formula the easy calculation computed for the three measures.

$$O_t = \frac{F_t - B_t}{B_t}, \tag{1}$$

where O is the measure of overconfidence at time t, F represents the result from the final balance sheet, and B represents the value forecasted in the budget. Forecasts are unbiased if the forecaster does not systematically over-or underestimate.

2.4.2 Sample

The final sample consists of 108 firms belonging SMEs category.

The age of entrepreneurs ranges from 22 to 74, averaging 48. Among them, there is a relative low presence of women, 38 out of 108, which is an accurate representation of the gender ratio of the Italian entrepreneurs' population (Bonte and Piegeler 2013).

The average number of years of existence of the firms in the sample is 9, with a wide range of variation between 2 and 45 years.

The level of education is different within entrepreneurs: 25 of them only have a middle school diploma, 47 have a high school diploma, and 36 of them have an undergraduate or graduate degree.

Looking at the data in detail we acknowledge the presence of 55 entrepreneurs who make decisions alone[1]—there is no formal committee to make decisions—and 53 entrepreneurs who make decisions jointly.

Only 27 firms in the sample have a complete integrated control software system. This number highlights the low level of innovation across small and medium firms, which mainly rely on external advice and/or on outdated and disaggregated systems.

2.5 Analysis and Results

2.5.1 The Three Major Dependent Variables: EBITDA, Equity, and Borrowing Costs

This section provides an analysis of the differences between the budget values and the final balance values for our three dependent variables. Numerous sub-industries are in the sample. However, ANOVA analysis based on the ATECO codes (similar to the US SIC classification) did not reveal any significant differences in the DV between the non-financial industries in our sample and was therefore excluded as a control variable.

[1]This information comes from the Italian legal form of the company

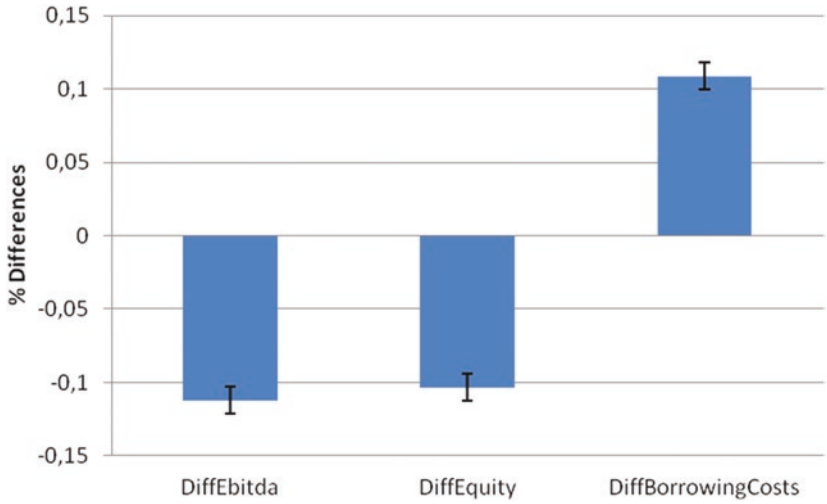

Fig. 2.1 Percentage differences of the budget values and final balance values for the three variables: EBITDA, equity and borrowing costs. *Source* Own elaboration

As we predicted, there is a general tendency toward overconfidence among entrepreneurs in predicting:

i. The level of EBITDA,
ii. The level of equity, and
iii. The level of borrowing costs.

Figure 2.1 shows the results of the data analysis on the differences among the three variables for the firms presented in the sample.

To interpret the results, an increase in the variables *DiffEbitda* and *DiffEquity* must be read positively as it implies that the results of balance sheets exceeded expectations, while an increase in the variable *DiffBorrowingCosts* is read negatively because it implies a negative increase of borrowing costs on the balance sheet.

From the analysis of the previous Fig. 2.1, we find that, point sub (i), EBITDA is overestimated on average by 11.2%, which is a huge diffence, considering that the budget anticipates the final

balance sheet's results of just one year. To clarify this with an absolute numeric example, this means that an average firm predicting to generate an EBITDA of 100,000 generates an actual EBITDA of 88,800. This difference is significantly different from zero ($t\,(107) = -12.6$; $p < 0.01$).

The same applies to equity, point sub (ii), which is overestimated by 10.3% ($t\,(107) = -12.27$; $p < 0.01$) and to borrowing costs, point sub (iii), which are lower in the budget, being 10.9% higher in the balance sheet ($t\,(107) = -12.6$; $p < 0.01$).

The similarity of the biases across measures can be explained by the high correlations between these dependent variables. For instance, it is reasonable to assume that if an entrepreneur planned to have a higher level of equity and then fails to reach that level, the only way to sustain the investments is to increase the level of debt, turning to an increase of borrowing costs. The level of EBITDA—by definition—is more independent from the capital structure, because EBITDA excludes other items such as interest payments depending on capital structure. For this reason, the average bias in EBITDA is not extremely similar to the level of the other two biases.

The standard errors of the three variables analyzed, measured by the whiskers in Fig. 2.1, surprisingly show how these results are pretty stable in the sample, which suggests that biases are quite homogeneous among SMEs. These first results highlight how forecast errors in small firms are quite substantial.

2.5.2 The Incidence of Independent Variables

We estimated a model for each of the three dependent variables by means of Ordinary Least Square regression (OLS), including robust standard errors using the Huber-White sandwich estimators. Such robustness check can deal with a collection of minor concerns about failure to meet assumptions, such as minor problems about normality, heteroscedasticity, or some observations that exhibit large residuals. The aim is to understand how the independent variables may affect the observed differences of the three dependent variables.

Table 2.1 The correlation among dependent and independent variables

Variables	Mean	DiffEbitda	DiffEquity	DiffB. Costs	Entralone	Agedecisor	Firmage	Gender	Integr	Highedu	Lowedu
DiffEbitda	−0.103	1									
DiffEquity	−0.112	0.808***	1								
DiffB.Costs	0.109	−0.807***	−0.687***	1							
entralone	0.509	−0.334***	−0.230*	0.292**	1						
Agedecisor	47.65	0.007	0.173	0.005	−0.203*	1					
firmage	19.43	0.325***	0.274**	−0.311**	−0.252**	0.190*	1				
gender	0.366	0.181	0.169	−0.264**	−0.072	−0.009	−0.057	1			
integr	0.250	0.204*	0.162	−0.208*	−0.075	−0.041	0.209*	−0.122	1		
highedu	0.333	0.344***	0.215*	−0.295**	−0.288**	−0.169	0.007	0.041	0.091	1	
lowedu	0.231	−0.268**	−0.152	0.222*	0.144	0.200*	−0.061	−0.093	−0.013	−0.388***	1

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

Table 2.2 Regression results from data processing under different dependent variables

Variables	DiffEbitda	DiffEquity	DiffB.Costs
Firmage	0.00231*** (0.0008)	0.00167** (0.00079)	−0.00218*** (0.00076)
Gender	0.0359** (0.0167)	0.0325* (0.0165)	−0.0508*** (0.0158)
Agedecisor	−0.0000339 (0.00066)	0.00119* (0.00065)	0.000164 (0.00063)
Highedu	0.0460** (0.0192)	0.0327* (0.0189)	−0.0367** (0.0181)
Lowedu	−0.0274 (0.0208)	−0.0165 (0.0205)	0.0167 (0.0196)
Entralone	−0.0312* (0.0177)	−0.0101 (0.0174)	0.0237 (0.0167)
Integr	0.0304 (0.019)	0.0257 (0.0187)	−0.0325* (0.0179)
Constant	−0.169*** (0.0407)	−0.213*** (0.0401)	0.166*** (0.0384)
Observations	108	108	108
R-squared	0.31	0.2	0.3

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$; Standard errors in brackets

Before introducing variables in the regression model, we carefully examined the data to detect problems of multicollinearity. Nonetheless, correlations were below 0.7 between independent variables, as reported in Table 2.1. Dependent variables, as expected and discussed, were significantly correlated. Therefore, we proposed three separate different regression models, each one with only one dependent variable at a time, to better highlight the predicting power. In Table 2.1, we report also the means for the analyzed variables.

Regression results are reported in Table 2.2.

From the analysis of Table 2.2 we find that the strongest significant factors across models to improve accuracy in prediction are:

i. The age of the firm (*firmage*),
ii. The presence of a woman (*gender*), and
iii. A higher level of education (*highedu*).

In particular, about point sub (i), recalling that the dependent variable has to be read as a percentage variation, an additional year of the age of the firm decreases the biased prediction of EBITDA, equity, and interests (of a 2.31, 1.67, and 2.18 $^{o}/_{oo}$, respectively) with respect to the

average bias; the age of the firm is a factor, which we did not consider in our a priori theoretical framework and comes from Post Hoc analysis. We assumed that this factor could have been irrelevant once controlling for the age of the entrepreneur (*agedecisor*) but it was not the case.

With respect to point sub (ii), even if few entrepreneurs in our sample are women ($n = 39$), they tend to show much more accuracy in predicting the budget in terms of final balance sheet, confirming our *H1*. This effect is consistent across all the different specifications and it is more pronounced when the dependent variable is the level of borrowing costs to pay, where accuracy increases by a 5.08%.

The last variable, which is significant across all the different dependent variables, is *highedu*, point sub (iii), a variable that captures the level of education of the entrepreneurs. Results show that having a degree reduces the different biases by 4.6, 3.27, and 3.67%, respectively. This goes in partial favor of *H2*, the hypothesis that supported the negative effect of low education in terms of accuracy. In fact, we found that a high level of education increases accuracy, but there is no significant difference between a middle level of education and a low level of education, meaning that only high education has an effect on increasing accuracy.

Interestingly, there are variables that are significant predictors only of particular dependent variables and not of all the measures of overconfidence.

When measuring accuracy in terms of equity, the age of the entrepreneur plays positively: An additional year increases accuracy by $1.19^{o}/_{oo}$. This result implies that the experience of older entrepreneurs may help in predicting the level of equity. Taking into account the results in terms of gender, it is evident that demographics do play a role, supporting *H1*. When measuring accuracy in terms of EBITDA, the presence of an entrepreneur who takes decisions alone weakens the power of the prediction of the final EBITDA by a significant 3.12%, favoring *H3*. Finally, when measuring the accuracy in predicting borrowing costs, the presence of an integrated control system improves the accuracy by a 3.25%, giving credit to *H4*.

Overall our results are robust even if there are other variables we do not observe here, like the differences in industries, or the impact of the crisis, on the general level of overconfidence.

2.6 Discussion and Conclusion

Implications of the results

In this contribution, we propose novel interrelated mechanisms to test for managerial overconfidence in a group of Italian small firms.

The goal of the research is to investigate how some individual and contextual dimensions, like the experience and the level of technological implementation, influence entrepreneurial accuracy, which in turn impacts on the subsequent firm survival and growth.

We devoted our analysis to three key variables of firm's health: earnings, level of equity, and borrowing costs instead of considering only investment capital or cash flows, as done in the past (Malmendier and Tate 2008). We acknowledge that cash flow related variables may be a common signal of overconfidence but in this work, we were interested in offering a different picture of the effects of overconfidence, on the capital structure and on the earning results as well.

First of all, we find that the age of entrepreneurs is positively correlated with accuracy, especially to predict equity levels. We can then say that both education and age, a proxy for *real* experience, have an effect. Women show more accuracy in their predictions. Although we are not here interested in business performance per se, this result goes in favor of the theoretical work developed by Marlow and McAdam (2013), where they dispute the association between gender and underperformance, and of the argument of Welter and Smallbone (2008), who show that it is because some local traditions that women entrepreneurs sometimes underperform. Controlling for the age of the firm, we found that this factor is indeed a moderator of the relationship between predicted budget values and results in the final balance sheet. A possible interpretation of this result is that if firms enter in the market and they are able to resist in the first turbulent years, then the probability to remain in the market and accurately predict future results increases.

The positive effect of higher education suggests the need to create and strengthen networks between academia, research centers, companies, the financial system, and institutions (Porter 1998). Universities and research centers are entrusted with the task of producing innovative

ideas and projects for business and applied research centers, which are consistent with their purposes and activities (Carlsson 2005).

Moving to contextual factors, we found that, as in Busenitz and Barney (1997), when entrepreneurs decide alone, without a joint committee to take decisions, biases (in particular in terms of EBITDA) are even more pronounced. In line with this argument, Forbes and Milliken (1999) highlight that "the very existence of the boards as an institution is rooted in the wise belief that the effective oversight of an organization exceeds the capabilities of any individual and that collective knowledge and deliberation are better suited to this task, enabling boards to achieve their full potential as strategic decision-making groups."

Finally, this research highlights the competitive advantage of having an integrated software system. We show that the use of more sophisticated processes for information gathering and analysis leads to more accurate forecasting behavior, at least in terms of reducing inaccuracy about borrowing costs. Explanations for statistical model superiority over human forecasts are well documented by heuristic biases of the forecaster (Cassar and Gibson 2007), and by the fact that without a proper integrated system, researchers have to rely on self-assessed measures of forecasting accuracy. Even though we haven't directly tested the presence of business failure after these biased predictions, there is a stream of research showing that these inconsistencies lead to an increase in the probability of failing (Camerer and Lovallo 1999; Hamilton 2000), because of a scarce accuracy in evaluating negative forecasts.

In this sense, prevention activities can be effectively exercised through the use of a strategic planning monitoring system able to detect threats and to develop a system of gradual responses to function with available information.

The information systems and internal periodic reporting assumes a support role in determining states of crisis, and for a more rational and professional implementation of the strategic plan of reorganization and control during its performance (Basile and Lusvarghi 1996). Recent research by Hormiga et al. (2013) showed how there is a positive relation between entrepreneurial aspirations and propensity to innovate. Here, we add a boundary condition: only in contexts with the

propensity to internally innovate through technological developments the performance may not be undermined.

The results on the determinants of overconfidence are not totally consistent across dependent variables.

Limitations, strengths, and directions for future research

No industry effect was found, since the overwhelmingly majority of companies in the sample belong to the non-financial industry. In any case, we acknowledge that measuring time and industry may bias the conclusions of our research. Considering also the specific geographical context investigated, caution should be exercised in generalizing the findings.

It should be investigated if the source of overconfidence is conscious, e.g., the entrepreneur knows that results will be less positive but provide higher predictions to convince stakeholders to invest, or unconscious, e.g., the entrepreneur is genuinely convinced he can reach the predicted results and if this aspect varies by country.

It may be argued that overestimating the budget may be a strategic business choice. We think that in the long run, it would not be feasible because, for example, banks would not trust anymore a biased budget after a long series of biased ones. Also, the presence of an integrated control systems shows that the small firms which are benefiting from this statistical tool are presenting less biased forecast while in principle they could have presented in any case biased prediction if the goal was only strategic.

Although forecasts from this study can suffer from biases such as reputation effects and exposure to legal liability, they measure the "true" predictions that may not be obtained using surveys.

A test out-of-sample would have helped to increase the statistical power and strengthen the stability of results. Despite a relative small sample, the significance of our results is suggesting that the main determinants we identified have a clear effect.

Future research should integrate different approaches in a combined view, on the one hand, increasing the variables that may be relevant, like the sector where the firm is operating and the marketing strategies, and on the other, obtaining personal information about entrepreneurs.

The inaccuracy in predictions may be enhanced by self-image concerns, which may be measured through surveys, or mediated by legal and statutory requirements.

The availability of a longer time series of responses with a greater time span would have allowed for an examination of learning effects. We have to leave this for future research. Longitudinal studies could also help to analyze if and when entrepreneurial overconfidence leaded to business failure. Further work is needed to assess causal directions: context influencing activity and vice versa.

The predisposition for entrepreneurs to be overconfident is only an issue if, as previously asserted (De Meza and Southey 1996; Hayward et al. 2006; Koellinger et al. 2007), it has a negative impact upon performance that may lead to failure. Our evidence does not measure directly these assertions. It would be therefore needed to show whether overconfidence in the budgetary forecasts of EBITDA and equity are strongly associated with an entrepreneur's decision to file for bankruptcy. It is possible to moderate entrepreneurial overconfidence by increasing the levels of educational attainment achieved by entrepreneurs and through the use of integrated budgetary control systems. While it is virtually impossible to control for all the determinants of bankruptcy and more "fine grained" information would be required, our findings point to education helping entrepreneurs to understand the limitations of heuristic methods and providing the confidence and competence to use integrated budgetary control systems effectively. The findings also indicate that overconfidence is less prevalent among women business owners.

Despite the relative small sample, the independent variables included in the models are strongly significant across different specifications. When considering the external validity of the findings, it is important to recall that entrepreneurs as a group are not homogeneous in terms of personality (Kolb and Wagner 2015), and, as a consequence, also in their overconfident attitudes. In this sense, financial planning touches upon a more complex topic of managerial decision-making and could be explored with qualitative research methods in the future.

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3

Level of Confidence of Male and Female Youth Soccer Players: On Detecting a False Underconfidence

Abstract In this paper, we investigate the relation between confidence and sport performance of women in a predominantly male task. We also study the accuracy of predictions and the implications of potential biased predictions in terms of overall happiness. Our main claim is that women underestimate their result because of the uncertainty related to the performance and because of defensive pessimism, a strategy used to cope with the chance of failure. To test our hypotheses, we conducted two field experiments with players. The first experiment was a two-stage experiment. In the first stage, participants were asked to judge their individual future performance and to place themselves among others, estimating their percentile position. In the second stage, participants rated their feelings about their personal outcome in terms of happiness. The second experiment extends the study to a masculine environment and introduces an incentive to measure if there is a conscious decreasing of expectations. We show that in predominantly male task, women explicitly and consciously decrease their expectations to protect themselves. The analysis suggests that coaches should accept women's pessimism before a performance, because it is a conscious way to handle with the anxiety of the assessment.

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Keywords Defensive pessimism · Sport · Gender · Experiments Happiness · Expectations · Underconfidence

3.1 Introduction

The major purpose of this research is to test if underconfidence can be found in a particular context in sport, contrary to the majority of settings, where overconfidence is predominant. The relation between confidence and performance is an issue under investigated, although Burton and Raedeke (2008), highlighted how confidence may have an effect on performance and on the way coaches have to handle with it.

Moore and Healy (2008) define two ways to elicit confidence bias. The first way to determine over or underconfidence is to consider the discrepancy between personal expectation and the obtained result. This is what is generally called underestimation/overestimation.

The second variety of underconfidence/overconfidence occurs when a set of individuals place themselves, respectively, worse/better than average. This approach can be used on an individual level as well, pointing out that, in this case, it can never show a bias alone, because one can actually be better or worse than average. Overestimation increases with the difficulty of the task while erroneously placing oneself above the average (over-placement) decreases with the difficulty of the task (Larrick et al. 2007). The idea is that in easy tasks people underestimate their own performance and underestimate others' performance (thus leading to over-placement), while in hard tasks people overestimate their own performance and overestimate others' performance as well (thus leading to under-placement).

On average women have been shown to be less overconfident than men (Niederle and Vesterlund 2007; Reuben et al. 2012; Vandegrift and Yavas 2009). This gender pattern holds true, especially, in predominantly male sports, like football (Lauriola et al. 2004; Koivula 1995; Matteo 1986). Although during the recent decades the involvement of women in football, and in sport in general, has increased, some sports are still considered inappropriate for women (Cann 1991; Sassatelli

2003). In addition, the involvement of, women in decision-making, educational and coaching roles does not match with the increasing proportion of active women in sports (Graham et al. 2013; Norman 2008).

Some studies have found that media coverage influences gender stereotypes in sport (Koivula 1999; Ólafsson 2006). In particular, in the Koivula study (1999), there is evidence that this scares coverage may negatively affect the confidence of players. At its extreme, in predominantly male tasks, women feel extremely weak, attributing successful outcomes to external factors (White 1993).

It should be of interest of teachers and coaches to investigate the relation between the level of confidence and the sport performance. In the holistic view of coaching (Cassidi 2010), these factors are interrelated and have to be taken into account by coaches. On the one hand, underconfident people tend to experience more enjoyment with their outcomes (McGraw et al. 2004) because they have a lower reference point. On the other hand, evolutionary psychology (Buss 1995) suggests that overconfidence pays off because overconfident people give signals to others that they will be successful, others notice it and decide to follow, trust, and invest on them.

3.2 Theoretical Framework and Hypotheses

Defensive pessimism (Norem and Cantor 1986) is a strategy used to cope with the chance of failure. To face anxiety and threats to self-esteem people explicitly set low expectations, thinking about the worst-case, even if the situation has been successful in the past.

An outcome of a sport event is often dependent upon several factors. Van Dijk et al. (1999) show that the more effort decision makers invest, the more disappointed they are when the goal is not attained. Therefore, to protect themselves from the experience of disappointment, they strategically underestimate the chances of obtaining the desired outcome. The origin of this defensive attitude has solid roots and can explain the gendered pattern. As suggested by Ohlott et al. (1994), women experience greater developmental challenges stemming from obstacles they face in sport.

Female students, when practicing sports, may fit this pattern of defensive pessimism and anxiety for the uncertainty of the performance when they are asked to give a prediction about the performance they are going to offer. One way to test this effect is the following: if players are really under-estimating/over-estimating themselves they will also under-place/over-place themselves because they will have lower/higher perceptions of their own relative ability in comparison to others. The key point here is a consistency across these two measures. In the case that a player underestimates one performance and over-places herself it can mean that the player is really far from the average performance that will be obtained, or that she is deliberatively underestimating the expected performance. Consider a hypothetical player, Ana, who predicts a performance of five goals when kicking ten times and thinks to be in the 70th percentile. Ana assumes that the percentage of score will be really low for that session, perhaps because she perceived difficulties because of the distance from the goal line, the ability of the goal keeper or simply because Ana is using defensive pessimism to deliberatively reduce the prediction of her performance. We think that the latter explanation is predominant. To test this theory, we propose to measure happiness, in terms of positive affect as in Diener (1994), about the result after that the performance is known. Even if we acknowledge that also other explanations are the drivers of Ana's choice, like less information about the performance of other players, a systematic pattern of underestimation and over-placement hides a subjective feeling to obtain a better performance than the predicted one. Following this argument, when Ana obtains her result, even if it is higher than the expectation, suppose she got a 6, Ana feels unhappy if in the social comparison with their colleagues she realizes she is under the 70th percentile predicted. In particular, the comparison with other players can drive happiness because wellbeing and satisfaction depend heavily on social comparison (Frank 1985). We predict that a player who predicts both underestimation and under-placement is using less compensatory adjustment and therefore, on average, will be more satisfied.

We have conducted two studies to test this theory with a sample of Spanish female players.

The theory makes five predictions:

H1: In a female football context, the difference between expected and actual performance shows underestimation, $\mu_e < \mu_a$

H2: When at individual level overestimation/underestimation is present, people will also generally over-place/under-place their performance

H3: The level of happiness is significantly lower in the group that underestimates and over-places its performance

H4: Female players deliberatively reduce their prediction

H5: In a male appropriate task, like playing football, females are significantly less confident than males

Study 1 will be used to test the first three hypotheses. Considering the sport setting, we predict that female football players will underestimate their result because of the uncertainty related to the performance and because of the defensive pessimism. If we assume that underestimation and under-placement share the same basic insight, people will be consistent across these two measures.

The interaction between defensive pessimism and overconfidence can produce underestimation and over-placement, which can be defined as "false positive underconfidence". To verify this hypothesis we can ask our sample to rate their happiness after knowing their grades. If measured happiness is significantly lower in players who are not consistent between these two measures of overconfidence, those players have implicitly expected a different score from the stated score. The underlying idea is that they reduce their expected grades by careful deliberation or because of defensive pessimism.

Study 2 will test the remaining two hypotheses. In particular, defensive pessimism as an explanatory concept of overconfidence has to be manipulated in an experiment, using a measure of this variable as a covariate. If in general underconfidence is found, it has to be shown if it comes from a genuine prediction or from careful deliberation, which can be tested giving a monetary incentive for the accuracy of judgment. It could in principle be the case that a general underestimation of performance in sport comes from a different form of

pessimism—depressive pessimism (Showers and Ruben 1990), which is an unconscious form of pessimism and not a conscious lowering of expectations. For this reason, we propose a monetary incentive for accuracy of judgment, meaning a payment inversely related with the difference from the predicted and the actual score, to elicit the real belief of participants, isolating the conscious careful deliberation in reducing their prediction. The last hypothesis, the lower confidence of females, would be a confirmation of previous testing (Gordon and Seminara 2005) but in this case applied to a football scenario.

3.3 Study 1

3.3.1 Participants

Sixty female participants were recruited from some semi-professional football teams in Barcelona, especially in the area of St. Andreu, because of the availability of semi-professional football fields to run the experiment and the ease to reach the place from the different areas of Barcelona. Participants were recompensed with a fixed fee of 5 euros. Given that this recruiting method was likely to attract players who are actively playing football, and who are interested in measuring their performance, this could represents a bias in finding the average percentile of this subgroup of people over the 50th percentile. In fact, as we will see in the result session, this subgroup of people showed an average result that was slightly higher than the general population.

3.3.2 Procedure and Design

This two-stage experiment took around 90 mins and has been conducted in the Sant Andreu football camp (Barcelona, Spain).

In stage 1, participants were asked to judge their individual future performance and to place themselves among others, estimating their percentile. They had to assess (a) how many goals in a set of ten free kicks they were going to score and (b) their relative position among all

the players taking part to the training (not only the sample of players who took part in the experiment). To standardize the procedure offering an equality of treatment among players, every player had to score from a fixed distance without a goalkeeper and with an inanimate barrier. In stage 1, the concept of percentile estimation was explained in careful detail in the instructions with the advice of practical examples. In a first, subsample of 30 players randomly chosen two out of the three examples given were about the chance to obtain a value higher than the 50th percentile while in the second subsample of players we used a reversed strategy: in two of the three examples the proposed percentile was under the 50th. This idea occurred by chance. We realized that in the instructions in the first subgroup there was an unbalanced perspective towards high percentiles in the examples. With the second subgroup, we then decided to talk a bit more about examples where low percentiles were present. By doing so, we could measure a possible anchoring effect (Tversky and Kahneman 1974).

In stage 2 participants rated their feelings about their personal outcome in terms of happiness, after knowing the results of the whole sample, using a scale from one (very low) to ten (very high), as in Diener (1994). In our case, the outcome could be only goal or no goal and the distribution was binomial, with a sequence of 10 independent yes/no goals.

Table 3.1 gives an extract of the collected data for two random individuals. The first person, identified by a number of identification (Id), predicted to score 8, expecting to be in the 55th percentile. The effective result was higher, 9, and the position among others was impressive, being almost in the 99th percentile. The elicited happiness was pretty high—8. In this case, there was both underestimation and under-positioning. The second person predicted a higher performance than the

Table 3.1 The collected database. An extract

Id	Expected goals	Expected percentile	Actual goals	Z	Actual percentile	Happiness
1	8	55	9	2.31	98.9	8
19	7	60	6	−1.17	12	7

actual one and she over-placed her position among others. In fact, the predicted percentile was 60th while the actual one was only 12th. To calculate the actual percentile, we used the quartile of the standard normal distribution (z).

3.3.3 Results and Discussion

We discuss the hypotheses in the light of this prior empirical evidence and in the next session show the critical aspects that require further data.

H1: In a female football context, the difference between expected and actual performance shows underestimation, $\mu_e < \mu_a$

In the relationship between the predicted goals and the actual goals, as we expected from the previous discussion, we obtained a general underestimation. Predicted goals were lower ($\overline{X} = 7.18$; SD = 0.76) than the actual average goals ($\overline{X} = 8.07$; SD = 0.39). The t test of the difference of the mean between predicted and actual scored goals was highly significant, $t(59) = 9.13$, $p < 0.01$.

H2: When at individual level overestimation/underestimation is present, the person will also generally over-place/under-place his or her performance

Hypothesis two requires that people are consistent in assigning a biased value of the same sign for both measures. In this case, we cannot support the hypothesis: more than half of the sample (33 people over 60 participants) underestimate their performance and, in the meantime, over-place themselves among others. However, defensive pessimism could moderate this relationship. To test this, we made use of the third hypothesis:

H3: The level of happiness is significantly lower in the group who underestimates and over-places its performance

In this case, we got a very interesting result: people who both underestimate and under-place (UU) themselves are happier than people who underestimate but over-place themselves (UO). The mean of happiness

for the cluster UU, composed by 17 people was 7.41 while the mean of happiness for the cluster UO, composed by 33 people was 6.06. The difference of the means with an unpaired t test is highly significant, $t(48) = 6.4$, $p < 0.01$, and the sign of the relationship and the extent of the difference between these two numbers give support to the theory that there is a reduction in the predicted score which is done by careful deliberation or using defensive pessimism. Our intuition is that the interaction between overconfidence and these moderators show a total effect of underestimation but the real subjective feeling is towards overestimation. Self-efficacy (Moores and Chang 2009) is important to strengthen this argument. If one is not self-confident one will never say "If I did bad, others will do worse."

Figure 3.1 helps the reader to see different levels of happiness across all the different clusters. The cluster that either overestimates or

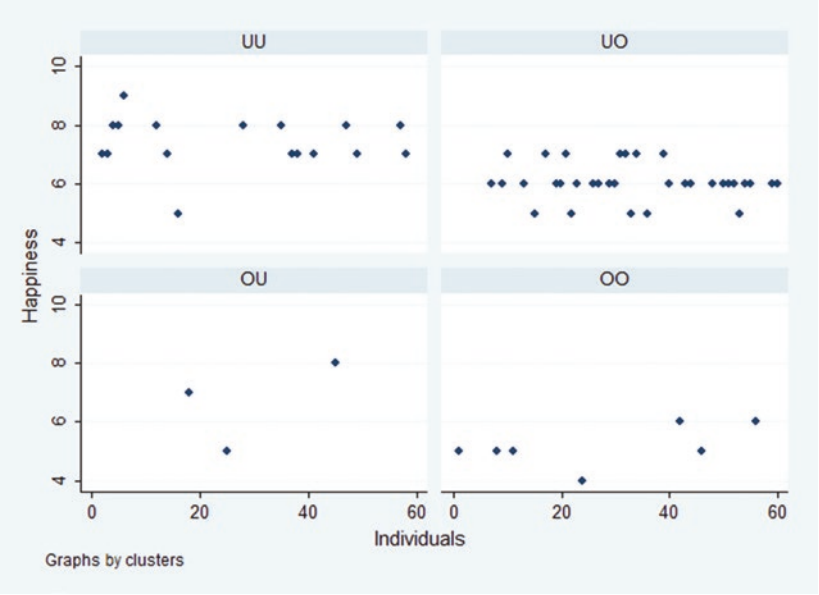

Fig. 3.1 Happiness of individuals across different clusters of overconfidence (UU = underestimation and under-placement, UO = underestimation and over-placement, OU = overestimation and under-placement, OO = overestimation and over-placement)

over-places is not surprisingly the subgroup with the lower level of happiness ($\overline{X} = 5.14$; SD = 0.69).

Another interesting finding is the anchoring effect: even if the mean of grades across the two sub-groups, A ($\overline{X} = 8.02$; SD = 0.43; n = 34) and B ($\overline{X} = 8.12$; SD = 0.33; n = 26), was not significant, the difference in the predicted percentiles was significant at 10%. Group A, the one which was primed with higher percentiles, showed an average prediction higher than the 60th percentile (60.6) while in group B, the one which was primed with lower percentiles, the prediction was around the 55th percentile (55.2). This means that a more emphasis on examples about placing oneself over or under others in the instructions influenced the estimated percentile.

This experiment needs to be extended considering a variety of sports to strengthen the external validity and to measure the heterogeneity across different sports. This study registers only two moments: the expectation before the performance and the level of happiness after knowing the results. It would be more complete measuring the variable happiness after the performance but before knowing the performance of others, to analyze and disentangle the effect of others on the individual happiness.

3.4 Study 2

Study 2 addressed two limitations of study 1: (a) Study 1 attributed the general level of underconfidence to defensive pessimism without a proper measure to control for defensive pessimism (b) in study 1 we assumed underconfidence being a gender effect and we created only a feminine environment.

3.4.1 Participants

Participants were 128 students who had previous experience with playing football (64 women, 64 men). 7 participants (1 woman and 6 men), were excluded from the analysis because they didn't want to take part in this experiment when the instructions were provided.

3.4.2 Procedure and Design

This experiment has been conducted in the Sant Andreu football camp, Barcelona. 55 participants (among those 28 were females) were included in the incentive condition. Participants were asked to judge their individual future performance in terms of goals, assessing how many goals in a set of ten free kicks they were going to score. To guarantee equality of treatment among players, every player had to score from a fixed distance without a goalkeeper and with the presence of an inanimate barrier.

We created a 2 × 2 factorial design, manipulating gender and incentive. Participants were randomly assigned to the incentive condition. In the incentive group, (27 men, 28 women) participants were told that they would have been paid according to their accuracy in predicting their personal performance, starting from 10 Euros in case of a complete accuracy (for instance, a prediction of 10 goals and a real score of 10 goals) and with a penalty of 1 Euro for every unit mistake (for instance, a prediction of 8 goals and a real score of 5 goals was paid 3 euros less than 10). The other participants were paid a fix fee of 5 Euros.

3.4.3 Results and Discussion

Participants' differences from the real performance were analyzed with a 2 × 2 ANOVA. Aside from individual differences, being in the incentive group increased the accuracy in judgment, $F(1,116) = 7.37$, $p < 0.01$. However, as may be seen in Fig. 3.2, this effect was qualified by a significant interaction between gender and incentive, $F(1,116) = 11.36$, $p < 0.001$.

H4: Female players are deliberatively reducing their prediction

The incentive system highly increased the accuracy in judgment for women while not significantly increasing the accuracy in judgment for men. Figure 3/2 clarifies that when an incentive system is present women are much more accurate in their prediction. This gives credit to the hypothesis of conscious (and strategic) lowering of expectations by women in predicting their scores.

H5: In a male appropriate task, like playing football, females, are significantly less confident than males

Men were clearly more overconfident than women, either in the incentive condition or in the fix payment condition [overall, $F(1,116) = 47.99$, $p < 0.001$]. This effect is confirmed by a permutation test that compares the level of confidence at the gender level. The test takes the original data and reassigns the gender to the different values of confidence completely at random, counting the number of times for which the gender effect is stronger than the real effect in the database. We replicated this process 1000 times, obtaining 1000 replicate values (counts). By construction, these counts represent the null distribution of the test statistic. We then compared the value of this statistic with the original data finding a $p < 0.01$.

With an incentive, men are less overconfident. This effect is present in Fig. 3.2, even if the difference is not significant in the data.

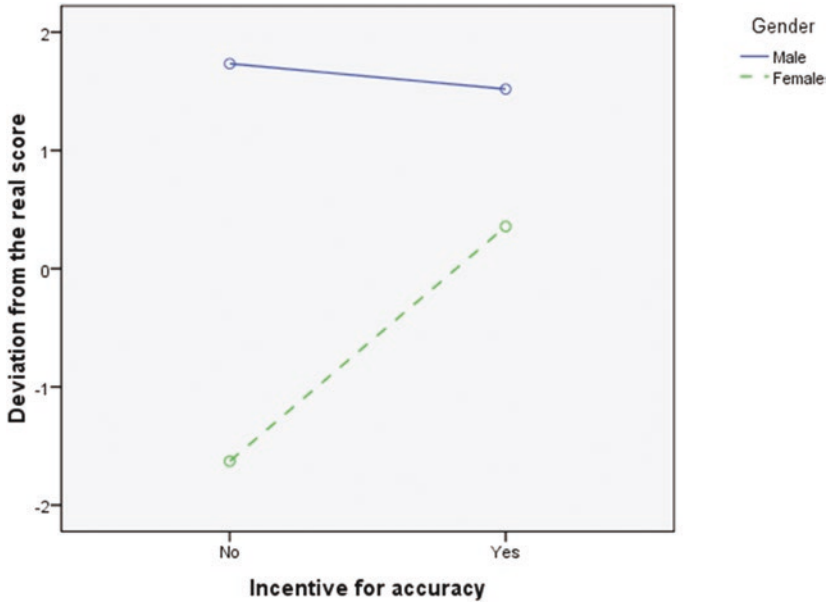

Fig. 3.2 Average difference in accuracy judgment between the predicted and the real score across gender and incentive

3.5 General Discussion

In this whole topic of over/under confidence, the key issue is information. We have imperfect information and hence uncertainty. By loss aversion (McGraw et al. 2010), women tend to underestimate their performance essentially to protect themselves. An effective way to determine a possible underlying overconfidence is to measure ones placement among others. Even if one is underestimating his or her performance, we can detect overconfident if his or her reasoning by something along the lines of "if I did badly and I'm better than others, then they might have done worse." This behavior is what we call *false positive underconfidence*, arguing that, getting rid of the moderators, overestimation, and over-placement share the same subjective components and thus are positively related. We then tried to manipulate defensive pessimism as a way to explicitly set low expectation. Our results confirmed the hypothesis of a conscious reduction of expectation that is reduced when introducing an incentive system. Interestingly, men did the opposite: they reduced their confidence in the case of an incentive to be accurate in the prediction, implicitly admitting their conscious bias toward overconfidence. The final effect is that with a monetary incentive there is a sort of convergence toward the accurate judgment, while in a system without incentives for accuracy women are less confident and men are more confident.

Contrary to evolutionary psychology theories, we found that the most satisfied group is the one who both underestimates and under places its performance. It could be interesting to study what is more satisfying for people in sports: a higher than expected absolute performance or a higher than expected relative performance (percentile position). Theories of happiness partially based on the prospect theory (Ariely 2008; Armor et al. 2008; Massey et al. 2011) would say that is more important the latter. In this experiment, we could have tested the level of happiness of the UO and OU groups looking for differences but, unfortunately, the OU group had too few observations.

3.6 Conclusion

This study was conducted to understand the determinants of female player's attitude in protecting themselves toward a possible failure in the performance. The results offer a possible way of dealing with low self-esteem among female players. The analysis suggests that coaches should accept women's pessimism before a performance. In fact, these results show that on average it is not a maladaptive style that leads to depression but a conscious way to handle with the anxiety of the assessment, which is even more relevant in a coaching session, where the performance is going to be evaluated. A similar but reversed story would be the implication for male players. Males, in fact, overestimate their results and they only partially reduce their bias if an incentive is given to increase accuracy. This would suggest that managers and coaches have to inform players that they are too optimistic and they are not as good as they think they are.

More generally, consistent with Aitchison et al. (1999), we find that the optimism of women is dramatically affected in a setting where the dominant "locker room culture" of masculine sport tend to prevail. These results complement the discussion introduced by Rumpf et al. (2014) on the training profiles and way to motivate male and female youth soccer playing, highlighting other differences between these two groups.

The principal limitation of this study is that it doesn't manipulate the level of confidence of players. It would be interesting to see if showing that they are wrong (both, men and women) might have an impact in terms of performance.

Further research has to investigate (i) what is the optimum lowering limit of underconfidence: excessive lowering can conduct to maladaptive copying styles, like fatalism and hopeless (ii) how cultural factors and context can influence their judgment and their performance.

The theory does not just apply to performance but can be extended to risk perception, and to inference about abilities, behavior and traits.

3.7 Extension in Other Domains

The presented framework can be easily transposed in other domains, such as the education one. When a student starts a new course, he knows that he will be evaluated at the end of it. The skills he has learnt and the knowledge he has acquired will be tested with an exam or perhaps a term paper. And in the end, the so-awaited evaluation will come in the form of a *grade*. Precisely because there is no mystery in how the process of giving a grade works (the better you are, the higher the grade you will receive) students try to predict their grades before those come out. And frequently, such predictions are built upon signals or hints they receive during the course. The grades from the assignments students hand in are a good example.

One of the first messages from this literature is that overconfidence is a very general construct that can be broken into several categories. The first one revolves around the two concepts we already mentioned: *over and underestimation*. The technical definition of these two does not differ much from their quotidian, common meaning: overestimation consists on expecting that you will do better than you actually did. Underestimation bears the opposite meaning. The second category of overconfidence is built around the concepts called *over* and *underplacement*. If the previous category only involved a person and his expectations, now we make a step forward and consider how good a person is *compared to others*. In this context, overplacing oneself is the equivalent of believing that we are among the best 10% of students in a classroom when, in reality, we are by no means as good. Underplacement means the opposite. Now that we have defined the construct of overconfidence, the natural question that follows is: what do people do? Following Moore and Healy (2008), it's believed that people tend to underestimate their absolute performance (grades in our case) but overestimate their relative performance (i.e., their position or ranking). With tasks that are regarded as "easy" the pattern above has strong support. When tasks are thought to be harder, the pattern above can reverse. It is possible to collect grade predictions from students and then see the patterns. Going one step further, we will also try to determine if gender differences have any impact on these patterns.

Based on the theory proposed in this chapter, it would be possible to derive the following behaviors

i. Students underestimate their grades and overplace themselves in easy courses but not in hard courses, where the opposite is true
ii. On average, women underestimate their grades more than men
iii. It is possible to observe combinations of under/overestimation and under/overplacement among students.

Data collection can be done through surveys and involved the following steps: a first survey, distributed in the second class of the course, asks students to predict which grade and which relative position (ranking) they expected to obtain in the midterm exam. For the predicted grade, students are requested to give a number between 0 and 10 with one decimal. For the predicted ranking, students are requested to guess the percentage of grades that will be lower than theirs. The number to put can be between 0% and 100%, with an example like the following one: "a person who writes 75% is indicating that he/she believes that 75% of the grades will be lower than his/hers".

A second survey, asking the exact same questions, can be handed out some weeks later. This way it is possible to see if predictions are modified according to this new information, which mainly consists of the grades of the weekly assignments they have delivered up until that point. Since exams generally derive from these assignments, doing good or bad is indeed a relevant signal.

Once the midterm is over and the real grades and real ranking is computed, it is possible to calculate if students did better or worse than they expected by subtracting predicted grades/ranking from the real grades/ranking.

More compactly, the variables to be obtained from the data collection process (directly or through simple calculations) are (Table 3.2):

In order to motivate students to make well-thought predictions, it is possible to design a simple incentive system: the person who made the most accurate prediction would receive his or her grade in Euros (so highest prize was 10€). In the same fashion, the person whose predicted ranking is closest to reality will obtain a similar reward (highest

Table 3.2 Proposed framework to test overconfidence in the education realm

Short Name	Long Name/Description
RealG	Real grade of the midterm
RealPos	Real relative position/ranking obtained in the midterm
IniPredG	The initial prediction of the grade to be obtained in the midterm
LatePredG	The second (and last) prediction of the grade to be obtained in the midterm
IniPos	The initial prediction of the ranking to be obtained in the midterm
LatePos	The second (and last) prediction of the ranking to be obtained in the midterm
AvDifG	The average between IniPredG and LatePredG
AvDifPos	The average between IniPos and LatePos
RealG−AvDifG	Measures of whether real grade/real ranking are above or below students' expectations
RealPos−AvDifPos	

prize was also 10€). In case of a tie, the money would be split. Principal component analysis can then be used to identify similar groups

1. The people who predicted a grade and position that were *below* average and yet obtained a grade and position that were *above* average. Those are students that underestimated their own capacity and underplaced themselves.
2. Those people who predicted a grade and position that were *below* average and then obtained such grade and position. Those were good predictors.
3. Those people who predicted a grade and position that were *above* average and obtained such grade and position. Those were good predictors.
4. Those people who predicted a grade and position that were *above* average and yet obtained a grade and position that were *below* average. Those are students that overestimated their own capacity and overplaced themselves.

For some students, protecting self-worth is of paramount importance. In the academic context, students' self-worth is most threatened when they fail to perform successfully at a given task and there is the

risk that they may be seen to have low ability. A priority of some students, therefore, is to protect their sense of ability and to try to influence others' evaluations of their ability. Self-handicapping and defensive pessimism are two ways through which students are able to do this. Self-handicapping (SH) involves the choice of an impediment or obstacle to successful performance that enables individuals to deflect the cause of poor performance away from their competence and on to the acquired impediment. *Example: I have an exam tomorrow. Today I'm going to spend the day cleaning the garage and visiting grandma. If I fail the exam, I can say that it was not due to lack of ability (which would damage my self-worth) but due to lack of effort (something that I could fix if I wanted to).*

Defensive Pessimism (DP): it consists on setting unrealistically low expectations prior to tasks that undergo some form of assessment. Post-evaluation, this has the advantage of protecting the user against failure. Pre-evaluation, it has the advantage of protecting the user against the anxiety derived from having to perform on a task where failure is possible. This, in turn, allows the user to exert effort and prepare for the task. On the flip side, DP may turn lead to complacency by making its user set a threshold for 'satisfactory' performance that is easier to achieve.

Task-oriented individuals are more concerned with the task itself (learning and mastering it) rather than with outperforming others and see success as a product of effort rather than ability. From a self-protection perspective, task-oriented students are less vulnerable because they attribute failure to insufficient effort (which is something they can control and change in the future) instead of to insufficient ability.

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4

Closing Remarks on Overconfidence in Business and Beyond

Abstract This chapter summarizes the main contributions on the overconfidence phenomenon discussed in this monograph. It also provides the key literature to offer the reader an in-depth analysis of the phenomenon in business and beyond. The starting point, after discussing what is overconfidence and how it can be measured, revolves around the implications of an overconfident attitude in small business management. This chapter goes further in discussing ways to reduce overconfidence when hubris and the excessive use of heuristics kick in. In this sense, it presents the advantages of using integrate software systems to reduce overconfidence. To further assess the impact of overconfidence in day-by-day decisions, the chapters present the findings on overconfidence in another different domain, sport, where women show the opposite bias, underconfidence, because of the uncertainty related to the performance and because of defensive pessimism, a strategy used to cope with the chance of failure in a male-dominated task. Across the brief chapter, there is a holistic discussion on how to improve accuracy in judgment and some key methodological routes to actually be able to measure overconfidence. Specifically, the book as a whole discusses how to conduct experiments, use large secondary datasets or psychological

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scales to assess the phenomenon from a different angle. The approach of this chapter and the citations used are at the interception between psychology and entrepreneurship, This chapter closes with a manifesto in 11 points.

Keywords Accuracy · Overconfidence · Entrepreneurs · SMEs Budget · Forecasting · Contextual characteristics

4.1 The Epilogue

The monograph discusses the overconfidence bias and its effects in the managerial realm. Stemming from an analysis of personality traits, in Chap. 1 the reader can understand the implications of an overconfidence attitude in finance and small business management. The second chapter goes on discussing how overconfidence can be measured through the difference between budgeted performance and actual performance. A systematic difference between predictions and final results (i.e., across companies and time) can be attributed to overconfidence. Chapter 2 interestingly shows that an effective way to reduce managerial overconfidence is to adopt integrated software systems, which outperform the role of human heuristics in accuracy. Chapter 3 concludes by extending the overconfidence study in another domain, football. Here, it can be seen the reverse effect of overconfidence, underconfidence. Across the chapters, it is possible to understand the key role of individual expectations in the level of subsequent overconfidence. The book concludes by showing that, while overconfidence is detrimental for business performance, also the opposite phenomenon, underconfidence, leads to low-performance levels as it activates a coping mechanism, which is often referred as defensive pessimism. In sum, the book presents an overview of the overconfident phenomenon highlighting how accuracy in judgments would lead to better business performance. Personal differences that might determine an overconfident attitude are discussed in detail.

Management has changed through time, and has taken a new form from generation to generation, gender, and education level, however,

one thing still remains; the lasting affects it has on a business. We have seen throughout this book, just what factors should be accounted for when deciding who should manage a team, or a business.

This book covered the background of management and the theory behind it through psychology, as well as expert's analysis on the subject, however, it takes a step further providing statistics in conjunction to this as well as a real-life example to further prove our point of just how independent variables play crucial role in a person's ability to manage.

It is important to look as a person's nature when deciding a manager, such as their personality, and how it can affect the business. If the person is too much of a risk taker, with a positive outlook, they are more likely to do worse than how the rest of the market is doing regardless of the markets status. It is important to have someone who is ambitious, but also rational when deciding management as mentioned throughout the chapters. The manuscript discusses how some variables, such as age gaps and generation difference play a role as well. It was supported that those with a larger age gap will have more opposing ideas as to how to manage a business while those who are within the same age range will share similar ideas. The important take away from that is deciding how to mix and match teams based on the ages with a manager who is similar in age range to produce the highest level of productivity.

Finally, gender can play a substantial role in all of this both in the management and in the sport domain. Chapter 3 supports that the big take away from that was the confidence level a woman has, as well as how her peers reacted around her affected the female's performance. In a much positive atmosphere, the females had no trouble preforming well in their tasks, however, in a more negative environment.

The purpose of this monograph is to provide a platform for important new insights on overconfidence. Overconfidence is conceptualised as the overestimation of an event having a positive outcome (Busenitz and Barney 1994; Tipu and Arain 2011) and has been researched with reference to entrepreneurs (Forbes 2005; Robinson and Marino 2015; Ucbasaran et al. 2010) and managers (Sautner and Weber 2009). Overconfidence in business undertakings represents the most severe bias in entrepreneurial decision-making processes (Zhang and Cueto 2017).

The research on overconfidence is conducted at the intersection of psychology and entrepreneurship, focusing both on a personal and a contextual dimension. A hubris theory of entrepreneurship models how more overconfident individuals are more likely to start and develop new ventures and how such ventures are also more likely to fail (Hayward et al. 2006).

The analysis of an entrepreneur's psychological behavior suggests that overconfidence leads to idealistic and unfeasible forecasts (Cassar and Gibson 2007). The correlation between confidence and competence is usually weak or nonexistent when comparing the claims with the facts. If entrepreneurs are overoptimistic, resource allocation decisions is compromised, leading to a negative impact on business performance (Dawson and Henley 2012). Failure to address pre-established goals may frustrate and constrain subsequent phases of development leading in the worstcases to business failure (De Meza and Southey 1996; Koellinger et al. 2007; Invernizzi et al. 2016).

Many methodological approaches are used to investigate the phenomenon, experiments, interviews, or large secondary dataset. A relevant aspect is to study the effects of overconfidence on performance as a moderate level of overconfidence might even be positive in terms of venture's success, given that a certain degree of risk propensity is useful to foster the ambition to grow.

This book centers on the understand-ing of the various dimensions of overconfidence in venture creation and devel-opment. It also seeks to present new research approaches and methodologies contributing to the understanding of this field. It adopts a holistic view in the chapters, including conceptual and theory, state-of-the-art situation, empirical research, and case studies, addressing:

- Research approaches to elicit overconfidence
- The implications of overconfidence
- The use of digital technology in reducing biases
- The role family Vs nonfamily firms in overconfident attitudes
- Entrepreneurial learning
- Acquisition skills and skills development
- Organizational, culture, and human resource issues
- Measuring overconfidence new venture creation

- Comparisons between different types of entrepreneurial venture
- The role of different institutional contexts
- Application of overconfidence in not business contexts

All in all, the purpose of this book is to provide a basic understanding of management from multiple aspects, and to decide which one best correlates to the businesses tone and model from a psychological stand point, and a scientific standpoint.

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Index

A.C. Invernizzi, *Overconfidence in SMEs*,
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