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THE INDIRECT IMPACT OF OVERCONFIDENCE ON THE PERFORMANCE OF TUNISIA FIRMS THROUGH THEIR FINANCING STRUCTURE

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ABSTRACT

In the current framework of behavioral corporate finance, this article studies the relationship between the managers' overconfidence and firm performance through the financing structure in the Tunisian context. Our model seeks to identify if the financing structure as a mediating variable between the performance and overconfidence. The empirical study is based on a sample of 56 firm managers for the year 2014. The results of the conducted regressions confirm the existence of a mediating effect of the financing structure on the relationship between overconfidence and the performance of Tunisian firms.

Keywords: Overconfidence, Financing structure, Firm's performance.

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Contribution/ Originality

This study is one of the few studies which have investigated the indirect impact of overconfidence on the performance of Tunisian firms through their financing structure; it is based on a new methodology that uses the theory of Baron and Kenny (1986) by utilising mediating variables to assess the relationship between the firm's overconfidence and performance.

1. INTRODUCTION

The literature review conducted from the perspective of behavioral finance shows that the majority of the work examine the direct relationship between leaders' overconfidence and the performance of the firm by ignoring the indirect relationship between these two variables (Bernardo and Welch, 2001; Ben-David *et al.*, 2006; Keiber, 2006). For this reason, the research wishes to establish and develop the field of behavioral finance to business psychology inspired by adopting a more realistic nature than generally the one used in economics (market finance and corporate). So, this is an exploratory study carried out primarily through a literature review. This development is similar to a complementary or even, in some respects, a revolution of paradigms. Indeed, some authors (Hermalin and Isen, 2000; Heaton, 2002) studying the behavioral approach in the context of rationality (mainly substantive) and other (Shiller, 1997) analyze the behavior outside this framework.

In our study, we will focus on explaining how work performance is not only dependent on the growth and skills directly related to the activity of labour but also on the conduct which constitutes an essential element in making financial decisions in the firm. To do this, we will undertake a questionnaire with directors of listed Tunisian firms. The purpose of this research is to explain the advantage of the behavioral approach apprehended by

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the leaders' overconfidence as an alternative explanation for the performance of the firm through the funding structure.

We fixed a reality, for a hypothetical-deductive approach, in order to detect the development of a research model based on a set of assumptions through the combination of theory on behavioral biases and exploratory qualitative study conducted on leaders. Our position is, in essence, positivist (Martinet, 1990; Wacheux, 1996) since it is based on a deductive approach to test questionable research hypotheses (Igalens and Roussel, 1998). Thus, we are trying in this research to describe the relationships between variables and test them to verify their loyalty when put to the test of reality in our sample of leaders.

Our research shows, then the following two sections: the first presents the theoretical model which posits that overconfidence could influence performance. In the midst of this direct relationship, interpose variables are related to the financing structure (equity, bank debt, bond debt and external equity). Besides, being influenced by leaders' overconfidence, these variables influence, in turn, performance. The second empirical section is designed to test the potential effect of the financing structure as a mediating variable between overconfidence and performance of the firm.

2. LITERATURE REVIEW AND HYPOTHESES

Overconfidence is the illusion of knowledge that makes individuals feel the accuracy of their information and capabilities as a selection (stock-picking). It is one of the most documented behavioral means (Daniel and Titman, 1999). In their synthesis on the foundations of behavioral finance, De Bondt and Thaler (1995) state that "overconfidence is one of the most relevant features in the psychology of judgment." These authors define an individual with excessive confidence in their own skills, abilities or knowledge.

This bias, associated with that of optimism, is a central aspect of the current literature on behavioral finance to business as highlighted by Baker *et al.* (2004): "Optimism is an unrealistic overestimation of future events, not related to personal skills, while overconfidence reflects an overestimation of the past" (Véronique, 2007). Explicitly, in the modeling of these two means, optimism is captured as an average error (overestimation) and overconfidence as an underestimation of the variance, but the two terms are often used interchangeably (Fairchild, 2005). In addition, these biases are often paralleled (Heaton, 2002; Gervais *et al.*, 2003) and combined, especially in the illusion of control when the individual thinks he can control, thanks to his abilities, purely random events. Thus, according to Daniel *et al.* (2001) overconfidence is stronger in activities that involve valuation difficulties, and this is why the feedback on the quality of the evaluation is ambiguous. Roll (1986) was the first to introduce the idea of optimistic and confident leader in finance. The principle defines the leaders of the acquiring companies as overestimating the gains resulting from these transactions and thus on average paying high prices for shareholders of target companies, thus leading to the phenomenon of the winner's curse. According to Weinstein (1980) excessive optimism is connected to trust; therefore, these two biases are distinct. Considering the definition of Hackbarth (2004) optimistic managers overestimate the earnings growth rate, while the on-confident managers underestimate the risks of gains. Hackbarth (2004) compares his model in the decisions of a biased and unbiased leader, he finds that optimism produces an overestimation of earnings growth rates, while overconfidence reduces the variance from expected results. Both effects lead to underestimate the probability of the investment project bankruptcy (Bernardo and Welch, 2001) consider that the presence of overconfident leaders play a positive role within the group and transmit private information about the area other leaders likely to follow. Indeed, the impact of overconfidence on financial decisions and business performance has been studied, both on a theoretical and empirical, since the early two miles. These early contributions confirm the effect of the bias, which is not necessarily negative, however.

Yet, few studies have tried to link the three dimensions in one perspective, i.e. trust, financing structure and performance. Indeed, this relationship is very complex; it must be specified by including the mediating concept of the financing structure. This assumes that the direct relationship between overconfidence and performance is rather an indirect relationship through the influence of the financing structure in enterprises. Therefore, the funding structure acts as a mediating variable in the relationship between leaders' overconfidence and business performance. Considering the scarcity of work, our research objective is to answer the question: how leader's overconfidence has an indirect effect on the performance of the firm through the firm's financing structure. Several theoretical developments and empirical tests have been developed to study the impact of the excess through confidence in the major financial decisions, namely the investment decision and the financing (Heaton, 2002; Hackbarth, 2004; Malmendier *et al.*, 2005). Several studies show that the direct relationship between the leaders' overconfidence and the firm performance is unstable. It can be positive, negative or non significant (Bernardo and Welch, 2001; Ben-David *et al.*, 2006; Keiber, 2006).

Therefore, it is recommended to introduce a mediating variable, the financing structure (apprehended by the various modes of financing, namely: self-financing, bank loans, bond debt and external equity) that allows to stabilize the impact of executives' confidence on business performance. We start with self-financing that plays a very important role, it increases the profitability of investments and business performance.

Indeed, leaders believe that being confident about the decisions they make will help to pursue conflicting objectives, namely: maximizing the fundamental value and minimizing capital costs. For this reason, confident leaders prefer internal financing (self-financing). However, self-financing is a free, renewable resource for leaders as for the company, it allows some financial independence, good control of financial charges, and gives the company freedom of action because it is independent of its creditors. Then, it is of lower cost. Besides, confident leaders think that self-financing would lead neither to a waste of funds nor to conservatism, but rather it would have a leverage accelerator to research new ideas. All these arguments lead us to say that cash is more interesting for leaders and for good performance. We then deduce the following hypothesis:

H1: The use of self-financing positively mediates the relationship between overconfidence managers and performance of the firm.

Hackbarth (2004) develops a model of capital structure based on the trade-off theory to study the impact of bias optimism and managerial confidence on the financial policy and the company's value. He believes in optimism by overestimating earnings growth rates and trust by an underestimation of the variance results anticipated by management. The author examines leaders' confidence about choosing a high debt ratio and emits mostly debt relative to rational leaders, which significantly impacts the capital structure.

According to Jensen and Meckling (1976) companies' debt is considered as one of the leaders' control tool that reduces discretionary cash flow.

According to several studies and research, debt plays a very important role in explaining the performance of businesses, namely the study of Modigliani and Miller (1958).

Furthermore, the confident leaders' use of debt is a way to support business operations, improve productivity and stimulate economic growth on the one hand, and increases their performance on the other. Moreover, confident leaders prefer this type of funding, that pushes for modernization and innovation, and streamline production because debt compresses manufacturing costs. It therefore appears that the debt is required for the performance of the company. It is considered as a sacrifice of economic resources today in the hope of obtaining higher revenues in the future. From this point of view, should be favored by innovative firms with high quality.

In addition, debt (bank or bond) opens more prospects other than financing alternatives. Indeed, a company issuing a bond sells its signature, hence its "serious" and "reputation" on the market, so that when the company

launches bidding to acquire the equipment they need as part of the project, suppliers know that it has already funds. This has considerable influence on performance.

We then deduce the following assumptions:

H2: The recourse to bank debt positively mediates the relationship between overconfidence managers and performance of the firm..

H3: The use of bond debt positively mediates the relationship between overconfidence managers and performance of the firm.

The use of external capital is also an important operation for the company; it allows the structures of the company to consolidate its business. Indeed, the company can better manage its working capital or even increase it. In addition, it will gain in economic credibility, to the extent that it may strengthen its capital base. Finally, this operation evokes stability in his favor of shareholders, associates and creditors. The confident leaders feel that this transaction as it increases the capital is important in the lives of enterprises to strengthen capital and ensure balanced economic development project.

Moreover, the capital increase is an acquisition mode of the company but also serves to strengthen its balance sheet when the company is financially weakened. Thus, it improves the ratio of financial independence and leaves room for new debt capacity. This method of financing has a major advantage over the performance of the firm, since it is free which automatically leads to an increase in equity and therefore stable resources and turnover of the company funds, resulting in a good financial health of the business. However, to our knowledge, no studies have been conducted yet to show the intermediary role of the financing structure in the relationship of trust on leadership and performance of the firm. We then deduce the following hypothesis:

H4: The use of external funds positively mediates the relationship between overconfidence managers and performance of the firm.

3. EMPIRICAL ANALYSIS

This section is designed to test the mediating effect of the financing structure in the relations between overconfidence managers, on one hand, and the performance of the firm, on the other. First, we will present our sample, the dependent and independent variables and the multivariate analysis method (hierarchical). The presentation and interpretation of the results of this study will be a second subsection.

3.1. Presentation of Data Variables and Measures

For our research, a study data from the annual reports of 56 listed companies in the Tunisian stock exchange in Tunis for the year 2014 and a questionnaire (conducted for my master thesis) sent to their leaders are conducted. These companies belong to the industrial, service, media and travel sectors.

Our study includes 3 main variables: the dependent variable: the performance of the firm, an independent variable: overconfidence and a mediating variable: the funding structure (self-financing, bank debt, bond debt and external funds).

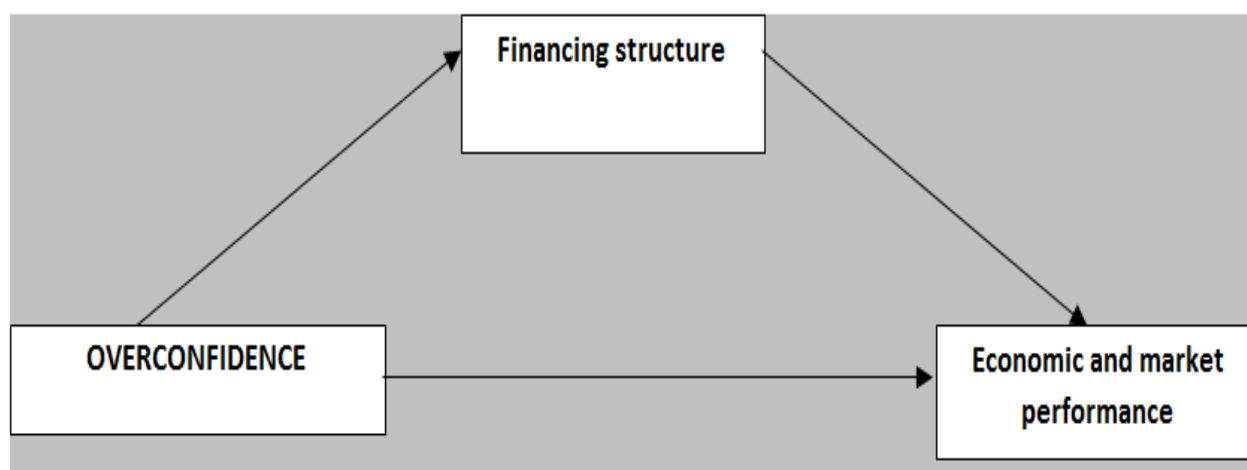


Figure-1. Conceptual model of the mediating effect of the financing structure in the relationship of overconfidence with the performance of the firm

Source: Manel (2015).

3.1.1. Dependent Variable: The Performance of the Firm

Performance is the ending result of all efforts of a company the company's efforts. Indeed, they are doing the right thing in the right way, at the right time and cost to produce good results that meet the needs and expectations of customers, giving them satisfaction and achieving the goals set by the organization.

We can say that a successful company must be both effective and efficient¹. It is effective when it accomplishes the objectives it has set to minimize the resources implemented. It is also effective when it reaches the goals it has set to achieve the welfare of its stakeholders 'parts. Furthermore, performance is measured with qualitative or quantitative indicators of outcome. To measure effectiveness, we will be using a criterion that expresses a relationship between the result and the goal. To measure efficiency, we will be using a criterion that expresses a relationship between the result obtained and the means used.

To evaluate the performance of a company, it is necessary to set measures at all levels: economic and financial. Like previous studies, we define the economic performance of the firm by the Return On Assets "ROA" operating income before depreciation and R & D / total assets (Zouari and Zouari-Hadji, 2014a; 2014b)² and financial performance by the Market to Book "MTB" = market capitalization / book value of equity (Zouari and Zouari-Hadji, 2014a; 2014b).

3.1.2. Independent Variable: Overconfidence

The identification of relevant and operational measure of overconfidence is not an easy exercise to handle in the sense that this measure must be earlier and exogenous to the decision in order to determine the direction of causality (Véronique, 2007). According Malmendier and Tate (2005b) two different approaches to measure this way: the first is an approach called "internal" bias, it is revealed preference by the leader himself through his answers to a

¹According Charreaux (1999). efficiency "refers to the performance of a collective entity appreciated by the welfare provided to its stakeholders, that is to say by all the individuals whose the utility is affected by the decisions of the entity. However, efficiency is a different concept that refers to the means used by the players to achieve their goals. a negotiation is deemed effective if the actors have used their best resources to achieve their goals. The aggregation of the effective behavior of individuals does not necessarily lead to produce an efficient organizational behavior. In some cases, we also will bead efficiency "informational" to describe the ability of markets to reflect the information in prices. "

²This measure of performance accounting has the advantage of eliminating the effect of accounting choices related to the treatment of R & D expenses in the financial statements largely prone to opportunism of the leaders.

questionnaire or the exercise of such stock options. The second so-called "external" approach is to analyze the perception and description of the leader by third parties such as the press. Russo and Schoemaker (1992) propose specific questions and ask the leaders to rank the relevance of questions about their work.

The introduction of different questions depending on the questioned individual aims at improving inter-individuals comparison, and therefore, detect overconfidence. This requires an individual pre-calibration of the relevance and difficulty of the questions. Ben-David *et al.* (2006) used a simpler methodology, the same question is asked to all leaders (expected evolution of the market index, but general issue which can assume relevant to CFOs of listed companies that constitute the sample) every quarter for four years. Overconfidence is then measured by the difference between volatility perceived *ex ante* and the actual volatility of the index calculated *ex post*.

In our study, we chose the questionnaire as a tool for measuring overconfidence. The questionnaires are questions based on the investor profile developed by the research unit on savings (PES) of the company Fern Hill. Each item is encoded by a Likert scale of 5 points (from "strongly disagree" = 1 to "strongly agree" = 5).

3.1.3. Mediating Variable: The Financing Structure

In our study, the mediating variables related to the financing structure are self-financing, bank debt, bond debt and external funds. To measure these variables, we use financial statements of listed Tunisian firms for 2014.

3.1.4. Control Variables

For more results reliability, we have introduced control variables that have a significant effect on performance. The multiple linear regression models used in this empirical study retain the size of the company and its industry. The firm size is measured by the natural logarithm of total company assets. This measure has been used in several studies such as (Nekhili *et al.*, 2012; Zouari and Zouari-Hadji, 2013;2014a;2014b). The industry is a dummy variable taking the value 1, if firms belong to a high-tech sector and 0 if not. This measure has been used by several researchers such as Zouari and Zouari-Hadji (2013;2014a;2014b) and Zouari and Zouari-Hadji (2010).

The explanatory and control variables influence the performance of the company and check its multidimensionality. They are as distinct from each other and present as shown in Appendix Table 9, a low correlation and / or non-significant between them.

3.2. The Modeling Assumptions

The empirical study of this research is based on the use of hierarchical regression models³ to test research hypotheses. To verify all assumptions, we need to test the existence of a mediator. The verification of this effect is achieved by the construction of three models. According to Baron and Kenny (1986), four conditions to be checked to verify a complete mediating effect of M in the framework of the X-Y relationship:

- ✓ Condition (1): the variable X must have a significant impact on variable Y.
- ✓ Condition (2): the variable X must have a significant impact on M.

³ In this work, the treatment of mediating variables should follow the approach devised by Baron and Kenny (1986). This framework, which aims at testing the mediating effect, is implemented via a multiple-hierarchical regression. This analysis consists in assessing the total effect (cumulative) of the explanatory variables on a certain criterion. The method can be performed on the basis of several steps. Firstly, it undertakes to test the predictor effect (independent variable) firstly on the criterion (dependent variable) and, secondly, on the mediator using partial and simple regressions. Then, the other relationship has to be tested (predictor and mediator on the criterion). In this case, a multiple-hierarchical regression has to be applied. It consists in gradually introducing certain independent variables into the regression-equation: starting with the predictors and control variables (Step 1), then the mediating variable (Step 2). On reaching an increase in the adjusted R² after inserting the mediator, one is able to assume the mediator effect on the relationship between the predictor and the criterion Zouari and Zouari-Hadji (2014a; 2014b).

- ✓ Condition (3): the supposed mediator variable M has significantly influence the variable Y, where the influence of variable X on Y is controlled.
- ✓ Condition (4): the significant influence of the variable X on Y should disappear when the effect of M on Y is controlled statistically.

Econometrically, we estimate models 1-3 testing the indirect relationship between the trust and on firm performance by the effect of the financing structure (self-financing). These models allow the validation of the hypothesis (H1)

$$(1) \text{ PERF } i = \beta_0 + \beta_1 \text{ SCONF } i + \beta_2 \text{ TAIL } i + \beta_3 \text{ SECT } i + \varepsilon_i$$

$$(2) \text{ AUTOF } i = \beta_0 + \beta_1 \text{ SCONF } i + \beta_2 \text{ TAIL } i + \beta_3 \text{ SECT } i + \varepsilon_i$$

$$(3) \text{ PERF } i = \beta_0 + \beta_1 \text{ SCONF } i + \beta_2 \text{ AUTOF } i + \beta_3 \text{ TAIL } i + \beta_4 \text{ SECT } i + \varepsilon_i$$

Equations 4-6 test the indirect relationship between the firm's overconfidence and its performance by the effect of the financing structure (bank debt). These equations are used to validate the hypothesis (H2)

$$(4) \text{ PERF } i = \beta_0 + \beta_1 \text{ SCONF } i + \beta_2 \text{ TAIL } i + \beta_3 \text{ SECT } i + \varepsilon_i$$

$$(5) \text{ DETTE BANC } i = \beta_0 + \beta_1 \text{ SCONF } i + \beta_2 \text{ TAIL } i + \beta_3 \text{ SECT } i + \varepsilon_i$$

$$(6) \text{ PERF } i = \beta_0 + \beta_1 \text{ SCONF } i + \beta_2 \text{ DETTE BANC } i + \beta_3 \text{ TAIL } i + \beta_4 \text{ SECT } i + \varepsilon_i$$

Equations 7-9 test the indirect relationship between firm's overconfidence and its performance by the effect of the financing structure (bond debt). These equations are used to validate the hypothesis (H3)

$$(7) \text{ PERF } i = \beta_0 + \beta_1 \text{ SCONF } i + \beta_2 \text{ TAIL } i + \beta_3 \text{ SECT } i + \varepsilon_i$$

$$(8) \text{ DETTE OBLIGA } i = \beta_0 + \beta_1 \text{ SCONF } i + \beta_2 \text{ TAIL } i + \beta_3 \text{ SECT } i + \varepsilon_i$$

$$(9) \text{ PERF } i = \beta_0 + \beta_1 \text{ SCONF } i + \beta_2 \text{ DETTE OBLIGA } i + \beta_3 \text{ TAIL } i + \beta_4 \text{ SECT } i + \varepsilon_i$$

Equations 10-12 test the indirect relationship between firm's overconfidence and its performance by the effect of the financing structure (external funds). These equations are used to validate the hypothesis (H4)

$$(10) \text{ PERF } i = \beta_0 + \beta_1 \text{ SCONF } i + \beta_2 \text{ TAIL } i + \beta_3 \text{ SECT } i + \varepsilon_i$$

$$(11) \text{ FONDS EXT } i = \beta_0 + \beta_1 \text{ SCONF } i + \beta_2 \text{ TAIL } i + \beta_3 \text{ SECT } i + \varepsilon_i$$

$$(12) \text{ PERF } i = \beta_0 + \beta_1 \text{ SCONF } i + \beta_2 \text{ FONDS EXT } i + \beta_3 \text{ TAIL } i + \beta_4 \text{ SECT } i + \varepsilon_i$$

With,

- PERF_i: Variable measured by ROA ratios and MTB of firm_i,
- SCONF_i: Score overconfidence calculated through a questionnaire of firm_i,
- AUTOF_i: This is the result of firm_i + amortization,
- FONDS EXT_i: External capital firm_i, the capital increase,
- DETTE BANC_i: Bank debt of the company_i,
- DETTE OBLIGA_i: Bond debt of the company_i,

- TAIL_i: The natural logarithm of total assets of firm _i,
- SECT_i: A binary variable which takes the value 1 if the firm _i belongs to a high-tech industry sector, and 0 inversely,
- B₀, β₁, β₂, β₃, β₄, β₅, β₆: Parameter estimate,
- ε_i: standard error.

3.3. Presentation and Interpretation of Results

This section aims to present the results of the testing hypotheses that relate to overconfidence to the company's performance (ROA, MTB) through the financing structure (AUTOF, DETTE BANC, DEETE OBLIGA, FONDS EXT). In order to submit our assumptions, we estimated models of separate regressions for each of the four stages of the process of Baron and Kenny (1986).

Model 1 (reduced model) contains the independent variable and the control variables in predicting the performance of the firm. Model 2 on the other side (reduced model), seeks to explain the variation of the mediator variable (financing structure) in a third step by the independent variable (SCONF) and control variables. Model 3 (full model) includes all the variables: the independent variable (SCONF) and mediating variables (AUTOF, DETTE BANC, DEETE OBLIGA, FONDS EXT). The control variables (TAIL, SECT) seeking to explain the variable dependent, ie the performance of the firm.

3.3.1. Interpreting the Results of the Indirect Relationship between the Overconfidence and Firm Performance through Self-Financing

According to the results in Table 1, the first condition was met, as the Model 1 (which tests the relationship between the variable SCONF and ROA) has a low explanatory power (R² adjusted = 0.041). The overall quality of the model is significantly acceptable (F = 0.163 at the 10% threshold), however, when performance is measured by MTB, the model in question has a very low explanatory power (R² adjusted = 0.019), and test Fisher becomes insignificant (F = 0.269, p > 10%). The Student's tests reveal that SCONF variable has a positive and significant impact when performance is measured by ROA (β = 0.236, t = 1.704, p < 10%), while MTB is not significant (β = -0.093, t = -0.661, p > 10%).

The objective of the second step is to demonstrate the existence of a relationship between SCONF and AUTOF. Model 2 shows that overall quality is statistically significant at the 10% level and the SCONF variable is positively and significantly associated with AUTOF Tunisian companies (β = 0.214, t = 2.080, p < 5%), and hence the second condition in the approach Baron and Kenny (1986) holds true.

Table-1. Results of Hierarchical Regression of steps 1 and 2 (model 1 and 2) to Tunisian Company

Variables		Step 1 Model 1				Step 2 Model 2	
		Firm's performance				Self-Financing	
		ROA		MTB		β	t
β	t	β	t				
V. control	TAIL	-0.201	-1.501 n.s	0.042	0.314 n.s	0.587	5.927 ***
	SECT	-0.059	-0.430 n.s	0.227	1.638 *	-0.230	-2.267 n.s
V. independent	SCONF	0.236	1.704 *	-0.093	-0.661 n.s	0.214	2.080 **
R ² adjusted		0.041		0.019		0.474	
F		0.163 *		0.269 n.s		0.000 *	

*** Significant at 1%, ** significant at 5%, * significant at 10%, n.s: not significant

Examining the results of Table 2 reveals a positive and significant relationship between self-financing and the two indicators of firm performance (ROA and MTB), from these results we can see that self-financing has a positive impact on the economic and market performance of the company (for ROA, $\beta = 0.034$, $t = 0.045$, $p < 5\%$; and for MTB: $\beta = 0.088$, $t = 0.098$, $p < 10\%$).

Model 3 (full model) is used to verify third-mediated condition of self-financing between SCONF and firm performance (ROA and MTB). The results of the hierarchical regression analysis indicate that the self-financing (mediating variable) remains important in explaining the dependent variable (the two forms of performance) after considering the predictor variable. The statistical coefficient of AUTOF variable has a positive and significant value to ROA ($\beta = 0.002$, $t = 0.032$, $p < 10\%$) and also with respect to MTB ($\beta = 0.065$, $t = 0.078$, $p < 10\%$). It appears from these results that the third condition is completely verified.

It only remains to verify the last condition, that is to say the effect of the predictor SCONF on the dependent variable (ROA and MTB) which should not be significant once the possible mediator (AUTOF) is considered.

The results in Table 2 show that the coefficients associated with the variable SCONF are statistically significant for the indicator (ROA) of the performance of the firm ($\beta = 0.271$, $t = 1.872$, $p < 10\%$) and non-significant for MTB ($\beta = 0.078$, $t = -0.528$). It follows that the mediation by self-financing is a partial mediation on confidence and performance of the firm. Through these results, we see that the SCONF variable has a positive effect when the firm performance is measured by MTB. From these results, the hypothesis 1 is confirmed (partial mediation) with Tunisian companies.

Table-2. Results of hierarchical regression steps 3 and 4 (Model 3) to Tunisian companies

Variables		Step 3				Step 3 and 4 Model 3			
		Firm's performance				Firm's performance			
		ROA		MTB		ROA		MTB	
		β	t	β	T	β	t	β	t
V. control	TAIL	-0.124	-0.697 n.s	0.089	0.506 n.s	-0.106	-0.609 n.s	0.084	0.473 n.s
	SECT	-0.140	-0.960 n.s	0.223	1.556 n.s	-0.096	-0.668 n.s	0.211	1.439 *
V. Independent	SCONF	-	-	-	-	0.271	1.872 *	0.078	-0.528 n.s
V. mediator	AUTOF	0.034	0.045 **	0.088	0.098 *	0.002	0.032 *	0.065	0.078 *
R ² adjusted		0.053		0.051		0.098		0.095	
F		0.049**		0.095*		0.002*		0.056*	
Adjusted R ² variation						0.057		0.076	

*** Significant at 1%, ** significant at 5%, *: significant at 10%, n.s: not significant

From Table 2 (Model 3), we found that the control variables (TAIL, SECT) are not statistically significant for both indicators of firm performance (ROA, MTB), except the coefficient of SECT variable that is statistically significant for the MTB indicator ($\beta = 0.211$, $t = 1.439$, $p < 10\%$). Indeed, the industry has a positive impact on the market performance. However, the company size is not an important factor in analyzing the performance of the firm.

According to Table 2, for both measures of performance, Model 3 (full model) has an interesting adjusted explanatory power. Thus, this comprehensive model, which takes into account the mediating effect of self-financing, also increases the percentage of explained variance from Model 1, in cases where performance is measured by ROA, adjusted R² passes from 0.041 to 0.098. Similarly, when performance is measured by MTB, adjusted R² passes from 0.019 to 0.095 and the F statistic becomes significant in Model 3 at the 10% threshold than that in the Model 1 (not significant). The adjusted R² of increase is linked to the consideration of the mediating effect of self-financing, so the

change in adjusted R² for the two models associated with the addition of the mediating variable is significant (0.057 and 0.076).

This shows that this variable is a good predictor of the dependent variable, namely the performance of the firm. The mediator variable (AUTOF) allows us to better explain the causal relationship between overconfidence and the performance of the firm.

3.3.2. Interpreting the Results of the Indirect Relationship between the Overconfidence and Firm Performance through Bank Debt

Consistent with previous results, the first condition of the relationship between the variable SCNF and ROA was filled (see Table 3).

The objective of the second step is to demonstrate the existence of a relationship between SCNF and bank debt (BANK DEBT). Model 2 shows that the overall quality is statistically significant at the 10% level and the SCNF variable is positively and significantly associated with BANK DEBT Tunisian companies ($\beta = 0.045$, $t = 0.098$, $p < 10\%$), and the second condition of Baron and Kenny (1986) holds true.

Table-3. Results of Hierarchical Regression of Steps 1 and 2 (model 1 and 2) to Tunisian companies

Variables		Step 1 Model 1				Step 2 Model 2	
		Firm's performance				Bank debt	
		ROA		MTB		β	t
		β	t	β	t		
V. control	TAIL	-0.201	-1.501 n.s	0.042	0.314 n.s	0.465	4.670 ***
	SECT	-0.059	-0.430 n.s	0.227	1.638 *	0.526	5.158 ***
V. independent	SCNF	0.236	1.704 *	-0.093	- 0.661 n.s	0.045	0.098 *
R ² adjusted		0.041		0.019		0.325	
F		0.163 *		0.269 n.s		0.08	

*** Significant at 1%, ** significant at 5%, *: significant at 10%, n.s: not significant

Examining the results of Table 4 shows a significant positive relationship between bank debt and both indicators of firm performance (ROA and MTB). From these results we see that bank debt has a positive impact on the economic and market performance of the company (for ROA, $\beta = 0.065$, $t = 0.096$, $p < 10\%$; and for MTB: $\beta = 0.015$, $t = 0.045$, $p < 5\%$).

Model 3 (full model) is used to verify third-mediated condition in bank indebtedness between SCNF and firm performance (ROA and MTB). The results of the hierarchical regression analysis indicate that bank debt (mediating variable) remains important in explaining the dependent variable (the two forms of performance) after considering the predictor variable. The statistical coefficient of the variable "DEBT BANK" has a positive and significant value compared to the ROA ($\beta = 0.028$, $t = 0.150$, $p < 10\%$) as compared to MTB ($\beta = 0.056$, $t = 0.086$, $p < 10\%$). It appears from these results that the third condition is completely verified. It only remains to verify the last condition, that is to say the effect of the predictor SCNF on the dependent variable (ROA and MTB) which should not be significant once the possible mediator (DEBT BANC) is considered.

The results in Table 4 show that the coefficients associated with the variable SCNF are not statistically significant whatever the extent of the performance will be then it was statistically significant at the first step of the process of Baron and Kenny (1986) when compared to measuring the performance ROA. The regression coefficients of the variable SCNF have insignificant signs relative to ROA ($\beta = 0.012$, $t = -0.158$, $p > 10\%$) and the MTB ($\beta = -0.068$, $t = -0.490$, $p > 10\%$). It follows that the mediation by bank debt is between full confidence on and performance of the firm. From these results, the hypothesis is validated with two Tunisian companies.

Table-4. Results of hierarchical regression steps 3 and 4 (Model 3) to Tunisian companies

Variables		Step 3				Step 3 and 4 Model 3			
		Firm's performance				Firm's performance			
		ROA		MTB		ROA		MTB	
		β	t	β	T	β	t	β	t
V. control	TAIL	0.112	1.166 *	0.180	1.148 *	0.020	1.730 *	0.186	1.174 *
	SECT	0.156	0.060 *	0.412	2.581 **	0.068	1.689 *	0.390	2.325 **
V. independent	SCONF	-	-	-	-	0.012	-0.158 n.s	-0.068	-0.490 n.s
V. mediator	DETTE BANC	0.065	0.096 *	0.015	0.045 **	0.028	0.150 *	0.056	0.086 *
R ² ajusté		0.056		0.065		0.057		0.039	
F		0.042 **		0.091 *		0.053*		0.098 *	
Adjusted R ² variation						0.016		0.002	

*** Significant at 1%, ** significant at 5%, *: significant at 10%, n.s: not significant

From Table 4 (Model 3), we note that the control variables (TAIL, SECT) are statistically significant for both indicators of firm performance thresholds of 5% and 10%. These results are consistent with the work of Strahan (1999) stipulating that the size of the company and the industry are two indicators necessary for the evaluation of the performance of a company. The results of these two variables emphasize their importance among the leaders in the financial decisions (financing, investment ...).

According to Table 4, for both measures of performance, Model 3 (full model) has an interesting adjusted explanatory power. Thus, this comprehensive model, which takes into account the effect of the mediator bank debt, also increases the percentage of explained variance from Model 1. In cases where performance is measured by ROA, adjusted R² passes from 0.041 to 0.057. Similarly, when performance is measured by MTB, adjusted R² passes from 0.019 to 0.039 and the F statistic becomes significant in Model 3 at the 10% threshold than that of the Model 1 (not significant). The adjusted R² of increase is related to the consideration of the mediating effect of bank debt. Thus, the variation of adjusted R² for both models associated with the addition of the variable is an important mediator (0.016 and 0.002). This shows that this variable is a good predictor of the dependent variable, namely the performance of the firm.

3.3.3. Interpreting the Results of the Indirect Relationship between the Overconfidence and Firm Performance through the Bond Debt

Consistent with the previous results, the first condition of the relationship between the variable SCONF and ROA was filled (see Table 5). The objective of the second step is to demonstrate the existence of a relationship between SCONF and bond debt (DEBT OBLIGA). Model 2 shows that overall quality is statistically significant at the 10% level and the SCONF variable is positively and significantly associated with DEBT OBLIGA Tunisian companies ($\beta = 0.065$, $t = 0.038$, $p < 10\%$), and the second condition of Baron and Kenny (1986) holds true.

Table-5. Results of Hierarchical Regression of Steps 1 and 2 (model 1 and 2) to Tunisian Companies

Variables		Step 1 Model 1				Step 2 Model 2	
		Firm's performance				Bond debt	
		ROA		MTB		β	t
		β	t	β	t		
V. control	TAIL	-0.201	-1.501 n.s	0.042	0.314 n.s	0.294	2.340 **
	SECT	-0.059	-0.430 n.s	0.227	1.638 *	0.332	2.583 **
V. independent	SCONF	0.236	1.704 *	-0.093	-0.661 n.s	0.065	0.038 *
R ² ajusté		0.041		0.019		0.154	
F		0.163 *		0.269 n.s		0.080	

*** Significant at 1%, ** significant at 5%, *: significant at 10%, n.s: not significant

Examining the results of Table 6 shows a positive and significant relationship between the bond debt and both indicators of firm performance (ROA and MTB). From these results, we see that the bond debt has a positive impact on the economic and market performance of the company (for ROA, $\beta = 0.027$, $t = 0.178$, $p < 10\%$; and for MTB: $\beta = 0.026$, $t = 0.046$, $p < 10\%$).

Model 3 (full model) is used to verify third-mediated condition of the bond debt between SCONF and firm performance (ROA and MTB). The results of the hierarchical regression analysis indicate that the bond debt (mediating variable) remains important in explaining the dependent variable (the two forms of performance) after considering the predictor variable. The statistical coefficient of the variable DEBT OBLIGA has a positive and significant value compared to the ROA ($= 0.004$, $t = 0.030$, $p < 10\%$) as compared to MTB ($\beta = 0.186$, $t = 0.076$, $p < 10\%$). It appears from these results that the third condition is completely verified. It only remains to verify the last condition, that is to say the effect of the predictor SCONF on the dependent variable (ROA and MTB) which should not be significant once the possible mediator (DETTE OBLIGA) is considered.

The results in Table 6 show that the coefficients associated with the SCONF variable are statistically significant for both indicators of the performance of the firm (for ROA: $\beta = 0.236$, $t = 1.678$, $p < 10\%$ and MTB: $\beta = 0.163$, $t = 0.012$, $p < 10\%$). It follows that bond debt is not a mediating variable on overconfidence and performance of the firm. From these results, the hypothesis 3 is not validated with Tunisian companies.

Table-6. Results of Hierarchical Regression Steps 3 and 4 (Model 3) to Tunisian Companies

Variables		Step 3				Step 3 and 4 Model 3			
		Firm's performance				Firm's performance			
		ROA		MTB		ROA		MTB	
		β	T	β	t	β	T	β	t
V. control	TAIL	- 0.172	- 1.199 n.s	0.086	0.620 n.s	-0.202	-1.423 n.s	0.096	0.680 n.s
	SECT	- 0.130	- 0.903 n.s	0.311	2.223 **	-0.060	-0.411 n.s	0.288	1.965 *
V. independent	SCONF	-	-	-	-	0.236	1.678 *	0.163	0.012 *
V. mediator	DETT E OBLIA	0.027	0.178 *	0.026	0.046 *	0.004	0.030 *	0.186	0.076 *
R ² adjusted		0.022		0.041		0.059		0.028	
F		0.055 *		0.101 *		0.067 *		0.086 *	
Adjusted R ² variation						0.018		0.009	

*** Significant at 1%, ** significant at 5%, *: significant at 10%, n.s: not significant

From Table 6 (Model 3), we find that the control variables (TAIL, SECT) are not statistically significant for both indicators of firm performance (ROA, MTB), except the variable coefficient SECT which is statistically significant for the MTB indicator ($\beta = 0.288$, $t = 1.965$, $p < 10\%$). We conclude then that the industry has a positive impact on the market performance, as the company size is not an important factor in analyzing the performance of the firm. This leads us to also consider that large companies do not have necessarily a high level of confidence on leadership and high performance.

According to Table 6 for both measures of performance, Model 3 (full model) has an interesting adjusted explanatory power. Thus, this comprehensive model, which takes account of the bond debt mediate, also increases the percentage of explained variance from the Model 1. In cases where performance is measured by ROA, adjusted R² passes from 0.041 to 0.059. Similarly, when performance is measured by MTB, adjusted R² Passes from 0.019 to 0.028 and the F statistic is significant at the 10% level in Model 3 than in Model 1 (not significant).

The adjusted R² of increase is related to the consideration of the mediating effect of the bond debt. The change in adjusted R² for the two models associated in addition with the mediating variable is significant (0.018 and 0.009).

This shows that this variable is a good predictor of the dependent variable, namely the performance of the firm. But, these results do not confirm our hypothesis (H3).

3.3.4. Interpreting the Results of the Indirect Relationship between the Overconfidence and Firm Performance through External Funds

Consistent with previous results, the first condition of the relationship between the variable SCONF and ROA was filled (see Table 7).

The objective of the second step is to demonstrate the existence of a relationship between SCONF and external funds. Model 2 shows that the overall quality is statistically significant at the 10% level and the SCONF variable is positively and significantly associated with FONDS EXT Tunisian companies ($\beta = 0.257$, $t = 1.990$, $p < 10\%$), and the second condition of Baron and Kenny (1986) holds true.

Table-7. Results of Hierarchical Regression of Steps 1 and 2 (model 1 and 2) to Tunisian Companies

Variables		Step 1 Model 1 Firm's performance				Step 2 Model 2 External Funds	
		ROA		MTB		β	t
		β	t	β	t		
V. control	TAIL	- 0.201	- 1.501 n.s	0.042	0.314 n.s	0.320	2.565 **
	SECT	- 0.059	- 0.430 n.s	0.227	1.638 *	- 0.096	- 0.755 n.s
V. independent	SCONF	0.236	1.704 *	- 0.093	- 0.661 n.s	0.257	1.990 *
R ² adjusted		0.041		0.019		0.169	
F		0.163 *		0.269 n.s		0.050	

*** Significant at 1%, ** significant at 5%, *: significant at 10%, n.s: not significant

Examining the results of Table 8 reveals a positive and significant relationship between external funds and two indicators of firm performance (ROA and MTB). From these results, we see that external funds have a positive impact on the economic and market performance of the company (for ROA: $\beta = 0.032$, $t = 0.006$, $p < 10\%$; and for MTB: $\beta = 0.091$, $t = 0.075$, $p < 10\%$).

Model 3 (full model) is used to check the condition of third mediation between own external funds SCONF and firm performance (ROA and MTB). The results of the hierarchical regression analysis indicate that external funds (mediating variable) remain important in explaining the dependent variable (the two forms of performance) after considering the predictor variable. The statistical coefficient of the variable FONDS EXT has a positive and significant value compared to the ROA ($\beta = 0.015$, $t = 0.066$, $p < 10\%$) and MTB ($\beta = 0.022$, $t = 0.058$, $p < 10\%$). It appears from these results that the third condition is completely verified. The results in Table 8 show that the coefficients associated with the variable SCONF are not statistically significant regardless of the extent of the performance of the firm retained, while it was statistically significant for the ROA in the first step of the process Baron and Kenny (1986), the regression coefficients of the variable SCONF have no significant signs relative to ROA ($\beta = 0.082$, $t = 0.875$, $p > 10\%$) and the MTB ($\beta = -0.077$, $t = -0.527$, $p > 10\%$). It follows that the mediation by external funds is full on between the overconfidence and performance of the firm. Through these results, we see that the SCONF variable has a positive effect on firm performance. The assumption 4 is then validated with Tunisian companies. According to Table 8 for the two performance measures, Model 3 (full model) has an interesting adjusted explanatory power. Thus, this comprehensive model, which takes into account the mediating effect of external capital, also increases the percentage of variance explained from the Model 1. In cases where performance is measured by ROA, adjusted R² passes from 0.041 to 0.089. Similarly, when performance is measured by MTB, adjusted R² Passes from 0.019 to 0.056 and the F statistic is significant at the 10% level in Model 3 that

the Model 1 (not significant). The adjusted R² of increase is linked to the consideration of the mediating effect of external funds.

The change in adjusted R² for the two models associated with the addition of the mediating variable is significant (0.048 and 0.037). This shows that this variable is a good predictor of the dependent variable, namely the performance of the firm.

Table-8. Results of Hierarchical Regression Steps 3 and 4 (Model 3) to Tunisian Companies

Variables		Step 3				Step 3 and 4 Model 3			
		Firm's performance				Firm's performance			
		ROA		MTB		ROA		MTB	
		β	T	β	t	β	t	β	t
V. control	TAIL	0.065	1.723 *	0.057	0.398 n.s	0.188	1.668 *	0.062	0.425 n.s
	SECT	- 0.131	- 0.950 n.s	0.238	1.753 *	-0.072	- 0.519 n.s	0.221	1.575 n.s
V. independent	SCONF	-	-	-	-	0.082	0.875 n.s	-0.077	- 0.52 n.s
V. mediator	FONDS EXT	0.032	0.006 *	0.091	0.075 *	0.015	0.066 *	0.022	0.058 *
R ² adjusted		0.015		0.027		0.089		0.056	
F		0.009 *		0.056 *		0.075 *		0.098 *	
						0.048		0.037	

*** Significant at 1% , ** significant at 5% , * : significant at 10% , n.s: not significant

The results in Table 8 (Model 3) show that the control variables (TAIL, SECT) are not statistically significant for both indicators of the performance of the firm, unless the statistical coefficient of TAIL variable has a positive value and significance compared to ROA ($\beta = 0.188$, $t = 1.668$, $p < 10\%$). This result is consistent with the work of Strahan (1999) stipulating that the size of the business is a necessary indicator for evaluating the performance of a company. We believe that the company size is a decisive and significant criterion for the firm's performance and financing structure.

From these results, we note that the Tunisian listed firms in the Tunis stock exchange seem to prioritize their funding resources by favoring self-financing at the expense of external resources. If they have to resort to external funding, they prefer the obligator bank debt. The validation of the funding hierarchical theory is based on the existence of asymmetric information that could lead to adverse selection problems from external investors. The role of information asymmetry on the choice of Tunisian companies funding is confirmed. The most sensitive information asymmetry reveals that companies rely primarily on debt. However the least affected by adverse selection companies prefer the emissions of capital.

4. CONCLUSION

Under the current behavioral finance companies, this article examined the relationship between the company's overconfidence and performance through the funding structure. The emerging literature on overconfidence confirms the marked presence of bias among business leaders. Theoretical approaches, however, do not conclude in a systematically negative effect, particularly in the case of a moderate confidence.

Several studies show the positive effect of managers' overconfidence on financial decisions (DeBondt and Thaler, 1994; Bukszar, 2003; Véronique, 2007). The majority of these studies focus on the direct relationship between managers' overconfidence and performance without taking account of other intermediate factors that may be relevant for the understanding of this indirect relationship.

Empirically, the regression results show that leader's overconfidence has an impact on the performance of Tunisian companies through the mediation of the financing structure. Indeed, these results indicate that Tunisian

companies have an interest to finance their activities and investments using the various modes of financing such as self-financing, bank loans, bond debt and equity external funds can be to increase their performance. Moreover, we noted that the confidence of the manager plays an important role in improving the performance of Tunisian companies.

The modeling of relations between the three concepts, namely overconfidence / financing structure / firm performance, could be summarized as follows. Because the funding structure could act as a mediating variable, checking this mediating effect was achieved by developing models based on variables selected in this study.

In this respect, our results indicate that the SCNF variable is relevant in determining the mediate with the methodology of Baron and Kenny (1986). Indeed, considering the mediating variable, the financing structure improves in a significant way the explanatory power of the model based on overconfidence / financing structure / performance.

From these results, we note that the mediating variable is a good predictor of the dependent variable, namely the performance of the firm. However, hierarchical regressions show that control variables have a significant effect on the financing structure and the performance of the firm. This angular part allowed us above all to empirically explore the contrast between what the theory says and what is observed in practice. This study limits and still leave many questions open about the issue of performance, overconfidence and the funding structure. The model should include other variables to represent more fully the economic reality. Finally, the consideration of overconfidence opens new perspectives in corporate finance, including a renewal of issues related to governance mechanisms and value creation associated with the ability to develop investment opportunities.

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APPENDIX

Tableau-9. Pearson correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
SCONF (1)	1						
AUTOOF (2)	0.393	1					
DETTE BANC (3)	0.286	0.363	1				
DETTE OBLIGA (4)	-0.219	0.014	0.143	1			
FONDS EXT (5)	-0.270	0.043	0.183	0.495	1		
TAIL (6)	0.253	0.331	0.250	-0.044	-0.051	1	
SECT (7)	0.230	0.153	0.316	0.387	0.313	0.357	1

(1) **Note:** that all the correlations between the explanatory variables are significantly smaller than 0.6 (threshold at which we begin to encounter serious problems of multi collinearity). Pearson test and condition index have revealed that these variables are also distinct from each other and are non-significant (higher correlation levels 10% and condition index is less than 1000).

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