

Investor's Commitment Bias and Escalation of Firm's Investment Decision

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ABSTRACT

This study examines the reasons of perseverance in firm's investment decision. It shows the possible influence of three closely related features which are: firm's financial indicators, investor's risk profile, and investor's commitment bias, on a firm's investment decisions escalation. This study aims to provide evidence as to whether investor considers the financial and risk's perception features (financial strength and risk profile) to persevere his initial investment decision while he notes a high level of commitment bias.

The proposed model of this paper uses GLM univariate data analyses to examine this relationship. Investor's risk profile and his commitment bias have been measured by means of a questionnaire comprising several items. As for the selected sample, it has been composed of some 360 Tunisian individual investors. Our results have revealed that investors pay more attention to keep their psychology comfort than their financial comfort. It exposed the importance of the investor's commitment bias and its risk perception in explaining investment decision escalation. Moreover results shows that there is strong and significant empirical relationship linking the escalatory behavior in investment decision and the interaction effects between the three independent variables. This means that, in practice, investors consider the three factors simultaneously.

KEYWORDS: *commitment bias, escalatory behavior, investor's risk profile, firm's financial strength indicator, investment level.*

JEL CLASSIFICATION: *D2, G3, L2, L5, M1*

INTRODUCTION

Investors should make good decisions, the right decisions in the right way at the right time (Schermerhorn, Hunt & Osborn, 2011). Essentially, the decision making process involves making choices basing on the accessible information at hand and the alternatives resultant from that information (Gilboa, 2011).

Most investors perceive themselves as rational decision makers. This means that they possess perfect information, distinguish all alternatives, know every consequence, and determine a complete preference scale (March, 2010). However, the reality shows that investors are all subject to *bounded rationality* (Colquitt, Lepine & Wesson, 2011; Nielsen,

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2011). Bounded rationality means that decision makers is unable to know all perfect information and alternatives to make optimal choice (Simon, 1982, 1997, 2009).

Agreed that decision makers habitually do not have all the information and alternatives necessary to make good decisions and, then, are subject to bounded rationality, it is normally that source of error in decision making exist (George & Jones, 2008). “Throwing good money after bad” or the escalation of a failing decision is the major error in decision making, which is a human tendency to persevere a failing course of action. There is an important amount of studies that shows that individuals and groups escalate original decision in a failing course of action in order to rationalize their initial choice (Bobocel & Meyer, 1994; Bragger, 2003; Fai, Wong, Yik, & Kwong, 2006; Hi & Mittal, 2007; Mullins, 2007; Ross & Staw, 1993; Staw, Barsade & Koput, 1997; Street & Street, 2006; Van Putten, Zeelenberg & Van Dijk, 2009, 2010).

The research of explanations of perseverance in investment decision brings us, in the first time, to be going to consult the traditional theory of rational choice. This theory interprets the inflows or outflows investor’s decision in an investment opportunity by the capacity of this opportunity to procure a superior expected utility.

Traditional financial theory of rational choice shows that investors pay only attention to the maximization of its utility function in the decision making process. There are two several reasons of investment decision escalation: (1) profitability (Ippolito, 1992; Berk & Green, 2004), and, (2) importance of committed costs (Sirri & Tifano, 1998; Huang, Wei & Yan, 2005).

However, today's phenomena show that the observed investor's behavior poses undeniable questions in the measure that is contrary to predictions of the so-called theory.

Consequently, the emergence of behavioral finance approach founded on the hypothesis of the limited rationality, permits to explain better the investment decision escalation while noting the behavioral biases: optimism, Heaton (2002); loss aversion, Mairesse and Mohnem (2005), overconfidence, Baker, Ruback & Wurgler (2004); ... as a determinants of this decision.

In other way, we can also explain the investment decision escalation by referring to contributions of *the theory of commitment*. Thus, an investor faced with negative feedback about a project may feel the need to justify the whole of time and money already sunk into the project Kundi (1997); Kundi, Nawaz & Shah (2007). White (1986) expresses “commitment to a failing course of action is a need on the part of decision makers to maintain the illusion that they haven’t erred”. In Staw (1981) word, this happens because, even in the face of negative feedback, decision makers “continue investing commitment to a dying course on the assumption that short term problems are the necessary costs/losses for achieving long term large objectives”.

Several, theoretical and empirical studies have tried to express the causes of commitment bias in different ways. Fox and Staw (1979) suggest that manager escalates if “he makes the initial decisions (responsibility pressure)” and/or “is under the pressure of being responsible for the consequences”. They also indicate that job insecurity and policy resistance also increase the commitment to an initial chosen decision.

Most of the researchers agree on the four fundamental causes of escalation which are: a) project related; b) human psychology/personality; c) social and d) organizational.

(Brockner, 1992; Keil, 1995; Keil, Cule, Lyytinen & Schmidt, 1998; Keil, Mann & Rai, 2000; Hall, 2003; Chee-Wee, Veiko & Tze-kuan, 2006; Kundi & Nawaz, 2006).

She (1991) found that “escalation happens due to the nature of investment, psychological factors and organizational factors”. This study examines the reasons of investor’s escalatory behavior in firm’s investment decision. It shows the possible influence of three closely related features which are: firm’s financial indicators (the traditional financial theory), investor’s risk profile (the behavioral finance theory), investor’s commitment bias (the theory of commitment), on a firm’s investment decisions escalation.

It will provide an important contribution to the setting of explanations of investment decision by the calling of the commitment bias as a plausible determinant. This study will provide evidence as to whether investor considers the financial and risk’s perception features (financial strength and risk profile) in his escalatory behavior while he notes a high level of commitment bias.

The article is structured as follows: Section 1 presents the related literature and the theories which motivate the empirical work, section 2 discusses the empirical strategies that were adopted and section 3 presents the main results and discussion.

1. LITERATURE REVIEW

1.1. Investor’s commitment bias and investment decision escalation

It is said that “a trapped administrator is one who remains inflexible to change in the face of negatives consequences” (Fox & Staw, 1979). Thus, researchers show that “decision makers may even stick with their bad decision for more than rationally required” (Brockner, Houser, Birnbaum, Kathy, Janet, Sinaia, 1986). In this phase, “projects take a life of their own, thereby eating up more resources and delivering no real value”, (Warne & Hart, 1996; Keil, Mann & Rai, 2000; Hall, 2003). Several studies reveals that decisions makers continue to invest in their initial course of action even after receiving considerable negative information concerning its availability (Chee-Wee et al., 2006; Van Putten, Zeelenberg & Van Dijk, 2009, 2010; March, 2010).

Meyer and Allen (1991) propose that commitment as a psychological attachment may take the following three forms: affective, normative and continuance types of commitment. These forms may also be seen as bases of commitment, motives engendering attachment (Becker, 1992).

Strong commitment depends on the existing of several factors, which are: The context of freedom in which the action was carried out, the public nature of the action, the explicit nature of the action, the irrevocability of the action, the repetition of the action, the consequences of the action, the cost of the action, the reasons for the action (absence of external reasons: promises of a reward, threats of punishment).

According to the circumstances, individuals will feel more or less bound by the act they were encouraged into doing. We can consequently understand why Kiesler (1971) chose to define commitment as the link between individuals and their actions.

H1: A high level of commitment bias will have positive influence on the investment decision escalation.

1.2. Investor's risk profile and the investment decision escalation

The analysis of the psychology of the investor provided an important number of advanced that contribute to explain his behavior on investment decision.

In the behavioral finance literature it is documented that investors are more sensitive to losses than to gains. This feature stems from prospect theory and was predictable by Kahneman and Tversky (1979) among others. Thus, investors who present myopic loss aversion are less motivated to invest a greater amount of their wealth into risky assets if they evaluate their investments more frequently.

Samuelson and Zeckhauser (1988) propose in the same setting the bias of status quo. This bias determines the decision of the investor to maintain the initial investment choice because of the importance of efforts and costs committed in the stage of the hold of position on this choice. He considers these committed costs and efforts like a point of reference. Every time that he is going to change his position on a fund, he is going to commit some similar costs. Of this fact (Mangot, 2005) shows that the agent has a tendency to let the unaltered things because this strategy is considered arbitrarily as the strategy of reference.

Daniel, Hirshleifer & Subrahmanyam (1998) and Mangot (2005) analyze the bias of conservatism or attribution. According to these authors, the investor keeps his position on his initial choice while granting an important weight on the news that comes to confirm this first choice that to those that come to invalidate it. This bias of attribution maybe in part attached to the phenomenon of cognitive dissonance.

In this setting, Samuelson and Zeckhauser (1988), note that when the investor receives a flow of information to contradictory consequences, he hung a process of selection of information. This process consists to overweight those that go in the sense of the confirmation and to avoid those that come to contradict it. He adopts a strategy aiming to stabilize him psychologically. This strategy is called a confirmation bias.

Thus, in the same order of ideas, we hypothesize in this study that the investor's risk profile influences his investment decision. So, a very defensive risk profile is associated positively with the investment decision escalation.

H2: An investor's defensive risk profile (as opposed to dynamic risk profile) will have positive influence on the investment decision escalation.

1.3. Financial strength and the investment decision escalation

The profitability is traditionally evoked by researches as an important heuristic for the decision making. These researches, generally based on the theory of rational choice, respect the formula of Helmut Schmidt that says “today's profits are tomorrow's investments”. Ippolito (1992) studied the impact of the relative profitability on the nets inflows in funds in the United States. The author verifies a linear and meaningful relationship between these two variables. To the same title, Berk and Green (2004) consider that the increasing slope of the relationship between the relative profitability and the nets inflows in the fund provides a perfect informative signal on the quality of the fund. For this reasons investors choose to invest further in funds to superior profitability.

A number of studies are conducted, lately, while based on the limited rationality hypothesis, aims, on the contrary, to prove a no linear relationship between the past profitability and the investment decision.

Among these works, the survey conducted by Sirri and Tifano (1998) shows, using the different measures of the fund profitability, that for the most funds, the profitability explains positively and meaningfully the inflows in these funds. For funds to moderate profitability the relationship is statistically weak, whereas, for those the underperforming the result shows that these funds don't know any meaningful outflows. Huang, Wei & Yan (2005) verify an asymmetric relationship between the nets inflows in funds and their relative profitability. These authors verify, that underperforming funds know, for the same reason as those most performing, meaningful inflows.

Thus, in the same way of the traditional financial theory we have the following hypotheses:
H3: company strong financial indicators (Z score) will have a positive influence on the investment decision level.

1.4. Dept level and investment decision escalation:

In corporate finance, the role of liabilities on investment decisions has drawn keen attention. In the first time, the Modigliani-Miller Theorem (MM Theorem) showed that in a perfect market, the level of liabilities does not affect corporate investment behavior. They noted that there is no relationship between fund procurement and the debt ratio. However, as regards the negative effects of liabilities on corporate management, it is noted, that liabilities can influence corporate investment behavior through the following two channels. Firstly, as important liabilities increase bankruptcy risks, corporate managers tend to go in for the limitation of borrowings and/or reducing investments which potentially increase the prospect of underinvestment. Secondly, higher debts level produce larger interest payment weight, which reduces liquidity, thus, debt has a negative impact on the investment level.

Arikawa, Miyajima & Saito (2003) adopt the method of estimation used by Lang, Ofek, Stulz (1996) and show that the main bank system in Japan facilitated to amplify the disciplinary role of liabilities, principally for low-growth companies. In this setting, Muramatsu (2002), based on the theory of Jensen (1986), asserts that the disciplinary role of liabilities or monitoring by main banks was not significant. Thus, author concludes that overinvestment happened in Japan during the bubble period.

Thus, previous studies have verified the role of liabilities on investment and its effect in restraining overinvestment and facilitating underinvestment. These studies suggest that liabilities limit overinvestment but probably cause underinvestment.

In this study we hypothesize that the importance of the dept level constraints investors to escalate their investment decision by its disciplinary effect.

H4: A high dept level is negatively associated with investment decision escalation.

1.5. R&D intensity and investment decision escalation:

To investigate the relationship between investment decision escalation and R&D intensity we refer to the notion of entrenchment in terms of manager-specific investments evoked by Jensen and Meckling (1976), and Jensen (1986). Entrenchment is caused by an excessive investment in assets corresponding to managers' skills. These investments enable managers to

increase their own return. The degree of entrenchment is described by how specific firm's assets characterize managers' talents.

For these objective managers make too many investments specific to their own skills. The cause is simply that they are investing shareholders' wealth rather than their own. By using shareholders' funds to make manager-specific investments, managers bind shareholders to themselves.

In this study we hypothesize that investor who decide to invest an important sum of his own in specific assets become strongly attached to his project and choose consequently to escalate his initial investment decision.

H5: A high R&D intensity is positively associated with investment decision escalation.

1.6. Investor's age and investment decision escalation:

Golec (1996), Chevalier and Ellison (1999) discuss the relation between age and the performance of the fund manager. According to these authors age reflects the manager's capacity to resist in situations of stress. In this case the youngest manager resists better to the pressure and tension that characterize this type of profession. Thus, the relation between age and the performance is negative. Authors consider two other arguments in favor of the youngest manager resistance. The first argument is that the youngest managers are generally the most formed to the modern financial theories, the second is that they are generally motivated.

In this setting, Golec (1996) develops a survey that aims to sketch the portrait of an ideal "manager ". This survey is realized on a sample of 530 managers in American mutual funds and of which the result shows that the manager who displays the best performances is relatively young (less than 46 years).

To this level we hypothesize that the youngest investor resists better on pressures and tensions in situation of stress. So:

H6: investors younger than 46 years escalate more his investment decision than those are older than 46 years.

2. METHODOLOGY

2.1 Data

Our empirical study is based on quantitative research. We use a questionnaire as a method of data collection. Our questionnaire consists of three main parts, based on treated areas in theory:

- The first part aims to collect some company's financial indicators from financial annual statement: Operating profit, total assets, current liabilities, long-term debt, current assets, earnings before interest and tax, R&D expense, sales;
- The second part focuses on determination of the level of investor's commitment bias.
- Party three aims to knowing the nature of investor's risk profile and the investor's age.

The questionnaire is addressed to investors in Tunisian individual companies. The subjects were each given one case, chosen at random from the list of investors implanted in the region of Sfax in Tunisia provided by "Agency of promotion of industry" in this region. Based on the research design, the study required 360 subjects.

As indicated in Table 1, the majority of companies that participated in the study are smaller firms and all respondents are individual investors.

Table 1. Profile of subjects

	Total	Percentage
Firm's Activity		
Agriculture and crafts	24	7
Industry	221	61
Commerce and Service	115	32
Investor's Experience in entrepreneurship		
3–6 years	76	21
7–10 years	242	67
> 10 years	42	12
Investor's Age		
<46	245	68
≥46	115	32
Total	360	100

Source: authors

2.2. Variables' measurement

The objective of this section is to determine the variables' measurement.

2.2.1. Escalatory behavior: The investment decision escalation (dependant variable)

The purpose of this article is to provide evidence as to whether investors consider the financial and risk perception features (financial strength and risk profile) in his escalatory behavior (investment decision) while he notes a high level of commitment bias. The appropriate measure in the literature to evaluate investment decision escalation is the investment level which uses the indicators of overinvestment and underinvestment.

In this study, we will use two indicators of investment level which are: overinvestment (low future investment opportunities and free cash flow) or underinvestment (low free cash flow and Future investment opportunities).

- The free cash flow ratio as conceptualized by Jensen (1986) is measured as operating income before depreciation interest expense and taxes, as well as dividends paid (Lehn & Poulsen, 1989; Gul & Tsui, 1998; Jaggi & Gul, 1999) divided by book value of total assets to account for effects related to size (Lang, Stulz & Walkling, 1991).

Free Cash Flow Rate (FCFR) = Operating profit / total assets.

- Future investment opportunities are measured by Tobin's Q (Skinner, 1993). Tobin's Q is defined as the ratio of market value of a firm to the replacement value of its assets (Lindenberg & Ross, 1981; Griliches, 1981; Cockburn & Griliches, 1988; Megna & Klock, 1993; Skinner, 1993). In our study, we will employ an approximation of Tobin's Q, considered as follows (Chung & Pruitt, 1994):

$$Q_{it} = \frac{MVS_{it} + D_{it}}{A_{it}} \quad (1)$$

MVS: market value of common and preferred shares;
 D: book value of debt, defined as current liabilities plus long-term debt plus inventories minus current assets;
 A: total assets.

Based on these indicators, investment level is as follows:

- 1 if the investor decides overinvestment: low future investment opportunities and free cash flow
- 0 if the investor decides underinvestment: low free cash flow and future investment opportunities.

2.2.2. Commitment bias:

To measure the investor's commitment bias, we take the same steps than the most of studies have used an adaptation of the original questionnaire elaborated by Meyer and Allen (1991) to evaluate organizational commitment (*Organizational Commitment Scale*). This instrument is chosen because of its validity and its multidimensional character shown by several researches (Meyer, Stanley, Herscovitch & Topolnytsky, 2002).

The commitment bias takes 2 follows:

- 2 if the investor has a high level for this bias
- 1 if not

2.2.3. Investor's risk profile

To determine the nature of the investor's risk profile, we refer to the questionnaire elaborated by Centea organization which is intended exclusively to characterize individual investor's risk profile.

The risk profile takes 2 follows:

- 2 if the investor has a defensive risk profile
- 1 if the investor has a dynamic risk profile

2.2.4. Financial strength indicators

When deciding a choice about where to put their money, savvy investors use ratio analysis. There are three kinds of ratio analysis: Profitability Ratios determine how much profit a company creates, Gearing Ratios evaluate a company's leverage, Liquidity Ratios measure the capacity of a company to meet its debts, and Investment Ratios determine the performance of the overall business. These ratios help investors to get the information they need to make an optimal decision.

Using a model of univariate discriminant analysis, Beaver (1996) envisaged financial distress using thirty financial ratios to evaluate 79 pairs of failed and non-failed companies. Beaver asserted that ratio of current assets to total assets and ratio of net benefits to total assets are capable to distinguish companies that will be bankrupt to those that will not. His model succeeded to predict, respectively, 90% and 88% of cases.

In this study, the financial strength indicator used is Altman's five ratios, which designate three levels of financial strength: strong, moderate, and weak. Altman (1968) used multivariate linear discriminant analysis (MDA) to determine a cut-off value that enabled him to predict with 95% precision the criteria indicating which companies were in financial distress or vice versa.

The Z score calculated using five of Altman's ratios are as follows.

$$Z \text{ score} = 1.2 \text{ WC/TA} + 1.4 \text{ RE/TA} + 3.3 \text{ EBIT/TA} + 0.6 \text{ MV/BV} + 1.0 \text{ Sales/TA} \quad (2)$$

Z score = financial condition of the company (strong, moderate and weak)

WC/TA = working capital/total asset

RE/TA = retained earnings/total asset

EBIT/TA = earnings before interest and tax /total asset

MV/TA = market value of share/book value of debt

Sales/TA = sales/total asset

Based on the Z score, Altman distinguish companies as strong, moderate and weak. In this study, financial strength representing the independent variable measured by Altman's Z score takes the values follows:

1 = weak,

2 = moderate; and

3 = strong.

2.2.5. Control Variables

Our study controls for dept level, R&D intensity and investor's age, as previous research has shown that these three factors do affect investment level.

2.2.5.1. Dept level and investment decision escalation

We observe a number of variables that measure the level of debt. Measures like total debt services ratio has been adopted by several researchers (Hovakimian, Hovakimian & Tehranian, 2004). While others have envisaged the debt ratio in the medium and long term (Myers, 2001). Titman (1984) has used the debt ratio in the short term.

In this setting we recommend to use the debt ratio as a measure of this variable measured by:

$$\text{Leverage ratios (LEV)} = (\text{total debt} / \text{total assets}) \quad (3)$$

This measure is also proposed by Koh (2003), Demaria and Dufour (2007), Jarboui and Olivero (2008), Kraiem (2008) and Sahut and Gharbi (2008).

2.2.5.2. R&D intensity

We use the research and development (R&D) intensity as a proxy for firm specific assets. As Francis and Smith (1995), Cho (1988) and Abdullah, Weiyu & Vivek (2002), we evaluate R&D intensity variable by the ratio of a firm's R&D expense divided by total assets.

2.2.5.3. Age

The investor's age takes 2 follows:

- 2 if the investor's age <46 years
- 1 if the investor's age ≥ 46 years

Theoretical framework is presented in figure 1.

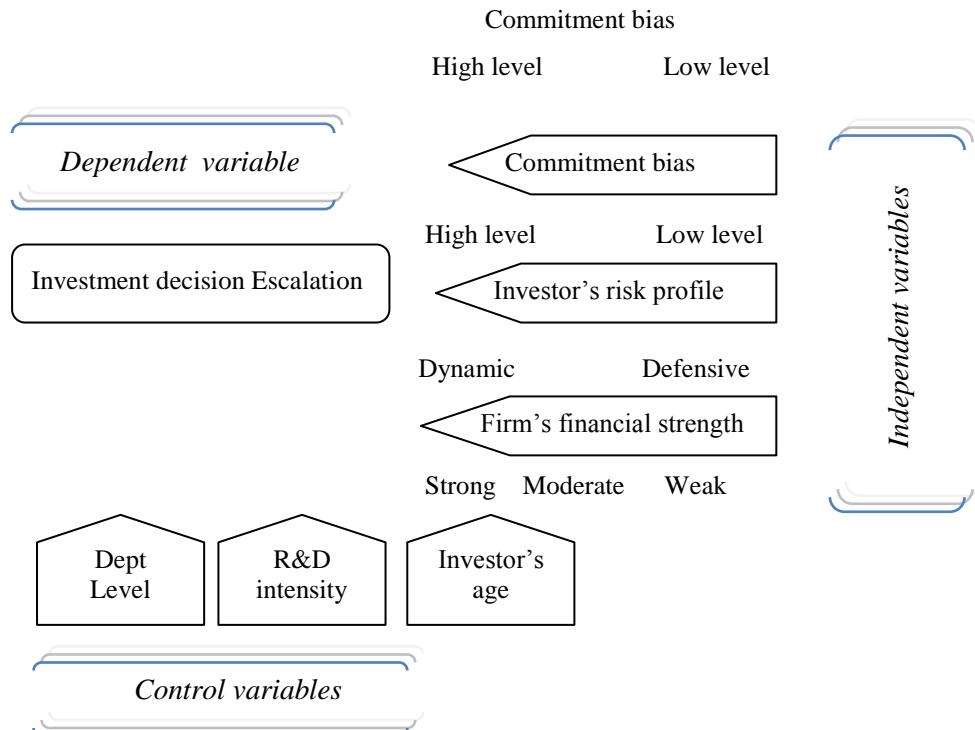


Figure 1. The factors that affect investment decision escalation

Source: authors

Table 2. Operational definitions of variables

Class:	Phenomena:	Measure:	Notation	Prediction
Independent Variable :				
Investment decision escalation	Overinvestment/underinvestment	<i>Overinvestment:</i> low future investment opportunities and free cash flow <i>Underinvestment:</i> low free cash flow and future investment opportunities.	IDE	
Dependent Variables:				
Commitment bias	Psychologic link between the investor and his project	The questionnaire obtained score	CB	+
Financial strength	Firm's performance indicators	Z score calculated using five of Altman's ratios	FS	+
Investor's risk profile	Qualification of the investor's risk profile	The questionnaire obtained score (defensive: 2/ dynamic:1)	RP	+

Class:	Phenomena:	Measure:	Notation	Prediction
Control Variables:				
Dept level	Firm's liabilities level	Leverage ratios (LEV) = (total debt / total assets)	DL	-
R&D intensity	Firm's specific assets	Firm's R&D expense/ total assets	RDI	+
Age	Investor's age		AGE	+

Source: authors

2.3. Experimental Design

This study used a 2. 2. 3. factorial design where it is associated only one case for each investor's investment decision. The combination of 3 factors of independent variables resulted in a 12-case combination, where each case was different. The design is shown in Table 3.

Table 3. Factorial design

Independent variables		
A	B	C
Commitment bias	Risk profile	Financial strength
2	2	3

Source: authors

The indicators of the independent variables are shown in Table 4.

Table 4. Detail on indicators of the independent variables

No	Commitment bias	Risk profile	Financial strength
1	High	Dynamic	Strong
2	Law	Defensive	Moderate
3			Weak

Source: authors

The combinations of the 12 cases are shown in Table 5.

Table 5. Case combination

No	Commitment bias	Risk Profile	Financial strength
1	High	Defensive	Strong
2	High	Defensive	Moderate
3	High	Defensive	Weak
4	High	Dynamic	Strong
5	High	Dynamic	Moderate
6	High	Dynamic	Weak
7	Law	Defensive	Strong
8	Law	Defensive	Moderate
9	Law	Defensive	Weak
10	Law	Dynamic	Strong
11	Law	Dynamic	Moderate
12	Law	Dynamic	Weak

Source: authors

2.4. Analysis and results

Based on the factorial design, the statistical model of the study can be stated as follows:

$$\text{IDE} = \alpha + b_1\text{CB} + b_2\text{RP} + b_3\text{FS} + b_4\text{DL} + b_5\text{RDI} + b_6\text{Age} \quad (4)$$

Where:

- IDE = An investor's investment decision escalation (dummy variable:
Overinvestment:1 or Underinvestment: 0)
- CB = An investor's commitment bias (high: 2, low: 1)
- RP = An investor's risk profile (Defensive: 2, dynamic:1)
- FS = Financial strength (strong: 3, moderate: 2, weak: 1)
- DL = Dept Level (total debt / total assets)
- RDI = R&D intensity (Firm's R&D expense/ total assets)
- Age = Investor's age (<46 years: 2, ≥46 years: 1)

General Linear Model Univariate Analysis of Variance (GLM UNIANOVA) was used to test hypotheses of study.

3. RESULTS AND DISCUSSION

Table 6. GLM univariate test: Tests of between subject effects

Source	Type III sum of squares	Df	Mean square	F	Sig.
Corrected model	56,072 ^a	10	5,607	59,250	,000
Intercept	1.699	1	1.699	17.950	.000
CB	6.270	1	6.270	66.252	.000
RP	3.677	1	3.677	38.850	.000
FS	.254	1	.254	2.685	.102
DL	5.366E-03	1	5.366E-03	.057	.812
RDI	.266	1	.266	2.816	.094
AGE	.331	1	.331	3.493	.062
CB*RP	5.199	1	5.199	54.942	.000
CB*FS	2.890	1	2.890	30.534	.000
RP*FS	2.234	1	2.234	23.605	.000
CB*RP*FS	4.915	1	4.915	51.939	.000
Error	33.028	349	9.464E-02		.000
Total	162.000	360			
Corrected total	89.100	359			

Note: ^a R squared = .629 (adjusted R squared = .619)

Source: authors

The study relied on GLM univariate analysis shows in table 6 that the commitment bias has a significant (0.00 at alpha = 0.05) effect on an investor's investment decision escalation.

This result is consistent with the findings of many researchers such as (Kundi, 1997; Kundi, Nawaz & Shah, 2007).

In this setting White (1986) affirms that “commitment to a failing course of action is a need on the part of decision makers to maintain the illusion that they haven’t erred”. Moreover Staw (1981) asserts that this happens because, even in the face of negative feedback, decision makers “continue investing commitment to a dying course on the assumption that short term problems are the necessary costs/losses for achieving long term large objectives”.

According to the earlier work of Kiesler (1971), and a numerous researches which coming to enrich this work such as Joule and Beauvois (1998), as far as attitudes are concerned, committing oneself to a counter-attitudinal action leads to a change of attitude or rationalization. While, concerning behavior, committing oneself to a decisional action leads the decision maker to bind to it (freezing effect, low-ball effect). Committing first to an inconsistent action increases the possibility of complying to following more demanding requests as long as the course of action becomes consistent (teasing effect and foot-in-the-door).

However, these studies shows that this type of effect on attitudes and behavior can be obtained only when the first action (preparatory act) was contracted in specific commitment contexts. Therefore, the similar action can be more or less binding, and can even be perceived as nonbinding. Researchers have shown that “the stronger the commitment the bigger the effects”.

Conversely the study relied on GLM univariate analysis shows in table 6 that firm’s financial strength indicators (FS) has a non significant (0.102) effect on an investor’s decision escalation.

This result is consistent with the findings of Bellando and Tran-Dieu (2008), and, Goetzmann and Peles (1997) whose shown that inflows in fund is not conditioned by a firm’s financial condition.

With respect to the task enjoyment question, individuals receiving the lower Z score will report higher levels of enjoyment than those receiving the higher Z score. This follows the earlier literature on cognitive dissonance (Aronson, 1992, 1994; Festinger, 1957).

According to the theory of cognitive dissonance, an individual registers dissonance when her behavior is inconsistent with her cognitions. Generally, it may be easier to change one’s cognitions than changing one’s actions. Based on the logic above, investors receiving the low Z score are be in a situation of dissonance shown in the conflict between the cognitions “I exerted effort to earn a large sum of money,” and “I received the low Z score”. Integrating the cognition “I’m not good at this task” diminishes the difference between an investor’s expected utility and their low Z score received. Incorporating the last cognition means that investors receiving the low Z score will be pessimistic in their abilities, so reducing the dissonance resulted from having exerted effort only to obtain a low return to their effort.

In this stage, investors may integrate cognitions associated to her ability to reduce dissonance, thereby committing additional effort to rationalize initial effort they exerted in the first choice.

On the other hand, investors who received a high Z score do not experience the dissonance state. As a result, these investors are more probable to be unbiased regarding their abilities on the initial decision.

There are several important findings in this study. As seen in Table 6, all interactions (CB*RP; CB*FS; RP*FS; CB*RP*FS) have a significant effect (0.00 less than alpha = 0.05) on investor's investment escalation. These results show that investors examined the factors simultaneously.

In earlier work (Ross & Staw, 1993), we proposed that decision escalation may involve the interplay of four sets of forces over time, which are:

- a) Project determinants: this category gathers objective aspects of a project, Northcraft and Wolf (1984), McCain (1986), Bateman (1983) give examples of research on project variables (such as: project's closing costs, project's salvage value,...).
- b) Psychological determinants: this rubric includes psychological aspects of decision maker, such as reinforcement traps, individual motivation, decision making errors, and biases in information processing. James (2002), Zayer (2007) provide examples of research on psychological determinants.
- c) Social determinants: this category gathers interpersonal aspects that may lead to increase investor's commitment in its project. Several researches are conducted on social determinants such as Simonson and Staw (1992), Keil and Robey (1999), and Heng, Tan, & Wei Heng (2003).
- d) Organizational determinants: includes variables such as the level of economic and technical incurred by the organization with respect to the project, the level of political support for a project within an organization... (Pfeffer, 1981; Goodman, Bazerman & Conlon, 1980).

In this study we employ three variables which are: Commitment bias (as a social psychological determinants), investor's risk profile (as a psychological determinants), and firm's financial strength indicator (as a project determinant).

This categorization of variables explains its significant interaction effect in the explanation of the investment decision escalation. r manuscript exactly according to the instructions. Please use the Template, and insert the text of your paper without alter it. That is the easiest and the most efficient way to have a good published manuscript.

CONCLUSION

This research examines the determinants of firms' investment decision escalation employing an investor's social psychological aspect which is: commitment bias introduced simultaneously with the firm's financial indicators, and, investor's risk profile.

Theoretical analysis indicated that escalation of commitment is the tendency of decision makers to maintain to invest time, money, or effort into a failure decision or unproductive course of action. The expression "throwing good money after bad" because they have "too much invested to quit" captures the real meaning of this frequent decision-making error. Escalation of commitment has managerial consequences. Many organizations have experienced large losses, because the manager was determined to justify his original choice by continuing to commit resources to a non profitable decision. March, declare it this way: "Now that I have made my decision, I need to find good reasons for it."

Empirical analysis presents survey of individual investors in Tunisia. The GLM univariate data analyses revealed the importance of the investor's commitment bias and its risk perception in explaining his investment decision escalation. However, empirical relationship analysis between firm's financial indicators and investment decision escalation shows that, in decision making process, investor pays little attention to firm's financial strength.

There is strong and significant empirical relationship linking the investment decision escalation and the interaction effects between the three independent variables. This means that, in practice, investors consider the three factors simultaneously.

Thus, investor's investment decisions analysis realized by integrating the commitment bias and the behavioral dimension in risk perception is not consistent with the traditional financial theory which predicated that investors pay only attention to the maximization of its utility function in the decision making process. While, in this study we asserts that the investor, affected by its psychological commitment bias and its behavioral risk perception, escalates his initial investment choices in spite of its failure in this decision.

Like any other, this study has its limitations. Even though investment decision escalation is explained only by project and psychological determinants, other factors discussed in previous literature (Ross & Staw, 1993), such as the social and organizational determinants, were not considered. These factors could be taken into consideration in future studies.

REFERENCES

- Abdullah, F., Weiyu G., & Vivek M. (2002). The relation of managerial holdings with Tobin's Q and R&D expenditures: Evidence from Japanese firms. *Multinational Business Review*, 10(1), 66-71.
- Altman, E. (1968). Financial ratios: Discriminate analysis and prediction of corporate bankruptcy. *Journal of Financial*, 4, 589–609.
- Arikawa, Y., Miyajima, H., & Saito, N. (2003). (University of Tokyo Press) Kinyūkiki zengo no tōshi kōdō to kigyō tōchi – kajō saimu mondai to main bank" in: Hanazaki, M., Teranishi, J. (eds.), Corporate governance no keizai bunseki – henkakuki no nihon to kinyūkikigo no higashi Asia.
- Aronson, E. (1992). The return of repressed: Dissonance theory makes a comeback. *Psychological Inquiry*, 3, 303-311.
- Aronson, J. (1994). A pragmatic view of thematic analysis", *The Qualitative Report*, 2(1), 1-3.
- Baker, M., Ruback, R.S., & Wurgler J. (2004). Behavioral Corporate Finance: A Survey. in B. Eckbo (Ed.), *Handbook of Corporate Finance: Empirical Corporate Finance*. SSRN_ID740946.
- Bateman, T. (1983). Ressource allocation after success and failure: The roles of attributions of powerful others and probabilities of future success. *Working paper, department of management. Texas A&M University, College Station*.
- Beaver, W. H. (1996). Financial ratios as predictors of failure. *Journal of Accounting Research*, 7(2), 179–192.
- Becker, D. (1992). Ohne Haß keine Versöhnung. *Das Trauma der Verfolgten*, Freiburg: Kore Verlag

- Bellando R, & Tran-Dieu L. (2008). La relation entre flux d'entrées nets et rentabilité des fonds : une étude appliquée au cas des OPCVM actions français. *Conférence de l'AFFI, 20-22 mai 2008*, Lille, France
- Berk J.B., & Green, R.C. (2004). Mutual fund flows and performance in rational markets, *Journal of Political Economy, 112*(6), 1269-1295.
- Bobocel, D. R., & Meyer, J. P. (1994). Escalating commitment to a failing course of action: Separating the roles of choice and justification. *Journal of Applied Psychology, 79*, 360-363.
- Bragger, J. D. (2003). When success breeds failure: History, hysteresis, and delayed exit decisions. *Journal of Applied Psychology, 88*(1), 6-14.
- Brockner J., Houser, R., Birnbaum, L., Kathy, D., Janet, N., Sinaia et al. (1986) Escalation of Commitment to an ineffective course of action: The effect of feedback having negative implications for self-identity. *Administrative Science Quarterly, 31*, 109-126.
- Brockner, J. (1992). The escalation of commitment to a failing course of action: Toward theoretical progress. *Academy of Management Review, 17*, 39-61.
- Chee-Wee, T., Veiko, T. & Tze-kuan, E. L. (2006) Agency relationships in the escalation of software projects: an options analytical perspective. Available at: http://www2.wiwi.hu-berlin.de/institute/organisation/Team_dt/Thiele/EscalationandDeescalationofSoftwareProject.pdf.
- Chevalier, J. & Ellison, G. (1996). Risk Taking by Mutual Funds as a Response to Incentives, *Working papers 96-3, Massachusetts Institute of Technology (MIT), Department of Economics*
- Cho, M.H. (1998). Ownership structure, investment, and the corporate value: an empirical analysis. *Journal of Financial Economics, 47*(1), 103-121.
- Chung, K. H., & Pruitt, S. W. (1994). A simple approximation of Tobin's q. *Financial Management 23*, 70-74.
- Cockburn, I., & Griliches, Z. (1988). Industry effects and appropriability measures in the stock market. *American Economic Review, 78*(2), 419-424.
- Colquitt, J. A., Lepine, J. A., & Wesson, M. J. (2011). *Organizational behavior: Improving performance and commitment in the workplace*. New York, NY: McGraw-Hill.
- Daniel, K., Hirshleifer, D., & Subrahmanyam, A. (1998). Investor Psychology and Security Market Under- and Overreactions. *The Journal of Finance, 53*(6).
- Demaria, S., & Dufour, D. (2007). Les choix d'options comptables lors de la transition aux normes IAS/IFRS : quel rôle pour la prudence ? *Comptabilité-Contrôle- Audit, n° 195*, 195-218.
- Fai, K., Wong, E., Yik, M., & Kwong, J. Y. Y. (2006). Understanding the emotional aspects of escalation of commitment: The role of negative effect. *Journal of Applied Psychology, 91*(2), 282-297.
- Festinger, L.A. (1957). *A Theory of Cognitive Dissonance*. Standford: Standford University Press.
- Fox, F. V., & Staw, B. M. (1979). The trapped administrator: Effect so f job insecuritya nd policyn resistance upon commitment to a course of action. *Administrative Science Quarterly, 24*, 449-471.
- Francis, J. & Smith. A. (1995). Agency costs and innovation: Some empirical evidence. *Journal of Accounting and Economics, 19*(2-3), 383-409.
- George, J. M., & Jones, G. R. (2008). Understanding and managing organizational behavior. *Upper Saddle River, NJ: Prentice Hall*.
- Gilboa, I. (2011). *Rational choice*. Cambridge, MA: MIT Press.

- Goetzmann, W & Peles, N. (1997). Cognitive Dissonance and Mutual Fund Investors, *Journal of Financial Research*, 20, 145-158.
- Golec, J.H. (1996). The effects of mutual fund managers' characteristics on their portfolio performance, risk, and fees, *Financial Services Review*, 5(2), 133-148.
- Goodman P.S., Bazerman, M. & Conlon, E. (1980). Institutionalization of Planned Organizational Change, *Research in Organizational Behavior*, 2, ed. Barry M. Staw et Larry L. Cummings, Greenwich, CT, JAI Press, 215-246.
- Griliches, Z. (1981). Market value, R&D and patents. *Economic Letters*, 7(2), 183-187.
- Gul, F.A., & Tsui, J.S.L. (1998). A test of the free cash flow and debt monitoring hypotheses: Evidence from audit pricing. *Journal of Accounting and Economics*, 24, 219-237.
- Hall, P. (2003). Killing IT Projects. *The Journal of Information Technology Management*. 16 (12). Available at: <http://www.catalysisgroup.com/articles/losinggamble.pdf>.
- Heaton, J. (2002). Managerial optimism and corporate finance. *Financial Management*, 31, 33-45.
- Heng, C.S., Tan, B. C. Y., & Wei, K.K. (2003). De-escalation of commitment in software projects: Who matters? what matters? *Information & Management*, 41, 99-110.
- Hi, X., & Mittal, V. (2007). The effect of decision risk and project stage on escalation of commitment. *Organizational Behavior and Human Decision Processes*, 103(2), 225-237.
- Hovakimian, A., Hovakimian, G., & Tehrani, H. (2004). Determinants of target capital structure: The case of dual debt and equity issues. *Journal of Financial Economics*, 71, 517-540.
- Huang, J. K., Wei, D. & Yan, H. (2005). Participation costs and the sensitivity of fund flows to past performance, *Journal of Finance* forthcoming.
- Ippolito, R.A. (1992). Consumer Reaction to Measures of Poor Quality: Evidence from the Mutual Fund Industry. *Journal of Law and Economics*, 35(1), 45-70.
- Jaggi, B., & Gul, F.A. (1999). An analysis of joint effects of investment opportunity set, free cash flows and size on corporate debt policy. *Review of Quantitative Finance and Accounting*, 12(4), 371-381.
- James, B. H. (2002). Managerial optimism and corporate finance. *Financial Management*, 31, 33-45.
- Jarboui, A., & Olivero, B. (2008). Le couple Risque/ Horizon temporel des investissements est-il gouverné par les institutionnels et les actionnaires dominants?, *Banque et Marchés*, n 93, Mars-Avril, 20-34.
- Jensen, M. C. & Meckling, W. H. (1976). Agency Costs and The Theory of The Firm. *Journal of Accounting and Economics*, 3, 305-360.
- Jensen, M. C. (1986). Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *American Economic Review* 76(2), 323-329.
- Joule, R.V., & Beauvois, JL. (1998). *La soumission librement consentie*. Dunod.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47, 263-291.
- Keil, M., Cule, P.E., Lyytinen, K., & Schmidt, R.C. (1998). A framework for identifying software project risks. *Communications of the ACM*. 41(11), 76-83.
- Keil, M. (1995). Escalation of commitment in information systems development: A comparison of three theories. *Academy of Management Journal*, 38, 348-355.
- Keil, M., Mann, J., & Rai, A., (2000). Why software projects escalate: An empirical analysis and test of four theoretical models. *MIS Quarterly*, 24(4), 631-664.

- Keil, M., & Robey, D., (1999). Turning around troubled software projects: An exploratory study of the deescalation of commitment to failing courses of action. *Journal of Management Information Systems*, 15(4), 63-87.
- Kiesler, C. A. (1971). *The Psychology of Commitment*, Academic Press, New York.
- Koh, P.S. (2003). On the association between institutional ownership and aggressive corporate earnings management in Australia. *The British Accounting Review*, 35, 105-128.
- Kraiem, B. R. (2008). The influence of institutional investors on opportunistic earnings management, *International Journal of Accounting Auditing and Performance Evaluation*, 5(1), 89-106.
- Kundi, G.M. (1997). Fundamentals of management information systems. 1st Ed. Saad Publications, Dikhan. Pakistan; pp. 87
- Kundi, G.M., & Nawaz, A. (2006). IT-Organization Alignment. Gomal University Journal of Research "GUJR". *Gomal University, DIKhan, Khyber Pakhtunkhwa*, 22(2), 202-206
- Kundi, G.M., Nawaz, A., & Shah, B. (2007). Politics in IT Projects. *Gomal University Journal of Research "GUJR"*, Gomal University, DIKhan, Pakistan, 23(2), 211-215.
- Lang, L., Ofek, E., Stulz, R. M. (1996). Leverage, investment, and firm growth, *Journal of Financial Economics*, 40, 3-29.
- Lang, L., Stulz, R.M., & Walkling, R.A. (1991). A test of free cash-flow hypothesis the cash of bidder return. *Journal of Financial Economics*, 29, 315-335.
- Lehn, K., & Poulsen, A.B. (1989). Free Cash Flow and Stockholder Gains in Going Private Transactions. *Journal of Finance*, 44, 771-787.
- Lindenberg, E., & Ross S. (1981). Tobin's q ratio and industrial organization. *Journal of Business*, 54(1), 1-32.
- Mairesse, J., & Mohnem, P. (2005). The importance of R&D for Innovation: A reassessment using French survey data. *The Journal of Technology Transfer*, 30, 183-197.
- Mangot M. (2005). *Psychologie de l'investisseur et des marchés financiers*. Dunod, Paris.
- March, J.G. (2010). *Primer on decision making: How decisions happen*. New York, NY: Simon & Schuster.
- McCain, B. E. (1986). Continuing Investment Under Conditions of Failure: A Laboratory Study of the Limits to Escalation, *Journal of Applied Psychology*, 71(2), 280-284.
- Megna, P., & Klock, L. (1993). The impact of intangible capital on Tobin's Q in the semiconductor industry. *American Economic Review*, 265-269.
- Meyer, J.P., Stanley, D.J., Herscovitch, L., & Topolnytsky, L. (2002). Affective, Continuance and Normative Commitment to the Organization: A Meta-analysis of Antecedents, Correlates, and Consequences. *Journal of Vocational Behavior*, 61, 20-52.
- Meyer, J.P. & Allen, N.J. (1991). A Tree-component conceptualization of organizational commitment. *Human Resource Management Review*, 1, 61-89.
- Mullins, J. W. (2007). Good money after bad. *Harvard Business Review*, 85, 37-48.
- Muramatsu, K. (2002). Fusai wa kigyō wo kiritsu zukeruka, main bank wa monitoring kinō wohatasuka. *Shōken Keizai Kenkyū*, 36, 107-127 (in Japanese).
- Myers, S.C. (2001). Capital structure. *Journal of Economic Perspectives*, 15, 81-102.
- Nielsen, H. (2011). *Bounded rationality in decision making*. Dobbs Ferry, NY: Manchester University Press.
- Northcraft, G. B., & Wolf, G. (1984). Dollars, sense, and sunk costs: A life-cycle model of resource allocation decisions. *Academy of Management Review*, 9, 225-234.

- Pfeffer, J. (1981). *Power in Organizations*, Marshfield, MA: Pitman.
- Ross, J. & Staw, B.M. (1993). Organizational escalation and exit: Lessons from the shoreham nuclear power plant. *Academy of Management Journal*, 36(4), 701– 732.
- Sahut, J.M., & Gharbi, O. (2008). Investisseurs institutionnels et valeur de la firme, *papier de travail*, Université de Poitiers et Université Paul Cézanne hal-00645361, 1-28.
- Samuelson, W. & Zeckhauser, R. (1988). Status Quo Bias in Decision Making. *Journal of Risk and Uncertainty*, 1(1).
- Schermerhorn, J. R., Hunt, J.G., & Osborn, R.N. (2011). *Organizational behavior*. New York, NY: Wiley.
- Simon, H.A. (1982). *Models of bounded rationality*. Cambridge, MA: MIT Press.
- Simon, H.A. (1997). *Models of bounded rationality: Empirically grounded economic reason*. Cambridge, MA: MIT Press.
- Simon, H.A. (2009). *Economics, bounded rationality, and the cognitive revolution*. Northampton, MA: Edward Elgar Publishing.
- Simonson, I. & Staw, B.M. (1992). Deescalation Strategies: A Comparison of Techniques for Reducing Commitment to Losing Courses of Action. *Journal of Applied Psychology*, 77(4), 419-426.
- Sirri, E.R., & Tifano, P. (1998). Costly search and mutual fund flows. *Journal of Finance*, 53, 1589-1622.
- Skinner, D. (1993). The investment opportunity set and accounting procedure choice: Preliminary evidence. *Journal of Accounting and Economics*, 16 (4), 407 – 445.
- Staw, B.M. (1981). The escalation of commitment to a course of action. *Academy of Management Review*, 6, 577-587.
- Staw, B.M., Barsade, S.G., & Koput, K.W. (1997). Escalation at the credit window: A longitudinal study of bank executives recognition and write-off of problem loans. *Journal of Applied Psychology*, 82, 130-142.
- Street, M., & Street, V. L. (2006). The effects of escalating commitment on ethical decision-making. *Journal of Business Ethics*, 64, 343-356.
- Titman, S. (1984). The effect of capital Structure on a firm's liquidation decision. *Journal of Financial Economics*, 13, 137-151.
- Van Putten, M., Zeelenberg, M., & Van Dijk, E. (2009). Dealing with missed opportunities: Action vs. state orientation moderates inaction inertia. *Journal of Experimental Social Psychology*, 45, 808–815.
- Van Putten, M., Zeelenberg, M., & Van Dijk, E. (2010). Who throws good money after bad? Action vs. state orientation moderates the sunk cost fallacy. *Judgment and Decision Making*, 5(1), 33–36
- Warne, L., & Hart, D.N. (1996). The impact of organizational politics on information systems project failure-a case study. In: *Proceedings of the 29th Annual Hawaii International Conference on Systems Science*, IV; 191-201.
- White, G. (1986). Escalating Commitment to a Course of Action: A Reinterpretation. *Academy of Management Review*. 11(2), 311-321.
- Zayer, E.C. (2007). *Verspätete Projektabbrüche in F&E: Eine verhaltensorientierte Analyse*.DUV, Wiesbaden.