

Investors Overconfidence: A survey on the Tunisian Stock Market

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Abstract

The aim of this paper is to check if investors in emergent markets, especially in the Tunisian stock market, suffer from the overconfidence bias. To achieve this purpose we adopted a survey approach on individual investors from the Tunisian stock exchange. Our major findings were: Tunisian investors seem to be overconfident in general cases and in beating the market. Furthermore, age and income are not related to self confidence. Concerning the gender issue, women tend to lack confidence in investment performance. Finally, overconfident men tend to trade more than women

Keywords: Behavioural finance, Overconfidence, Better than average, Trading, Emerging markets.

Résumé

L'objectif de cet article est d'étudier le biais de surconfiance des investisseurs dans les pays émergents, notamment sur le marché des actions tunisien. Ainsi, un questionnaire a été élaboré et administré auprès d'un échantillon d'investisseurs individuels sur la bourse des valeurs mobilières de Tunis. Nos principaux résultats montrent que les investisseurs tunisiens sont généralement surconfiants. Ils croient en leur capacité de battre le marché. Par ailleurs, l'âge et le revenu ne sont pas reliés au biais de surconfiance. Et en termes d'investissement, les femmes sont moins confiantes et font moins d'échanges sur le marché que les hommes.

Mots clés: Finance comportementale, surconfiance, effet meilleur que la moyenne, Echange, Marchés émergents.

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1 Introduction

Economists started implementing psychological findings into economic models starting in the 1970s, but the most rapid development of this trend began in the 1990s. Since then, overconfidence has also become a field of interest for economists, mainly in the context of behaviour on financial markets.

Overconfidence is defined as the tendency to place an irrationally excessive degree of confidence in one's abilities and beliefs. This definition has evolved into two different interpretations. The first is hubris or what is sometimes referred to as the "better than average effect" (the idea that most investors simply believe their skills are better than average). One can think of this as an irrational shift in the perceived means. The other is "miscalibration"². This arises when the confidence interval around the investor's private signal is tighter than it is in reality. This can be thought of as an irrational shift in perceived variance.

Both forms of overconfidence lead the overconfident investor to form posteriors with excessive weight on private signals. In the former case, the weight on one's private signals irrationally ignores Bayes rule and says "I am right"; in the latter case, Bayes' rule is known but not implemented properly because the variance parameter in the weight is incorrect. In either case, the private valuation of a stock will differ from that of the market as the overconfident investor places more validity on his private valuation and less on the market's valuation.

The existence of overconfidence on financial markets is demonstrated through the numerous experimental and questionnaire studies, as well as the rapidly developing field of theoretical modelling. The main suggestion of these studies, besides many other valuable insights, is that overconfidence leads investors to overtrade (De Bondt & Thaler, 1995; Odean, 1998a, 1998b, 1999; Barber & Odean, 2001; Gervais & Odean, 2001; Barberis & Thaler, 2003; Statman, Thorley &

² See Fischhoff et al. (1977, 1980).

Vorkink, 2006). These models predict that overconfident investors trade more than rational investors. De Bondt and Thaler (1995) argue that “the key behavioural factor needed to understand the trading puzzle is overconfidence”

Some researchers associate differing levels of overconfidence with gender issues, which accommodates the common belief of men being more confident than women given the same level of knowledge, particularly so in male dominated realms such as finance. Models of investor overconfidence predict that since men are more overconfident than women, men will trade more and perform worse than women (Benos, 1998; Odean, 1998b; Caballé & Sakovics, 2003; Gervais & Odean, 2001; Agnew, Balduzzi & Sundén, 2003)³. Several other factors may potentially affect individuals’ overconfidence. These factors are: anchoring⁴, previous relevant experience, background, age...

Then, a more refined research into investor’s attitudes is needed before we can make any claim about over (or under) confidence.

An increasing amount of research emerges focusing on the overconfidence of individual investors from developed markets through experimental and questionnaire studies. However, this field is less explored in the emergent markets (Kuo, Kuo & Zhang, 2007). Precisely, we would like to know if the theory as suggested and tested in developing markets, works as well in emerging markets, and especially in the Tunisian one. Furthermore, compared to developed markets, emerging markets are considerably smaller⁵ and less liquid. This lack of liquidity can potentially alter the previous findings of the developed markets (Pisedtasalasai & Gunasekarage, 2007).

³ Others models of investor overconfidence, see De Long, Shleifer, Summer and Waldmann (1991), Hirshleifer, Subrahmanyam and Titman (1994), Kyle and Wang (1997), Wang (1998), Daniel, Hirshleifer and Subrahmanyam (1998, 2001), and Hirshleifer and Luo (2001).

⁴ The tendency of people to base estimates on any number just seen.

⁵ There are only about 50 listed firms in the BVMT.

The goal of our paper is to study the behaviour of individual investors. Empirically, we use a questionnaire based on a sample of individual stock investors in Tunisia. The questionnaire survey offers a more direct measurement on attitudes and it is suitable for many issues in the field of behavioural finance (Lenney, 1977; Beyer & Bowden, 1997; Bengtsson, Persson & Willenhag, 2005). Specifically, we try to answer the following questions: Are investors really overconfident? Does the self-confidence vary over different domains (such as in general situation vs. in the investment scenario)? Is it appropriate to claim overconfidence by overtrading? A delicately designed question set is asked to distinguish the self-confidence in different situations.

According to our analysis, Tunisian investors seem to be overconfident in general cases and in beating the market. Furthermore, age and income are not significantly related to self-confidence. Concerning the gender issue, we find that women tend to lack confidence in investment performance. Finally, overconfident men tend to trade more than women.

The remainder of the paper is organized as follows: In *section 2*, we review the literature on the overconfidence phenomenon. In *section 3*, we describe data and methodology. In *section 4*, we present our results and their interpretations. Finally, *section 5* concludes the paper and presents some limits.

2 Literature Review

Human nature obviously affects our behaviour. Overconfidence is one of the psychological factors known to affect our everyday life and also well documented. It means that people are usually more confident than correct. Indeed, they tend to have an unrealistically positive view of themselves. The models of investor overconfidence, like models of Benos (1998), Odean (1998b), Caballé and Sakovics (2003) and Gervais and Odean (2001) are tied to the behavioural elements proposed

by psychologists. Psychological studies show that overconfidence affects our behaviour in many ways (For example, Alpert & Raiffa 1982; Lichtenstein, Fischhoff & Phillips 1982; Fischhoff, Solvic & Lichtenstein 1977; Griffin & Tversky 1992) and this overconfidence is also found in many professional fields⁶ (see Odean, 1998b; Daniel, Hirshleif & Subrahmanyam, 1998).

Most people, when comparing themselves to a group (of co-students, co-workers, random participants), believe to be superior to an average representative of that group in various fields. That is they seem to believe they are more skilful than they really are (Svenson, 1981; Weinstein, 1980; Taylor & Brown, 1988; Lichtenstein et al, 1982).

The better than average effect attempts to determine whether and to what extent people feel superior to their peers, what reasons this may have and areas it influences. A well-known study of the better than average carried out by Svenson (1981) demonstrated that while comparing themselves with others, people generally believe themselves to be more skilful and less risky drivers than an average driver, without a prior definition or knowledge on the average driving skills.

Although the scope of psychological research on the better than average effect is much narrower than that of probability calibration, its application and analysis in the field of economics and finance is more extensive through experimental and questionnaire studies borrowed from psychology in general. In fact, the better than average effect has been proven in various experimental settings. Taylor and Brown (1988) document in their survey that people judge themselves as better than others with regards to skills or positive personality attributes. In this context, Deaves et al. (2008) explain that the feeling that many investors have that they are more able to

⁶ Examples include physicians and nurses (Christensen-Szalanski & Bushyhead, 1981; Baumann, Deber & Thompson, 1991), engineers (Kidd, 1970; Wagenaar & Keren, 1986), negotiators (Neale & Bazerman, 1990), entrepreneurs (Cooper, Woo & Dunkelberg, 1988), managers (Russo & Schoemaker 1992), investment bankers and market professionals (Stael von Holstein, 1972; Ahlers & Lakonishock, 1983; Froot & Frankel, 1989)...

tease out value than their counterparts allows them to discount the price signals coming from the rest of the market. Alicke et al. (1995) believe that the better than average effect is caused by a self-serving bias⁷ allowing people to maintain a relatively high level of self-esteem. Babcock and Loewenstein (1997) also prove in numerous experiments the pertinence of that bias. According to the authors, agents believe their contribution to a joint task to be higher than is really the case, and their information processing for outcomes with personal involvement is different than for those of third party involvement

Psychological studies and economical theories of overconfidence show that men are more overconfident than women and that overconfidence decreases with experience (Barber & Odean 2001; Gervais & Odean 2001). There is also evidence that men are more overconfident than women typically in the masculine topics (Lundberg, Fox, & Puncochar 1994; Deaux & Emswiller 1974; Beyer & Bowden 1997). In financial matters, men argued to feel more talented (Prince 1993). Additionally, so-called self attribution bias is shown to be bigger with men (Beyer, 1990; Deaux & Farris, 1977; Meehan & Overton, 1986). Based on these studies we can expect men to be more overconfident when they are acting in the financial markets than women (see Barber & Odean 2001).

Furthermore, Grinblatt and Keloharju (2001) analyse the effects of demographic factors (distance, language and culture) on stockholdings and trades. According to Tyynela and Perttunen (2003), gender and age are factors that cause differences between people's overconfidence. Besides, Baranova et al. (2004) believe that overconfidence is higher before the relative skills are measured than after. Namely, that the individuals adjust their expectations downwards even before the actual results of their performances are known. In their view, overconfidence may also be higher for males than for females.

⁷ See Skala (2008) for further details about these studies.

The link between overconfidence and trading activity has recent theoretical and empirical literature behind it. In fact, many overconfidence models show that high returns make investors overconfident and as a consequence those investors trade more often. Kyle and Wang's (1997) model has overconfidence as a commitment device for trading intensity. Odean (1998b) and Benos (1998) develop a model in which overconfidence leads to trading. Daniel et al. (1998) show that overconfident investors overweight private signals. Gervais and Odean (2001) show that investors whose overconfidence is a function of experience trade more in response to a given signal than less confident investors. Odean (1999) suggests that overconfidence may be responsible for a percentage of trading. Barber and Odean (2001) test whether overconfidence drives trading using gender as a proxy for overconfidence. They confirm that overconfident traders (men) in their sample⁸ trade more than women. As a result, the performance of men is hurt more by excessive trading. Shu, Chiu, Chen and Yeh (2004) reach the same conclusions on individual investors as Barber and Odean by analysing the investors' trading accounts from a local stock broker in Taiwan.

Glaser and Weber (2009), using data on 215 online investors who responded to a survey, find that the better than average effect is related to trading frequency. According to Glaser and Weber, at the individual level, overconfident investors will trade more aggressively: the higher the degree of overconfidence of an investor, the higher his or her trading volume. Odean (1998b) calls this finding "the most robust effect of overconfidence". Using experimental data, Deaves et al. (2008) observe that miscalibration-based overconfidence is positively related to trading activity, while Biais et al. (2002) find that miscalibration-based overconfidence reduces trading performance.

Chuang and Lee (2006) use data of US listed companies in the period 1963-2001, to prove a variety of effects of overconfidence on financial markets. They confirm

⁸ They use trading records of over 35,000 US households taken from a nationwide brokerage firm.

the assumption of Gervais and Odean (2001), that trading profits induce overconfident investors more frequently to trade. In addition, Chuang and Lee (2006) provide support for investors displaying a self attribution bias for high market volatility being due to the presence of investor overconfidence, and for overconfident investors being prone to trade more in relatively riskier securities, after experiencing market gains.

Statman et al. (2006) test the market trading volume prediction of formal overconfidence models using the US market level. They find that monthly market turnover (proxy of trading volume), is positively related to lagged market returns. Vector autoregressions and associated impulse response functions indicate that individual security turnover is positively related to lagged market returns as well as to lagged returns of the respective security. Kim and Nofsinger (2007) confirm these findings using Japanese market level data. They identify stocks with varying degrees of individual ownership to test the hypothesis and discover higher monthly turnover in stocks held by individual investors during the bull market in Japan.

Deaves et al. (2008) perform an asset market experiment in order to test if the high levels of overconfidence lead to increased trading activity. They find that greater overconfidence leads to increased trading volume. This is true both at the level of the individual and at the level of the market.

3 Data and Methodology

The subjects are targeted on the individual private stock investors in Tunis⁹. We addressed our questionnaire to 150 Tunisian investors¹⁰. We used two methods of data collection (face to face interviews and mail survey). We got a response rate of 83% and a final sample of 125 investors. The survey was conducted in July 2008.

⁹ We note that commercial agents working at the front offices in stock market intermediary houses help us to contact the investors.

¹⁰ Several questionnaires were omitted since too many questions had been left unanswered.

We use a designed question set (4 questions) in order to distinguish the self-confidence status considered in different scenarios.

The first three questions are asked to explore whether the extent of overconfidence varies in different domains. The fourth question is about the investors' frequency of trading and tries to check if overconfident investors are inclined to overtrade.

The first question is about the confidence in general situation, borrowed from the well structured query pattern used in Psychology when measuring overconfidence. We use it to serve as a benchmark to make further comparisons.

The other two questions are related to the scenario of investment. In the second question, subjects are asked about their subjectively perceived investment performance in comparison with their peers. In the third question, subjects are asked whether they have the confidence to beat the market as a whole.

We tried to check:

- Whether the confidence status differs when one faces different situations. For example, one may reveal significant overconfidence in general conditions while exhibit diffidence when facing investment.

- Whether the confidence statuses in investment differ when we used different benchmarks. For example, one may be inclined to overconfidence when compared with one's peers, while tending to diffidence when referred to the whole market. In particular, if they believe that beating the market as a whole is very difficult as the efficient market hypothesis implies.

The three questions are explained respectively as follows:

Question 1: Overconfidence in general situations

Suppose that you are related to a group of people who have a similar background and social status as you. Generally, when compared with them, you will most probably feel that you are :

- 1- better than average.
- 2- about the same.
- 3- not as good as the average.

According to the typical judging criterion used in Psychology: if the proportion answering “better than average” is significantly higher than that of “not as good as the average”, then the investors are claimed to be overconfident in the general cases.

Question 2: Overconfidence in investment performance related with peers

Compared with the investors you are acquainted with, you believe your investment performance is :

- 1- better than average.
- 2- about the same.
- 3- not as good as the average.

Question 3: Overconfidence in investment performance related with the market as a whole

When considering the next three months, do you have confidence in beating the market as a whole?

- 1- Yes, very much.
- 2- Yes. I have some confidence.
- 3- No. I have no confidence at all.

For the second and the third question, if the proportion of investors answering “better than average” or “yes” is higher than that of “not as good as the average” or “no”, then the investors are claimed to be overconfident in investment performance in comparison with the peers/the market.

Question 4: On average, how long do you hold your stocks in your portfolio?

According to many authors (Odean, 1998b; Barber & Odean, 2001), when investors are overconfident, they are inclined to overtrade. Based on these studies, we can expect a significant relation between self confidence and trading turnover.

4 Empirical results

With the data collected, we first report the sample distributions of various variables. From the distributions of confidence in different situations, we will discuss whether individuals are apt to be overconfident in each situation. Then, we will analyse the relationships between self-confidence and demographic variables as well as between self confidence and trading turnover through chi-square (χ^2) test.

4.1 Profile of respondents

Exhibit 1 reports summary statistics for our sample of investors grouped by gender, age, education and income. 73% of the subjects who responded to the questionnaire were men. This is easily understood since the number of men is higher than the number of women investing in stock markets. A greater number of subjects (35.2%) were aged around 35~49 while 30.4% were aged between 25 and 34 years. 44% of the subjects have a bachelor degree while 44.8% have a master degree or above. We remark according to our sample, that the higher the degree of education, the more we invest in the stock market. Finally, most of the respondents belonged to a middle-income class with a monthly income between 600 and 2000 dinars¹¹.

Exhibit 1.

Profile of respondents

variables		samples	%	variables		samples	%
Gender				Education*			
	male	92	73.6		low	14	11.2
	female	33	26.4		middle	55	44.0
	Total	125	100		high	56	44.8
Age	< 25	16	12.8	Total	125	100	
	25 ~ 34	38	30.4	Income**			
	35 ~ 49	44	35.2		low	29	23.3
	50 ~ 60	16	12.8		middle	63	58.4
	> 60	11	8.8		high	23	18.4
	Total	125	100		Total	125	100

*The education of low: high school or lower; middle: bachelor; high: master and above.

**The income of low: lower than 600 dinars; middle: from 600 to 2000 dinars; high: above 2000 dinars.

¹¹ 100 Tunisian Dinars = 71, 9 US Dollars as of 1/26/2009.

4.2 The distributions of self-confidence

This section will describe the distribution of self-confidence both in general conditions and in investment. This is followed by cross distribution of self confidence in general cases and investment.

4.2.1 Self-confidence in general conditions

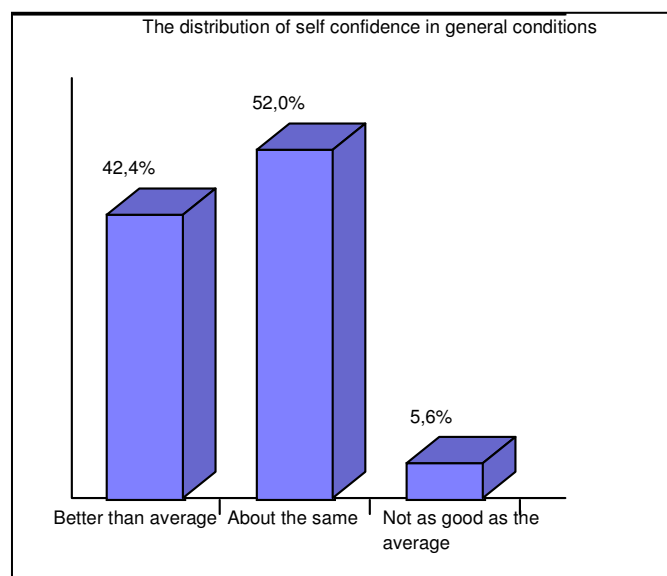
Exhibit 2 reports that when subjects are related to the peers with similar backgrounds and social status, they consider themselves as “about the same” (52%). Tunisian people behave and think as the average. Benoit and Durba (2007) argue that if people have no information about themselves (on some unknown skill), they will rate themselves as average. This can also be explained by the herding behaviour¹². In fact, according to Shiller (2000), in everyday living, we have learned that when a large group of people is unanimous in its judgments they are certainly right. Moreover, those who see themselves “better than average” are much more than those “not as good as the average”, with the proportion of 42.4 % versus 5.6%. Thus, people are inclined to be overconfident in general cases. This result is in concordance with the studies on better than average effect. In fact, self-serving biases allow people to maintain a relatively high level of self-esteem (Alicke et al., 1995).

Exhibit 2.

The distribution of self-confidence in general situations

Self confidence	samples	%
better than average	53	42.4
about the same	65	52.0
not as good as the average	7	5.6
Total	125	100

¹² Herd behaviour is a form of heuristics where individuals are led to conform to the majority of individuals, present in the decision-making environment, by following their decisions.



4.2.2 Self-confidence in investment

From Exhibit 3, we remark that the majority of investors in the Tunisian stock market view themselves as “about the same” (40.3%). In addition, 30.6% of the respondents consider themselves as “better than average”, greater than those “not as good as the average” by less than 1%. The results obtained indicate that Tunisian investors demonstrate overconfidence in terms of relative investment performance perceived when comparing with peers.

Concerning the confidence in beating the market, Exhibit 4 shows that 72.6% of the interviewers think that they are able to beat the market (11.3% are very confident).

According to Exhibit 3 and Exhibit 4, the investors show evidence of overconfidence, whether it is compared with their peers or with the market as a whole.

Exhibit 3.

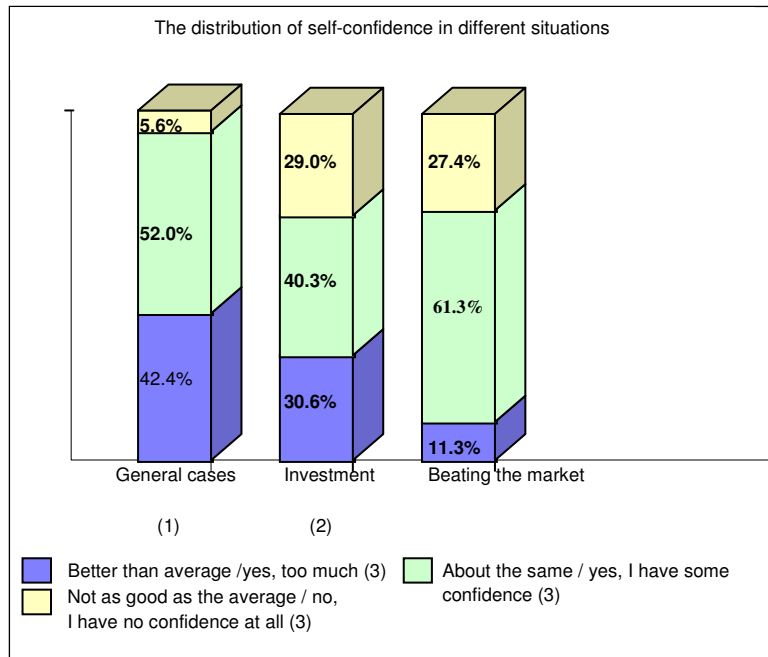
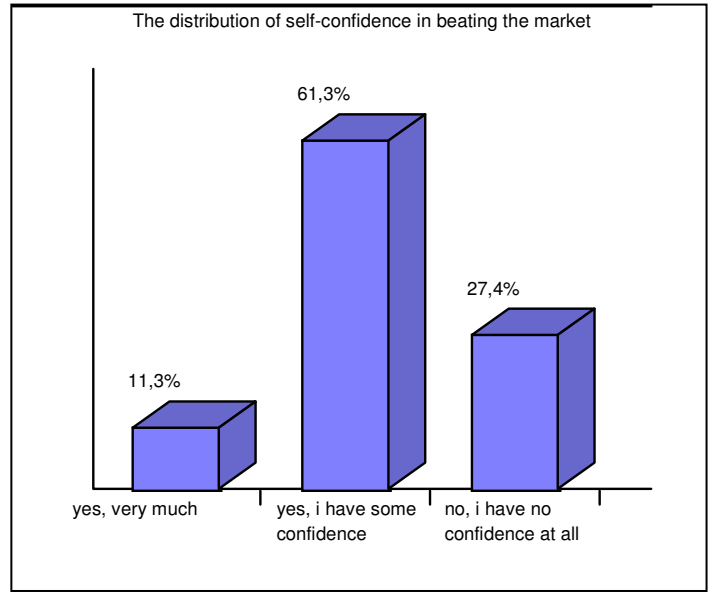
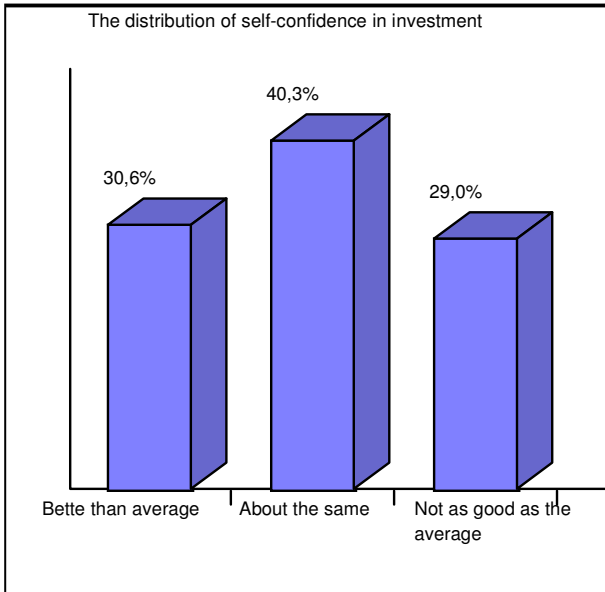
The distribution of self-confidence in investment

Self confidence	samples	%
better than average	38	30.6
about the same	50	40.3
not as good as the average	36	29.0
Total	124	100

Exhibit 4.

The distribution of self-confidence in beating the market

Self confidence	samples	%
yes	90	72.6
no	34	27.4
Total	124	100



4.2.3 Cross distributions of self-confidence in general conditions and investment

According to Exhibit 2, 42.4% of individual investors believe themselves better than others, while only 5.6% consider themselves not as good as the average.

We remark from Exhibit 5 a strong correlation between the investors' confidence in general situations and in investment performance (chi square statistics reaching the 1% significant level). In fact, most subjects who feel better (not as good as) than average in general situations also tend to feel better (not as good as) than others in investment. Moreover, 71.4% of the subjects consider themselves not as good as the peers both in general cases and in investment. In other words, those who see themselves as "not as good" in general cases are also diffident in investment.

Besides, the dependence between the confidence in general cases and the confidence in beating the market is weakly significant (in the group of people who see themselves better than average in general conditions, chi square statistics is significant at the level of 10%). Indeed, in the group of people considering themselves better than the others in general cases, 81.1% of subjects consider themselves able to beat the market. Furthermore, 68.8% of investors viewing themselves as average in general situations feel they can beat the market. In summary to the above analysis, the subjects demonstrate a significant self-confidence when referring to investment. It is more difficult for the group having confidence in themselves in general cases to beat the peers than to beat the market when referring to investment performance.

Exhibit 5.

Cross distributions of self-confidence in general conditions and investment

Confidence in investing performance		Self-confidence in general conditions			
		better	average	worse	Total
Better	samples	25	12	1	38
	%	48.1	18.5	14.3	30.6
average	samples	15	34	1	50
	%	28.8	52.3	14.3	40.3
worse	samples	12	19	5	36
	%	23.1	29.2	71.4	29.0
Total	samples	52	65	7	124
	%	100	100	100	100
Confidence in beating the market		better	average	worse	Total
yes	samples	43	44	3	90
	%	81.1	68.8	42.9	72.6
no	samples	10	20	4	34
	%	18.9	31.3	57.1	27.4
Total	samples	53	64	7	124
	%	100	100	100	100

We remark from Exhibit 6 that there are more investors belonging to the combination of “yes x better” (confidence in beating the market and investment performance better than peers) than to the combination “no x worse” (no confidence in beating the market and investment performance worse than peers). In fact, they account for 26.1% and 15.4% respectively. This means that the ones having confidence are numerous than the ones lacking confidence in investment.

Exhibit 6

Cross distributions on the confidence of three situations

Beating the market	returns(vs. peers)	General cases			Total	%
		better	average	worse		
yes	better	23	8	1	32	26.1
	average	11	28	1	40	32.5
	worse	8	8	1	17	13.8
no	better	2	4	0	6	4.8
	average	4	5	0	9	7.3
	worse	4	11	4	19	15.4
	Total	52	64	7	123	100

In summary of the analysis above, the patterns show that investors are overconfident both in general situations and in investment.

Many studies have established that, in general, people tend to have an unrealistically positive view of the self. Taylor and Brown (1988) document, in their survey, that people have unrealistically positive views of themselves (positive illusions including unrealistically positive self-evaluations, exaggerated perceptions of control and mastery and unrealistic optimism). They explain that the self-serving bias make people assign more responsibility for success and less for failure to themselves.

Furthermore, the presence of overconfidence in the Tunisian financial market is in concordance with many studies. The prevalence of all overconfidence facets on an individual investor level is confirmed in a large questionnaire study of De Bondt (1998). According to the author, investors are overly optimistic about the performance of shares they themselves own but not about the level of the stock

index in general. In addition, they underestimate the covariance in returns between their own portfolio and the market index, which could originate from the better than average effect (Odean, 1998b). According to Daniel et al. (1998), investors overestimate the precision of their information (sometimes more specifically: overestimating private signals and underestimating the public issues).

4.3 Self-confidence vs. demographic variables

To establish which demographic factors are considered the most important in contributing to self-confidence, we use the independence test.

We can see from Exhibit 7 that age and income are not significantly related with self-confidence. However, we get a significant chi-square statistics only for the relation between self-confidence in general situations and education. In fact, subjects who are highly educated are more overconfident on themselves in general cases. But, this relation is not reported in investment performance.

Concerning the gender issue, Exhibit 7 show that there is a (weak) significant difference between male and female when the questions asked are about the general cases. The percentages of feeling better than average for men vs. women are 83.0% vs. 17.0%. This result is in concordance with the literature suggesting that there are significant gender differences in overconfidence, measured as a better-than-average effect. For example, Deaux and Farris (1977), Beyer and Bowden (1997), Beyer (1998), and Johnson et al. (2006) find that men have better self perception than women despite the general lack of difference in their test performance.¹³

¹³ The literature offers differing views on whether males actually are more miscalibrated than women. Lundeberg, Punóchař, and Fox (1994) and Pulford and Colman (1996) argue that men are less well calibrated than women, particularly for tasks that are perceived to be in the masculine domain, whereas Beyer and Bowden (1997) and Beyer (1998) find women to be better calibrated. Lichtenstein and Fishhoff (1981), Lundeberg et al. (2000), Biais et al. (2002) and Deaves et al. (2004) find no difference in miscalibration between men and women.

Deaux and Ferris (1977) write “Overall, men claim more ability than do women, but this difference emerges most strongly on ... masculine task[s].” Several studies confirm that differences in confidence are greatest for tasks perceived to be in the masculine domain (Deaux & Emswiller 1994; Lundeberg, Fox & Puncochar, 1994; Lenney, 1977; Beyer & Bowden 1997). Men are inclined to feel more competent than women do in financial matters (Prince, 1993). Indeed, Deaux and Farris (1977); Meehan and Overton (1986), and Beyer (1990) find that the self-serving attribution bias is greater for men than for women. And so men are likely to become more overconfident than women.

In terms of investment, according to our survey, there is no significant difference between male and female when the questions asked are about investing performance (compared with peers)¹⁴. However, men show more overconfidence than women in beating the market. In fact, for those who answer “able to beat the market”, men accounts for 78.9% and women for 21.1%.

Exhibit 7: Self-confidence and demographic variables: independence test													
variables		Self-confidence in general situations				Self-confidence in beating market			Self-confidence in investment performance				
		better	average	worse	total	yes	no	total	better	average	worse	total	
gender	male	sample	44	42	6	92	71	20	91	29	37	25	91
		%	83.0	64.6	85.7	73.6	78.9	58.8	73.4	76.3	74.0	69.4	73.4
	female	sample	9	23	1	33	19	14	33	9	13	11	33
		%	17.0	35.4	14.3	26.4	21.1	41.2	26.6	23.7	26.0	30.6	26.6
	total	sample	53	65	7	125	90	34	124	38	50	36	124

¹⁴ Though, casual observation reveals that men are disproportionately represented in the financial markets (and in the Tunisian stock market in particular).

		%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	χ^2 (P-value)		5.65	(0.0593)*			5.09	(0.0241)**		0.46	(0.7933)		
age	<25	samples	8	8	0	16	13	3	16	1	9	6	16
		%	15.1	12.3	0.0	12.8	14.4	8.8	12.9	2.6	18.0	16.7	12.9
	25~34	sample	13	22	3	38	29	9	38	13	14	10	37
		%	24.5	33.8	42.9	30.4	32.2	26.5	30.6	34.2	28.0	27.8	29.8
	35~49	sample	19	24	1	44	32	11	43	15	17	12	44
		%	35.8	36.9	14.3	35.2	35.6	32.4	34.7	39.5	34.0	33.3	35.5
	50~60	sample	7	8	1	16	10	6	16	6	6	4	16
		%	13.2	12.3	14.3	12.8	11.1	17.6	12.9	15.8	12.0	11.1	12.9
	>60	sample	6	3	2	11	6	5	11	3	4	4	11
		%	11.3	4.6	28.6	8.8	6.7	14.7	8.9	7.9	8.0	11.1	8.9
total	sample	53	65	7	125	90	34	124	38	50	36	124	
	%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	
χ^2 (P-value)		8.09	(0.4261)			3.56	(0.469)		5.76	(0.6735)			
education	Low	samples	6	5	3	14	8	6	14	5	6	3	14
		%	11.3	7.7	42.9	11.2	8.9	17.6	11.2	13.2	12.0	8.3	11.2
	Middle	sample	21	32	2	55	24	12	54	16	24	15	55
		%	39.6	49.2	28.6	44.0	46.7	35.3	44.0	42.1	48.0	41.7	44.0
	High	sample	26	28	2	56	40	16	56	17	20	18	55
		%	49.1	43.1	28.6	44.8	44.4	47.1	44.8	44.7	40.0	50.0	44.8
	Total	sample	53	65	7	125	90	34	124	38	50	36	124
		%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	χ^2 (P-value)		8.66	(0.0702)*			2.45	(0.2942)		1.14	(0.8872)		
	income	Low	samples	11	17	1	29	21	8	29	6	15	8
%			20.8	26.2	14.3	23.2	23.3	23.5	23.2	15.8	30.0	22.2	23.2
middle		sample	31	37	5	73	51	21	72	24	25	23	72

	%	58.5	56.9	71.4	58.4	56.7	61.8	58.4	63.2	50.0	63.9	58.4
high	sample	11	11	1	23	18	5	23	8	10	5	23
	%	20.8	16.9	14.3	18.4	20.0	14.7	18.4	21.1	20.0	13.9	18.4
total	sample	53	65	7	125	90	34	124	38	50	36	124
	%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
χ^2 (P-value)		1.15	(0.8863)			0.48	(0.7852)		3.44	(0.487)		

Barber and Odean (2001) contend that the relationship between gender and trading activity is due to the greater overconfidence of men. Following the authors, we investigate this by controlling for gender focusing only on males and looking at how trading turnover is related to self-confidence.

We can see from Exhibit 8 that confidence is not significantly related to trading turnover when the subjects are referred to as self-confident in general conditions or in beating the market. However, this relation is significant when the subjects are referred to as self-confident in investment performance compared with peers. In fact, 24.1% of those who see themselves better than the peers hold their stocks in their portfolios, on average, only 1 month. According to Shiller (1998), many investors feel that they do have speculative reasons to trade often, and apparently this must have to do with a tendency for each individual to have beliefs that he or she perceives better than others' beliefs (Shiller, 1998). Furthermore, 34.5% of the subjects considering themselves better than the other investors in terms of investment hold stocks more than 12 months in their portfolios. We can interpret this result by the fact that some investors prefer holding the stocks they consider good ones (they believe more strongly in their own valuation of these stocks and concern themselves less about the beliefs of others) and then investing them in long term horizons.

Exhibit 8: Self- confidence and trading turnover												
Self-confidence in general situations				Self-Confidence in beating market				Self-confidence in investment performance				
Trading frequency (number of months)	better	average	worse	total	yes	no	total	better	average	worse	total	
<2	samples	10	2	1	13	12	1	13	7	5	1	13
	%	22.7	4.8	16.7	14.1	16.9	5.0	14.1	24.1	13.5	4.0	14.1
2~5	sample	13	16	1	30	24	5	29	4	17	9	30
	%	29.5	38.1	16.7	32.6	33.8	25.0	32.6	13.8	45.9	36.0	32.6
6~12	sample	7	6	2	15	10	5	15	4	6	4	14
	%	15.9	14.3	33.3	16.3	14.1	25.0	16.3	13.8	16.2	16.0	16.3
≥12	sample	9	13	2	24	18	6	24	10	7	7	24
	%	20.5	31.0	33.3	26.1	25.4	30.0	26.1	34.5	18.9	28.0	26.1
TTL	sample	39	37	6	82	64	17	81	25	35	21	81
	%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
χ^2 (P-value)		7.93	(0.2433)			3.24	(0.3557)		10.56	(0.103)*		

5 Conclusion

The key behavioural factor and perhaps the most robust finding in the psychology of judgement needed to understand market anomalies is overconfidence. We focused in this research on this factor in order to check whether individual investors are overconfident in emergent market. We find that Tunisian investors tend to be overconfident in general cases. In terms of investment, we find also that it's more difficult for overconfident investors to beat their peers than to beat the market as a whole when referring to investment performance. Furthermore, age and income are not significantly related to self-confidence. Finally, while men are more confident

than women in general cases and in beating the market, we find little evidence that overconfidence leads to over-trading.

Our study can be helpful either for investors or portfolio managers. In fact, it may help the investors in understanding the subjective part of their behaviour and control their emotion. It may also help financial analysts and portfolio managers to give their recommendations more accurately. Furthermore, to avoid this bias, investors should not invest without first examining the nature of the potential investment instruments. Before making an investment decision, they should also collect information from various sources and then analyze them.

As future research, it would be interesting to test the correlation between measures of overconfidence (bias score) and trading volume. Furthermore, we can also include other psychological factors to study the investor's decisions such as loss aversion (tendency to dislike losses much more than like the gains), representativeness (tendency to draw strong conclusions from small samples underestimating the effects of random chance), narrow framing (tendency to analyze a situation in isolation while ignoring the larger context), and belief perseverance (tendency to ignore information that conflicts with ones' existing beliefs)...

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