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Further evidence on Gender differences and their impact on Risk Aversion

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Abstract: *This paper examines the impact of gender on risk aversion in portfolio selection. Using an account data for over than 2166 customers of a Tunisian Brokerage firm, our empirical results show significant relationship between risk aversion and each of exogenous variables including gender, financial knowledge, age, education level and wealth. Furthermore, the level of education and knowledge in finance has an adverse effect on risk aversion by gender. These findings have several important implications on optimal asset allocation and portfolio managers.*

JEL classification: G14; G15

Keywords: Gender difference, Risk aversion, Tunisian stock market

1. Introduction

The assessment of individual risk attitude is central in managerial and financial decision making, both in theory and practice. Predictions derived from standard finance theory, such as portfolio theory, are based on assumptions concerning individual risk attitudes. However, understanding individual attitudes towards risk is intimately linked to the aim of understanding and predicting economic behavior. One important open question concerns the determinants of individual differences in risk attitudes. Previous studies (Barsky et al., 1997; Diaz-Serrano and O'Neill, 2004; Donkers et al., 2001; Guiso and Paiella, 2005; Guiso et al., 2002, among others) have measured risk attitudes using survey questions, and showed mixed results on determinants, for example gender. In fact, several factors, including self-serving biases, inattention, and strategic motives could cause respondents to distort their reported risk attitudes (Camerer and Hogarth, 1999). Experimental studies, which measure risk-taking behavior with real money at stake, on the other hand, provide an incentive compatible measure of risk attitudes.However, a drawback of this technique is that it is costly and difficult to perform with a large, representative sample, preventing studies at a large scale.Interestingly, differences in asset allocation can also occur if investors have different expectations about future returns and/or different perceptions about the riskiness of financial markets.

To start, Croson and Gneezy (2009) find that women are more risk averse than men and that the social preferences of women are more specific than those of men; women are neither

more nor less socially oriented, but their social preferences are more malleable. Furthermore, they show that women are more averse to competition than are men.

Several explanations of gender differenceshave been mentioned. The first explanation offered for gender differences in risk taking is based on differences in emotional reactions to risky situations. Previous research from psychology concludes that women experience emotions more strongly than men (Harshman and Paivio, 1987). A second reason for gender differences in risk attitudes and in the evaluation of risk may relate to confidence. The literature finds that both men and women are often overconfident, with men being more overconfident in their success in uncertain situations than women. In this context, Barber and Odean (2001) analyze the common stock investments of men and womenusing account data for over 35,000 households. They document that men, theoretically more overconfident, trade 45 percent more than women.A final explanation for the observed risk preference difference is the interpretation of the risky situation. Arch (1993) provides explanation on the basis of the believed appropriate response. Males are more likely to see a risky situation as a challenge, while females interpret risky situations as threats t.

Several studies support evidence that women, on average, hold less risky assets than men do. They report systematic gender differences in risk preferences (Charness and Gneezy, 2012; Croson and Gneezy, 2009; Dwyer et al., 2002; Jianakoplos and Bernasek, 1998). For example, Jianakoplos and Bernasek (1998) show that single men invest, on average, 46 percent of their wealth in risky assets, while single women invest only 40 percent (these proportions are respectively 47.4% and 43.0% in the study of Jacobson et al., 2014). This gender gap in stock holdings is widely attributed in the literature to women being more risk averse than men regarding financial risk. Dominitz and Manski (2007) show significant gender differences in beliefs about future stock returns and find that the heterogeneity in reported beliefs leads to differences in the probability of holding stocks.

This study is distinguished from the previous work by at least three reasons. First, it focuses on adeveloping country that witnesseda revolution in January 2011. Second, it uses data from real investment decisions. And finally, it shows how despite progress in man-woman's parity, the Tunisian society remains patriarchal as man is hegemonic bothathome and in the workplace.

We first use daily data spanning from January 2, 2007 to March 19, 2014 to investigate the impact of several socio-economic variables comprising knowledge in finance, level of instruction, income, age and gender on investors' risk aversion. Second, we assess the importance of these variables to the probability of adopting long or short trading position.

The empirical results show negatively and statistically significant relationship between financial knowledge and risk aversion except of the women's subsample. Also, the level of instruction contributesto explain the shift on investors' risk appetite. On the other hand, we reveal positive linkages between both age and incomefactors and the risk aversion. Furthermore, we find evidence between age and the long trading position. In contrast, there is no significant relationship between the income and the probability to adopt the long trading position. The level of instruction impacts positively the long trading position for men's subsample but negatively for women's. Finally, there is some evidence that the probability of having long trading position increases as the financial expertise decreases.

The remainder of this paper is organized as follows. Section 2 provides a summary of the literature review. Section 3 discusses the econometric framework. Section 4 presents the data and the stochastic properties. Section 5 discusses the empirical results. Section 6 draws conclusions and implications.

2. Theoretical survey

Risk and uncertainty are of great importance in almost every important financial decision. Many economic interactions involve some form of risk. Thus, it is not surprising that a substantial body of research in social science has tried to understand how decision makers incorporate risk in their choices.[1] A burgeoning literature has made progress on developing empirical measures of individual risk attitudes, with the aim of capturing this important component of individual heterogeneity (see, e.g., Bruhin et al., 2010), but many questions remain unresolved.One important systematic difference in risk taking between groups is the gender of the decision maker (see, Charness and Gneezy, 2012).

However, researchers had explored why women and men might have different risk preferences. Those differences may be due to either nurture, nature, or some combination of the two. Gneezy et al. (2009)explore the role that culture plays in determining gender differences in competitive behaviour. They investigate two distinct societies the patriarchal Maasai tribe of Tanzania and the matrilineal Khasi tribe in India. While they find that, in the patriarchal society, women are less competitive than men, which is consistent with experimental data from Western cultures, in the matrilineal society, women are more competitive than men. The authors interpret this as evidence that culture has an influence on gender differences. Interestingly, however, they find no evidence that, on average, there are gender differences in risk attitudes within either society.

Using 26 independent experimental markets with a total of 280 participants, Fellner and Maciejovsky (2007) show that binary lottery choices are systematically correlated with market behavior: the higher the degree of risk aversion the lower the observed market activity. They find that women are more risk averse than men, submit fewer offers, and engage less often in trades.

Regarding risk measurement, Charness and Gneezy (2012) analyze data from 15 different experiments which all apply the same investment game and find a strong gender difference such that women make smaller investments in the risky asset than do men, and so appear to be financially more risk averse. Moreover, women have a higher context-sensitivity than men and have a smaller propensity to enter competitive situations. Recently, Dittrich and Leipold (2014) examine gender differences in time preferences using an online experiment conducted with a large number of participants. The authors document that women tend to be more patient than men. Their result is consistent with findings from evolutionary psychology that, due to evolutionary selection pressures, women are better able than men to delay gratification and tend to be more self-disciplined.

In another study that deals with gender difference, Jacobsen et al. (2014) investigate two

[1] See Croson and Gneezy (2009) for an excellent survey of the literature on gender differences in economic experiments.

possible explanations for a gender gap in risky holdings; gender differences in optimism and perceived risk. Their results indicate that men tend to be more optimistic than women regarding a broad range of issues, including the economy and financial markets. After considering differences in optimism, systematic gender differences in asset allocations disappear.

Some studies give exception to the general rule of gender differences. Atkinson et al. (2003) present a comparison of investment behavior of male and female mutual fund managers. They find similar performance and other fund characteristics, suggesting that differences in investment behavior generally attributed to gender may be related to investment knowledge and wealth constraints. Also, Dwyer et al. (2002) demonstrate that the observed difference in risk taking between men and women is significantly attenuated when a financial investment knowledge control variable is integrated in the analysis.

3. Methodology

We first describe a linear model linking risk aversion to explanatory variables including investors' gender. Second, we present a logit model explaining long/short trading positions of investors by the same exogenous variables.

3.1. Linear model

This paper studies the relationship between risk aversion and several socio-economic variables of investors including gender. More precisely, we investigate the differences or similitudes by gender in investment behavior. We develop a simple linear model explaining risk aversion of investors by their level of instruction (LI), financial knowledge (FK), income (REV), age (AGE) and gender (GENDER). To achieve better results, we propose different versions of this model:

Model 1: $$RA_{it}^{G} = \beta_0^1 + \beta_1^1 FK_{it}^{G} + \beta_2^1 LI_{it}^{G} + \beta_3^1 REV_{it}^{G} + \beta_4^1 AGE_{it}^{G} + \beta_5^1 GENDER_{it}^{G} + \varepsilon_{it}^{2G} \quad (1)$$

Model 2: $$RA_{it}^{G} = \beta_0^2 + \beta_1^2 FK_{it}^{G} + \beta_2^2 LI_{it}^{G} + \beta_3^2 AGE_{it}^{G} + \beta_4^2 GENDER_{it}^{G} + \varepsilon_{it}^{2G} \quad (2)$$

Model 3: $$RA_{it}^{G} = \beta_0^3 + \beta_1^3 FK_{it}^{G} + \beta_2^3 AGE_{it}^{G} + \beta_3^3 GENDER_{it}^{G} + \varepsilon_{it}^{3G} \quad (3)$$

Model 4: $$RA_{it}^{G} = \beta_0^4 + \beta_1^4 REV_{it}^{G} + \beta_2^4 AGE_{it}^{G} + \beta_3^4 GENDER_{it}^{G} + \varepsilon_{it}^{4G} \quad (4)$$

where:

RA_{it}^{G}: Risk Aversion of investor i at time$t$ for gender G with $G = M\ or\ F$ if Male or Female, respectively, measured by market volatility at time t;

FK_{it}^{G}: Financial Knowledge of investor i at time t for gender G;

LI_{it}^{G}: Level of Instruction of investor i at time t for gender G;

REV_{it}^{G}: Level of Income of investor i at time t for gender G;

AGE_{it}^{G}: Age of investor i at time t for gender G;

$GENDER_{it}^{G}$: Gender of investor i at time$t$; it takes the value of 1 if the investor is a man and 0 otherwise;

β_m^n: the parameter linked to the variable m for model n (with n= 1, 2, 3 and 4).

ε_{it}^{G}: An error term of investor i at time$t$ for gender G.

These models are tested on the entire sample of transactions carried out by all investors without gender-based distinction. To detect an eventual effect of gender, we divide our sample

into two subsamples: the first one includes only men while the second is reserved for women. When we test the relationship between risk aversion and explanatory variables on these subsamples, the variable gender is dropped from all considered models.

3.2. The logit model

We shed lights on the relationship between long/short positions realized by investors of the sample and five important socio economic variables including, knowledge in finance, level of instruction, income, age, and gender. For this purpose, the logit model is used. It is noteworthy that the logit and probit models are two popular models for binary endogenous variables.

Let us suppose a variable y that takes the value of one if there is a long position (buy) and the value of zero otherwise (i.e., short position or sell). The latent variable y^* is defined as follows

$$y_i^* = \alpha + \beta \sum_{i=1}^{5} x_i + \varepsilon_i \quad (5)$$

where x is the exogenous variables including, knowledge in finance, level of instruction, age, income and gender and ε_i is an error term.

The observable variable y is given by

$$y_i = \begin{cases} 1 \ if \ y_i^* > 0 \\ 0 \ otherwise \end{cases} \quad (6)$$

The present logit model is defined as follows

$$P(y = 1) = \frac{1}{1+e^{-(\alpha + H_i \beta)}} = \frac{e^{(\alpha + H_i \beta)}}{1+e^{(\alpha + H_i \beta)}} \quad (7)$$

where alpha, beta are the parameters of the logit model.

4. Data, variables description and summary statistics

4.1. Data

Our primary data set consists of two files provided by a brokerage firm on the Tunisian stock exchange market. The first one is a customer's file, comprising for each customer, code number, date of birth, gender, profession and activity sector. The second file presents the transactions realized by customers during the period January 2, 2007 to March 19, 2014. It contains the customer's code, transaction's date, sense of transaction (i.e., buy or sell) and negotiated share (i.e., quantity, price, brokerage and commission fees). We also use daily Tunisian stock market index (Tunindex) compiled from the Tunisian stock exchange website.[2]

The customers' file contains initially 3936 customers. Some of them are companies and therefore we do not have any information about the gender of the portfolio manager; they are dropped from the sample. We also exclude the observations in which, the date of birth and/or the profession of the customer are not mentioned. The number of remaining customers is 2166. The transactions file initially contains 49421 transactions. They are not all ordered by customers existing in the first file. These transactions are eliminated and the final sample contains 45393 observations. A transaction may be a share's buy or sell. During the considered period, we register 19279 buy and 26114 sell operations.

[2] http://www.bvmt.com.tn.

4.2. Descriptive analysis of socioeconomic variables

Profession and activity sector allow us to determine if the customer has or has no knowledge in finance; the value 1 is attributed if acting in activity sectors such as banking, insurance, brokerage firms, financial direction in companies, etc. and 0 otherwise. Level of instruction is a dummy variable that takes the value of 1 if the customer has a university or high school grade at minimum and 0 otherwise. The third dummy variable is income, it takes the value one if the annual revenue exceeds 50000 TND (about 30000 US dollars, that represents ten times the guaranteed minimum wage approximately in Tunisia) and zero otherwise. Date of birth is used to compute age of the customer in April 2014.

Table 1
Descriptive analysis of variables.

	Number	Mean Age	Knowledge in Finance		Level of instruction		Income	
			Yes	No	High	Low	High	Low
Panel A: proportions of investors								
Women	556 (25.7%)	38	23 (4.1%)	533 (95.9%)	59 (10.6%)	497 (89.4%)	34 (6.1%)	522 (93.9%)
Men	1610 (74.3)	41	101 (6.3%)	1509 (93.7%)	232 (14.4%)	1378 (85.6)	165 (10.2%)	1445 (89.8)
Aggregate	2166 (100%)	40	124 (5.7%)	2042 (94.3%)	291 (13.4%)	1875 (86.6%)	199 (9.2%)	1967 (90.8%)
Panel B: proportions by gender								
Women			18.5%	26.1%	20.3%	26.5%	17.1%	26.5%
Men			81.5%	73.9%	79.7%	73.5%	82.9%	73.5%
Aggregate			100%	100%	100%	100%	100%	100%

Table 1 presents the features of our sample customers by gender over the period January 2, 2007 to March 19, 2014. Panel A of this table shows that Tunisian financial market's investors are essentially men. This predominance of men (three quarters men against one quarter women) confirms the patriarchal composition of the Muslim Tunisian society. Only 5.7% of investors have knowledge in finance, which can be explained by the fact that investment in stock market is relatively a new activity in Tunisia[3]. Dealing with level of instruction, merely 13.4% of investors are high level instructed. The low level of instruction may be explained by the quality of our primary data and by our definition of this variable. In fact, any person that has no university or high school grade is qualified by having a low level of instruction. Analyzing the portfolio sizes from the second file (transactions' file) of our data set, we conclude that investors are small shareholders. The average of the investors' transaction value in the selected data is approximately 1500 TND (almost 1000 USD). This fact can explain that only 9% of investors have high income.

Panel B of table 1 presents a gender repartition of investors within each alternative of our selected factors (yes/no, high/low). Among the financial experts, the proportion of women is 18.5%. Only 20.3% of high-educated investors are women. No more than 17.1% of wealthy investors are women. These results confirm the disparity men/women displayed in Pane A.

[3] The Tunisian stock market was created in 1969. The stock market capitalization/GDP is about 20% in 2012 (Central bank of Tunisia report 2012).

4.3. Descriptive statistics

The volatility of the market index is used as a proxy variable of the customer risk aversion. This volatility is calculated by the variance of market index returns during the 30 days that precede day of the transaction done by the customer. The volatility of the return series (i.e., risk aversion) is given as follows:

$$Vol_t = \frac{1}{30}\sum_{j=t-31}^{t-1}\left(r_j - \bar{r}_j\right)^2 \quad (8)$$

where, r_j is the return of the Tunisian stock market index (Tunindex) at time j. It is computed by taking the difference in the logarithm between two consecutive observations.

Table 2
Descriptive statistics.

	Vol (10^4)	FK	LI	Rev	Age	Gender
Mean	0.3611	0.0568	0.1339	0.0919	39.764	0.7431
Median	0.1603	0.0000	0.0000	0.0000	39.000	1.0000
Maximum	5.1333	1.0000	1.0000	1.0000	89.000	1.0000
Minimum	0.0132	0.0000	0.0000	0.0000	1.0000	0.0000
Std. Dev.	0.6639	0.2315	0.3406	0.2889	17.564	0.4369
Skewness	4.3431	3.8290	2.1494	2.8249	0.0045	-1.1133
Kurtosis	23.770	15.661	5.6201	8.9806	2.5974	2.2394
Jarque-Bera	37845***	19752***	2286***	6106***	14***	499***
Observations	1792	2166	2166	2166	2166	2166

Notes: *** denotes the rejection of the normal distribution at the level of 1%.

Table 2 presents the descriptive statistics of our considered variables. One year is the minimum age variable, which could be explained by the fact that the portfolio is registered for a child yet managed by his parent. The variables of risk aversion, knowledge in finance, instruction level, income and age are right skewed while the gender variable is left skewed. Additionally, the risk aversion, knowledge in finance, instruction level and income variables are leptokurtic while both age and gender variables are platikurtic. As indicated by the Jarque-Bera test, we strongly reject the null of Gaussian distribution. The variable age is one that is closest to this distribution. The number of observation of risk aversion is different and represents the number of quotation days of the Tunisian stock exchange during the study period.

5. Empirical results

5.1. OLS Results

We assess the linkages between the risk aversion and some explanatory variables including age, income, level of education and knowledge in finance. To this end, we propose four models. Model 1 considers all the variables and in Models 2 to 4, different versions are tested. When the regressions are executed on the men's and women's subsamples, the variable relating to gender is eliminated. Table 3 summarizes the ordinary least squares (OLS) regression results.

Table 3
OLS regression results.

Panel A: Fullsample	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Intercept	0.162498***	0.161277***	0.161889***	0.168434***
FK	-0.046192***	-0.018688*	-0.021584**	
LI	-0.033717***	-0.005211		
REV	0.081667***			0.041890***
Age	0.001747***	0.001810***	0.001781***	0.001515***
Gender	0.086572***	0.086915***	0.086915***	0.081436***
$AdjR^2$	0.007187	0.005580	0.005589	0.006127
F-statistic	66.71730***	64.67263***	86.03430***	94.27479***
Panel B: Men's subsample	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Intercept	0.253632***	0.251296***	0.251204***	0.256348***
FK	-0.066206***	-0.036449***	-0.035628***	
LI	-0.02655***	0.001501		
REV	0.083083***			0.039277***
Age	0.001638***	0.001738***	0.001749***	0.001374***
$AdjR^2$	0.003693	0.002010	0.002034	0.002264
F-statistic	37.15197***	27.18543***	40.75823***	45.25637***
Panel C: Women's subsample	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Intercept	0.137443***	0.149172***	0.138118***	0.128662***
FK	0.346407***	0.328185***	0.300774***	
LI	-0.137866***	-0.061339***		
REV	0.189604***			0.114900***
Age	0.002245***	0.002025***	0.002181***	0.002500***
$AdjR^2$	0.026179	0.019567	0.018220	0.009457
F-statistic	43.89090***	43.45661***	60.21983***	31.46564***

Notes: FK, LI, Rev, Age and Gender refer to financial knowledge, level of instruction, income, age and gender, respectively. *, ** and *** denote significance at the level of 10%, 5% and 1%, respectively.

Panel A of Table 3 shows a strong significance of all used variables, except for the level of instruction variable for Model 2. The financial knowledge, the level of instruction, income, age and gender variables are contributive to explain the reaction of investors in the Tunisian stock market. It is clear from this initial study based on the full sample, that the risk aversion variable is positively dependent on income, age and gender but negatively linked with education and knowledge in finance variables. Thus, the risk aversion of Tunisian investors increases with income and age but decreases with education level and knowledge in finance. Moreover, gender has a significant effect on risk aversion, which was originally the idea of the use of two subsamples by gender. The obtained results are similar whatever the considered model. The variable age adopted in the four models is always positive and significant, supporting

strong evidence across age and risk aversion. We conclude that the Tunisian investor becomes less averse towards risk regarding age.

Looking to the full sample against both subsamples, we find similar results only for the men subsample. Risk aversion of men investors rises with the income and age while decreases with the financial knowledge and the instruction level. Similarly to the result of Panel A, the latter is not significant for Model 2. As shown in Panel C of Table 3, only the sign of financial knowledge variable changed for all models. The sign of this variable becomes negative and statistically significant at the 1% level. In contrast, the level of instruction coefficient becomes statistically significant for Model 2.

Panels B and C of Table 3 provide the estimation results by gender. It turns out that Tunisian men and women investors admit different behavior toward risk, regarding knowledge in finance. Indeed, the risk aversion of Tunisian women is positively affected by the knowledge in finance factor, indicating that women tend to select risky portfolios. In other words, contrarily to men, women with financial expertise become risk prone in their investment decisions. This contradictory result between men and women disappears regarding the level of instruction. More precisely, for both women and men, this variable has a negative and a statistically significant effect on risk aversion. Thus, the men and women Tunisian investors become more risk averse when the level of education increases. These results are in line with those of Dwyer et al. (2002) and Atkinson et al. (2003), which concluded that gender differences are attenuated by financial investment knowledge and wealth.

We note that the poor explanatory power of our models measured by adjusted determination coefficient (Adjusted R^2) is expected since they deal with an association between financial and socioeconomic variables.

5.2. Logit regression's results

To feed this study of gender effect on investment decisions, we use gender and other socio-economic characteristics of investors to explain why investors differentiate between long and short trading positions. We use the dummy variable (i.e., endogenous variable) to distinguish between buy and sell transactions. More specifically, we attribute the value 1 for long trading position and 0 for short trading positions. To this end, we use the binary logit model to determine the effects of the most influential variables on the probability of having a long or short trading position. For this purpose, we consider the same four models as aforementioned above. Table 4 gives the estimate results of the logit model.

Table 4
Logit regression results.

Panel A: Full sample	Model 1	Model 2	Model 3	Model 4
Intercept	-1.107619***	-1.108501***	-1.109450***	-1.107766***
FK	0.003663	0.018688		
LI	0.178780***	0.194199***	0.199309***	0.179308***
REV	0.044331			0.045409

Age	0.011479***	0.011517***	0.011543***	0.011483***
Gender	0.302599***	0.302835***	0.303254***	0.302667***
McFadden R^2	0.012066	0.012037	0.012032	0.012065
LR statistic	746.7976***	745.0464***	744.7463***	746.7872***
Panel B: Men's subsample	Model 1	Model 2	Model 3	Model 4
Intercept	-0.819062***	-0.820512***	-0.821181***	-0.819145***
FK	0.004689	0.021325		
LI	0.216060***	0.231688***	0.237686***	0.216731***
REV	0.046349			0.047828
Age	0.011518***	0.011576***	0.011607***	0.011522***
McFadden R^2	0.009812	0.009779	0.009772	0.009812
LR statistic	524.8609***	523.0890***	522.7170***	524.8450***
Panel C: Women's subsample	Model 1	Model 2	Model 3	Model 4
Intercept	-0.890574***	-0.899379***	-0.897826***	-0.890363***
FK	-0.422875**	-0.422875**		
LI	-0.379177***	-0.438877***	-0.492035***	-0.443243***
REV	-0.151755			-0.128391
Age	0.007611***	0.007774***	0.007575***	0.007433***
McFadden R^2	0.007604	0.007468	0.006816	0.006914
LR statistic	62.17579***	61.05859***	55.72787***	56.53263***

Notes: FK, LI, Rev, Age and Gender refer to financial knowledge, level of instruction, income, age and gender, respectively. *, ** and *** denote significance at the level of 10%, 5% and 1%, respectively.

As shown in this table, according to the LR statistics, the results reveal a strong significance for all considered models. As indicated in Panel A of Table 4, we show that the increase in the level of education, age and gender variables rises the probability of having a long trading position. However, both knowledge in finance and income are insignificant. These results are similar for the four models. Concerning the subsample of men (see Panel B of Table 4), we reveal comparable results as for whole population. Panel C summarizes the results of women's subsample. The age factor has a positive effect on the probability of buying. The income is always insignificant. The knowledge in finance becomes positively and statistically significant impact, in contrast to Panels A and B. The probability of long trading position increases when the knowledge in finance and level of instruction decreases.

On the whole, it is worth noting that the sign of some coefficients changes with gender, indicating significant effect on investment decisions. This result confirms those obtained in the first part of this study, suggesting that the behavior of investment and risk attitude in the Tunisian stock market depends considerably on gender.

6. Conclusion

The purpose of this paper is to study the effect of gender and some socio-economic variables on the investment decisions in the Tunisian stock market, by adopting simple and ad hoc models. They explain the risk appetite of investors (or risk aversion of investors) by their level of instruction, income, financial expertise, age and gender. These models are firstly applied to the entire sample without distinction of gender and thereafter are executed for two subsamples, one for men and another for women.

The OLS results show that for the whole sample, among our socio-economic factors, financial knowledge, income and age are relevant. Gender is also significant as a determinant variable of investor's risk aversion. The regressions on men's subsample display similar results. These findings are also obtained for the subsample of women. All retained factors are statistically significant, but the coefficient of financial knowledge is of an opposite sign, indicating a different attitude toward risk for women. When having financial expertise, women become more risk seeking.

The above finding is confirmed by the logit model regressions in order to explain the long or/and short trading positions by considering several socio-economic variables. Investors male and female behave differently: while men with high level of instruction have tendency to buy more, probability of taking long position decreases for educated women.

The measure of risk aversion used in this paper, although it provided very significant results, deserves to be treated by taking into account the features of individual investors' portfolios in the sample. This could be improved by using a much more personified measure of aversion to risk, depending on the composition and the active management of investors' portfolios. A measure such as instant profitability report portfolio risk would be more indicative of the actual preferences with respect to the risk of the investor.

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