# Impact of behavioral factors on investors' financial decisions: case of the Egyptian stock market

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## Abstract

**Purpose** – This paper aims to investigate the relationship between investors' demographic characteristics (age, gender, education level and experience) and their investment decisions through behavioral factors (sentiment, overconfidence, overreaction and underreaction and herd behavior) as mediator variables in the Egyptian stock market.

**Design/methodology/approach** – This paper collects data from a structured questionnaire survey carried out among 384 local Egyptian, foreign, institutional and individual investors. This paper used a partial multiple regression method to analyze the effect of investors' demographic characteristics on investment decisions through behavioral factors as the mediator variable.

**Findings** – Investor sentiment, overreaction and underreaction, overconfidence and herd behavior significantly affect investment decisions. Also, age, gender and the level of education have significant positive effects on investment decisions by investors. Experience does not play a significant role in investment decisions, but as investors gain experience, they tend to overlook the emotional factors.

**Practical implications** – The findings of this paper would help to understand common behavioral patterns of investors and indicate a path toward the growth of the Egyptian stock market.

**Originality/value** – There is a lack of research in behavioral finance covering Middle East and North African markets. This paper attempts to fulfill the gap by analyzing behavioral factors in the Egyptian market.

**Keywords** Investor sentiment, Overconfidence, Overreaction, Underreaction, Herd behavior

**Paper type** Research paper

# 1. Introduction

Egyptian economy has witnessed significant transformation in the past two decades. Such transformation has largely focused on privatization policy implementation (Omran, 2007; Youssef, 1996) and on gradual shift toward a market economy (Weiss and Wurzel, 1998; Oweiss, 1990; Hamed, 1981). This resulted in higher investment opportunities for both local

**JEL classification** – G41, C83

and foreign investors. Thus, the Egyptian economy experienced substantial increase in diverse security offerings, trading activities and breadth of market size. Hence, the Egyptian stock market has opened a huge opportunity for research in finance and investment discipline.

Prior literature mainly focuses on financial market performance to explore new methods of investment to allow investors to maximize returns with minimum risk (Fama, 1965; Lintner, 1965). A different and more recent strand of literature shows that emotional and psychological factors such as fear, greed and overconfidence also play a significant role in investment decisions (Statman *et al.*, 2006; Lo *et al.*, 2005; Shefrin, 2002; Daniel *et al.*, 1998). This paper aims at analyzing the relationship between investor demographic characteristics and investors' investment decisions through behavioral factors as mediator in the Egyptian stock market. By analyzing 384 investor responses from a structured questionnaire survey, this paper finds that investor sentiment, overreaction and underreaction, overconfidence and herd behavior have significant effects on investment decisions. The results also suggest that age, gender and education level significantly affect investment decisions, sentiment, overreaction and underreaction and overconfidence. The results indicate no significant effect of investment experience on any of the behavioral factors, as well as investment decisions, but indicate that as investors gain experience in the field of investment, they tend to overlook the emotional influences of sentiment, overconfidence, overreaction or underreaction and herd behavior.

Traditional literature assumes that investors' investment decisions are made on the rational expectation of updating their belief upon arrival of new information and the maximization of expected return for a given level of risk. Krishnamurti (2009) points to the limited ability of fundamental analysis and technical analysis in determining the fair security value. So, there is an apparent necessity to explore and assess the changes in security prices, investor behaviors and factors influencing the investment decisions. Thus, the discipline of behavioral finance emerges to explain the changes in security prices and the impact of emotions and behavioral factors on the investors' decisions (Barberis and Thaler, 2003).

Most of the prior literature focuses on developed North American, European, or Asian markets. There is a lack of research in behavioral finance covering Middle East and North African markets. This paper attempts to fulfill the gap by analyzing behavioral factors in the Egyptian market. The findings of this paper would help understand common behavioral patterns of investors in the Egyptian market. Moreover, this paper analyzes all types of investors – local and foreign, institutional and individual – to make a broad generalization of the findings.

Section 2 of this paper discusses relevant literature. Section 3 presents the objective of the paper and relevant hypotheses. Section 4 explains the research methodology. Section 5 presents the experimental results. Finally, Section 6 concludes the paper and provides necessary policy implications.

## 2. Literature review
Asaad (2012) suggests interdisciplinary experimental financial research that includes analysis of behavioral aspect of decision-makers in financial decision making. This section discusses four major behavioral factors analyzed in this paper, investor sentiment, overconfidence, overreaction and underreaction and herd behavior, in the context of investors' investment decisions.

## 2.1 Investor sentiment

Baker and Wurgler (2006) define investor sentiment as investors' beliefs and perspectives about future cash flows or discount rates that are not supported by the key fundamentals. A high degree of optimism or pessimism is associated with investors' trading on mainstream models (Black, 1986). For example, if fundamental analysis suggests a sell recommendation for a particular stock, and if the investor decides to hold the stock based on his own beliefs, or vice versa, the investor reaction, in this case, lends itself to the sentiment hypothesis. Lee *et al.* (1991) argue that the discount of closed-end fund reflects compensation for resale price risk in segmented market, which is primarily composed of individual investors. They also suggest that investor sentiment is a key factor affecting an individual investor's investment behavior. Their empirical findings suggest a strong relationship between monthly returns of NYSE firms and changes in closed end fund discounts for the period from July 1965 to December 1985. They also find that both discount anomaly and small firm effect are partially attributed to changes in investor sentiment. This indicates that when investors turn pessimistic (optimistic), small firm returns decline (increase) and discounts widen (shrink).

Leonard and Shull (1996), in an attempt to examine whether investor sentiment is priced, analyze the monthly movement of closed-end fund and small firm returns and their attribution to the January effect and investor sentiment. Their results show that investor sentiment is priced in publicly traded shares of the closed-end funds, and that tax motivations stimulate individual investors to resume investments in the market. Lee *et al.* (2002) use investor intelligence sentiment index as a direct measure of investor sentiment to test the impact of noise traders' sentiment on the formation of volatility and expected returns. They find that the shifts of sentiment are negatively correlated with market volatility. Similarly, Lee *et al.* (1991) also find that the closed-end fund discount (a proxy for investor sentiment) has the highest correlation with the smallest stocks run by individual investors. Their findings also suggest that investor sentiment and noise traders have the highest effect on market volatility. Ben-Rephael *et al.* (2012) analyze aggregate net changes in equity funds and find that such changes are positively related with the excess return, and such relation is reversed in short term (four-ten months). This indicates that investor sentiment leads to noise in aggregate market.

Brown and Cliff (2004) investigate the investor sentiment and the short term returns by focusing on market aggregates instead of individual stocks. By using two investor sentiment surveys, a daily survey by the American Association of Individual Investors and a weekly survey by Investor Intelligence, they find that sentiment levels are highly correlated with recent market returns and sentiment has low forecasting power over the short-term returns. Mian and Sankaraguruswamy (2012) find that sentiment moves stock price response to news in the direction of the sentiment. Their findings suggest that stock price responds positively toward good earnings news during period of high sentiment than that of period of low sentiment, and vice versa. Such impact of sentiment on the stock price response is apparent in the case of small, volatile, young, non-dividend paying and distressed stocks. Similarly, Jiang (2011) finds that market reaction to earning announcements is asymmetric, especially for pessimistic investor sentiment.

Kling and Gao (2008) analyze the relationship between Chinese institutional investor sentiment and market returns. Their results show that investors' mood follow a positive feedback process in the short run. Therefore, institutional investors tend to be more optimistic when historical market returns are positive, and vice versa. Although this study represents an important link between institutional investor sentiment and market returns, the authors argue that generalization of such result may not be feasible as there is a short

history of Chinese institutional activism. Qiang and Shu-e (2009) analyze the investor
sentiment effect on stock price based on the noise trading theory of De Long *et al.* (1990).
Their results show that investor sentiment is a systematic factor for stock price discovery.
Stock price fluctuates with the changes in investor sentiment. Although the effect of positive
and negative investor sentiment change is different, the effect of positive change is much
stronger than that of the negative one.

Lemmon and Portniaguina (2006) use consumer confidence to measure investor
optimism and analyze the relation between sentiment and the small-stock premium. They
find that sentiment is not significant in forecasting variation in the value and momentum
premiums. Li and Zhang (2008) find a positive relationship between stock returns and shifts
in sentiment. Again, they find that such shifts are negatively related to the market volatility.
In a recent paper, Guo *et al.* (2017), by collecting investor sentiment data from professional
social network site of China (Xueqiu), show that investor sentiment is useful in predicting
stock price when investors put high attention on such prices. Drakos (2010) investigates
terrorist activities and investor sentiment in 22 countries and find evidence of significant
lower return on the day of terrorist attacks or activities.

In a recent study, Mat Nor *et al.* (2014) analyze the effect of investor sentiment on bank
deposits. By constructing an investor sentiment index using two attribute-based sentiment
proxies (consumer sentiment index and business condition index) in Bursa Malaysia stock
market, the authors show that sentiment index, in the long run, positively affects deposit
flows in Malaysian banks. In the partial short run, first lag of sentiment proxies, output,
money supply and interest rates have positive relationships and currency has negative
relationship with bank deposits. The authors also show that output, money supply and
sentiment index Granger cause bank deposits, whereas interest rate and deposits show bi-
directional causal relationships. On the other hand, Rashid *et al.* (2014) analyze quarterly
time series of Malaysian macroeconomic and sentiment data and show that interest rates,
currency index and FTSE Bursa Malaysia Composite Index have higher influence on
Islamic price index than that of industrial production, consumer price index, money supply
and investor sentiment indices. This study contributes toward the continued debate on the
need of *Sharia'h*-compliant capital market for Muslim investors. Again, Rashid *et al.* (2013)
show that corporate decisions are significantly influenced by investor sentiment in
Malaysia. By analyzing 361 firms in four industries, the authors present evidence of
dividend catering incentives as they find that market demand for dividends drives corporate
dividend decisions.

### 2.2 Investor overconfidence

Studies in behavioral finance show that individuals, on average, tend to overestimate
chances of success and underestimate chances of failure or risk (Hirshleifer *et al.*, 2012).
Also, overconfidence leads to overestimation of individual skills or prospects. Dittrich *et al.*
(2005) analyze investor overconfidence in their experimental setup and conclude that
overconfidence is positively associated with suboptimal choices and complex decisions and
negatively associated with age and decision uncertainties. Wang (2001) analyzes the
investor survivability with evolutionary game setup. He concludes that in the case of a large
risk-taking scenario, moderately overconfident investor can survive or even dominate the
market. His results also indicate that pessimistic investor does not survive in the market. On
the other hand, Besharov (2004) concludes that in the absence of accurate information,
overconfident choices do not necessarily tend to be suboptimal.

Glaser and Weber (2007) find that investors with above average perception about own
investment skills and past performance tend to trade more. Barber and Odean (2001) analyze

the trading behavior of both male and female investors and conclude that male investors tend to trade more than female ones and thus reduce their investment return significantly due to excessive trading. Such difference in trading behavior is more visible between single male and female investors.

Odean (1998) provides a theoretical setup to analyze the financial market with overconfident investors. He predicts higher expected trading and lower expected utility for overconfident traders. Gervais and Odean (2001), in their multi-period market model, show that traders, at their early stage of career, tend to overestimate own success. Such overestimation leads to overconfidence in trading that neutralizes as the trader accumulates experience. In an empirical analysis, Lin and Shiu (2003) analyze the investment returns of 6,993 investors in the Taiwan stock market for the period from January 1996 and April 2000 and find that frequent bidders assume significantly lower return by aggressive bidding and overassessment of IPO firms.

Hilary and Menzly (2006) find that analysts who are successful in accurate forecasting tend to be overconfident because of their success and underperform in their subsequent prediction. Lin et al. (2010) find evidence of overconfident trading in real estate investment trusts (REITs), suggesting that asset managers consider REITs as asset class and such overconfident trading vary with the size of REITs. In a more recent experimental paper Pikulina et al. (2017) suggest that investors' strong overconfidence about own investment knowledge induces excessive investment, while lack of confidence leads to underinvestment and moderate confidence results in accurate investment.

Recently, in Turkish market, Tekçe et al. (2016) analyze the factors that affect overconfidence, familiarity bias, representativeness heuristic and status quo bias among Turkish investors. The authors find significant evidence of overconfidence and familiarity bias among investors: young, male investors and investors with lower portfolio value and from less developed region in terms of education and income show significantly high level of overconfidence in their trading behavior. Again, Al-Hilu et al. (2017) provide empirical evidence suggesting that investors in the UAE exhibit overconfidence and home bias in their trading and tend to sell prior "winners" and buy prior "losers". Such investors rely mostly on own information channel and familiarity for investment decisions, and they attribute this toward inability to manage systemic crisis, lack of good governance in crisis period, information asymmetry and insider trading.

*2.3 Overreaction and underreaction*
Overreaction and underreaction by investors have been the most debated issue in literature for decades. In their seminal paper, De Bondt and Thaler (1985) indicate that investors systematically overreact to unexpected news, and this leads to the violation of market efficiency. They conclude that investors put high importance on past performance, ignoring the mean-reversion tendencies of such performance. Lakonishok et al. (1994) show that firms with high earnings to price ratio, cash flow to price ratio and book-to-market equity ratio tend to have poor past earnings growth, and vice versa. These findings suggest market overreaction to past growth and resulting mean reversion shows stocks with poor past performance experience high future returns and vice versa.

Barberis et al. (1998) present underreaction and overreaction model where the authors assume earnings to follow a random walk. Investors perceive two states of earnings – mean-reverting and trend. In first state, stock price underreacts to an earning reversion as Bayesian investors believe the change to be temporary. In second state, investors extrapolate on false trend and the stock price overreacts. Daniel et al. (1998) suggest a second model of investor overreaction and underreaction that assumes the existence of both

informed and uninformed investors. Informed investor's overconfidence leads to the overestimation of their private signal regarding stock values, while their biased self-attribution leads to underestimation of public signals. This produces short-term returns, followed by long-term reversals, as public information eventually outweighs personal behavioral anomalies. Hong and Stein (1999) model overreaction and underreaction in a bounded rationality setup with two agents – news watchers and momentum traders. They suggest that prices underreact because of gradual information diffusion across population, when momentum traders benefit by analyzing trend. But in the long run, prices overreact because of arbitrage attempt by investors. Kausar and Taffler (2005) empirically test these three models of overreaction and underreaction. They find evidence of underreaction to bad news and rational reaction to good news. This provides support for Daniel *et al.*'s (1998) model. Their results do not provide any support for the other two models. Chiao and Hueng (2005) present overreaction as a risk factor to explain stock return as they find that firm size and book-to-market ratio are not sufficient to fully explain returns.

Ikenberry *et al.* (1996) analyze stock splits announcements and find significant evidence of market underreaction in post-split performance. Similarly, Desai and Jain (1997) analyze post-split and post reverse-split performance of stocks and find evidence of market underreaction in both cases. Kaestner (2006) analyze current and past earnings surprises and resulting market reaction for the period from 1983 to 1999. His findings show that investors underreact for a short-term period to earning announcements, but over long term, they overreact to historically highly unexpected earnings. Such evidences may raise significant doubt on the validity of market efficiency. Fama (1998) denies such possibility by arguing that such irregularities can be chance events. He argues that evidence of market overreaction is as common as that of underreaction, and the continuation of pre-event abnormal returns after the event announcements are as evident as post-announcement reversals.

Recent studies reveal overreaction in emerging markets as well. Boubaker *et al.* (2015) show evidence of short-term overreaction in the Egyptian Stock Exchange. By analyzing daily stock returns for a period from 2003 to 2010, they find that "losers" outperform "winners" over short term. They also show negative effect in stock return of terrorist attacks three days post event and a price reversal on day four. Similarly, Piccoli *et al.* (2017) find the evidence of short-term overreaction in the Brazilian market index. By analyzing cumulative abnormal returns, they show that stocks tend to overreact to both positive and negative news, and evidence of such overreaction is stronger when volatility is low. Del Giudice and Paltrinieri (2017) analyze flow of funds in 78 mutual funds in African countries and find evidence of overreaction by retail investors in two events – Arab Spring and Ebola outbreak. Such results are more pronounced when these two events received higher media coverages.

## 2.4 Herd behavior

Scharfstein and Stein (1990) present a theoretical setup suggesting that investment managers imitate others' strategy although they are in possession of exclusive information. Such managers prefer taking decisions following associated group to avoid risk of losing reputation. Bikhchandani and Sharma (2000) also present a model of information cascade that indicates that investors tend to resort to significant herding in their trading behavior mainly because of the uncertainty surrounding the quality of private and public information available to them. Hirshleifer (2001) attributed herding to the conformity bias, namely, to the fact that people experience enhanced comfort following others around them. Grinblatt *et al.* (1995) show empirical evidence that

mutual fund managers mostly buy stocks based on past returns but sell the same stock at the same time implying herd behavior.

Agarwal *et al.* (2011) show empirical evidence of herd behavior by brokerage firms in the Indonesian market. Their results show that both domestic and foreign investors tend to herd while such behavior is much pronounced for foreign investors. Herd behavior is not only confined to individual investment but also affects institutional investors. Wermers (1999) analyzes the mutual fund trading for the period from 1975 to 1994 and find evidence of herd behavior by growth funds in trading small stocks. The author suggests that such herding by mutual fund speeds up the price adjustment process in market. In a recent paper, Clarke *et al.* (2014) analyze institutional herd behavior and find evidence of price destabilization by daily institutional herding for short term, but such institutional herding, on the arrival of information, speeds up price adjustment process.

Nofsinger and Sias (1999) analyze monthly return for the period from 1977 to 1996 and find a strong positive correlation between annual institutional ownership changes and herding interval return. This implies that institutional investors participate in positive feedback trading more than that of individual investors, and herd behavior of institutional investors has more effect on returns than that of individual investors. Sias (2004) extends this analysis of institutional investors' herd behavior and show that such investors' demand for stocks is highly correlated with lag quarter demand. The author also concludes that a minuscule of their herding is a result of momentum trading.

Kallinterakis *et al.* (2009) extend their analysis beyond national market by examining herd behavior in stock exchange alliances (EURONEXT). They provide evidence of significant herd behavior in trans-national securities market. But such behavior becomes weaker after controlling for size, industry and country effects. Oehler and Wendt (2009) analyze trading activities of equity fund managers in German for the period from 2000 to 2005. They find significant evidence of herd behavior when fund managers face market-wide cash inflows or outflows. Moreover, fund managers who invest only in German equities show herd behavior while selecting stocks for investment.

Puckett and Yan (2008) find empirical evidence of herd behavior by institutional investors for the period from 1999 to 2004. They show evidence of return reversals after short-term sell herds but no such evidence after short-term buy herds. This implies behavioral motivations for sell herds and information-based buy herds, blocking information processing into stock price. Liang (2011) designs an experimental study to investigate the neural basis of herd behavior in stock trading. He predicts that two brain regions of investors, the "anterior insula" and the "medial prefrontal cortex", are significantly activated when they face high price fluctuations and smooth price change, respectively.

In a more recent study, Balcilar and Demirer (2015), using Markov regime-switching model, analyze the dynamic relationship between global risk factors and herd behavior in the Turkish market. They find significant evidence of herd behavior during high- and extreme-volatility regimes. They also show that US market-related factors significantly affect such regime transition and thus herd behavior across all market sectors, except industrials. Huang *et al.* (2015) analyze the effect of idiosyncratic volatility on investors' behavior in Taiwan equity market. They find significant evidence of herd behavior, which shows distinct pattern as per idiosyncratic volatility of various industries. Again, Galariotis *et al.* (2016) find evidence of herd behavior for high liquidity stocks in G5 market. They also show that return clustering affects the variance of equity market liquidity, especially during the crisis and post-crisis period.

### 3. Hypothesis

The objective of this paper is three-fold; first, to analyze the nature of direct and indirect relationships between investor demographic characteristics and investment decision through behavioral factors as mediator variables; second, to determine the nature of relationship between demographic characteristics and behavioral factors; and third, to determine the nature of relationship between behavioral factors and investors' decisions in the Egyptian stock exchange.

The central hypothesis of this paper is:

*Ha.* There is a significant impact of individual demographic characteristics (age, gender, education level and investment experience) on investment decision through behavioral factors as mediating factor.

Based on the four behavioral factors analyzed in this paper, this hypothesis is categorized into four different hypotheses:

*H1.* There is a significant positive effect of individual demographic characteristics (age, gender, education level and investment experience) on investment decision through investor sentiment as a mediating factor.

*H2.* There is a significant positive effect of individual demographic characteristics (age, gender, education level and investment experience) on investment decision through overconfidence as a mediating factor.

*H3.* There is a significant positive effect of individual demographic characteristics (age, gender, education level and investment experience) on investment decision through overreaction and underreaction as mediating factor.

*H4.* There is a significant positive effect of individual demographic characteristics (age, gender, education level and investment experience) on investment decision through herd behavior as a mediating factor.

Figure 1 illustrates the framework of hypotheses proposed in this paper.

### 4. Methodology

#### 4.1 Variables and measurement

To test the effect of demographic characteristics on investment decisions, this paper analyzes four different demographic characteristics: age, level of education, experience in the field of investment and gender of the investors. For the purpose of diversity in analysis, this paper includes all categories of investors: individual, institutional, national and foreign investor.

The dependent variable is investment decision. Such investment decision is represented by purchase and sale decisions made by the investors. This investment decision is measured by the investors' response to buy or sell securities relying on fundamental analysis, technical analysis and other sources of information (e.g. newspaper articles, specialized magazines, internet and rumors). Glaser and Weber (2007) followed a similar method to measure trade volume.

The mediator variables analyzed in this paper are the behavioral factors. These variables are expected to affect investors' decision-making. Based on the prior literature, this paper analyzes four behavioral factors: investor sentiment, overconfidence, overreaction and underreaction and herd behavior.
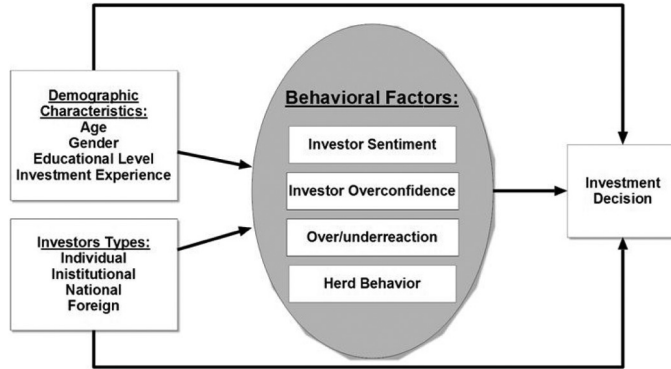
**Figure 1.**
Relationship between
demographic
characteristics and
investment decisions
through behavioral
factors

**Note:** This figure shows the relationship between the demographic
characteristics (age, gender, education level and investment
experience) of the investors and their investment decisions using
behavioral factors of the investors (investor sentiment,
overconfidence, overreaction and underreaction and herd behavior)
as mediator variables in the Egyptian stock market

### 4.2 Econometric model

Baron and Kenny (1986) present the following regression mediation model. For a model
where $Y$ is the dependent variable and $X$ is the independent variable, we have:

$$Y = b_0 + b_1X + \varepsilon_1 \qquad (1)$$

If $M$ is a mediator variable that mediates the relationship between $Y$ and $X$, that is the effect
of $X$ on $Y$ also comes from another factor $M$, the next step is to determine the effect of $X$ on
$M$:

$$M = b_2 + b_3X + \varepsilon_2 \qquad (2)$$

Similarly, we need to explore the partial effect of both $X$ and $M$ on $Y$:

$$Y = b_4 + b_5X + b_6M + \varepsilon_3 \qquad (3)$$

By inputting equation (2) into equation (3), we find:

$$Y = (b_4 + b_2b_6) + (b_5 + b_3b_6)X + (b\varepsilon_2 + \varepsilon_3) \qquad (4)$$

By comparing coefficients of $X$ in equation (1) and equation (4) we find:

$$\begin{aligned} b_1 &= b_5 + b_3b_6 \ \ or, \\ b_1 &- b_5 = b_3b_6 \end{aligned} \qquad (5)$$

Figure 2 presents the direct effect of $X$ on $Y$ in equation (1). Figure 3 presents the mediation
model with path coefficients. The path coefficient $b_5$ is the direct effect of X on Y. The path

coefficient $b_3$ is the effect of X on M (first stage effect). The path coefficient $b_6$ is the effect of M on Y (second stage effect). The multiplication of the first stage effect and second stage effect $b_3b_6$ from equation (5) is the indirect effect.

In the context of this paper, $Y$ is the investment decisions made by the investors, $X$ is the vector of vector of demographic characteristics of the investors (age, education level, experience and gender) and $M$ is the vector of behavioral factors (investor sentiment, overconfidence, overreaction and underreaction and herd behavior).

### 4.3 Data sources
Data for this paper are collected through a structured questionnaire that was distributed to a group of individual and institutional investors in Egypt. The authors conducted the questionnaire survey from January 2012 to April 2012. The questionnaire contains 25 items measuring the respondents' perception about behavioral factors (investor sentiment, overconfidence, overreaction and underreaction and herd behavior). The respondents select a response that best indicates their level of agreement with each statement, using a Likert-type five-point scale, where "1" implies strongly disagree and "5" implies strongly agree. A total of 400 questionnaires were sent to various investors in the Egyptian Stock Exchange and 384 respondents responded to the questionnaire, indicating a 96 per cent response rate.

There are opposing views about questionnaire-based research in literature. One criticism of questionnaire-based research is a low response rate. Gilbert (2001) states that the response rate of a postal questionnaire survey can be as low as 20 per cent. Incorrect or missing answers in questionnaires may influence the data quality as well. On the other hand, Bell (2014) indicates that a well-administered questionnaire survey can be an excellent method to obtain quantitative data about people's attitudes, values, experience and behavior in a short time. In this paper, a response rate of 96 per cent was possible because of continuous persuasion of the authors. This also ensured accuracy in the data collection through questionnaire. Ngoc (2013) followed a similar method in analyzing behavioral factors affecting investor decision in Ho Minh City stock Exchange in Vietnam.

The sample of this paper includes diverse individual and institutional investors (both local and foreign) based on their demographic profile. Institutional investor are the fund managers of the Egyptian and foreign banks operating in the Egyptian market. Foreign investors are obtained from the lists of foreign investors prepared by the Department of Disclosure and Market Sector of the Egyptian Stock Exchange and brokerage companies that have registered in securities market in Egypt. There are 302 (78.65per cent) male and 82
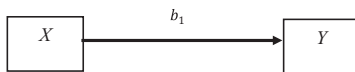


Notes: This figure shows the model of the effect of an independent variable ($X$) on the dependent variable ($Y$) when there is no mediator variable ($M$) affecting the relationship between $X$ and $Y$. $b_1$ is the coefficient of the regression of $X$ on $Y$ [$Y = b_0 + b_1X + \varepsilon_1$; model presented in equation (1)]

Figure 2.
Direct effects of independent variable on dependent variable (without mediator variable)
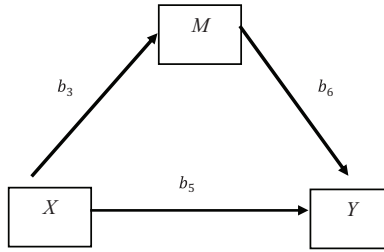
**Notes:** This figure shows the model of
the effect of an independent variable ($X$)
on the dependent variable ($Y$) when $M$
is the mediator variable affecting the
relationship between $X$ and $Y$. $b_3$ is the
path coefficient of the regression of $X$
on $M$ [$M = b_2 + b_3X + \varepsilon_2$; model
presented in equation (2)], $b_5$ is the
direct effect of $X$ on $Y$; $b_6$ is the effect
of $M$ on $Y$ [$Y = b_4 + b_5X + b_6M + \varepsilon_3$;
model presented in equation (3)]; the
multiplication $b_3.b_6$ from equation (5)
is the indirect effect

**Figure 3.**
Direct and indirect
effects of independent
variable on
dependent variable
(with mediator
variable)

(21.35per cent) female investors. A total of 123 investors (32.03per cent) fall within the age
group of 45-55 years, and 122 investors (31.77per cent) within the age group of 35-45 years.
Only 36 investors (9.38 per cent) are less than 25 years old. An overwhelming number of 220
investors (57.29 per cent) received graduate-level education, while 114 investors (29.69 per
cent) received bachelor-level and the remaining received high school-level education. About
135 investors (35.16 per cent) have 10-15 years of investment experience, 117 investors (30.47
per cent) have 5-10 years of experience, 111 investors (28.91 per cent) have 1-5 years of
experience and only 21 investors (5.47 per cent) have less than 1 year of experience. About
212 investors (55.21 per cent) carry an investment portfolio of Egyptian Pound 20,000-
50,000, while 88 investors (22.92per cent) carry an investment portfolio of less than Egyptian
Pound 20,000, and the remaining investors carry an investment portfolio of Egyptian Pound
50,000 or more.

Table I shows a clear preference for fundamental analysis. About 81 per cent
respondents mentioned fundamental analysis as their source of information for investment
decisions. Technical analysis ranks as the second choice of the investors for their investment
decisions, as about 78.6 per cent respondents indicate technical analysis as their source of
information. The results clearly indicate that an overwhelming majority of investors are
driven by overconfidence (76.2 per cent) while making investment choices. Similarly,
majority of the investors show indication of overreaction or underreaction (71.6 per cent)
toward new information in the market.

## 5. Results and discussion
This paper uses partial multiple regression to analyze the impact of demographic
characteristics on the investment decision through four different behavioral factors as

| Variables | Average | SD | (%) |
|---|---|---|---|
| Fundamental analysis | 4.05 | 1.070* | 81 |
| Technical analysis | 3.93 | 0.966** | 78.6 |
| Investor sentiment | 3.28 | 0.756** | 65.6 |
| Overconfidence | 3.81 | 0.899** | 76.2 |
| Over/underreaction | 3.58 | 0.722** | 71.6 |
| Herd behavior | 3.21 | 0.560*** | 64.2 |

**Notes:** This table shows the summary statistics of the responses on source of investment information and behavioral factors affecting investment decisions, provided by the investors in the Egyptian stock market. The data are collected by a structured questionnaire survey of 384 representative investors in the Egyptian stock market

Table I.
Descriptive statistics:
variable response

mediator variables. Table II presents the results of first hypothesis test using investor sentiment as a mediator variable.

The results in Table II indicate that the three important variables that significantly affect investment decisions by investors are investor sentiment, education level and gender. The results indicate a positive effect of gender and level of education on investment decisions. The standard regression coefficients present the coefficients of respective variables if they were treated as independent variables in the analysis. Age and experience of the investors do not seem to play a significant role in investment decision making by investors.

To determine the effect of direct and indirect effect of demographic characteristics on investment decisions when investor sentiment is a mediator variable, this paper analyzes the path coefficients, as presented in Table III. Results clearly indicate that use of investor sentiment as a mediator in the analysis increases the indirect effect of the education level and age from 0.092 to 0.395 and from 0.085 to 0.369, respectively. Although age and experience are not significant factors, investor sentiment, acting as a mediator variable, increases the indirect effect of age from 0.024 to 0.153, while decreases the effect of experience from 0.024 to −0.026.

| Variable | Partial regression coefficient | Std. error | t-score | p-value | Standard regression coefficient | Significance | Rank order |
|---|---|---|---|---|---|---|---|
| Age | 0.079 | 0.049 | 1.602 | 0.11 | 0.059 | No | – |
| Education level | 0.234 | 0.053 | 4.382 | 0.00 | 0.171 | Yes | 2 |
| Gender | 0.307 | 0.087 | 3.522 | 0.00 | 0.099 | Yes | 3 |
| Experience | 0.039 | 0.085 | 0.447 | 0.66 | 0.025 | No | – |
| Investor sentiment | 0.822 | 0.046 | 17.732 | 0.00 | 0.651 | Yes | 1 |

**Notes:** This table shows the effect of demographic characteristics (age, gender, education level and investment experience) of the investors on their investment decisions using behavioral factor (investor sentiment) of the investors as a mediator variable in the Egyptian stock market. The data are collected by structured questionnaire survey of 384 representative investors in the Egyptian stock market; $R^2 = 0.973$

Table II.
Impact of
demographic
characteristics on
investment decision
(mediator variable:
investor sentiment)

| Dependent variable | Demographic characteristics | Direct impact | Direct impact through intermediate variable | Indirect impact | Total impact |
|---|---|---|---|---|---|
| Investor sentiment | Age | 0.182 | – | 0.030 | 0.212 |
| | Education level | 0.474 | – | 0.092 | 0.566 |
| | Gender | 0.345 | – | 0.123 | 0.468 |
| | Experience | −0.004 | – | 0.003 | −0.001 |
| Investment decision | Age | 0.024 | 0.153 | 0.035 | 0.059 |
| | Education level | 0.092 | 0.395 | 0.079 | 0.171 |
| | Gender | 0.085 | 0.369 | 0.014 | 0.099 |
| | Experience | 0.024 | −0.026 | 0.001 | 0.025 |

**Notes:** This table shows the direct and indirect effects of demographic characteristics (age, gender, education level and investment experience) of the investors on their investment decisions using behavioral factor (investor sentiment) of the investors as a mediator variable in the Egyptian stock market. The data are collected by structured questionnaire survey of 384 representative investors in the Egyptian stock market

Figure 4 shows the direct relationships of demographic characteristics and investment decisions and indirect relations to the same through investor sentiment as a mediator. There is a direct significant effect of the education level on the investment decision worth 0.171. There is also a direct significant effect of the gender on investment decision of the value of 0.099. Moreover, there is an indirect significant positive impact of age, education level and
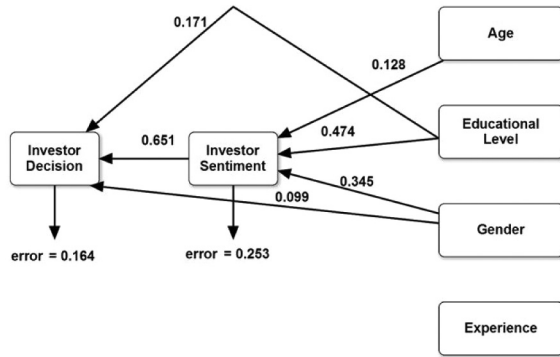


**Figure 4.**
Direct and indirect
impacts of
demographic
characteristics on
investment decision
through investor
sentiment

**Notes:** This figure shows the direct and indirect effects (using partial multiple regression) of demographic characteristics (age, gender, education level and nvestment experience) of the investors on their investment decisions using behavioral factor (investor sentiment) of the investors as a mediator variable in the Egyptian stock market. The data are collected by structured questionnaire survey of 384 representative investors in the Egyptian stock market

gender and negative indirect effect of experience on investment decisions through investor sentiment as a mediator

Table IV presents the results of *H2* test using investors' overconfidence as a mediator variable. The results in Table IV again indicate that there are three variables that significantly affect investment decisions – overconfidence, gender and education level. These results identify a positive effect of gender and education level on investment decisions. Age and experience, again, do not seem to play important roles in investment decision-making, but experience still has a negative effect on investment decision making process.

The results of path coefficients analysis presented in Table V show that use of overconfidence as a mediator increases the indirect effect of the education level from 0.088 to 0.436. Similarly, the indirect effect of gender and age increases from 0.121 to 0.286 and from 0.052 to 0.135, respectively. The indirect effect of experience increases from −0.017 to 0.056.

Figure 5 shows the direct and indirect relationships of demographic characteristics and investment decision through overconfidence as a mediator. There is a direct significant

| Variable | Partial regression coefficient | Std. error | *t*-score | *p*-value | Standard regression coefficient | Significance | Rank order |
|---|---|---|---|---|---|---|---|
| Age | 0.069 | 0.048 | 1.449 | 0.148 | 0.085 | No | – |
| Education Level | 0.120 | 0.054 | 2.208 | 0.028 | 0.129 | Yes | 3 |
| Gender | 0.375 | 0.082 | 4.544 | 0.000 | 0.258 | Yes | 2 |
| Experience | −0.026 | 0.082 | −0.3151 | 0.753 | −0.018 | No | – |
| Overconfidence | 0.795 | 0.042 | 18.788 | 0.000 | 0.742 | Yes | 1 |

**Notes:** This table shows the effect of demographic characteristics (age, gender, education level and investment experience) of the investors on their investment decisions using behavioral factor (investor overconfidence) of the investors as a mediator variable in the Egyptian stock market. The data are collected by structured questionnaire survey of 384 representative investors in the Egyptian stock market. $R^2 = 0.976$
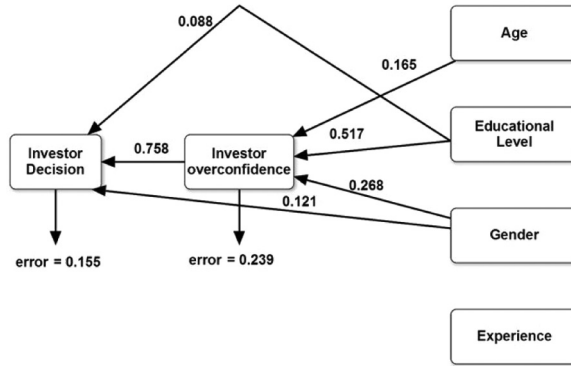
Table IV.
Impact of demographic characteristics on investment decision (mediator variable: overconfidence)

| Dependent variable | Demographic characteristics | Direct impact | Direct impact through intermediate variable | Indirect impact | Total impact |
|---|---|---|---|---|---|
| Overconfidence | Age | 0.165 | – | 0.005 | 0.187 |
| | Education level | 0.517 | – | 0.050 | 0.524 |
| | Gender | 0.268 | – | 0.062 | 0.407 |
| | Experience | 0.052 | – | 0.043 | 0.039 |
| Investment decision | Age | 0.052 | 0.135 | 0.033 | 0.085 |
| | Education level | 0.088 | 0.436 | 0.041 | 0.129 |
| | Gender | 0.121 | 0.286 | 0.137 | 0.258 |
| | Experience | −0.017 | 0.056 | −0.001 | −0.018 |

**Notes:** This table shows the direct and indirect effects of demographic characteristics (age, gender, education level and investment experience) of the investors on their investment decisions using behavioral factor (investor overconfidence) of the investors as a mediator variable in the Egyptian stock market. The data are collected by structured questionnaire survey of 384 representative investors in the Egyptian stock market

Table V.
Direct and indirect impacts of demographic characteristics and overconfidence on investment decision

**Figure 5.**
Direct and indirect
impacts of
demographic
characteristics on
investment decision
through
overconfidence

**Notes:** This figure shows the direct and indirect effects
(using partial multiple regression) of demographic
characteristics (age, gender, education level and
investment experience) of the investors on their investment
decisions using behavioral factor (investor overconfidence)
of the investors as a mediator variable in the Egyptian
stock market. The data are collected by structured
questionnaire survey of 384 representative investors in the
Egyptian stock market

effect of the education level and gender on the investment decision worth 0.088 and 0.099, respectively, as well as an indirect relationship of age, education level and gender with education level.

Table VI presents the results of *H3* test using overreaction or underreaction as mediator variable. The results in Table VI indicate that four variables significantly affect investment decisions – overreaction or underreaction, gender, education level and age. All four variables have a positive effect on investment decision. Experience still does not seem to be an important factor to affect investment decisions of the investors.

**Table VI.**
Impact of
demographic
characteristics on
investment decision
(mediator variable:
overreaction or
underreaction)

| Variable | Partial regression coefficient | Std. error | $t$-score | $p$-value | Standard regression coefficient | Significance | Rank order |
|---|---|---|---|---|---|---|---|
| Age | 0.105 | 0.057 | 1.839 | 0.067 | 0.108 | Yes | 4 |
| Education level | 0.250 | 0.064 | 3.899 | 0.000 | 0.224 | Yes | 3 |
| Gender | 0.591 | 0.096 | 6.142 | 0.000 | 0.340 | Yes | 2 |
| Experience | 0.111 | 0.099 | 1.126 | 0.261 | 0.066 | No | – |
| Over/underreaction | 0.530 | 0.042 | 12.546 | 0.000 | 0.594 | Yes | 1 |

**Notes:** This table shows the effect of demographic characteristics (age, gender, education level and investment experience) of the investors on their investment decisions using behavioral factor (overreaction and underreaction) of the investors as a mediator variable in the Egyptian stock market. The data are collected by structured questionnaire survey of 384 representative investors in the Egyptian stock market; $R^2 = 0.966$
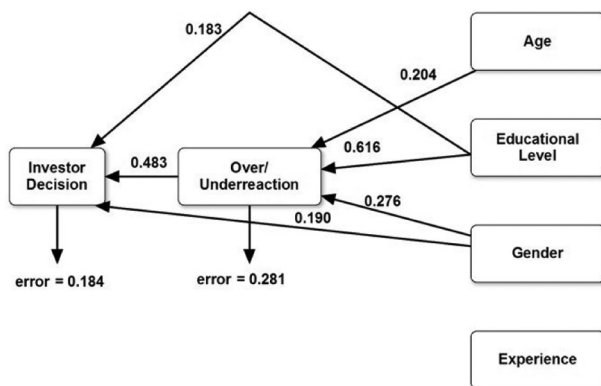
The results of path coefficients analysis presented in Table VII show that use of overreaction or underreaction, as mediator variable, increases the indirect effect of the education level from 0.183 to 0.32, and of age from 0.079 to 0.105. But the same reduces the indirect effect of gender and experience from 0.19 to 0.154 and from 0.074 to $-0.136$, respectively.

Figure 6 shows the direct and indirect relationships of demographic characteristics and investment decision through overreaction or underreaction as mediator variable. There is a

| Dependent variable | Demographic characteristics | Direct impact | Direct impact through intermediate variable | Indirect impact | Total impact |
|---|---|---|---|---|---|
| Over/underreaction | Age | 0.204 | – | −0.02 | 0.184 |
| | Education level | 0.614 | – | −0.111 | 0.503 |
| | Gender | 0.276 | – | 0.068 | 0.344 |
| | Experience | −0.106 | – | 0.044 | −0.062 |
| Investment decision | Age | 0.079 | 0.105 | 0.029 | 0.108 |
| | Education level | 0.183 | 0.32 | 0.041 | 0.224 |
| | Gender | 0.190 | 0.154 | 0.15 | 0.340 |
| | Experience | 0.074 | −0.136 | −0.008 | 0.066 |

**Notes:** This table shows the direct and indirect effects of demographic characteristics (age, gender, education level and investment experience) of the investors on their investment decisions using behavioral factor (overreaction and underreaction) of the investors as a mediator variable in the Egyptian stock market. The data are collected by structured questionnaire survey of 384 representative investors in the Egyptian stock market

**Table VII.**
Direct and indirect impacts of demographic characteristics and overreaction or underreaction on investment decision



**Notes:** This figure shows the direct and indirect effects (using partial multiple regression) of demographic characteristics (age, gender, education level and investment experience) of the investors on their investment decisions using behavioral factor (investor overreaction and underreaction) of the investors as a mediator variable in the Egyptian stock market. The data are collected by structured questionnaire survey of 384 representative investors in the Egyptian stock market

**Figure 6.**
Direct and indirect impacts of demographic characteristics on investment decision through overreaction or underreaction

direct significant effect of the education level, age and gender of the value 0.183, 0.079 and 0.19, respectively.

Table VIII presents the results of *H4* test using herd behavior as a mediator variable. The results again indicate that four variables significantly affect investment decisions – herd behavior, gender, education level and age. All four variables have a positive effect on investment decision. Experience again is not significant for investment decision making.

The path coefficients analysis results presented in Table IX show that use of herd behavior as mediator variable decreased the indirect effect of three variables – gender (from 0.227 to 0.141), education level (from 0.312 to 0.131) and age (from 0.132 to −0.005). The only variable for which the indirect effect increases is experience (from 0.001 to 0.038).

Figure 7 shows the direct and indirect relationships of demographic characteristics and investment decision through herd behavior as mediator variable. There is a direct significant effect of gender, education level and age worth 0.227, 0.312 and 0.132, respectively.

The results indicate that all behavioral factors (investor sentiment, overconfidence, overreaction and underreaction and herd behavior) have significant positive effects on investors' investment decisions. When these behavioral factors are used as mediator

| Variable | Partial regression coefficient | Std. error | *t*-score | *p*-value | Standard regression coefficient | Significance | Rank order |
|---|---|---|---|---|---|---|---|
| Age | 0.177 | 0.065 | 2.734 | 0.007 | 0.159 | Yes | 4 |
| Education level | 0.425 | 0.071 | 6.021 | 0.000 | 0.334 | Yes | 3 |
| Gender | 0.705 | 0.111 | 6.364 | 0.000 | 0.351 | Yes | 2 |
| Experience | 0.002 | 0.112 | 0.015 | 0.988 | 0.001 | No | – |
| Herd behavior | 0.490 | 0.067 | 7.357 | 0.000 | 0.397 | Yes | 1 |

**Table VIII.**
Impact of demographic characteristics on investment decision (mediator variable: herd behavior)

Notes: This table shows the effect of demographic characteristics (age, gender, education level and investment experience) of the investors on their investment decisions using behavioral factor (herd behavior) of the investors as a mediator variable in the Egyptian stock market. The data are collected by structured questionnaire survey of 384 representative investors in the Egyptian stock market; $R^2 = 0.956$

| Dependent variable | Demographic characteristics | Direct impact | Direct impact through intermediate variable | Indirect impact | Total impact |
|---|---|---|---|---|---|
| Herd behavior | Age | 0.134 | – | −0.007 | 0.127 |
| | Education level | 0.503 | – | −0.06 | 0.443 |
| | Gender | 0.288 | – | 0.08 | 0.368 |
| | Experience | 0.064 | – | −0.025 | 0.039 |
| Investment decision | Age | 0.132 | −0.005 | 0.027 | 0.159 |
| | Education level | 0.312 | 0.131 | 0.022 | 0.334 |
| | Gender | 0.227 | 0.141 | 0.124 | 0.351 |
| | Experience | 0.001 | 0.038 | 0.000 | 0.001 |

**Table IX.**
Direct and indirect impacts of demographic characteristics and herd behavior on investment decision

Notes: This table shows the direct and indirect effects of demographic characteristics (age, gender, education level and investment experience) of the investors on their investment decisions using behavioral factor (herd behavior) of the investors as a mediator variable in the Egyptian stock market. The data are collected by structured questionnaire survey of 384 representative investors in the Egyptian stock market
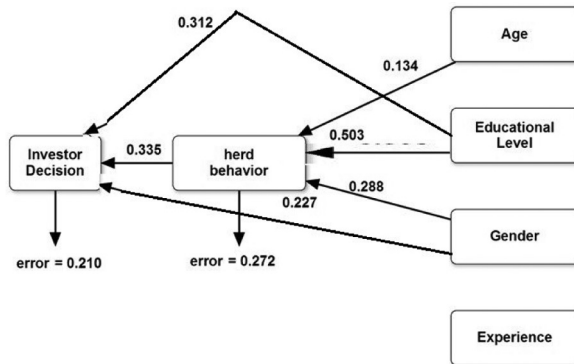
**Notes:** This figure shows the direct and indirect effect
(using partial multiple regression) of demographic
characteristics (age, gender, education level and
investment experience) of the investors on their investment
decisions using behavioral factor (herd behavior) of the
investors as a mediator variable in the Egyptian stock
market. The data are collected by structured questionnaire
survey of 384 representative investors in the Egyptian
stock market

**Figure 7.**
Direct and indirect
impacts of
demographic
characteristics on
investment decision
through herd
behavior

variables, the results indicate that three demographic factors, age, gender and education
level, have significant positive effects on investment decisions, but investors' experience in
the stock market does not play a significant role in investors' investment decision making
process. The analyses of direct and indirect effect of these demographic factors on
investment decisions indicate that experience plays an opposite role in the behavioral
factors. This implies that as investors gain experience in investment field, they learn to
ignore the emotional factors in making investment decisions. The results of this paper are
consistent with the findings of Gervais and Odean (2001).

## 6. Conclusion and policy implication
Behavioral finance aims at analyzing psychological and emotional factors that affect
investment decisions. This paper investigates the relationship between behavioral factors
and investors' investment decisions in the Egyptian Stock Market. In addition, this paper
measures the direct and indirect relationships between demographic characteristics and
investors' decisions through behavioral variables as mediating factors.

Based on data collected from questionnaire survey carried out among 384 representative
investors in the Egyptian Stock Market, the results indicate that age, gender and the level of
education play significant positive roles in investment decisions made by the investors in
the Egyptian stock market. Behavioral factors such as investor sentiment, overreaction and
underreaction, overconfidence and herd behavior have significant effects on investment
decisions. The results also suggest that age, sex and education level significantly affect
investment decisions and investor sentiment, overreaction and underreaction and investor
overconfidence. The results indicate no significant effect of investment experience on any of
the behavioral factors, as well as investment decisions. But as investors gain experience in

the field of investment, they tend to overlook the emotional influences of sentiment, overconfidence, overreaction or underreaction and herd behavior. The finding of this paper would be helpful to understand common behavioral patterns of investors in the Egyptian market. Also, the findings of this paper definitely point a stable path toward the growth of the Egyptian stock market.

This research has serious implications for policymakers. Overconfidence and herd behavior may encourage investors to take excessive risks that may result in excessive market volatility. Better quality information, easily accessible to investors, always improves their financial decision-making. It is important to inform investor about the market and idiosyncratic risk of their investments. In this context, the Securities and Exchange Commission may require total disclosure of qualitative and quantitative information regarding relevant risks that the firms are exposed to. Daniel *et al.* (2002) make a similar suggestion in the US market regarding risk disclosure.

A conducive environment for proper financial education facilitates better use of information relevant for investment decisions. One priority of policymakers is to enhance the effectiveness of financial education. Integrating investor psychology in the development of financial education is an effective way to enhance financial education. Creating materials relevant to target investor group that takes into account the differential preference and psychology, developing analytical tools to identify investor's needs and biases and reinforcing communication level to link education method to immediate application are some key areas of focus for policymakers. Garcia (2013) suggests similar policy suggestion. This research is also important for policymakers who aim at stabilizing investor sentiment to control market volatility. Also, this research is important for portfolio managers who take their investors' sentiment into account when assessing stocks and hedging risks.

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## Appendix

### The Relationship between Behavioral Factors and Investor's Financial Decisions

"An Empirical Study on The Egyptian Stock Market"

**Study Questionnaire**

**Section One:**

1. Considering your investments in stock market, the following choice represent your investment volume in Egyptian pounds:
   a. less than 20000
   b. 20000 to 35000
   c. 35000 to 60000
   d. 60000 to 100000
   e. greater than 100000

2. The following are some of investors' goals in the stock market, please specify their degree of importance from your point of view:

| Goal | Very important | important | neutral | Less important | Not important at all |
|---|---|---|---|---|---|
| High stock return in short run | | | | | |
| Profit maximizing in the long run | | | | | |
| Both high returns and profit maximizing | | | | | |

**Section Two: Investment Decision**

3. Please specify the choice of each of the following data sources when making an investment decision (buy/sell) in the Egyptian stock market:

| Data Source | Strongly agree | Agree | neutral | disagree | Strongly disagree |
|---|---|---|---|---|---|
| **A. Fundamental Analysis** | | | | | |
| I depend on economic data (GDP- interest rates- inflation rate- exchange rate) when I make my investment decision | | | | | |
| I depend on industrial data (type of industry- competition level- technology level- regulations) when I make my investment decision | | | | | |
| I depend on financial data (income statement- balance sheet- cash flow statement) when I make my investment decision | | | | | |

| B.   Technical Analysis | | | | | |
|---|---|---|---|---|---|
| I depend on stock exchange index when I make my investment decision | | | | | |
| I depend on industrial indices when I make my investment decision | | | | | |
| Trading volume affect my investment decision | | | | | |
| Trading returns affect my investment decision | | | | | |
| I tend to sell the commercial paper when its price goes up | | | | | |
| I tend to buy commercial paper when its price goes down | | | | | |
| I consider experts opinions when making the investment decision | | | | | |
| I consider brokers opinions when making the investment decision | | | | | |
| I consider big investors opinions when making the investment decision | | | | | |
| I consider friends opinions when making the investment decision | | | | | |
| I consider researches and mutual fund analysis when making the investment decision | | | | | |
| I depend heavily on private information I have when making the investment decision | | | | | |
| I consider random information when making the investment decision | | | | | |
| I use internet as a main source of data when making the investment decision | | | | | |

**Section Three: Behavioral Factors**

4.  The following are some factors that may affect your investment decisions, please specify your opinion on each of them:

| Data Source | Strongly agree | Agree | neutral | disagree | Strongly disagree |
|---|---|---|---|---|---|
| **A.   Investor Sentiment** | | | | | |
| I avoid investing in stocks that are not familiar to me | | | | | |
| I buy stocks I heard about from a friend | | | | | |
| I buy stocks of the company I am working for | | | | | |
| My current mood affect making my investment decision | | | | | |
| Feeling optimistic affect making my investment decision | | | | | |
| Feeling pessimistic affect making my investment decision | | | | | |
| **B.   Overconfidence** | | | | | |
| I am aware of everything in the stock market | | | | | |
| I have the needed expertise and skills to invest in stock market | | | | | |
| I trust my data sources | | | | | |
| I have the ability to analyze the new information in the market | | | | | |
| I do trade by myself | | | | | |
| I am sufficiently aware of electronic trading | | | | | |
| I keep the best stocks in my portfolio | | | | | |
| My opinion comes first when making the decision | | | | | |

| C.   Over/Under Reaction | | | | | |
|---|---|---|---|---|---|
| I do react quickly to new information in the market | | | | | |
| I rethink before making an investment decision when there is random information | | | | | |
| I rethink before making an investment decision when the information source is unreliable | | | | | |
| My reaction depends on availability of many sources for the new data | | | | | |
| My reaction depends on my analysis of the data | | | | | |
| **D.   Herd Behavior** | | | | | |
| I make my decision based on the majority of other investors decisions | | | | | |
| I make my decision mainly based on the commercial paper movements | | | | | |
| I confidently take a decision different from majority of investors in the market | | | | | |
| Quick movements in the market does not affect my decision | | | | | |

**Section Four: Demographic characteristics**

1.  **Age:**
    a.   less than 25 years
    b.   25 to 40 years
    c.   40 to 55 years
    d.   greater than 55 years

2.  **Gender**
    a.   male
    b.   female

3.  **Educational Level**
    a.   high school
    b.   bachelor degree
    c.   Graduate degree

4.  **years of experience**
    a.   less than 1 year
    b.   1 to 10 years
    c.   10 to 25 years
    d.   more than 25 years

5.  **Investor Type**
    a.   Individual, Egyptian
    b.   Individual, foreigner  (not Egyptian)
    c.   Institutional, Egyptian
    d.    Institutional, foreigner (not Egyptian)

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