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## Individual investor's characteristic and risk-taking in stock market

SHAHMANSURI, Esfandiyar †, RAHNAMAY-ROODPOSHTI-Fereydon\* †, NIKOUMARAM, Hashem † and VAKILIFARD, Hamid Reza

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### Abstract

This study examines the relationship between investor's characteristic from the perspective of behavioral finance. Behavioral finance attempts to understand and explain the real behavior of real investor versus behavioral theories. This article aims to determine and evaluate investors' personality types and behavioral targets appropriate to their behavioral characteristics and type of their chosen investment strategy using questionnaire information. Investment characteristic including capital growth, speculation, retirement savings, financial security and entertainment investment with technical, fundamental and intuitive strategies which are against personality traits such as risk-taking, overconfidence and aspiration are discovered and characterized as affecting chosen features in the Stock Exchange under uncertainty investment. The results show that the risk-taking amount of investors based on fundamental analysis is less than technical. Also there is a positive and significant relation between level of Aspiration and risk-taking level of investors.

### Behavioral theory of portfolio, Investment strategies, Investment objectives, Investment behavior characteristics

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## Introduction

Researchers suggest that under conditions of uncertainty, human decisions systematically take away from decisions predicted by economic theories and people generally care less about possible outcomes compared with the confident outcomes. Given the significant effect of today's investment on future lifestyle of people, it is important to understand the difference between decisions made by investors, the process that leads to this decision and the final investment performance (Shefrin and Hoffmann, 2011). Mean-variance-based investors only care about expected return and total variance of portfolio rather than individual assets. These investors have constant opinions about risk: they always disagree with risk. But the behavioral investments are different. Behavioral investors, make the portfolio layered as a pyramid of assets, so that each layer corresponds to a specific purpose and a specific opinion about the risk. Contrary to the recommendations of the theory of mean - variance, here covariance among securities (i.e. behavioral theory) often is not considered (Shefrin and Statman, 2000).

Traditional financial knowledge usually insists on explaining phenomena in terms of rational man hypothesis (or perfect man) and suggests all investment strategies in conditions which rational people invest in efficient or semi-efficient markets. Standard financial models (SFM) consider investors as whom without feeling and always consider stock prices as a function of the present value of expected cash flows and the balance between risks and return factors. Behavioral finance approach attempts to create an appropriate alternative instead of the standard financial and argues that investors proceed to invest in a space with mixed feelings and therefore these feelings affect the markets (Bloomfield, 2010).

The main problem we are facing today is that under uncertainty investment, we encounter with different groups of investors which their behavior is not rational and this behavior can fail rational strategies with the assumption of rationality. Studies on hidden heterogeneity suggest that detection of unobservable variables' effect such as investors' priorities and their ideas is important and vital on achieving a better understanding of the selections and behavior of financial market participants. Non-visible differences at the individual level may help to detect extensive behavioral abnormalities so through this it could be explain their possible strategies and targets in a range of investors' personality traits.

In this study, personality traits such as risk-taking, overconfidence and willingness are measured as optional features affecting the behavior of investors and it becomes clear that investors in different domains of risk-taking and willingness and overconfidence in the capital market are looking to achieve what goals and which strategy they will choose to realize the goals lie in their character in terms of technical and fundamental and intuitive judgment? Is there any difference between these personality types and their goals and strategies?

The paper is organized as follows: Section 2 Literature review we use to develop hypothesis, Section 3 describes the data and methodology employed to test the hypothesis. The empirical results are provided in Section 4. Finally, Section 5 summarizes the results and concludes the paper.

## Literature review

Behaviorists in finance are seeking to define the economic man with a more realistic model in finance. Classic finance is a set of knowledge based on principals of Arbitrage, Miller and Modigliani, portfolio foundations of Markowitz, Capital assets pricing theory of Sharpe, Lintner and Black, and Black-Scholes and Merton's pricing theory of transaction authority. Classic finance has been based on a set of simplifying assumptions of the real world and the concept of rational economic man lies in the lower layers of this attitude and says that human beings always make rational decisions (Pompian, 2006). In return, behavioral finance attempts to identify human psychological phenomena in the market and at the individual level and to learn from them. Finally, behavioral finance knowledge like classic finance has been based on underlying concepts and assumptions, but the difference is that classic finance has based its assumptions on a bed of ideals while behavioral finance builds these assumptions on the observed and realistic basis (Shefrin and Statman, 2000). Although some believe that current behavior in the capital market is rational behavior but behavioral finance does not believe that information is available to everyone in a symmetrical form and there are many restrictions which markets, particularly financial markets stay away from standard format and their musts (Kahneman and Slovic, 1982).

According to Lintner (1998) behavioral finance, aims to study how to interpret and act based on information to make investment structured decisions by peoples. Olsen (1998) in his description from behavioral finance states that behavioral finance does not try to show that rational behavior is wrong but tries to show the application of psychological decision-making processes in understanding and forecasting the financial markets.

The relationship between goals and selection in conditions of uncertainty is located in the center of two-factor theory of Lopez's risk selection. The first will focus on security goals and potential. According to Lopez, the purpose of risk aversion people is confidence level and the purpose of risk appetite people is return probability. Although some people only by security and some are only motivated by the possibility of return, both motivated with more or less force are existed in all people. The second factor in Lopez's theory is level of passion. The levels of enthusiasm are different among the people. Many people have the desire to get rich, but the amount of money that each of them defines as being rich is different (Lopez, 1987).

Portfolios which are in the framework of behavior are similar to layered pyramids. Each layer is linked to a specific purpose and covariance between layers, is not considered, in fact the simple two-layer pyramid is investigated. The down protective layer is designed for creating financial security and upper potential layer is designed to have a chance to get rich (Shefrin and Statman, 2000).

## Behavioral portfolio management

Behavioral portfolio management (BPT) emphasizes on the role of behavioral preferences in selecting the portfolio and suggests that portfolio choices of any investor and thus their performance in return, is reflecting attributes such as dreams, hopes, fears and narrow framing in trading decisions. BPT in this context, explains why some investors, by reviewing several objectives, for example, avoiding poverty in retirement period and the potential for making money and other wishes, at the same time they buy securities and lottery tickets (Statman, 2002).

Also Tripathi and Aggarwal (2009) believe that ingredient analysts and investors can review and follow up the stock return and performance during last two or three years and select and invest on the stocks that have had negative returns in that period of time and so earn higher return than the market average return without engaging in complex models of technical or fundamental analysis. Research conducted by Barber and Odean noted that overconfidence of investors, emphasize the role of ideas and help to explain why some investors are overly optimistic and their forecasts are too bold (Barber and Odean, 2001).

### **Fundamental, technical and intuitive investment strategies**

Researchers have investigated different strategies in their research. Two schools of thought that dominate on the stock market literature are fundamental and technical analysis and investors who operate outside of these two strategies are called investors lacking of the analysis knowledge or investors based on personal judgment and intuition (Murphy, 1999).

#### 1. Fundamental analysis

The approach of fundamental analysis and related models has received attention since 1930s in theoretical and learning frameworks. In such models the attention is mainly paid to the intrinsic value of stock and to determine the intrinsic value of stock, attention is paid to financial statements, sale growth and the ability of the company in maximizing the profit and similar factors and analyzing is being done in present environmental, economic and industrial conditions (Reilly and Brown, 2011).

#### 2. Technical analysis.

Technical analysis, using analysis of past prices and volume of transactions, predicts the future price movements. The foundation of these analysis focuses on the use of diagrams and mathematical and geometric equations, thus obtained small and large processes. In this context, opportunities to buy or sell are determined through estimating the range of market fluctuations (Murphy, 1999).

#### 3. Intuitive analysis.

In the behavioral model, investors are trying to have the best model of profit maximization of utility for stocks in their portfolio. However, calculating utility values requires a thorough knowledge of calculating all returns and careful management of the portfolio. For this reason, it is assumed that investors who do not rely on financial and investment knowledge use experimental method (intuitive method) in which it relies more on argue and past experiences to estimate the ultimate benefits and costs than using pre-given formulas and solutions. As a result, they select portfolio strategies that are less than optimal (Hoffman et al., 2010). Herding behavior is observed in financial markets of different countries whether developed or developing. In addition to investors, decision errors are observed in corporate executives. The research which was conducted between German companies operating in Russia came to the conclusion that the managers of these companies come to intuitive error in their investment decisions (Kotof, 2013).

### **Objectives of investors**

Investment objectives lie in investor's priorities. Aspiration levels, is an important component of goals.

A behavioral theory of portfolio is that investors whose wishes has a lot of Aspiration, act as they have a high tolerance towards risk and implicitly means that investors with high levels of Aspiration, are more willing to choose high-risk portfolios (Shefrin and Statman, 2000). High-risk portfolios are those that are more exposed to market risk and assess small businesses better than they seem (Barber and Odean, 2001).

### Behavior features of investors

#### 1. Risk – taking

Scholars of financial studies who attempt to understand and explain the behaviors and the causes of events in financial markets; the dominant paradigm in financial theories is based on maximizing expected utility and risk aversion. Psychological studies show that people actually behave differently than what modern financial theories of rational human beings manifest draw (Fernandes et al., 2009). Tversky and Kahneman (1992) Showed that people in the face of profit are risk-averse and in the face of loss is risk-taking. Also people sensibly are feeling worse towards the loss compared with the same size of profit. This phenomenon which is known as loss aversion has its roots in the psychology of people and is considered as one of the fundamental concepts of prospect theory.

#### 2. The level of Aspiration

The Aspiration is a concept which has been adapted from psychology. According to Siegel (1957), Aspiration refers to achieving a specific purpose that one strives for it. In the position of precarious choose, Aspiration is defined as the return of predetermined criteria used by decision maker to transform monetary results into the profit and loss (Camille and Eléonore, 2014).

#### 3. Overconfidence

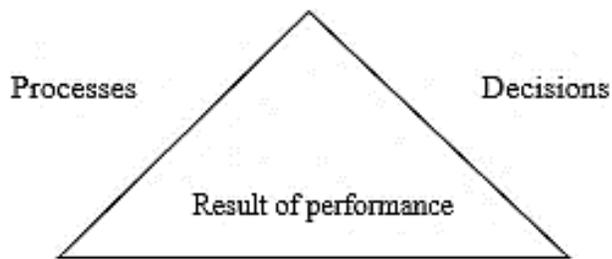
Overconfidence or excessive self-confidence is as a baseless belief of cognitive abilities, judgments and intuitive reasoning of the person. Overconfidence causes investors to over-estimate their forecast skills and believe that they can determine the time (changes) of the market (Waweru and Munyoki, 2008).

### The relationship between behavioral finance, portfolio management, investment strategies and stock analysis

According to the assumptions of the classical economists, emotions play no role in economic activities, especially according to the market efficiency hypothesis. In fact, in financial markets and according rational expectations hypothesis, the role of emotions is considered as null. Simon believes that people's decision making is conducted by a series of limitations that may undermine the concept of rational choice and this choice is not done according to the utility curve. These limitations may be external or originate from the biases of investor. These biases are retrieved from reference point of investor's decision making or his/her knowledge (Simon, 1955).

But Neil and Wheatley (1998) were among the first who tried to design emotions index based on market ratios. Baker and Wurgler (2007) and Winter (2007) using the similar approach and factor analysis method created an index to evaluate the market sentiments. In short, emotions can be defined as conceptualized phenomenon from assessment, emotional and short-term situations. One of the great triumphs of behavioral finance is presenting a series of theoretical papers that show in an economy in which rational and irrational traders oppose to each other, irrationality can be sustained and to affect prices for a long time (Thaler and Barberis, 2002).

Given the significant impact of current investment alternatives on the way of people's life in the future, it is important to understand that how individual investors in dealing with triangular relationship differ between decisions taken, the processes that lead to these decisions and the result of investment performance (Browning and Crossley, 2001).



**Figure 1** Relationship triangular

Graham and his colleagues in this regard believe that up to date, our understanding of these relationships has remained limited, because existing researches study part of the triangle or use socio – demographic variables such as gender, age or trade channel as pattern of underlying psychological processes as investment decision stimulating (Graham et al., 2009).

Behavioral portfolio theory, in this context, explains this issue that why some investors, by reviewing several objectives (e.g. prevention of poverty in retirement period and the potential for making money) as well as some wishes, they simultaneously buy bonds and lottery tickets (Statman, 2002). Conducted researches on the overconfidence of investors, emphasize on the role of strategies and help to explain why some investors are too optimistic (Barber and Odean, 2001) and have too bold predictions (Kahneman and Lovallo, 1993).

Empirical research of Hoffman, Shefrin and Pennings (2010) combines survey responses related to individual investors with their transaction records to create a unique data set that combines soft and hard data in a wide time interval. This survey allows the researcher to directly measure investors' characteristics that normally remain invisible such as their goals and strategies. Instead of using indicators based on, for example, survey, and researcher directly measures these dimensions of the investors' fundamental objectives and strategies (Graham et al., 2009).

Shefrin and Statman (1985) showed that portfolio selection with prospect theory is different from portfolio selection within the expected utility theory.

The most important feature of behavioral portfolio is that it is comprising of a number of securities without the risks and secure and a number of securities with high risk, which entire portfolio without diversification will be enough. In this context, the optimal portfolio is that matches the demands and interests of the decision maker individual and not to cause the maximizing of the expected return, and thus the interests and emotional biases of individuals is crucial to choose the composition of the portfolio.

Essayad and Desai (2008) investigated the behavioral pattern of Saudi investors based on Shefrin and Statman model. They found that Saudi investors in their investment decisions are influenced by the concept of mental accounting and form their investment portfolios like the proposed pyramid of Shefrin and Statman and based on emotions rather than performance.

Wagner (2001) presented a model of portfolio choice according to the level of investor wealth in comparison to the target portfolio (regret theory) and showed that if individuals' decision leads to wealth level more than the target level, the person gains more utility in investment, however, if the resulting wealth is less than the targeted level the person in addition to comparing with target portfolio, regrets because of not selecting other alternative investments. Rengifo and Trifan (2006) studied the effects of avoiding losses on decision making about allocation of wealth between risky and risk

- free assets. They have used the "value at risk" criteria accordance with desirable risk levels which is determined within specific prospect theory. They showed that how portfolio assessment counts affect investors' decisions and attitudes especially when they face with financial losses, which in these conditions they study the role of profit and loss at the past in the allocation of existing wealth.

Shefrin and Hoffman (2011) examined that what online investors do in terms of investment objective and extensive investment strategies that they apply and eventually how their portfolio works in terms of risk and return and encounter with factors. They analyzed that how systematic differences in the characteristics of the investor deal with their objectives and strategies. Results disclose information about the impact on investors' portfolio due to the overconfidence, understanding the merits, speculation and interest in risk. Shefrin and Hoffman (2014) in their study mentioned technical, fundamental and intuitive analysis and professional consultation as investment strategies and compared their research with Lewellen et al., (1980). Hoffman and Shefrin found that investors, who use technical analysis and succession trading of options, make weaker portfolio decisions that impressively lead to lower return compared with other investors.

Taqaduset al., (2013) showed in their study that risk-taking can have positive or negative relationship with different characteristics. Active investors require less security and have high level of risk, while passive investors are less risk-taking. Emotional state affects people's risk - taking level. Positive emotional state cause high risk - taking and negative emotional state cause risk aversion. Muralidhar (2016) believes that using of modern portfolio theory and behavioral finance cause to do not merge investor's objectives in analysis as the center of their savings and investment. Jain et al., (2015) in their research found that investors often make their investment decisions non – rational under pressure of some behavioral errors and gain poor return. Shefrin, Hoffman and Pennings (2010) in the context of portfolio choices found that investors select their portfolio such that they are consistent with their level of Aspiration. BPT based investors consider their portfolio as asset pyramid shape. Low – risk gadgets at the bottom and high – risk gadgets are at the top of the pyramid.

Diecidue and Van De Ven (2008) define Aspiration level as wishes that play an important role in financial decision making. Return higher than market average is called success and return lower than Aspiration level is called failure. They put value on the likelihood of success and failure. The main achievement is that the decision-maker when faced with financial decision, not only consider risky projects but also pay attention to the likelihood of success and failure. Glaser and Weber (2007) found that investors, who thought that their investment skills or their past performance is better than the people's average, more proceed to deal. The study of Barber and Odean (2001) also revealed that the investors with overconfidence have more transaction sequence that is the cause of return decreasing on their investment.

## Data and Methodology

### Data

In this study, using personality traits such as risk-taking, overconfidence and aspiration as optional features affecting the behavior, it became clear using different personality types measurement by questionnaire that investors in different domains of risk-taking and willingness and overconfidence in the capital market are looking to achieve what goals and which strategy they will choose to realize the goals lie in their character in terms of technical and fundamental and intuitive judgment? And is there any difference between these personality types and their goals and strategies?

Statistical population of study includes active investors in Iran capital market which are 5.5 million. Questionnaire has been used to test the hypotheses. The questionnaire was distributed between 1000 activists of Iran stock and Likert scale has been used to measure the research hypotheses. After collecting and analyzing the data from the questionnaire, a new category of active investors in capital market is provided. In this category, behavioral characteristic of each individual has been identified in accordance with the investment objectives and strategies.

Studying research's gathered data on investors behavioral characteristics such as risk-taking, willingness and overconfidence, as well as investment objectives in capital growth groups, financial security, recreational, retirement savings and speculation and also investors selective strategies based on fundamental, technical and intuitive analysis of natural people, has used a standard questionnaire to collect a sample of 343 people from capital market participants. We could examine and extract investor's personality dimensions, objectives and strategies using 40 standard classified questions.

### Methodology

The required data for this research to assess the study goals is based on using questionnaire and determining of investors behavioral characteristics and statistical test of investment strategies. In this article to test research hypothesis, descriptive statistics is used to examine the dimensions of demographic and inferential statistics is used to analyze data and hypothesis testing. One – sample test, T test, simple linear regression and one-way analysis of variance (ANOVA) also are used to test research hypostases. After determining the presence or absence of difference between the average of tested groups, LSD test is used to determine the average difference between which two groups is significant.

In order to test investor's behavior based on investment objectives and strategies, hypothesis of this study is formed in three formats. The first to third hypothesis are focused on the test of investment strategies and behavioral characteristics and fourth to sixth hypothesis are based on the test of investment objectives and behavioral characteristics and seventh to eleventh hypothesis are presented for the test of investment objectives and investment strategies. Table 1 shows the hypothesis of this research.

Category	Hypothesis #	Hypothesis
investment strategies and behavioral characteristics	1	Fundamental Investors have greater overconfidence compared to technical and intuitive Investors.
	2	Fundamental Investors are less risk – taking compared to technical and intuitive Investors.
	3	Fundamental Investors have higher Aspiration level compared to technical and intuitive Investors.

investment objectives and behavioral characteristics	4	There is a positive and significant relation between the Aspiration level of investors and their risk – taking amount.
	5	There is a significant relation between investor’s speculation target and their risk – taking levels.
	6	There is significant relation between the goal of capital growth and their Aspiration level.
investment objectives and investment strategies	7	Investors whose aim is capital growth select fundamental strategy more than other strategies.
	8	Investors whose aim is fun select technical strategy more than other strategies.
	9	Investors whose aim is saving for retirement select fundamental strategy more than other strategies.
	10	Investors whose aim is financial security select fundamental strategy more than other strategies.
	11	Investors whose aim is speculation select technical strategy more than other strategies.

**Table 1** Research hypothesis

The results of the statistical analysis and hypothesis testing will show that each individual investor by selecting his/her specific strategy for investment, what range of objectives, behavioral errors, risk, Aspiration and overconfidence does he/she accept.

**Empirical Results**

Results from descriptive statistics of the respondents indicate that more than 90 percent of those participating in this survey have a bachelor's degree, master's degree and Ph.D. and most of them are relatively expert investors and in the age range of young and experienced that adds to the credibility of the results and significance of this study.

Variable	Range	Frequency	Abundance %
Age	Lower than 20	0	0.0%
	Between 20 to 25	31	9.0%
	Between 25 to 35	169	49.3%
	Between 35 to 50	104	30.3%
	More than 50	37	10.8%
Educational level	Diploma or less	19	5.5%
	Associate degree	12	3.5%
	Bachelor degree	67	19.5%
	Master of science	184	53.6%
	Ph.D. candidate or Ph.D. or higher	45	13.1%

**Table 2** Frequency and educational level of respondents.

Thus, in this section, ranking of investment purposes is done by Friedman test at first. Then, testing of research hypotheses and analytical and theoretical model of the research is presented.

Objectives	N	Mean	Std. Deviation	Mean Rank	Rank
Capital growth	343	4.3786	.84650	4.39	1
Entertainment		2.2913	1.06568	3.42	4
Retirement saving		3.0097	1.08258	2.74	3
Financial security		3.5793	1.00535	2.46	2
Speculation		2.7929	1.03939	1.99	5

**Table 3** Descriptive statistics of investment objectives and average rating

Descriptive analysis of the results of the questionnaire showed that in terms of frequency, more than 50 percent of respondents and capital market activists and more than 26 percent and about 16 percent chose fundamental strategy, technical strategy and intuitive strategy respectively.

But the results of Friedman test showed that due to the significance level of test (0.00) which is smaller than 0.05 and 0.01, rejected the assumption of equality of investment ranks and strategies between respondents and investors and regarding the mean scores obtained in the table of mean scores it follows that the respondents' highest priority and importance is dedicated respectively to fundamental, technical and intuitive strategy. Also, the results of Friedman test for ranking investment strategies is presented in Table 4.

Strategy	N	Mean	Std. Deviation	Mean Rank	Rank
Technical	343	3.067	.7910	1.86	2
Fundamental	343	3.656	.7263	2.45	1
Intuitive	343	2.959	.7462	1.70	3

**Table 4** Descriptive statistics and mean scores of investment strategies

Since t tests, simple linear regression and analysis of variance are of parametric tests which their utilization requires assumptions about population parameters that one of these main assumptions is the normality of the used data in these tests so Kolmogorov–Smirnov test is used to assess the normality of the main variables of research before conducting and analyzing tests. Cronbach’s alpha was obtained 0.879 for questionnaires’ stability.

Variable	Confidence level	K-S
Overconfidence	0.95<	0.029
Aspiration	0.95<	0.027
Risk-taking	0.95<	0.04

**Table 5** Kolmogorov-Smirnov test values.

According to Table 5 all values of Kolmogorov-Smirnov test are less than 0.05 which the normality assumption of data at the significance level of 95 percent is accepted.

**Hypotheses testing**

In this section, hypotheses as mentioned in the previous section are tested using one-way analysis of variance. During the testing of hypotheses, the average of overconfidence, Aspiration risk-taking of fundamental, technical and intuitive investors is tested at first using one-way analysis of variance which in the case of rejecting  $H_0$  hypothesis, the LSD post hoc is used.

$$\begin{cases} H_0: \mu_1 = \mu_2 = \mu_3 \\ H_1: \mu_1 \neq \mu_2 \neq \mu_3 \end{cases}$$

**Hypothesis 1 test:**

Hypothesis	ANOVA between groups		LSD test results		
	F	Sig	Variable1	Variable2	sig
1	10.048	.000	Intuitive	Fundamental	.000
				Technical	.000
			Fundamental	Intuitive	.000
				Technical	.962
			Technical	Intuitive	.000
				Fundamental	.962

**Table 6** Hypothesis 1 test

In the case of the first hypothesis, Table shows that F test statistic is equal to 10.048 and the significance value of the test is 0.000, so the null hypothesis is rejected. It means that there is significant difference between investors overconfidence in investment strategies (Fundamental, technical and intuitive analysis). Thus, the overconfidence average of investors who use fundamental strategy is the same as the technical strategy but is more than intuitive strategy.

Hypothesis	ANOVA between groups		LSD test results		
	F	Slg	Variable1	Variable2	sig
2	4.390	.013	Intuitive	Fundamental	.659
				Technical	.105
			Fundamental	Intuitive	.659
				Technical	.003
			Technical	Intuitive	.105
				Fundamental	.003

**Table 7** Hypothesis 2 test

About risk-taking in investment strategies, the results show that according to the F test statistic (4.39) and the test significance value (0.013), there is a significant difference between investors declarative risk-taking based on fundamental, technical and intuitive analysis. So there is a significant difference between investors risk-taking based on fundamental and technical analysis and risk-taking amount of investors based on fundamental analysis is less than technical analysis.

Hypothesis	ANOVA between groups		LSD test results		
	F	Slg	First variable	Second variable	sig
3	3.625	.028	Intuitive	Fundamental	.391
				Technical	.288
			Fundamental	Intuitive	.391
				Technical	.008
			Technical	Intuitive	.288
				Fundamental	.008

**Table 8** Hypothesis 3 test

In this study a special attention has been paid to investors' Aspiration level and the results of third hypothesis test showed that according to significance value of analysis of variance (0.028), there is a significant difference between Aspiration levels of investors based on fundamental, technical and intuitive analysis. Thus, there is significant difference only between investors' Aspiration average based on technical and fundamental analysis and Aspiration average of technical analysis is greater than fundamental analysis.

Hypothesis	Variable		Aspiration	Risk-taking
4	Aspiration	Pearson Correlation	1	.168**
		Sig. (2-tailed)		.003
	Risk-taking	Pearson Correlation	.168**	1
		Sig. (2-tailed)	.003	

**Table 9** The results of correlation between two variables of Aspiration level and risk-taking amount

According to the Pearson correlation coefficient (0.168) and achieved significance value (0.003) it can be stated that there is a positive significant relation between risk-taking amount of investors and their Aspiration level.

Hypothesis	Value		Speculation	Risk-taking
5	Speculation	Pearson Correlation	1	.095
		Sig. (2-tailed)		.095
	Risk-taking	Pearson Correlation	.095	1
		Sig. (2-tailed)	.095	

**Table 10** The results of correlation between two variables of speculation and risk-taking

According to the Pearson correlation coefficient (0.095) and achieved significance value (0.095) which is not less than 0.05, the null hypothesis of no correlation between these two variables is not rejected. Therefore, there is a significant correlation and relation between speculation and risk-taking of investors.

Hypothesis	Variable		Capital growth	Aspiration
6	Capital growth	Pearson Correlation	1	.246**
		Sig. (2-tailed)		.000
	Aspiration	Pearson Correlation	.246**	1
		Sig. (2-tailed)	.000	

**Table 11** Results of correlation between two variables of Aspiration level and capital growth

According to the Pearson correlation coefficient (0.246) and achieved significance value (0.000) it can be stated that there is a positive relation between the goal of capital growth and Aspiration level of investors.

Hypothesis	ANOVA between groups		LSD test results		
	F	SIg	First variable	Second variable	sig
7	4.215	.016	Intuitive	Fundamental	.042
				Technical	.004
			Fundamental	Intuitive	.042
				Technical	.112
			Technical	Intuitive	.004
				Fundamental	.112

**Table 12** Results of analysis of variance of capital growth in investment different strategies

According to the F test statistic which is equal to 4.215 and a significance value of the test which is equal to 0.016, the null hypothesis is rejected. That is, there is a difference between capital growth purpose of investors based on fundamental, technical and intuitive analysis. It can be also concluded that there is a significant difference between capital growth purpose of investors based on intuitive analysis and technical analysis and capital growth purpose of investors based on intuitive analysis is less than technical and fundamental analysis. However, there is a significant difference between capital growth purpose of investors based on fundamental and technical analysis.

Hypothesis	ANOVA between groups	
	F	SIg
8	.826	.439

**Table 13** Analysis of variance results for entertainment purpose in investment different strategies

According to the F test statistic which is equal to 0.826 and significance value of the test (0.439), there is no reason to reject the null hypothesis. That is, there is no significant difference between entertainment purpose of investors based on fundamental, technical and intuitive analysis.

Hypothesis	ANOVA between groups	
	F	SIg
9	.929	.396

**Table 14** Analysis of variance results of saving purpose for retirement in investment different strategies

According to the F test statistic which is equal to 0.929 and significance value of the test that is equal to 0.396, the null hypothesis is accepted. That is, there is no difference between saving purpose of investors based on fundamental, technical and intuitive analysis.

Hypothesis	ANOVA between groups		LSD test results		
	F	SIg	First variable	Second variable	sig
10	4.131	.017	Intuitive	Fundamental	.042
				Technical	.004
			Fundamental	Intuitive	.042
				Technical	.112
			Technical	Intuitive	.004
				Fundamental	.112

**Table 15** Analysis of variance results for financial security in investment different strategies

According to significance level of the test (0.017) which is less than 0.05, the null hypothesis at the confidence level of 95% is rejected. That is, there is a significant difference between financial security purpose of investors based on fundamental, technical and intuitive. Now, LSD test has been used to assess if there is any difference between financial security purpose of investors based on intuitive and fundamental analysis which according to significance value of 0.081, the null hypothesis is rejected i.e. there is a difference between financial security purpose of investors based on intuitive and fundamental analysis.

Hypothesis	ANOVA between groups	
	F	SIg
11	.226	.798

**Table 16** Analysis of variance results for speculation purpose in investment different strategies

According to the F test statistic which is equal to 0.226 and p-value or significance value of the test which is equal 0.798, the null hypothesis is accepted. That is, there is no difference between speculation purpose of investors based on fundamental, technical and intuitive analysis. So speculation purpose is the same between investors based on fundamental, technical and intuitive analysis.

## Conclusion

In this paper, a unique data set consists of basic information about the behavioral characteristics of active investors on the stock exchange has been used. This database is designed using Google docs online questionnaire software and is provided to investors by electronic means. The researcher has used these data to detect and categorize investors based on their personal characteristics, investment objectives and investment strategies on the market.

In order to measure behavioral tendencies and inherent psychological biases of investors, the rating form is used instead of the quantitative indexes of the stock market to directly evaluate the characteristics of the investors. Research data has combined a set of invisible diverse behavioral variables including risk-taking, overconfidence and Aspiration as well as a range of personal purposes of investors such as capital growth objectives, financial security, saving for retirement, entertainment and speculation with a selection of their investment strategies such as fundamental, technical and intuitive strategies. In this way, groups of investors were explained and hypotheses were tested in behavioral framework of investors' portfolio. The results show that the overconfidence average in investment strategies of people who use the fundamental strategy is as the same as the technical strategy, but is more than the intuitive strategy. The risk-taking amount of investors based on fundamental analysis is less than technical analysis.

This result is somewhat inconsistent with Shefrin and Hoffman (2014) which believe that investors based on fundamental analysis have higher Aspiration level and financial transactions compared to investors based on technical, and accept more risk and have excessive self-confidence. The level of Aspiration is also different from Shefrin results. This study shows that Aspiration level of technical investors is far more than fundamental and intuitive investors.

The results also show that there is a positive and significant relation between Aspiration level and risk-taking amount of investors, but there is no significant relation between speculation purpose and risk-taking of investors. Thus, there are no similar results between this research and the results of Shefrin and Hoffman (2014) in the context of relation between speculation purpose and risk-taking.

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## **The Motivations of women entrepreneurs, in the municipality of León, Nicaragua**

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### **Abstract**

The creation of women-led enterprises has recently been the subject of great interest, due to their increasing number and recognized dynamism in economic activity. This paper analyzes the following questions: [1] what personal motivation influence or affect women entrepreneurs; [2] what are the motivations that led the woman to become an entrepreneur? [3] What role do motivations play as opportunities mechanisms? [4] How do these women entrepreneurs measure risk factors in their decision to start a business? In addition [5] if women's business motivation. Is related to success in their own businesses. The results show the internal consistency of the scales evaluated by the Cronbach Alpha coefficient showed high reliability, above the established minimum 0.852, the adjustment indices showed significant values. The results of this study show that the motivational scales possess satisfactory properties of construct validity and internal consistencies.

### **Entrepreneurship women, personal motivations and business motivations**

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## Introduction

Women's entrepreneurship has consolidated as an engine of economic growth, increasing the Entrepreneurial Activity Rate [TEA] among women in 61 economies worldwide in just two years [Global Entrepreneurship Monitor-GEM]. Governments and international economic organizations, the OECD, the World Bank, the United States Agency for International Development (USAID) and the International Monetary Fund (IMF) have addressed policies and programs aimed at favoring initiatives led by women in business, in order to understand and foster entrepreneurship in developing countries (Minnit, 2012).

The literature considers different meanings about motivation to explain entrepreneurial behavior (Buttner & Moore, 1997), and very few studies focus on the aspects applied to theories that explain entrepreneurship initiatives. On the other hand, business performance is usually to measure from the economic perspectives of growth in sales or employees, and / or the increase in profits (Barba & Atienza, 2012). In this context, certain motivational factors that explain the behavior of the entrepreneur have received some attention. As Kantis (2004) states, at the Latin American level, a line of research have been developed in recent years, framed in new ventures and entrepreneurs. At the international level, the contributions of the Global Entrepreneurship Monitor [GEM] (Acs & Amorós, 2008) stand out.

High levels of need for achievement will make business behavior a positive influence on economic growth and development (Kantis, Angelelli, & Moori, 2004).

In this paper, we present an integrative model that allows us to have an overall view of the influence that motivations have on the entrepreneurial woman.

The contrasting hypotheses will allow us to analyze [1] the complementarity between personal motivations, [2] motivational mechanisms, [3] opportunities, creativity and innovation and [4] risk propensity to drive the implementation of a company.

In relation to the factors studied, several papers deal with the influence of the motives that influence the creation and consolidation of businesses; however, we do not find work that incorporates the four factors.

## Literature review

### Motivations to undertake

In the literature on business dynamics, several studies has been carried out that attempt to explain, their nature associated to the entrepreneurial capacity to visualize new business opportunities (Baron, 2006; Chen et al., 1998)

However, the knowledge of what is and how the success of the female entrepreneurship is determined, is related to the motivations, the expectations and the personal objectives that have an impact on the business conduct (Nussbaum, 2011; Rábago, DAnnunzio, & Monserrat, 2004 ).

This influence is also verified in the field of entrepreneurship, highlighting the motivational factors such as: need for achievement, independence and desires for wealth are determining factors in the understanding of differences in individual behavior (Brandstätter, 2011), however, are scarce The empirical studies that address the reasons why they incite women to start businesses (Buttner & Moore, 1997).

The field of female entrepreneurship emerged in the late 1980s with a variety of disciplines (Hisrich & Brush, 1983). Although initially it focused mainly on the problems of financing and access to capital faced by women (Minniti & Naudé, 2010). It has recently evolved to a knowledge of the main motives for women to undertake in relation to individual goals and their desire to seek a balance between work and family (Buttner & Moore 1997, Daeren 2000, Gibb and Ritchie 1982).

As Kantis, Ishida, and Komori (2002) point out, the emergence of entrepreneurs by necessity represents an increasingly common category in Latin America over other more developed regions.

Recent studies confirm that in the last two years, the increase in new models of entrepreneurship in Latin America reveals competitive deficiencies (Lederman, Messina, Pienknagura, & Rigolini, 2014), the vast majority of new businesses lack innovation and transformation (Acs & Amorós, 2008), create little employment and do not contribute to economic growth (Scott Shane, 2009).

On the other hand, some studies have tried to establish a model of entrepreneurship in small and medium enterprises (Brandstätter, 2011; Shane & Venkataraman, 2000).

One of the models to which reference is made is the GEM's entrepreneurial process (Acs & Amorós, 2008; Alvarez, Urbano, & Amorós, 2012). Recent studies confirm that during the last two decades, the emergence of new business models has allowed the development of new technologies, which has contributed to economic performance and potentiate competitive rivalry (Acs & Amorós, 2008).

However, the competitive impact of these entrepreneurial efforts differs from country to country at the same level of development (Carree, Van Stel, Thurik, & Wennekers, 2002), between countries at different stages of development (Wennekers, Stel, Thurik, Reynolds, 2005) and also between regions of a single country. On the other hand, from the psychological point of view, entrepreneurship depends largely on the willingness and willingness of individuals to start an independent business, the skills of women involved and the efforts for the necessary successful implementation (Kantis et al. 2004).

In this sense, we can consider that there are different models and / or theories, applying the literature multiple criteria to explain the entrepreneurial initiatives among women, why they found their own businesses and their behavior, demonstrating that the motivation to achieve, excels in the entrepreneurial profile Feminine (Barba & Atienza, 2012; Belwal, Belwal, & Al Saidi, 2014).

### **Motivation of the Entrepreneurial Woman**

Numerous studies have highlighted the importance of deepening the understanding of the role of women in entrepreneurship and development (Bruni, Gherardi, & Poggio, 2004).

The main literature on women's entrepreneurship deals with how women are able to cope with social demands, given their ability to survive in a hostile environment and their valuable naturalized female skills (Bruni et al., 2004). On the other hand, Veciana (2005) affirms that women with a motivation, preparation and adequate skills for decision-making is related to the success of the companies created by them. However, new businesses are not created by chance, but a great deal of effort and time is needed to finally crystallize the business (Carter & Ram, 2003).

In this sense, it is important to include the study of motivations in the female entrepreneurial process.

a] The need for achievement: McClelland (1961) was one of the pioneers who studied the need for achievement, indicated a desire to perform tasks well, not so much seeking recognition or social prestige, but trying to achieve an internal feeling of personal achievement, Its hypothesis is that this factor is partly responsible for economic growth (Liñán & Santos, 2007, p.462).

Urban and Veciana (2001) consider that there is evidence that the need for the institutional environment in each region or country will be decisive in terms of available opportunities [business or not], the perception of them, Skills development, the abilities to take advantage of them and all this can be considered as part of the motivations for the enterprise. McClelland [1965] found that one of the main characteristics that the entrepreneur must have is "personality", as the force behind entrepreneurial activities to be a successful entrepreneur. (Veciana, 2005) Those with a well-developed personality in In this sense, they take better the opportunities that the market offers, better than other members of society (Shane, 2000).

Similarly, other empirical studies have emphasized the importance of the need for achievement as a characteristic of entrepreneurs and their relationship with the success of the companies created by them (Barba & Atienza, 2012).

b] The need for independence: the pioneering work was done by Collin and Moore [1964], where the characteristics that stand out most in the motivation of female entrepreneurship, refers to the desire and the need for independence by women (Liñán & Santos, 2007).

Other motivational constructs such as the favorable environment can influence business success through the development of its internal characteristics (Ismail, Husin, Rahim, Kamal, & Mat, 2016).

There is evidence that self-employment can provide women with precious gender independence and the possibility of starting a business to balance work and family, to have greater flexibility in the use of time (Kirkwood, 2004; , Merigo, & Urbano, 2015) and adjust the number of hours to reconcile dedication to family needs (Castiblanco, 2016).

c] Need for Economic Income: The search for opportunities is one of the reasons to have your own business in the field of entrepreneurship (Pérez & Avilés, 2016).

In this sense, aspects related to the discovery of opportunities as a central focus, the welfare of the community, the care and prosperity of the family and the desire for wealth (Sasu & Sasu, 2015) and their performance behavior (Amorós, Guerra, Pizarro, & Poblete, 2006), and to the extent that it can be explained by the nature of the business (Barba & Atienza, 2012). One of the stereotypes about the figure of the entrepreneur is that his actions are guided by making a lot of money, however, there is ample evidence in the literature that this is not the main motivation of entrepreneurs (Carter & Ram 2003, Sánchez, Fernández, Díaz, & Hernández, 2012)

d] Mechanisms of Motivation:

The conditions of the environment are a very cited component and analyzed in the entrepreneurship literature. Environmental conditions are defined as components outside the enterprise, but they influence their birth and development (Rauch & Frese, 2000).

According to Kantis (2004), in societies with cultures favorable to entrepreneurship, it is more feasible for people to undertake to gain social recognition. It is the predictor of the image of entrepreneurship in society, as an aspect that influences the perception of desirability and viability of creating the company (Marulanda, Montoya, & Velez 2014).

Considering the impact of the motivation mechanisms, the first reasons that moved women to create their company prevailed over the desire for recognition by society (EM Sánchez & Hernández, 2011), because of the fact that the ultimate goal Of the entrepreneur not the appropriation of the value created, but the creation of social value (Moya, Sánchez, & Taboada, 2015). This fact also seems to be found in the case of women entrepreneurs in Malaysia (Ismail et al., 2016), placing greater emphasis on non-wage components, based on the expected results for them and their families, by (Sánchez & Hernández, 2011 ) Example the support of your family.

e] Opportunity: The existence of business opportunities are those decisions to exploit opportunities for the creation of companies, is a necessary condition for entrepreneurship (Shane, 2000).

Amorós (2011) believes that it is important for countries to have people who can recognize valuable business opportunities and who perceive in themselves the skills required to exploit those opportunities. Not all potential entrepreneurs will exploit opportunities with the same expected value (Lee, Florida, & Acs, 2004).

E] Motivations related to scientific knowledge: Creativity is defined as "the ability" to produce work that is new, that is, original unexpected and appropriate.

According to the definition, entrepreneurship is a form of creativity and can be labeled as a company or creativity because new businesses are often original and useful (Lee et al., 2004).

In this sense, Schumpeter [1934] considers that the economies that operate in a constant state of imbalance, the motivations of the individual act as drivers of business conduct, lies in the technological, political, social, regulatory and other changes that offer A continuous supply of new information on different ways of using resources to improve wealth (Shane & Venkataraman, 2000).

According to Drucker (1985) creativity and innovation are the specific instrument of entrepreneurs, the way in which they exploit change as a previously non-existent opportunity. New market opportunities are strongly influenced by technological developments and local government regulations (Verheul & Thurik, 2001).

For Carter and Ram (2003), this factor is innovation, and includes in it an individual's intention to create something new, developing product / service ideas, skills to find solutions to their needs, desires and to continue learning.

The entrepreneur is characterized by having a spirit of risk to exploit opportunities. Other characteristics, which he considers (McClelland, 1961), the individual in his role of entrepreneur, influences the personality trait is not necessarily innate, but can be developed. That is, in any entrepreneurial process, risk is always present, the search for an opportunity leads the entrepreneur to some new and uncertain place, where risk is inevitable.

### **Assumption of Hypothesis**

As for personal motivations, it is pertinent to cite the findings of Autio and Kauranen (1994), investigated through the personal motivations referred to in this model include the need for achievement, independence and the desire for wealth, which can be decisive in the determination to become an entrepreneur. However, results Collins, Hanges, and Locke (2004), showed that personal motivations correlate significantly with career choice and business performance.

Hypothesis 1: The personal motivations will be positively associated with the probability of creating companies. We also hope that personal motivations are positively associated with motivational mechanisms in the decision to become an entrepreneur. According to Kantis (2004), he considers that "in societies with cultures favorable to entrepreneurship it is more feasible for people to undertake to gain social recognition. It is the predictor of the image of entrepreneurship in society as an aspect that influences the perception of desirability and viability of creating the company (Marulanda et al., 2014).

Hypothesis 2: Motivation mechanisms will be positively associated with business performance. With regard to the entrepreneur's opportunities, although it is possible to argue that the exploitation of opportunities depends fundamentally on personal characteristics (Graña, 2002), there is a trend of researchers who emphasize that opportunities also depend on factors external to the entrepreneur (Ozaralli & Rivenburgh, 2016) and, therefore, it is necessary for the entrepreneur to discover the opportunity to recognize the value and meaning of the new information once it is received, in order to take advantage of the opportunity (S. Shane, 2000).

Hypothesis 3: The role that motivations play as an opportunity, positively influence personality and external factors entrepreneurial women. On the other hand, what is evident in this context, the motivations related to knowledge and risk. Starting from the idea that the entrepreneur is the center of entrepreneurship (Low & MacMillan, 1988), the study of entrepreneurs' distinctive attributes (Baron, Markman, & Hirska, 2001), it is necessary for the potentially entrepreneurial individual to have certain Entrepreneurial skills: motivation and skills (Anna, Chandler, Jansen, & Mero, 2000).

On the other hand, if we consider that the attributes tend to flow in the start-up of a company and in its success: the propensity to take risks and the inexistence of fear of the failure of the entrepreneurial women cause that they perceive less risks associated to the creation, and development of a company than other individuals and show less fear of corporate failure (Baron, 2004).

They lead us to formulate the fourth and last Hypothesis:

Hypothesis 4: Women entrepreneurs measure factors related to scientific knowledge and risk in their decision to create a company.

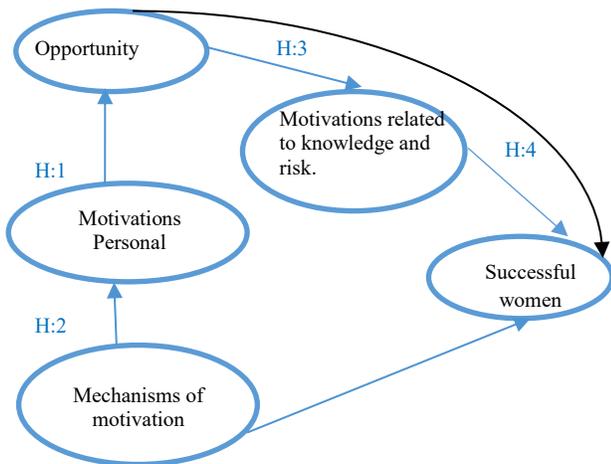
### **Methodology**

The study population is made up of women entrepreneurs from the municipality of León, Nicaragua.

Target population	Employments of women [<1 year]
Size of the population:	187 women
Geographical study:	Department of León, municipality León [Nicaragua] 101 women
Sample size	
Sampling unit	Enterprise Sampling error [confidence level]: 0.5% [95%] The respondents:

**Table 1** Empirical Research Sheet  
*Source: self made*

From the bibliographic review of the most important research in the field and the variables defined for the present study, four Hypothesis summarized in the theoretical model presented in Figure 1.



**Figure 1** Theoretical model  
*Source: self made*

To test the Hypothesis above, a field study was conducted through a personal survey, using a self-administered questionnaire addressed to the owners of the company as support. In order to approach the convergent validity we perform a factorial analysis with the items of each one of the variables, eliminating those that do not saturate in the factor.

Finally, the discriminant validity is contrasted by performing a factorial analysis with all the items that satisfy the rest of the conditions of reliability and validity. Thus, we can verify that the items of different scales do not weigh in the same factor or dimension, as characteristic of the existence of discriminant validity. Thus, if they saturate in the proposed dimension and the analysis presents an adequate goodness, we will be able to affirm that there is discriminant validity.

Table 1 shows the items used to measure the different variables that make up the model once the scales have been cleared, regardless of those items that do not meet the minimum criteria indicated. It also includes the descriptive results of a first grouping of variables and analysis of main components that influence the motivations for the development of the entrepreneurial activity.

Entrepreneurial women will assess whether motivation is conditioned by the lack of culture, on average the main reasons to become entrepreneurs, are related to personal factors for a higher quality and job satisfaction, having a direct relationship by the existence of an opportunity business. According to the results of the reasons related to the decision to become entrepreneur, the opportunity and continuity of the company have significant values at  $p < 0.05$  or with levels of significance at 90%.

It can be seen that the variable related to the capacity of the woman to assume risk is probably the best predictor for the motivations of the Municipality of León.

But beyond the detection of an opportunity this plays a fundamental role in the motivational cycle proposed by McClelland, according to this theorist, in the process of motivation not only intervene stimuli, incentives, motives, but also opportunities, however.

There are other factors that motivate the entrepreneurial initiative in the municipality of León. Thus, we can point out the three most important variables that we will consider will be; the mechanisms of motivation, creativity and innovation and propensity to risk, as a mechanism to manage their business.

The results show that women entrepreneurs in the municipality of León, in situation of personal motivations, are aspects that are not highly conditioned in relation to the opportunities to undertake.

Table 1 presents in the third column communalities where the value of the extraction is observed and in all cases, since it has high values, they indicate that there is enough relation between variables to perform a principal components analysis (Hair, Anderson, Tatham, & Black, 2001).

Table 1 presents the rotated component matrix. The extraction method has been the principal components analysis and the Varimax rotation method with normalization (Kaiser, 1970).

Thus, the first component explains 23.49% of the model of personal motivations and the sum of the variances of the first 4 components reaches 68.44%, which indicates that we can be in the presence of an explanatory model of personal motivations. Analyzing the results, we group the variables with high extraction values, which correspond to personal motivations, where women entrepreneurs express that if personal motivations [need for achievement, need for independence, need for economic independence] is essential for Entrepreneurship and the latter for economic development, it could be said that it is necessary to promote this motive more in people if it is to achieve economic development in societies, to facilitate with greater success their entrepreneurship; And even prevent its closure.

In the second component, which affects the motivation mechanisms of female entrepreneurs, environmental conditions constitute a component for decision making, as an aspect that influences the perception of desirability and viability of creating the company.

The third component, reflected in motivations for opportunity, indicates that this result can be explained by what McClelland establishes as to why people with high motivation are entrepreneurs, possess behaviors that are characteristic and necessary for entrepreneurship

The fourth component refers to Creativity and Innovation, where it is convenient to highlight "the skills" to find solutions to their needs and desires.

Finally, the fifth component is the risk propensity, in this sense the entrepreneurial women of the municipality of León, is characterized by having a spirit of risk to exploit opportunities. Other characteristics of women in their entrepreneurial role influence the personality trait, although it is not necessarily innate, but can be developed.

Using the SPSS software, the KMO [Kaiser, Meyer and Olkin] test of sampling adequacy was performed, which correlates the correlation coefficients observed among the variables. The closer to 1 has the value obtained from the KMO test, it implies that the relationship between the variables is high. Thus, a value of 0.63 was obtained which means a high relation between the variables. As for the Bartlett sphericity test that evaluates the applicability of the factorial analysis of the studied variables, in the study the Sig result is less than 0.05, so it is appropriate to study the grouping of variables with the factorial analysis (Hair et al., 2001).

The Cronbach Alpha was applied to the 31 items, obtaining a value of 0.852, which guarantees the reliability of the measurement scale used. The mean values of each of the GPA factors are also calculated, being high for five of the seven factors except for the Motivation Mechanisms and risk propensity, where one of the variables warns us that family support is a fundamental pillar to solve the difficulties that arise through the generation of new ideas [little adaptation and inefficiency in its management].

Variables and factors found ACP	Me	Dv.	Com.	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	F <sub>4</sub>	F <sub>5</sub>	F <sub>6</sub>	F <sub>7</sub>
<b>Need for Achievement</b>										
Desire to test one's own skill in creating a new company	4.73	2.76	0.71	0.84						
Desire to develop own ideas	6.25	1.71	0.63	0.79						
<b>Need for Independence</b>										
Greater flexibility in the use of time	5.40	2.47	0.53		0.68					
Insufficient perspectives of work	4.23	2.87	0.64		0.80					
The desire to test one's own skill in creating a new company	5.39	2.47	0.55		0.74					
<b>Need for income</b>										
Have a livelihood	6.51	1.52	0.58			0.76				
Get high income	6.00	1.92	0.77			0.88				
Improvement of the personal work environment [Work environment]	6.10	1.92	0.64			0.80				
<b>Motivation Mechanisms</b>										
Successful women entrepreneurs enjoy great recognition and social prestige	4.62	2.64	0.68				0.16			
Difficulties perceived in the previous professional career	2.37	2.37	0.69				0.82			
Family support	5.46	2.48	0.69				0.26			
For obstacles found in the promotion	2.35	2.31	0.71				0.83			
For precarious contracting conditions	2.37	2.36	0.68				0.75			
<b>Opportunity</b>										
I have the ability to solve the difficulties presented to me through the generation of new ideas	6.05	1.81	0.76					0.87		
I believe I have the ability to generate new initiatives when I work in a collective.	5.90	2.05	0.78					0.88		
<b>Creativity and innovation</b>										
Women with the ability to generate ideas usually are related to greater creative talent	6.26	1.75	0.63						0.76	
I have innovative ideas	6.54	1.14	0.72						0.54	
Ability to find through creative processes solutions to your needs and desires	6.12	1.76	0.78						0.87	
The discovery of a new product / service	5.50	2.38	0.69						0.72	
The development of a new method of production	4.12	2.80	0.73						0.56	
<b>Risk Propensity</b>										
Women's ability to take risk	5.52	2.31	0.97							0.10
Fear of economic risk	3.29	2.62	0.62							0.76
Fear of failure	3.08	2.60	0.80							0.89
Tolerance to uncertainty	3.21	2.64	0.81							0.90
Fear of not being accepted	3.19	2.75	0.58							0.76
Mean of each component [Me (Fact.)]				5.49	5.006	6.20	3.43	5.97	5.70	3.65
Variance Explained for each factor:				23.49	12.56	10.74	6.95	5.34	4.04	4.42
Total Variance:	68.44%									

**Table 2** Descriptive and exploratory factorial analysis

**Logistic and Binary regression analysis**

This paper examines whether women's entrepreneurial motivation.

Is related to success in their own businesses. For this, we propose: [1] three linear regressions [J = 1,2,3] with Likert type variables [values 1 to 7]; And [2] a fourth binary logistic regression [H = 1] with dummy variable [0,1] that discriminates the acceptance or not of a professional tutor. Table 4 presents the detail of the dependent variables and their descriptives. Table 3 Regression Model Binary Logistics: Motivational factors associated with the entrepreneurship of women

Descriptive Statistics Me Dv. Med. Mo	Me	Dv.	Med	M o
J = 1; "Family Parent Model".	5,38	2,51	7	7
J = 2; "Continue with a family tradition".	5,01	2,55	7	7
J = 3; "Business culture in the region".	4,85	2,24	5,50	7
H = 1; "Considers it necessary to have the help of a professional tutor".	0,63	0,48	1	1

**Table 3** Dependent Variables

The dependent variables related to the characteristics of women associated with the condition of "entrepreneurs", raised by the entrepreneurship literature, will allow us to verify if the motivations of the entrepreneurial women are close to that of the entrepreneur in general. The variables that we evaluate in this sense are presented below:

- The models of parents, continue with a family tradition, business culture in the Region, were measured through a Likert-type variable [values 1 to 7]; [Being the most representative value with fashion = 7], and the acceptance of a tutor that provides knowledge as business support. Women entrepreneurs value very positively the help of a professional tutor, who could eliminate their lack of knowledge related to business success.

Table 4 presents the contrast results of the four Hypothesis formulated in point 3 with their corresponding association of measures. First, statistically, this relationship is significant, low and directly proportional to the fact that it is the highest value in t for creativity and innovation. The summary table of the ANOVA reports that there is a significant 99% relationship between independent and dependent variables, and Snedecor's F statistic rejects the Hypothesis null that R is zero through analysis of variance with a factor [ANOVA]. In the three regressions this statistic indicates that the data of the sample fall in the critical region [with Sig. = 0.000], therefore, there is a linear relationship between the independent variables, rejecting the Hypothesis null that the population value of R is zero, Stating that the regression equations fit the data; Therefore, personal motivations are linearly related to the predominant factor of risk propensity.

As can be seen in the results of the three regressions presented, a positive and significant incidence of the first Hypothesis "Need to achieve" in the dependent variables [0.18 [β11] [β11] is shown; 0.19 [β12]; 0.18 [β13] and p <0.01]. This first evidence suggests that it is advisable, in the previous and nascent stage of the entrepreneurs, to direct the training towards issues that reinforce the personal development of their abilities and abilities; Being these in turn the most notorious results, and, that are associated in an important way [t with high value] as well as that they propitiate the self-knowledge and the cultivation of some virtues of the character. The predictive equation in the three cases obtains determination coefficients [R-Adjusted1 = 0.103; R-Adjusted2 = 0.109; R-Adjusted3 = 0.122] which indicates a fit of the data to the model with four factors.

The results show that independence, [Hypothesis H2], inversely influences risk propensity [0.44 [β21], p <0.01]; Which is consistent with S. Shane (2003), claim that independence implies having responsibility for using one's own judgment, (Carter & Ram, 2003) includes aspects such as the yearning for an individual to plan their work and take their Own decisions.

In general, in the contrast of the third Hypothesis [H3] we observe that there is a clear and univocal dependence on the economic necessity, however, the results of the 2nd Regression [j = 2] indicate that greater business motivations, oriented towards a tradition Family, causes motivations to influence positively to the extent that these can be achieved and have an impact on higher aspirations of personal and professional growth. [0.32 [β32], p <0.01], if there is a positive and significant relationship that can help personal motivations. Therefore, we can accept it as valid the formulation of the Hypothesis where culture influences in a satisfactory way, when proposing the help of a professional tutor.

Predictive Variables.	1 <sup>st</sup> Regression [j=1]		2 <sup>nd</sup> Regression [j=2]		3 <sup>rd</sup> Regression [j=3]	
	Standardized Coefficient [Sig.]	Test T [Sig.]	Standardized Coefficient [Sig.]	Test T [Sig.]	Standardized Coefficient [Sig.]	Test T [Sig.]
[Constant]		60,87 <sup>a</sup>		111,72 <sup>a</sup>		74,38 <sup>a</sup>
H1: Need Achievement	0.18 [β11]	1.904 <sup>b</sup>	0.19	1.99 <sup>b</sup>	0.18	1.92 <sup>b</sup>
H2: Need for independence	0.44	0.65 <sup>c</sup>	0.19	2.04 <sup>b</sup>	0.26	2.80 <sup>a</sup>
H3: Need for Economic Income	0.37	4.12 <sup>a</sup>	0.32	3.55 <sup>a</sup>	0.21	2.24 <sup>a</sup>
H4: Motivatin Mechanism	0.15	1.60 <sup>c</sup>	0.36	4.03 <sup>a</sup>	0.36	4.08 <sup>a</sup>
H5: Opportunity	0.30	3.24 <sup>a</sup>	0.28	3.03 <sup>a</sup>	0.36	3.94 <sup>a</sup>
H6: Creativity and innovation	0.48	5.65 <sup>a</sup>	0.28	3.02 <sup>a</sup>	0.19	2.08 <sup>a</sup>
H7: Risk Propensity	0.00	-0.03 <sup>c</sup>	-0.08	-0.81 <sup>b</sup>	0.08	0.82 <sup>c</sup>
Sig: p <0.01a, P <0.05b, p <0.1c	1st Regression		2nd Regression		3rd Regression	
R [deterministic coefficients; R, R <sub>2</sub> and R <sub>3</sub> corrected or adjusted];	R = 0.34; R <sub>2</sub> = 0.112; Adjusted R = 0.103		R = 0.34; R <sub>2</sub> = 0.118; Adjusted R = 0.109		R = 0.36; R <sub>2</sub> = 0.131; Adjusted R = 0.122	
Durbin-Watson statistic [DW1]	Durbin-Watson statistic [DW1] = 1.614		Durbin-Watson Statistic [DW2] = 1.69		Durbin-Watson statistic [DW3] = 2.106	

**Table 4** Hypothesis contrast results from the three linear regressions

The Durbin-Watson statistic of the three estimates [DW j = 1,2,3], two of which are less than 2 [DW1] = 1.614; [DW2] = 1.69; [DW3] = 2.106], then it can be assumed that the residues are independent.

In another sense, we observed that risk propensity as a factor or component formulated through its characterization would significantly influence the attitude of women entrepreneurs, however in this regard we have obtained an inverse relationship and highly significant, [-0.08 [B41],  $p < 0.01$ ]. The dependent variable [H = 1] serves to establish a classification proposal with the Binary Logistic Regression (RLB) method that studies the association of the four factors of the GPA and the predisposition to accept a professional as a tutor.

The Table 4 of variables included in the equation, shows the estimates of the coefficients of the model and the data to evaluate it. The Table of classification indicates that the model is good to predict in the future, since if the classification is applied to the already known observations, a success rate of 89% is obtained. The Wald statistic [Sig = 0.000] that contrasts the Hypothesis with whether the regression coefficients are equal to zero, presents a significant value [p-value < 0.05]. Cox R2 [value = 0.241] and Snell and Nagelkerke [value = 0.489] indicates good fit of the model to the data.

Parameter Estimates	B	Wald	Exp [B]
HLB-1: Mechanisms of motivation	-1.178	3.448	.308
HLB-2: Propensity at Risk	1.152	4.250	3.165 <sup>b</sup>
HLB-3: Need for Achievement	-2.236	6.438	.107 <sup>c</sup>
[Constant]	-1.168	1.529	.311

**Table 5** Model of binary logistic regression [rlb]  
 Source: self made. Where: Sig.:  $p < 0.05a$ ;  $P < 0.03b$ ,  $p < 0.01c$

Since the coefficients [B] are expressed in the original metric of the variables, we notice that the aspects related to the motivation mechanisms, the main factor that makes the difference is the risk propensity, [HLB-1: -1.178 [β],  $P < 0.01$ ], [HLB-2: 1,152 [β],  $p < 0.01$ ], as well as the need for attainment to [HLB-3: -2.236 [β],  $p < 0.01$ ], prediction of motivations For the creation of business in the municipality, according to the binary logistic regression analysis, indicated that the variable with significant influence to consolidate the entrepreneurial women's businesses were risk propensity.

In this sense, the values of Exp [B] are higher and the Wald statistic is significant. However, there is no significant statistical evidence that the parameter on the motivation mechanism of female entrepreneurs is negative, indicating that an increase in the value of motivation mechanisms in the municipality of León, will cause a decrease in The consolidation of microenterprise. This factor not only relates to the family, but also to gain social recognition, be independent and do what others have done in relation to entrepreneurship; In this case, covers the culture of the municipality of Leon.

However, the Need for Achievement of entrepreneurial women has a significant influence [HLB-4: -2.236 [β],  $p < 0.05$ ] on less willingness to accept as non-economic help a professional as a tutor.

In the preliminary analyzes, if the internal motivations that led the women to undertake, are characterized by desire for autonomy and a motive of achievement that is evident in the fact that they are always oriented towards achieving goals and goals.

The motivations of women entrepreneurs, the main criteria of personal motivations and the problems of motivation mechanisms with which they are found, have an important influence on the innovation measures subsequently adopted by the environment, and significantly, if they are positioned in A zone or territory with a high rate of business creation and, above all, if they receive assistance from the Administration. For this reason, the findings can be useful for local authorities and representative and labor associations, promoting entrepreneurship in territories that are accompanied by territorial measures of local development.

The results obtained suggest the existence of a significant influence of several variables of the sociological approach, as well as of the cultural approach in the probability of creating a company. In relation to cultural values, against the traditional view of literature that highlights the relevance of individual values on the start-up of the company. On the other hand, we find that there is a significant negative influence of personal motivations.

## Conclusions

Recognizing the role of entrepreneurship, especially associated with women, different meanings have been considered about the motivation to explain their entrepreneurial behavior.

On the other hand, business performance is usually measured from certain motivational factors that explain the behavior of entrepreneurial women.

As for the motivations that led the entrepreneurial women to become entrepreneurs, it was found that of the seven factors evaluated, the one related to the personal aspects is the most influential and within it, those that are part of the motivation of achievement, the Desire to develop their own ideas with the aim of increasing their personal growth, autonomy and independence and in the economic aspect is to obtain high income. In integrating this result with the support of the family, he warns us that family support is a fundamental pillar to solve the difficulties that arise through the generation of new ideas [little adaptation and inefficiency in their management]. Equally, it is important to note that it has been proven that for women entrepreneurs in the municipality of León, Nicaragua, the results indicate that the enterprises created by women are enterprises of necessity, the personal satisfaction that this activity offers them. Advantages such as: The risk propensity as a factor that through its characterization significantly influences the attitude of female entrepreneurs, however in this regard we have obtained an inverse relationship and highly significant, [-0.08 [ $\beta$ 41],  $p < 0.01$ ].

For this reason, one of the determinants motivated by opportunity goes beyond subsistence, it is strongly influenced by the economic situation of women in the management of uncertainty, risk management capacity, a strong motivation for opportunity, means having certain (Acs & Amorós, 2008; Block & Koellinger, 2009), consider that the need for autonomy originates in the exploitation of an opportunity, it achieves the growth of employment. The latter does not generate much impact on the economies of the countries and is not associated with innovation.

Finally, the motivations of women entrepreneurs, indicate as a result of aspects related to needs to achievement, needs for independence and needs of economic income, shows that women entrepreneurs is based, lack of knowledge and attitudes that allow them to use their motivation And ability to determine business opportunities. This characteristic makes it possible to verify that the need to seek greater personal and family compatibility is a predominant factor in the entrepreneurial dynamic.

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## **Linkage of the Universidad Técnica de Babahoyo in the social entrepreneurship in the rural sector of the canton Baba of Ecuador**

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### **Abstract**

One of the greatest challenges for the Ecuadorian University is to know how it is linked to or related to the Society; as agent of transfer and diffusion of knowledge and technologies in collaboration of those who integrate it, to go the most vulnerable social capital. It is important that the university contributes to the economic development of urban and rural sectors, with the support of teachers and students promoting social entrepreneurship, which contribute to the social development of communities

### **College, Linkage – society, Entrepreneurship, rural development**

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## Introduction

In the 21st century, universities worldwide have undergone a series of changes, facing new challenges and challenges that must contribute to the development of society. For UNESCO, the Regional Conference on Policies and Strategies for the Transformation of Higher Education in Latin America and the Caribbean, referring to the pertinence of the university, points out "the role it plays and the place of higher education in Function of the needs and demands of the various social sectors. The actions that are formulated will have no real social meaning if they are not anticipatory of future scenarios and do not manifest their intention to modify the actual reality "(UNESCO 1995).

Since the enactment of the Organic Law on Higher Education, (National Assembly of Ecuador, 2010), higher education institutions have been subjected to a series of structural changes in their habitual behavior and have gone from being institutions that maintained their own objectives Respond to a coherent institutional framework with the State.

The relationship with the community has been clearly debated from the Mission Project of the Ecuadorian University for the XXI Century promoted by CONUEP - National Council of Universities and Polytechnic Schools.

The link between the university and the social sectors is considered as the transversal axis of the university's functioning in the world, together with teaching and research, are conceptual and ideological transforming pillars that are at the most important moment, committed to Through University Social Responsibility with different projects, programs focused on the entrepreneurship of different communities and vulnerable groups.

The Universidad Técnica de Babahoyo, through the department of social partnership, brings a group of teachers from the different careers (agronomy, health, administration, accounting, education) and students to the social enterprise in the rural sector of the Baba canton. The objective of diagnosing the environment in which rural communities develop to establish the strengths and weaknesses of individuals and contribute to social entrepreneurship.

So the question arises how the linkage of the Universidad Técnica de Babahoyo contributes to the social entrepreneurship of the rural sector of the canton Baba - Ecuador?

## Development

For a relevant approach to research, it is necessary to make explicit the meaning, scope and incidence of the terms: university; Link and social enterprise that are assumed for this work. According to Gómez (2000), each society requires that its educational system that is oriented to respond to the demands and needs that society demands today.

For (Bernal, 2010) any society that wishes to play a leading role in this knowledge-dominated environment and that tries to solve its contradictions, must consider its educational system as the engine and dynamism factor. Therefore, academic institutions need to be sensitized in order to:

- Orient the events that will guide the course of society.
- Get ahead of your time.
- Managing change to build a fair society and sensitive to problems, and thus improve the quality of life of its citizens

(Toron, 2012) Reference to (Murcia Peña, 2009: 244). And it defines that the university is a social, cultural, political, ethical-aesthetic and cognitive scenario, where ideas, feelings and projects are constantly confronted, but above all where they live and share experiences, theories and sensibilities that are intended to help maintain, And develop the individual, society and culture.

The university is a social institution framed by a historically determined social formation. The interaction of this institution with the society in which it is inserted is given in a different way and with a different structure, both within the university and in the social environment.

(Malagon, 2006) It maintains that the relevance or link between university and society is assimilated to the university - productive sector relationship. University - region linkage is not a mechanical process, but the university must build the region, that is, it must conceptually delimit the region. This process must be carried out collectively with the different social, political, economic and cultural sectors, which together with higher education constitute the region of learning.

According to (DelCerro, 2015) defines social entrepreneurship "Social entrepreneurship is the process by which citizens construct or transform institutions or systems to solve social problems. It implies the creation of new equipment and resources that improve the capacity of society to address problems and thus maximize social impact through sustainability and sustainability."

In other words, social entrepreneurship is the initial act of a program or project with social impact.

As the research scenario is considered. The Universidad Técnica de Babahoyo located in the Babahoyo canton of the province of Los Ríos, offering its service since 1970, with the career of Education, Agronomy, Health, Administration and Engineering in system, The link between the University and society is carried out With teachers and students who carry out the field work through programs or projects such as social entrepreneurship in urban and rural sectors in the province through agreements signed with communities, parish boards, companies The objective of university - Society is to improve the quality of life of its inhabitants and contribute to the economic development of the productive sectors.

According to population census (INEC 2010) The population of Baba canton is 39,691 inhabitants of which 31,292 live in the rural sector, the rural sector of Baba canton contributes to the economy of the province with 6% according to data of the central bank (2015 ) So that the need to contribute to rural development arises, the survey was considered a survey of the inhabitants of the rural parishes of Bejucal, Guare and Baba to diagnose the economic, social and cultural situation, surveys Which sets out questions that help identify the need of the sector and be able to associate it among families or neighbors of the sector. Among the questions that were asked are: Do you own rented housing? Income you receive? State of access to the community? If the parish government socializes the strategic plan?, among other.

A SWOT analysis of each community was carried out with the participation of the inhabitants, to know their strengths, weaknesses, opportunities and threats, after which a matrix of stakeholders was elaborated; which is socialized for commissioning.

With the application of the statistical method, an analysis of the survey was carried out, which results in the need to train the inhabitants of the rural communities of the canton Baba in diverse subjects between what is considered: agriculture, veterinary, pisciculture, Is in charge of the Faculty of Agricultural Sciences, entrepreneurship training in charge of the Faculty of Finance and IT, preventive health training by the Faculty of Health.

### Conclusion

The Universidad Técnica de Babahoyo since 2010 has been making the connection with society, with the participation of teachers and students of different faculties; In the Baba canton has been carried out relevant training in communities has seen the change in the quality of life of its inhabitants.

### Recommendations

The linking of the university - society should be followed to the communities of the enterprises so that these arise and contribute to the development of communities.

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## Market timing strategies and excess return in Tehran stock exchange

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### Abstract

This study examines the relationship between market timing strategies and excess returns in companies listed in Tehran Stock Exchange. In this study, 50 companies have been selected and tested from among the companies listed in Tehran Stock Exchange for the five-year period from 2009 to 2014. The results show that market timing based on E/P has a positive and significant correlation with market excess return and with increase in E/P, excess return increases. Moreover, market timing based on bear market situation has a significant negative relationship with excess return, and with increase in forecasting bear market, the excess return increases. The hybrid model proposed shows that strategy of market situation is more than EP strategy.

### Market-timing strategies, excess return, the model of predicting market conditions

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## Introduction

Any investor looks to find a strategy to win over the market and get excess return. Many investment strategies are known with market timing. Some investors believe the best strategy is the simple strategy - buy and hold - but some believe that market-timing strategies should be used to earn excess return. The main purpose of market timing is to determine the right time to enter and exit the market that is done by calculating the risk and costs. Market timing can be carried out with various strategies. One of these strategies is earning-to-price ratio. The difference between earnings and price encourages people to invest (Shen, 2003). Short-term indicators such as T-bills can also be used to determine the right time to invest. In this study, E/P ratio and forecast bear market have been used. Our aim was to investigate whether PE model, as a fundamental model, does timing better or timing model based on market fluctuation. To this end, we have looked into both models and tested a third proposed model that is a combination of the two models.

We examined these models by creating excess return in companies listed in Tehran Stock Exchange to determine the possibility of forecasting and timing of market. Similar to previous studies, the following hypotheses were formed and tested:

H 1: Market-timing strategy based on E/P model has a significant relationship with excess return.

H 2: Market-timing strategy based on predictive model of bear market situation (MS) has a significant relationship with excess return.

H 3: The combined market timing strategies (E/P and MS models) has a significant relationship with excess return.

This paper proceeds as follows: In the next section, we describe some related studies on market timing strategies. This section shows the role of market timer in various financial markets. Then, the data pertaining to results of market timing strategies, PE Model and MS Model and stock excess returns are gathered and presented. Then, the basic grounds of the examinations and inferences are presented. Consequently, the results are explicated and the conclusions are drawn.

## Literature review

Mitchell and Burns (1938) were among the first researchers who used leading economic indicators for market timing. Several years later, researchers of financial markets investigated the timing research strategies. With parametric and nonparametric tests, Henriksson and Merton (1981) assessed the ability of managers to measure market timing.

They compared predicted returns with reality but failed to show evidence that predicting models have the necessary power to predict the time. They did not confirm the hypothesis that the managers have the ability of timing market. Market timing has multi-functions in financial markets. Another application of the theory of market timing is that managers can schedule issuing share based on market conditions.

When company's stock is reported more than real, they make decisions to finance through issuing equity. The most useful criteria to express the value of the stock market is the weighted average ratio of market value to book value for external financing. In the weighted average, weights equal to the sum of external financing through equity and debt (Baker and Wurgler, 2002).

According to this theory, companies try to release their stocks when the ratio of market value to book value of the companies in the market is determined more than the reality (Titman and Wessels, 1998). From the traditional view, market timing is an investment strategy that switches between maintaining ordinary shares or cash with the aim of to better performance in the capital market. In fact, the goal is that in good periods, it is fully invested on stocks and in bad times on other assets such as cash.

However, in fully efficient markets attempt to make extraordinary gains through securities selection or market timing will not be too dramatic (Lam and Li, 2003). Sharp (1975) examined likely gains regarding market timing and concluded that market timing in the long term creates only 4% more efficiency. Gao (2015) showed that for understanding the best market-timing strategy, its time and distribution should be done according to investment policy and the balance of opportunities and market failure. In a study on market timing to exploit arbitrage opportunities, Shizas and Tomakos (2015) showed that rotation strategy has statistically had high efficiency.

Kasperzik (2014) showed that successful managers choose and purchase good stocks during the boom and during the recession, they perform market timing. Resnick and Shoemith (2002) show that the switching strategy out of stock into T-bill before a bear (bull) realizes 2 percent excess from a buy and hold strategy in S&P 500. Kim and Sun (2013) showed in Korean fund market, managers active in stock fund on average have positive market timing ability in predicting long-term horizons.

These results suggest that the Korean stock market managers use timing to improve their performance in active managing of equity funds.

In a study entitled testing the effect of market timing theory on capital structure, Estiavan (2012) showed that the ratio of book value to market value on the stock market has a negative impact on leverage. In a study “Entitled evaluation of financing decisions, market timing and actual investment, Fama and French model,” Butler et al. (2011) showed that there is a negative relationship between external financing and stock returns. Brooks Katsaris (2004) used switch off between stasis and the bubble bursts and showed that the three-regime model has a significant power to explain S & P500 index returns. In a study entitled, “Comparing and evaluating market timing strategies,” Brooks et al. (2005) used speculative bubble model, the difference between E-P and bond yields, and prediction model based on the difference between long-term and short-term bear markets. Their results showed that all methods except one have superiority to the buy-and-hold method. Shen (2002) based on E/P ratio in S & P500 index has examined the data from 1970 to 2000. His study shows that strategic orientation has changed regarding efficiency and market volatility.

The strategy based on E/P is more used. In studies of other researchers (Campbell and Shiller (1998), Lander, Orphanides, and Douvogiannis (1997) and Pesaran and Timmermann (1995)), the relationship between P/E and securities return was approved, and their evidence showed that there is a negative relationship between them. The evidence shows that, by changing interest rates, the entry and exit to the stock market could be timed.

## Research Methodology

### Data

The study population consisted of all companies listed on the Tehran Stock Exchange in the period from Saturday, March 21, 2009 to Saturday, March 22, 2014, and 50 companies were selected.

Excess return information of an asset or asset risk is equal to the return on assets and return minus the risk-free asset over a period of study in that period. The difference between the market rate of return and excess return rate of risk-free rate of return is calculated. Risk-free rate of return based on bank deposit interest rate is calculated according to the Central Bank information. PE ratio is measured by the earnings per share (EPS) for the price of stock.

### Models specification

First, using Im, K. S., Pesaran, M. H., & Shin, Y. (2003), we tested the stationerity of the variables. Then normal distribution of variables, heterogeneity of variances, the significance of the entire model, and significance of each coefficients of the final model are found. Jacque, C. M., & Bera, A. K. (1980) statistic is used to study the normal distribution of the dependent variable. White test was used to assess heterogeneity of variance. The method of ordinary least squares (OLS) models is used to test the hypotheses.

#### Model 1: Market-timing model with PE ratio

This model is based on the relationship between the PE and excess return and defined as follows:

$$ER_{it} = \beta_0 + \beta_1 EP_{it} + U_t \quad (1)$$

*In this model:*

$ER_{it}$  = Excess Return

$EP_{it}$  = Price to Earnings ratio or  $\frac{E}{P}$

$U_t$  = error

If it can be claimed that  $\frac{E}{P}$  and excess return are significantly associated when the regression coefficient  $\beta_1$  is zero.

#### Model 2: The model predicts the market situation (MS)

This model shows the relationship between excess return and MS.

$$ER_{it} = \beta_0 + \beta_1 MS_{it} + U_t \quad (2)$$

Where:

$ER_{it}$  = Excess Return

$MS_{it}$  = The Model Predicts the Market Situation

$U_t$  = error

This model is measured like Resnick and Shoesmith (2002).

$$\Pr(R_{t+1} = 1) = F(a_0 + a_1 SPREAD) + U_t$$

Pr shows the likelihood of growth and decline of the market. In the event that for a period of at least six months market is decreasing, or negative average return in six months,  $R_{t+1} = 1$  and zero otherwise. As the variable  $R_t$  gets values of zero and one, for the prediction of bear market, probit regression method is used and its computational formula is as follows. Spread is the difference between interest rate and stock (index of Tehran Stock Exchange in the month t. This model says if in the period of six months market trend were bearish (decline) and the stock dropped more than 50 percent, sales strategy must be done.

#### Model 3: The relationship between excess return and combined PE and MS model

In order to test the research hypotheses, the following regression model is used. This model shows the relationship between excess return and PE and MS model.

$$ER_{it} = \beta_0 + \beta_1 EP_{it} + \beta_2 MS_{it} + U_t \quad (3)$$

Where:

$ER_{it}$  = Excess Return

$EP_{it}$  = Price to Earnings ratio

$MS_{it}$  = The Model Predicts the Market Situation

$U_t$  = error

## Results and Discussion

### Data description

Central and distributive indices variables are shown in Table 1. Average excess return value is -0.480, E/P ratio is 0.11, and predicting market situation is 0.30. Standard deviation of excess returns, E/P ratio, and predicting market situation are 0.13, 0.22, and 0.05. From among the variables, predicting market situation has the lowest and E/P has the highest dispersion.

variable	mean	median	SD	Skewness	Elongation
ER	-0.054	-0.030	0.130	-6.900	55.800
EP Model	0.110	0.150	0.220	-3.700	19.100
MS Model	0.300	0.290	0.050	0.680	1.000

**Table 1** Descriptive statistics

### Stationarity of the variables

Calculations show that the values of Im, Pesaran, and Shin statistic(2004) is -7.9 and significance level is 0.000. Given that significance level is less than 0.05, it is concluded that with 95 percent of confidence, variables have been reliable during the study period and the possibility of creation of spurious regression is rejected. T test values for each variable are shown in Table 2 separately. Given that the level of significance is less than 0.05 for all variables, with 95% confidence all the variables are significant.

Variable	t-statistic	p-value
ER	-5.068	0
EP Model	-3.603	0.006
MS Model	-5.93	0

**Table 2** Descriptive statistics

Jarque–Bera test results for tests for normal distribution of the dependent variable (excess return) are presented in Table 3. Since the significance level for this variable is more than 0.05, the hypothesis of normality of the dependent variable is confirmed. One of the important issues that we deal with in data analysis is the issue of heteroscedasticity of variance.

Heteroscedasticity of variance means that in regression model estimation values of error terms have unequal variances. The regression model would be appropriate if the variances of the error are the same. Thus, to investigate this, white test will be used. If significance level of white test exceeds 0.05, with 95% confidence the error variances are identical and ordinary least squares regression can be used.

variable	statistics	p-value
ER	243.9	0.056

**Table 3** Jarque–Bera test results

Heteroscedasticity of variance for the research models are provided in Table 4. It is seen that the significance of this statistic of this test is more than 0.05, so the assumption of homogeneity of variance of error is accepted.

Hypothesis	Statistics	White statistics	p-value
H1	F-Statistics	0.041	0.83
	Obs*R-square	0.042	0.83
H2	F-Statistics	0.029	0.86
	Obs*R-square	0.03	0.86
H3	F-Statistics	0.037	0.84
	Obs*R-square	0.038	0.84

**Table 4** White statistic results

The first hypothesis test results are presented in Table 5 panel A. It can be argued that  $\frac{E}{P}$  and excess return are significantly associated if regression coefficient of  $\beta_1$  is zero. Fisher test of the significance of the entire regression is 0.004 suggesting that with 95 percent of confidence regression model is significant. Durbin-Watson statistic is 1.998 indicating a lack of correlation between variables. Regression coefficient of  $\beta_1$  is 0.109 and its significance level is 0.04 representing the significance of the relationship between these two variables. Due to positive regression coefficient and a significance level, with 95% level of confidence the first hypothesis is confirmed.

Panel. PE Model				
variable	coefficient	standard deviation	t-statistic	p-value
$\beta_0$	-0.067	0.01	-6.747	0
$\beta_1$	0.109	0.038	2.874	0.004
$\beta_2$	-	-	-	-
Durbin-Watson	1.998			
Coefficient of determination	0.189			
F- statistic	8.258			
p-value	0.004			
panel B. MS Model				
$\beta_0$	0.046	0.046	.01.007	0.315
$\beta_1$	-0.335	0.149	-2.25	0.025
$\beta_2$	-	-	-	-
Durbin-Watson	2.094			
Coefficient of determination	0.149			
F- statistic	5.061			
p-value	0.025			
panel C. MIXED Model				

$\beta_0$	-0.016	0.055	-0.294	0.769
$\beta_1$	0.088	0.044	1.998	0.047
$\beta_2$	-0.16	0.172	-0.932	0.035
Durbin-Watson	2.027			
Coefficient of determination	0.199			
F- statistic	4.561			
p-value	0.011			

**Table 5**

variables	ER	
	correlation coefficient	P-Value
EP model	0.374	0
MS model	0.142-	0.033

**Table 6** The results of the correlation coefficient among EP - MS models and excess return

Moreover, the correlation coefficient between variables E/P and excess return at level of significance 0.000 is 0.374 showing that with increasing E/P, excess return increases and vice versa. The results of this hypothesis are consistent with the results of Poe Shen (2002). The second hypothesis test results are presented in Table 5 panel B. Fisher test showing the significance of the entire regression is 0.025 suggesting that with 95 percent of confidence regression model is significant. Durbin-Watson statistic is 2.094 indicating a lack of correlation between variables. Regression coefficient between predicting bear market situation and excess return is -0.335 and t-test significance level is less than 0.05 representing the significant relationship between these two variables. Due to the negative regression coefficient and a significance level, with 95% level of confidence the second hypothesis is confirmed. These findings indicate that there is a significant negative relationship between forecasting bear market and excess return.

The coefficient of determination of this model is 0.149 showing the fact that 14.9 percent of the changes in excess return as the dependent variable can be explained using the independent variable forecasting bear market.

Due to the negative correlation between predicting bear market conditions and excess return, with 95% confidence, it could be argued that there is a significant negative relationship between forecasting bear market and excess return. The results of the research are consistent results by Butler et al. (2011) and Resnick, B. G., & Shoemith, G. L. (2002) .

The third hypothesis test results are presented in Table 5 panel C. The third hypothesis includes combined market timing strategy based on two variables E/P and forecasting bear market. Durbin-Watson statistic is 2.027 that indicate a lack of correlation between variables. Regression coefficient between E/P and excess return is 0.088, and regression coefficient between forecasting bear market situation and excess return is -0.160 and for both, the significance level of t test is less than 0.05. Fisher test significance level is 0.011 and with 95% confidence regression model is significant. Therefore, due to significance levels of regression coefficients and Fisher test, hypothesis three is confirmed with 95 percent showing that combined strategy of market timing has a significant relationship with the excess return.

In table 6, the coefficient of determination is 0.199 which signifies that the 19.9% of the changes of the dependent variable excess return can be explained using independent variable forecasting bear market. Given that the index of predicting bear market is more than E/P, it can be concluded that for the enterprises examined in this research, forecasting bear market affects excess return more than E/P.

## Conclusion

The results show that timing strategies can generate excess returns. The results indicate that both EP and MS models can explain negative excess returns, but MS sensitivity factor is larger than the EP and has more effect on negative excess returns. This study has been able to develop the timing aspect. First, there is a positive correlation between EP and excess return. Second, there is a significant negative correlation between excess return and MS model. Third, the combined model can explain negative excess returns and sensitivity of MS model is more than EP. We suggest investors do market timing based on our hybrid model and identify the opportunities to leave the market and stop negative excess returns.

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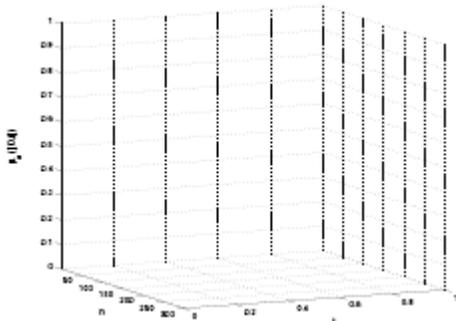
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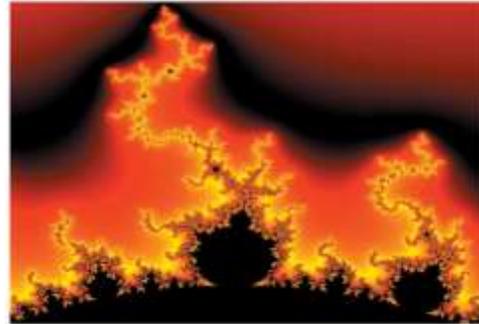
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