EXAMINE THE ANTECEDENTS OF INVESTMENT DECISION-MAKING BEHAVIOUR IN A DEVELOPING ECONOMY: APPLICATION OF PROSPECT THEORY

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ABSTRACT
The current study investigates the behavioural effect on investment decisions made by investors in the Pakistan Stock Exchange (PSX). Data were gathered through a survey using proven items from past literature as reliable and efficient parameters for collecting this information. Questionnaires were distributed among investors in the stock market using convenience sampling. This study utilized multi-regression techniques combined with structural equation modelling techniques (SEM) using SmartPLS-4.0 for statistical analysis. The present study provides a theoretical framework for exploring investors' decision-making processes in the Pakistani stock market by employing prospect theory. Current research incorporates the affect of information searches on investors behaviour, herding effects, heuristics and market variable. The results demonstrate how heuristics, herding and variables significantly impact decisions made by investors in stock markets, making clear their significance in search results. The study offers practical and theoretical implications by extending prospect theory; its findings also offer practical guidelines for policymakers and practitioners who wish to understand how behaviour impacts financial decisions in a developing economy stock market.
Keywords: Heuristics, market variable, herding, Pakistan stock exchange, information searching, investment decision-making behaviour, prospect theory, developing economy.

1. INTRODUCTION

The development of the economy of under-developing countries mainly depends on their commerce and industrial performance and activities. Researchers often discuss that the growth of the economy of any country is directly related to the development of the financial market (Masoud, 2013). In an uplifted economy stock market plays a significant part in the necessary sourcing of capital for industrial and commerce for carrying out its activities (Ehsan et al., 2018). The stock market provides finance through shares by raising funds for corporations from domestic and foreign individuals and institutions. Developing economies provide a good platform for mutual fund teams and foreign investors to invest their funds (Patil & Bagodi, 2021).

Many researchers do qualitative and quantitative research in the area of financial effecting by behavioural factors (Parveen et al., 2020; S. Z. A. Shah et al., 2018; Keswani et al., 2019; Jariwala, 2015; Zahera & Bansal, 2018; Hunjra et al., 2012; C. Phan & Zhou, 2014). A past study about behavioural finance found that investors not performed as rationally as the economic theories suppose. According to

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the study of behavioural finance scholars, individual investors mostly make irrational decisions on behavioral psychological biases. However, the research Kübılay and Bayrakdaroglu (2016) on behavioral finance indicated that stock investors wanted to make rational financial decisions. Rational investors use different relevant theories to assess risks and uncertainty while taking investment decisions (Arora & Kumari, 2015).

This study explores two main effects: (1) the impact of behavioural determinants (herding mentality, heuristics, and variable factors) on stock market investment decisions and (2) the impact of behavioural determinants on investment decisions in the stock market through the mediating role of information searching. Many past studies from developing and developed stock markets detected heuristics, market variables, and herding are very effective behavioural determinants with substantial significant impact on investors' decisions on the stock market. Chawla et al. (2018) study showed that heuristics and herding positively affect stock investors' investment decisions. Likewise, market variables like historical market trends, changes in stock prices, and market information also played an essential role in financial decision-making about the stock market (K. C. Phan & Zhou, 2014; Waweru et al., 2008). There is uncertainty and a lack of asymmetric information in developing countries like Pakistan. Therefore, stock investors in developing countries primarily depend on behavioural determinants and vice versa (Ahmed & Noreen, 2021).

According to the previous literature review, this study focuses on problems that arise from the decisions made by Pakistan Stock market traders. This research seeks to study the direct impact of biases in the behaviour that influence the influence of information search in the decision-making process of individuals who invest in stocks. The current study examined the impact of three different behavioural biases and the mediating roles of information searches on the decision-making process for stock investments of stockholders who invest in the Pakistan Stock Exchange. This thorough study of the impact of behavioural biases on the investment decisions made by this Pakistan stock exchange is beneficial to the research literature.

2. LITERATURE REVIEW

2.1. Financial Decision-making Behavior

"Investment decision-making is a procedure of taking a sure alternative from a variety of alternative opportunities" (Ahmed & Noreen, 2021). According to Jariwala (2015) this activity is performed after a proper assessment of all substitute investment options. Wong & Cheung (1999) historical literature study concluded that investor is rational and sometimes irrational in the case of investment financial decision. Rational investors focus on the concerned market's statistical data, whereas irrational investment decisions are based on psychological and behavioural biases.

2.2. Heuristics

Gigerenzer and Gaissmaier (2011) heuristic means accurate and quick decisions making by ignoring all the information and all complex methods. Heuristics decision emphasizes examining only a few substitutes, considering less material, or decreasing the effort of getting better cue values (A. K. Shah & Oppenheimer, 2008). The literature study about the Pakistan Stock market indicates that heuristics significantly impact financial decision-making behaviour. Farooq and Sajid's literature study also indicates that heuristics positively affect individuals' financial decision-making. The research regarding irrational investors indicates that they utilize heuristics basis approach to get an urgent response to solve the issues of their financial investment. It can be hypothesized as follows:

H1: Heuristics significantly impacts the decision-making behaviour of investors.

2.3. Herding mentality

Herding is a trend of investors in the financial market that investors copy the decisions of the other relevant investors. Individual investors do not emphasize the relevant or appreciated information for their investment decision-making, like the company's profile or financial performance. Investors buy the stock by following the leading investors (Zahera & Bansal, 2018). The use of the heading effect in the Pakistan stock market is very high. In the Pakistan stock exchange, the study (Javaira & Hassan, 2015) indicated that the high existence of herding in the Pakistan stock market and hearing significantly positively impacts individual investor performance.

H2: Herd mentality significantly impacts the decision-making behaviour of investors.

2.4. Market Variables

Market variables include "past trends of stocks, changes in the price of a stock, company preferences, and asymmetric market information". According to study by Kengatharan and Kengatharan (2014), market variables significantly affect individual stock investor investment behaviour. The changed investor decision-making behaviour changes stock investors' strategies and trading plans (Lai et al., 2001). Past studies indicated that investors' responses to market variables significantly impact the investment decision-making of stock market investors. In a past study of Pakistan, according to (Hunjra et al., 2012), there is a positive significant impact on individual stock investors and equity investment decisions.

H3: Market variable significantly impacts the decision-making behaviour of investors.

2.4. Information Searching

Information is essential in investment decisions to reduce the risk linked with these decisions. Information searching means taking advice from other sources before making any investment decisions. If an investor has more information about the market, they can reduce the risk in their investment and make good decisions. The stock market and its stock prices are changing rapidly in the current global world, so expert advice is necessary about market information to make sound investment decisions (Gill et al., 2018). Rational investors collect financial, company growth, and other information with the consent of financial experts about stock before making an investment decision about shares. This study tests the significance of the following hypotheses:

H4: Information searching significantly impacts the decision-making behaviour of investors.

H5: Information searching mediate the relationship between heuristics and the decision-making behaviour of investors.

H6: Information searching mediate the relation between herd mentality and the decision-making behaviour of investors.

H7: Information searching mediate the relation between a market variable and the decision-making behaviour of investors.

2.5 Prospect Theory

The Prospect Theory introduced by "Kahneman and Tversky" (Edwards, 1996). Prospect theory is a psychological theory that narrates financial decisions in the presence of risky situations, uncertainty, and probability. In this behavioural study about investment, prospect theory is applied to irrational individual stock investment decisions. A research model based on prospect theory derived as shown in Figure 1:
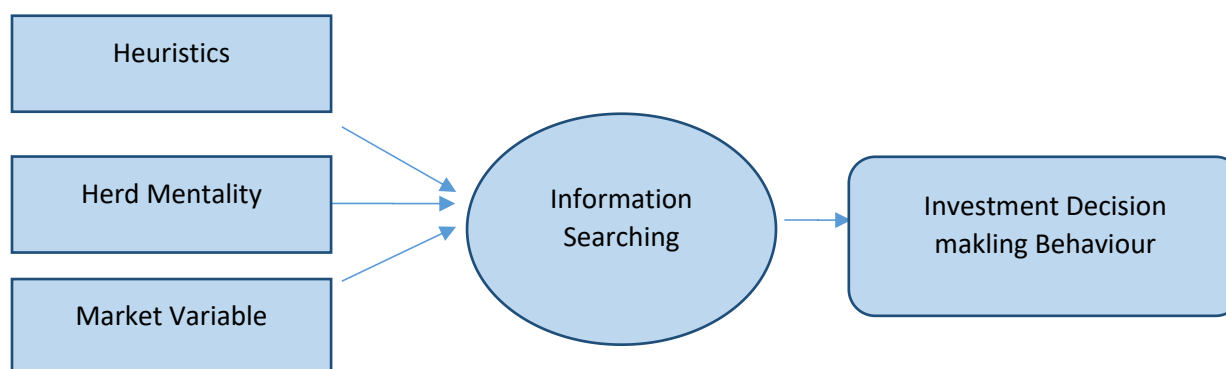
Data was collected from investors who have invested in Pakistan Stock Exchange. The questionnaire was designed based on developed items from past literature. Random sampling was utilized. The list of investors was obtained through brokers listed on the Pakistan Stock Exchange. The sample size was calculated through G*power. Respondents were informed that information will be considered for academic study analysis only, and the data of this survey will be retained confidential.

3.2 Operationalization of variables

The constructs of current consist of items that were adopted from past literature. Five-point Likert scale was utilized to gauge all items of study.

Table 3.1 Operationalization

Variables	Items	Reference

| Heuristics (HE)	7	(Ahmed & Noreen, 2021)
Herding Effect (HME)	5	(Ahmed & Noreen, 2021)
Market Variables (MVE)	5	(Ahmed & Noreen, 2021)
Information Searches (IS.)	7	(Gill et al., 2018)
Investment Decision-Making Behavior (IMDB)	9	(Ahmed & Noreen, 2021)

3.3 Data Analysis and Statistical Tool

Data were analyzed using the partial least squares structural equation modelling (PLS-SEM) technique. The bootstrapping process through SmartPLS software was applied in this research to test the hypotheses, as data normalization is not compulsory in PLS-SEM.

4. DATA ANALYSIS

4.1 Respondents' Profile

Table: 4.1 Respondents' Profile

Demography	Characteristics	Frequency
Gender	Male	187
	Female	73
Age Group	18-25	52
	26-35	142
	36-45	47
	47 and above	19
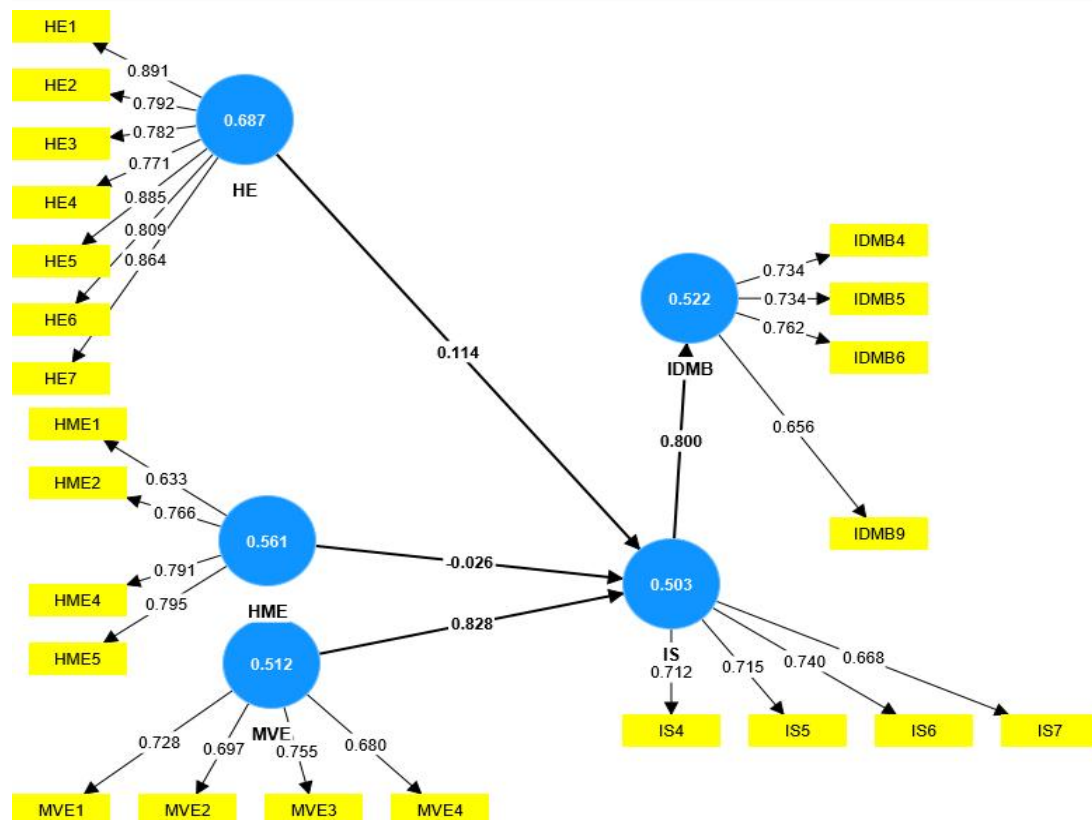
Figure 2: Measurement Model

4.2 Measurement Model

The first phase of a PLS-SEM investigation is the statistical analysis, also known as the external or measurement model, as shown in Figure 2. The average variance extracted (AVE) and composite reliability (CR) values (AVE) determines convergent validity. Discriminant validity is achieved using the cross-loading strategy and the Fornell-Lacker method. The CR value must be at least 0.70. However, for valid convergence, the AVE must be at least 0.5.

4.2.1 Individual Items Reliability

Table 4.2 reflects the internal item reliability through loadings, average variance extracted (AVE) and composite reliability (CR) values. The AVE should be greater than 0.50, and the composite confidence limit should be equal to or greater than 0.70. Every variable used in the current study has AVE greater than 0.05 and CR, Alpha and loading values greater than 0.70.

Table 4.2 Reliability indicators

Constructs	Items	Loadings	Alpha	CR	AVE
Heuristics (HE)	HE1	0.891	0.925	0.939	0.687
	HE2	0.792			
	HE3	0.782			
	HE4	0.771			
	HE5	0.885			
	HE6	0.809			
	HE7	0.864			
Herding Effect(HME)	HME1	0.633	0.737	0.835	0.561
	HME2	0.766			
	HME4	0.791			
	HME5	0.795			
Investment Decision-Making Behavior (IDMB)	IDMB4	0.734	0.696	0.814	0.522
	IDMB5	0.734			
	IDMB6	0.762			
	IDMB9	0.656			
Information Searches (IS.)	IS4	0.712	0.67	0.802	0.503
	IS5	0.715			
	IS6	0.740			
	IS7	0.668			
Market Variables (MVE)	MVE1	0.728	0.681	0.807	0.512
	MVE2	0.697			
	MVE3	0.755			
	MVE4	0.680			

4.2.2 Discriminant Validity

Table 4.3 shows discriminant validity analysis through the Fornell and Lacker method. The average variance extracted (AVE) values exceed the correlation between the implicit variables; it reflects all variables have confirmed the discriminant validity. The initial phase of this learning introduced the framework and highlighted the relationships between variables based on the existing literature. However, these relationships may be reviewed based on the confirmatory factor analysis performed in this study aligns with the recommendation (Hair et al., 2014).

Table 4.3 Discriminant Validity

	HE	HME	IDMB	IS	MVE
HE	**0.829**				
HME	0.184	**0.749**			
IDMB	0.426	0.337	**0.723**		
IS	0.417	0.344	0.800	**0.709**	
MVE	0.371	0.421	0.779	0.859	**0.715**

4.3 Structural Model

The hypotheses of the current study were tested through a structural model through the bootstrapping procedure. The T values, P-Values and upper and lower limits were calculated using the structural model. It also provides the beta values showing the strength of paths.
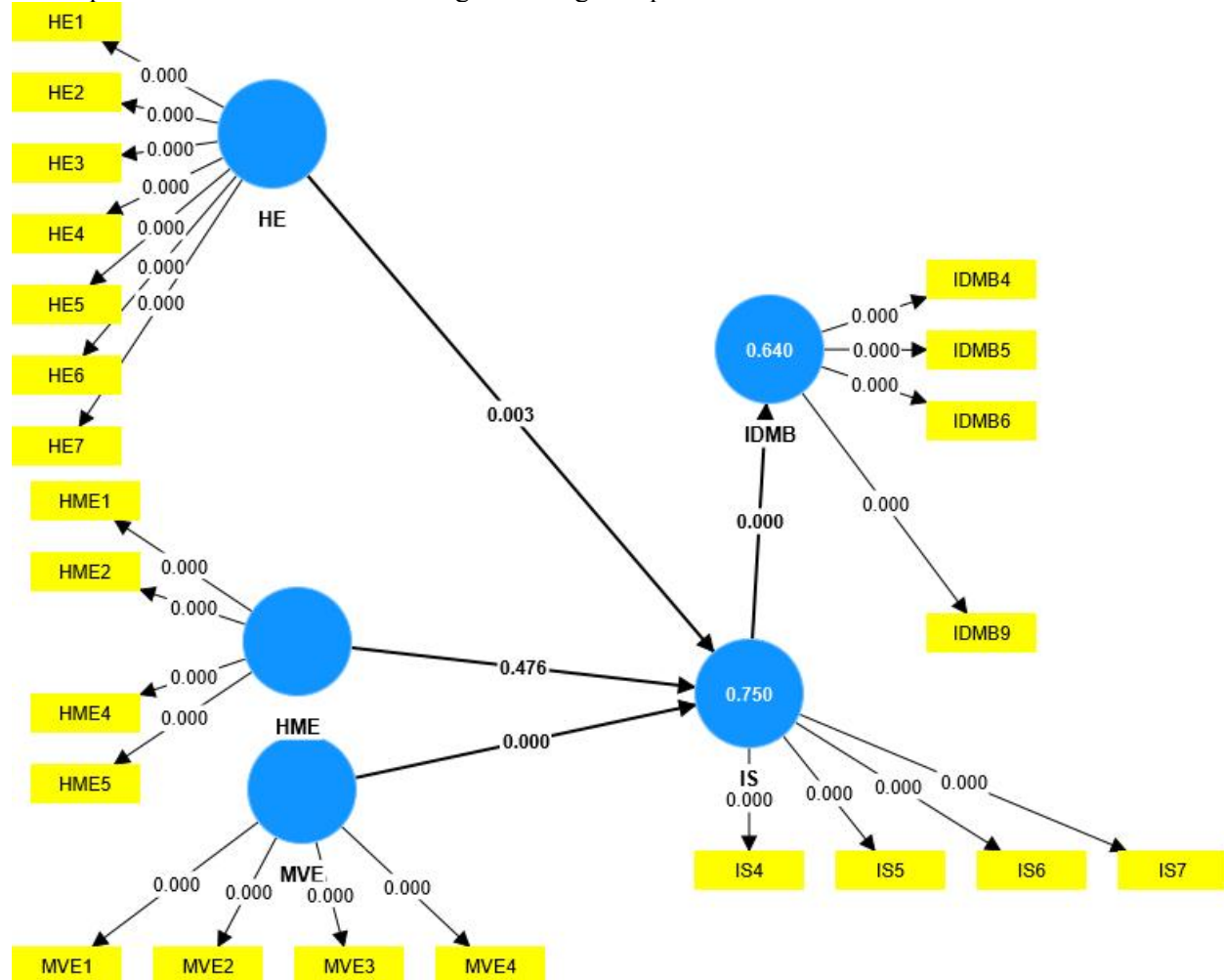

Figure 3: Structural Model

Table 4.4 shows that results supported the H1, H3, and H4 hypotheses as P-Values lower than 0.05, but the H2 hypothesis was not supported as P-Value was higher than 0.05.

Table 4.4 Hypotheses testing

Hypothesis	Relationships	Std. Beta	Std. Error	T-Value	P-Value	2.50%	97.50%	Decision
H1	HE -> IS	0.11	0.04	2.96	0.00	0.049	0.199	Supported
H2	HME -> IS	-0.03	0.04	0.71	0.48	-0.099	0.047	Not Supported
H4	IS -> IDMB	0.80	0.03	24.41	0.00	0.733	0.859	Supported

| H3 | MVE -> IS | 0.83 | 0.04 | 20.35 | 0.00 | 0.737 | 0.897 | Supported |

4.3.1 Mediation Analysis

The mediating hypotheses H5 and H7 are supported as P-Values are lower than 0.05. In contrast, H6 is not supported due to a P-Value greater than 0.05 and zero stranded between the upper and lower limit, as shown in Table 4.5 below:

Table 4.5 Mediation analysis

Hypothesis	Relationships	Std. Beta	Std. Error	T-Value	P-Value	2.50%	97.50%	Decision
H6	HME -> IS -> IDMB	-0.021	0.029	0.717	0.473	-0.077	0.039	Not Supported
H5	HE -> IS -> IDMB	0.091	0.031	2.949	0.003	0.039	0.161	Supported
H7	MVE -> IS -> IDMB	0.662	0.047	14.086	0.000	0.564	0.747	Supported

5. DISCUSSION

This section provides findings from the study's overall results that align with the research objectives to analyze the influence of heuristics, herding effect, and market variables on investor decision-making through the mediating role of information search. Prospect theory was utilized to provide the theoretical foundation of the current study research framework. The data were collected using a close-ended questionnaire from investors of the Pakistan Stock Exchange. Seven hypotheses were developed in the. Four hypotheses were direct, and three were mediating hypotheses. Five hypotheses were supported, and two hypotheses were not confirmed. The following section discusses hypothesis testing and the accomplishment of the research objectives.

H1 proposed that heuristics influence information Searching. The statistics analysis confirmed the H1 hypothesis by concluding that heuristics significantly influences information searches (b= 0.11, T = 2.96, p-value < 0.05). H2 claimed that the herding effect significantly influences information searching. The results did not support the H2 hypothesis (b= -0.03 T = 0.71, p-value > 0.05). H3 proposed that market variables influence information searching. The results supported H3 by the following values (b= 0.83, T = 20.35, p-value < 0.05). H4 hypothesised that information searching influences investment decision-making behaviour. The findings confirmed that H4 was accepted (b= 0.80, T = 24.41, p-value< 0.05).

The H5 hypothesis shows that information searches mediate the relationship between heuristics and investment decision-making behaviour. The H6 hypothesis reflects that information searches mediate the connection between the herding effect and investment decision-making behaviour. In addition, Hypothesis H7 proposes that information searches mediate the relationship between market variable and investment decision-making behavior. The results of the present study showed that information searching significantly mediates the relationship between heuristics and investment decision-making behaviour (b= 0.091 T = 2.949 and p-value < 0.05). However, hypothesis H6 was not supported as(b= -0.021 T = 0.717 P-value> 0.05). While H7 was supported as information searching significantly mediates the relationship between market variable and investment decision-making behaviour (b= 0.662, T value=14.086, p-value < 0.05) .

5.1 Theoretical and Practical Implications

The study offers practical and theoretical implications extending the prospect theory. The findings of this study provide practical guidance for policymakers and practitioners to comprehend the impact of behavioural aspects on financial decisions made in the stock markets of Pakistan. In addition, the study used a quantitative approach to study the investment-making behaviour of the investors. Therefore, the study's results offer numerous practical and theoretical implications by applying the prospect theory and analyzing the mediating effect of information searching.

5.2 Limitations and Future Research Predictions

The present research employed a quantitative method; the mixed method can be used with qualitative methods in future studies. The current study focused only on prospect theory to examine the behaviour of investment decision-makers in the Pakistani market. In the future, a combination of other financial theories can be deployed. The present study focused on the investors in the Pakistani stock market. In the future other countries' stock markets can be examined.

5.3 Conclusion

The current research examines the antecedents of investment decision-making of investors in the Pakistani stock market by applying the prospect theory. The data were gathered via survey using trustworthy and efficient measures adopted from past literature. Three hundred questionnaires were sent to stock market investors using a random sampling method, and there were 260 completed questionnaires gathered for further statistical analysis. This study employs multiple regression techniques using structural equation modelling methods (SEM) using the Smart PLS-4.0 software. This study pounders a theoretical basis to study the investment decision-making processes in the Pakistani market by combing the prospect theory with the impact of information Searches on the relationship between investment decision-making behaviour, herding effects, heuristics, and market variables. The results show that heuristics and market variables significantly impact investment decisions in the stock market by highlighting the significance of search results. This study has practical and theoretical implications by extending the prospect theory. The findings of this study provide practical recommendations for policymakers and practitioners to understand better the antecedents of financial behaviours in the stock market of a developing economy.

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