



THE RUN OF LITHUANIAN HOUSEHOLDS FINANCIAL BEHAVIOR

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Abstract. The paper discusses application of behavioural finance theories for more profitable financial and investment decisions of Lithuanian households. The role of behavioural finance during the process of taking financial decisions and productivity of financial activity of market participants is analyzed. The reasons of difference between real behaviour of market participants in the situations of uncertainty and risk and the assumption of rational behaviour of economic entities, underlying in classic financial theories, are revealed. The basic theories of behavioural finance and possible opportunities of their use for analysis of processes and phenomena, taking place at financial market which cannot be explained within the limits of classic financial theories, are described. Empirical research found the evidence of behavioural finance impact on Lithuanian households' financial decisions, which lead to conclusion of implementation behavioural finance theories in Lithuanian households' financial practice.

Keywords: behavioural finance, market inefficiency, exceptional errors and biases, prospect theory, risk attitude.

JEL classification: G02, G11, G14.

1. Introduction

The stabilization observed in Lithuanian economy within the last years and its developing competitive market environment have made highly important such aspects as development of financial and investment strategies, the choice of capital investment objects and management of financial asset portfolio aimed at gaining short-term or long-term income for households. However, in the field of finance the market participants operate under the influence of developed stereotypes of thinking and erroneous analysis of information, as well as some other subjective factors, which in aggregate have a strong influence on financial decisions and on productivity of undertaken actions. In this regard, behavioural finance is a financial management field seeking to explain irrational aspects in financial decisions taken under uncertainty and risk and is an effective modern tool allowing investors to solve facing financial problems.

The economic researches carried out in Lithuania have shown that behavioural finance makes it possible to predict the behaviour of investor in the situations under uncertainty and risk, that is essential for taking reasonable financial decisions in the modern financial market.

The goal of investigation is to determine behavioural types with specific features, motivation and goals of Lithuanian individual investors.

The main issue consists in the fact that the existing knowledge and education about behavioural finance theories and models are insufficient; therefore it should be developed in the future, because only a small part of households are capable to use available financial information effectively in nowadays.

Interest of examining new complex financial models and tools developed in foreign financial literature and applying them in Lithuanian financial market has begun to emerge in the national practice and is confirmed by academic publications, which have begun appearing in the scientific journals on the issues and problems of the Lithuanian market. Valančiauskas (2002) marked ‘Calendar effect’ and ‘Halloween effect’ which were not explained with framework of classic finance paradigm, solving the issue of stock return on the special days of the week and during specific month. Jurevičienė and Gausienė (2010), Bikas and Kavalauskas (2010) have indicated in their papers the urgent need for detailed examination of the mentioned above problem and its scientific solutions. Novelty and originality of this investigation comparing with other studies concentrated in developing a technique of behavioural investor

type identification, according to specific actions of households in conditions under uncertainty and risk.

In this regards, based on a survey research the first part of this paper attempts to provide a comprehensive discussion of the problem of drawing up and managing a financial and investment decisions with the approach of behavioural finance and their theories analyzing investor behaviour. In the second part of the paper specific features of households are specified and the information received during the survey among potential participants of financial market is summarized. The conclusions emphasize a complex of recommendations on forecasting behaviour and on estimation of effectiveness of financial strategy in the field of behavioral finance.

2. Main issues in behavioral finance

Irrationality of market participants became clearly apparent in the situations of uncertainty and risk, which are basic for all business, financial and investment activities. As Kahneman (2011) affirms, efficient investment and financial strategies, successful financial solutions under uncertainty and risk are common to irrational investors as well, so financial market participants, including the more successful participants are often showing examples of highly irrational behavior compared to behavior alleged and denoted in the classic finance paradigm. These arguments have given rise to a branch of finance known as behavioral finance.

Behavioural finance is relatively new but quickly expanding field that seeks to provide explanations for economic decisions of people by combining behavioural and cognitive psychological theory with conventional economics and finance (Baker, Nofsinger 2010). This approach presents a great deal of suspicion about the validity of effective markets hypothesis proposed by Fama in 1970 which has been criticized by behavioural finance researchers and philosophers Kahneman and Tversky (1979), McCurdy (1992) and Mackay (2008). The main proof of such thinking are examples of financial crises (for example, the crash of the New York Stock Exchange in 1987 or the retail Internet stock bubble of 1999) that have occurred since then seemed without any apparent reason. Shleifer (2000) shared the opinion that the structures of financial market are seriously changing as far as market participants and available financial instruments are changing. According to authors, there are three main situations where market participants behaved inconsistently (Table 1).

In particular, market participants have to make decisions under uncertainty and for this reason they need to have enough confidence to predict future market conditions, asset prices, interest rates and capacity of financial and investment resources.

The notions of incorrect assessment was introduced by Tversky and Kahneman in 1971 and 1972 and grew out of their experience of investor's innumeracy, or inability intuitively analyze situations under uncertainty and risk and try to understand how these patterns guide investment decisions.

Table 1. Anomalies contradicting to classic finance paradigm (source: compiled by authors basing on Kahneman, Tversky 1979, McCurdy 1992, Vaschenko 2007, Mackay 2008)

Situation	Condition
Attitude towards risk	Market participants do not fully value risk maximizing utility. Final outcome of financial decision is estimated from point of view of losses and gains of certain financial situations rather than from the point of view of total wealth.
Decision theory	Investors make different choices and take different financial decisions depending on formulation of the problem rather than analysis of previous similar situations.
Bounded rationality	Market participants do not follow passive investment strategies implied by the efficient markets hypothesis, Markowitz' portfolio theory and CAPM model. Relying on outdated information, investors actively buy and sell financial assets. Thus, individuals do not appropriately apply mathematical models for market analysis and do not diversify enough their portfolios.

Summarizing the researches of market participants' behaviour, behavioural inconsistencies fall into different categories called behavioural deviations, i.e. cognitive errors and emotional biases (Pompian 2012).

Cognitive deviations arise from various processes and are variously classified. Based on the papers of Kahneman and Tversky (1981), there are revealed three situations leading to cognitive errors such as overestimation of information which corresponds to earlier established representations about previous events and ignoring latest relevant factors, incorrect application of mathematical models using average data excluding the fact that these average results are not universal for absolutely all experiments and influence of presentation of information that market participants are affected by the way in which this information is presented.

As it seen (Fig. 1) all cognitive biases stem from faulty reasoning, better information or advice can correct them. In addition to cognitive errors that investors display, market participant tend to act in irrational way due to emotional biases that

are also known as affect heuristics. Conversely to cognitive biases stem from faulty reasoning, emotional biases originate from impulse or intuition rather than conscious calculations, they are difficult to rectify (Pompian 2012).

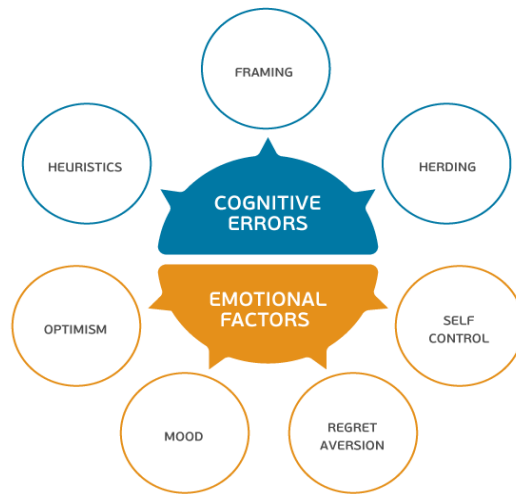


Fig. 1. Patern of cognitive biases and frames (source: compiled by authors basing on Pompian 2012, Jurevičienė, Ivanova 2012)

Behavioural deviations systemize stereotypes of decision-making from traditional models and describe the financial behaviour by plenty of examples of behavioural biases of individuals. These behavioural features are not always negative aspects of behaviour in the market.

3. Prior researches in behavioural finance

In the context of behavioural finance couple of theories explaining irrational investor behaviour are suggested. First of them is prospect theory which was designed as an alternative to both H. Markowitz portfolio theory and von Neumann and Morgenstern expected utility theory, and proposed by D. Kahneman and A. Tversky in 1979. H. Markowitz's portfolio theory (1952) assumes that investors tend to avoid risky solutions. Von Neumann and Morgenstern (1944) in expected utility theory have concluded that investors avoid property loss, and what is more each and every next property gives a lower performance level. Tversky and Kahneman (1979) have demonstrated in numerous highly controlled experiments that most individuals systematically violate all of the basic axioms of expected utility theory in their actual decision-making behaviour at least some of the time. Prospect theory represents a value function which passes over this reference point and assigns a 'value' to each positive and negative result is asymmetrical S shaped curve and breaks in the starting point, which means greater sensitivity for losses rather than gains (Fig. 2).

Prospect theory indicates that decision makers prefer to simplify their choices cognitively whenever possible, satisfying rather than maximizing and it can explain and predict many anomalies in the market.

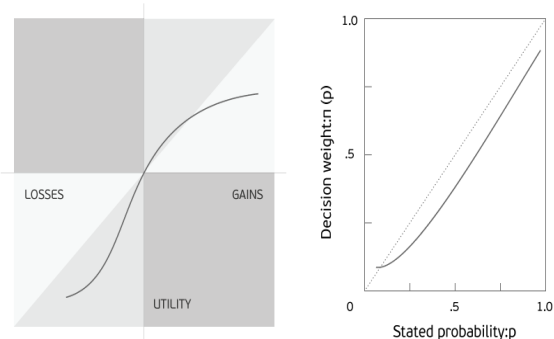


Fig. 2. Value function and probability weight (source: compiled by authors basing on Kahneman, Tversky 1979)

The most illustrative of which high risk premium of stocks and why still bonds outperform stocks in the market, asymmetry of price elasticity of demand and disposition effect (Vaschenko 2006).

High risk premium of stocks. One of the fundamental problems in finance, based on the expected preferences of personal investors, is the so-called the equity premium puzzle, which was put forward by Mehra and Prescott (1985) analyzing markets data for the period 1889–1978, and refers to the lack of consensus among economists on why demand on government bonds, which return

is much less than stocks, is as high as it is and investors are willing to hold bonds and not put everything in stocks, while the annual return of stocks is about 8–10% more than return from bonds. If the expected outperformance of equities over bonds accrues, investors would be indifferent between a certain payoff of \$51,209 and a 50/50 bet paying either \$50,000 or \$100,000. Some explanation relies on individual characteristics on investors' behaviour and proposed by Thaler and Benartzi (1995) a concept of myopic loss aversion. Individual exhibits loss aversion if the disutility from suffering a loss is higher than the utility from receiving an equally high gain (Kahneman, Tversky 1979). Thaler and Benartzi (1995) provided a series of necessary calculations, which were based on the prospect theory, and they showed that loss aversion is the basis of such a high risk premium for the stocks, as opposed to annual bond return, the negative stock returns is quite common. It was shown that for small losses the absolute value of the loss is about 2.5 times higher than the value of gain for the same profit, i.e. a measure of positive emotions from getting 250 units of income is equal to the absolute value as the negative emotions from getting 100 units of loss.

Asymmetry of price elasticity of demand. The price elasticity of demand shows the percentage change in demand for a particular product caused by 1% change in product's price. The asymmetry coefficient was first noted by D. Putler (1992), which showed that at lower prices there is a low elasticity of demand than at its rising. On some products the gap between the coefficients of elasticity with increasing prices and at lower values reached 2.4 times. This fact is easily explained within the framework of prospect theory: consumers evaluate more a negative impact of goods that are purchased at the higher prices than the positive impact of buying products at a reduced price, so it is easier to predict a strict reduce of demand at higher product prices than the percentage increase in demand when the price of a product is lowering.

Disposition effect. Disposition effect lies in investors' unreasonably long holding in their portfolios shares which are not profitable, and unnecessarily quickly sell stocks that are profitable. According to the classic theories, stocks should be kept, if the growth in their prices is assumed, and sell if the drop in prices is assumed. Selling of non-profit shares will reduce tax costs, which should also encourage investors to sell distressed securities (Vaschenko 2006). However, observations from the market show that trading activity on profitable stock is much higher than for loss-making shares. On average, investors hold shares profitable about 104 days, while non-profitable –

about 124 days. This strategy is explained by them as a desire to reclaim their losses based on the expected future growth of the shares resulted in a loss. The results of observations, the remaining in the portfolio non-growing shares generate about 2.5 times less annual revenue than the one that could bring sold winning stocks.

Second theory of irrational investor behavior as theory of market under- and overreaction was proposed by A. Shleifer (2000) in 'Inefficient Markets: An Introduction to Behavioral Finance' paper, where author analyzed evidences of excessive and insufficient investor reaction to new information. From Shleifer (2000) finding $E(st|zt)$ is average income earned from owning a share s for the period t , z_t - information about the share (or concerned a company which issues these shares) obtained during the period t . If the information is positive, then $z_t = G$, if the information is negative, then $z_t = B$. Investor's under-reaction occurs if after receiving negative information about the the shares price of company falling down less than it should do. In terms of the law of the present value of these shares are overvalued, so their purchase brings the loss to investor. This consideration is formalized by the following formula:

$$E(st+1|z_t = G) > E(st+1|z_t = B). \quad (1)$$

Overreaction occurs after a series of positive information it is a huge flow of share prices. That is, the shares are overvalued again and again bring the owners loss that is expressed as:

$$\begin{aligned} E(st+1|z_t = G, z_{t-1} = G, \dots, z_{t-j} = G) < \\ E(st+1|z_t = B, z_{t-1} = B, \dots, z_{t-j} = B), \end{aligned} \quad (2)$$

where $j \geq 1$.

Proposed by A. Shleifer (2000) model describes the process of forming investors' opinion about the shares of specific companies, which is based on two already mentioned behavioural biases – conservatism and incorrect application of mathematical models (described by D. Kahneman and A. Tversky in 1974). Conservatism appears as a lack of investor reaction to negative information leading to an overestimation of the shares. Investors perceive bad news, which contradict investors' beliefs on specific company, and they do not react on these new on the time or react partly. Incorrect application of mathematical models based on the fact that after receiving some good news about specific company, market participants assume this positive trend as a constant for future events as well. Such behavioural deviation leads to a reassessment of the shares and reduce an income of their owners.

The third theory called noise trade was formulated by F. Black in his famous paper ‘Noise’ in 1986, and developed further in the paper of J. B. De Long, A. Shleifer, L. Summers and R. Waldmann ‘Noise trader risk in the financial market’ in 1990. Shefrin and Statman (1994) divided the investors into information traders and noise traders. Market participant who trade on unverified information or data, rumors or other noise as true information is pointed out as noise trader (Black 1986). Noise traders mistakenly believe that they have special information about the future prices of risky assets and use it as a basis for investment

decisions. Such a type of trader accepts noise as true information because they like to trade actively and they are irrational market participants.

Therefore information traders are rational market participants, who's trading based on reliable information. Suppose the noise in the market is the result of the game between noise traders and rational investors, noise trade will lead market prices deviate from their fundamental value, show the phenomenon that the market price amplitude widen, generate for the rational traders arbitrage restrictions and the risk premium based on noise trading (Fig. 3).



Fig. 3. Information based interaction of traders with noise traders (Source: compiled by authors basing on Black 1986, De Long *et al.* 1990)

The assumption covers all that happens in the market, even the fact that the behaviour of the market is practically unpredictable

4. Behavioral factor in financial decision of Lithuanian households'

Further research of tendencies of Lithuanian households' financial behaviour based on questioning survey and focused on cognitive and emotional characteristics influencing financial decisions under uncertainty and risk that were forming according national mentality and habits. The first similar research was carried out in 2012 to clarify behavioural characteristics of financially savvy households. However, it was find out that results were likely better than average across Lithuania. It was a strong need to investigate the behaviour of randomly chosen respondents.

The new survey had been run in 2013 and has been developed to meet changing objectives and focus. To determine specific behavioural biases of Lithuanian individuals, prepared questionnaire contains three dimensions:

- financial saving and investing behaviour of individuals,
- risk tolerance and

- ability to cope with uncertainty.

The questionnaire was largely based on the questionnaire used in previous year, to ensure that many of the questions could be tracked over time. Amendments were made and new questions were developed. After finding out behavioural characteristics it is clear that stated behavioural features also need to be classified into two groups:

- which are common to behavioural features of market participant presented in papers of foreign researchers of behavioural finance (Kahneman, Tversky and others) and
- which can be classified as specific national characteristics.

According to Statistics Lithuania (2012) there is 1 million 267 thousand households in Lithuania and 61% of them temporary or regularly use information technologies in their daily activities. In order to get representative results with 99% confidence level and 10% confidence interval, it is needed minimum sample size of 166 respondents. A total number of respondents agreed to participate in questionnaire was 183, the analysis of data of 79 men and 104 women will be presented further. Based on obtained data from the survey, the results are following:

1) A combination of high level of financial literacy (71%) and poor mathematical literacy (81%) is considered as one of characteristic behavioural features of the respondents. Interviewed respondents have different fields of education and work experience, their experience in investment and financial activities differs as well, so a great majority (81%) of respondents has difficulty using mathematical formulas to calculate inflation.

2) Taking into account respondents' different investment goals, for great majority of respondents (55%) it is difficult to start savings or investments because they have short or long-term financial difficulties.

3) Lithuanian households (81%) have demonstrated overconfidence in own financial experience and are tended to overestimate own financial and mathematical capabilities and underestimate the behaviour of other market participants.

4) It was found that the respondents have attitude to risk as it described by Kahneman and Tversky (1979) experiments and are conscious (23%) and unconscious (69%) risk takers. Moreover, the majority (69%) of respondents are unconscious risk takers and are inconsistent in their actions and motives of the financial decision-making. From difference in percentage of con-

scious and unconscious risk takers it can be concluded that the vast majority (69%) operates without a clear strategy of financial behaviour and change their views and motives quickly depending on the situation they have.

5) If in the case of unprofitable investment, financial resources had already been invested, the investors (87%) subjectively assume financial return and are more valuable if they already own the investment than in situations where there is no any commitment yet.

6) Lithuanian households (71%) believe that it is not financially effective to copy strategies of other market participants. Moreover, 67% of respondents had mentioned herding as one of the reasons of their financial failures. Thus, it can be stated that Lithuanian individuals have a specific behavioural feature of no herding affect in their financial decisions which is determined by mentality.

Defined behavioural biases of Lithuanian households allow applying model of investor personality type in order to explain further specifics of behaviour of Lithuanian households (Fig 4). Four very general categories of attitude and style results from Schweser (2013) model provide indications into following investment behaviour.

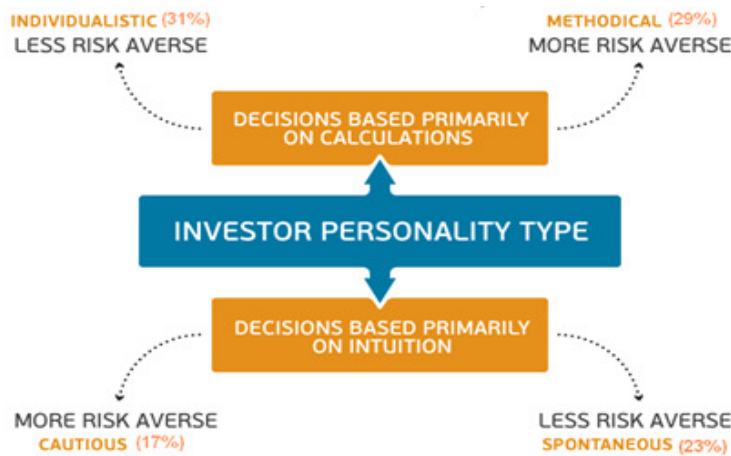


Fig. 4. Investor types of Lithuanian households (Source: compiled by authors)

1) Cautious investor (17% from total number of the respondents). Respondents of this investor type does not like analyzing financial information, make calculations and create own financial strategies. They prefer safe, low volatility investments with little potential for loss. As a result, this investor type exhibits a strong desire for financial security and respondents of this type are not active market traders. Households of this investor type are affected by trap effect because it is impossible for them to take money from a project they had committed themselves. They are affected by herding bias as well, so they tend to observe financial

strategies of other market participant than following own beliefs (Table 2).

Table 2. Basic orientation of cautious investor type (Source: compiled by authors)

Impactful biases:	Herding, conservatism, loss aversion.
Basic orientation:	Capital growth over long term, do not need regular income from investment.
Risk tolerance:	Lower than average.

2) Methodical investor (29% from total number of the respondents). This type Lithuanian household diligently research markets, industries, and firms to gather investment information, so they rarely form emotional attachments to investments. However, if financial resources had already been invested into financial situation under uncertainty and risk, respondents are tend to carry on this commitment because they are afraid of loosing invested money. This type is less affected by overconfidence bias, so they consistently predict gain from investment and their trading activity is estimated on the need of portfolio restructure based on external circumstances (Table 3).

Table 3. Basic orientation of methodical investor type (Source: compiled by authors)

Impactful biases:	Trap, conservatism.
Basic orientation:	Growth in capital value over medium or long-term.
Risk tolerance:	Generally lower than average.

3) Individualistic investor (31% from total number of the respondents). This type of respondents have original ideas about investing and like to get involved in the investment process, but have low levels of financial and mathematical literacy and are overconfident about their own financial decision making skills, so these market participants tend to underestimate performance of other investors. They quickly change their mind on buying or selling assets. Thus, such behavioural characteristics are reducing effectiveness from their financial operations (Table 4).

Table 4. Basic orientation of individualistic investor type (Source: compiled by authors)

Impactful biases:	Trend of unconscious risk, overconfidence.
Basic orientation:	Moderate level of income, growth in capital value over medium to long term.
Risk tolerance:	Above average but not as high as of aggressive investor.

4) Spontaneous investor (23% from total number of the respondents). This type of investor has very low financial and mathematical literacy and does not seek for professional consultations or advice. They are willing to accept higher risk and sell the huge part of their capital if they are sure that it helps them to gain huge profit. However, the results of their active trading might be high gains as well as big losses. Investors of this type constantly adjust their portfolios in response to changing market conditions. They fear that failing to respond to changing market conditions will nega-

tively impact their portfolios. Their reactions to changing investment trends combined with a tendency to over-manage their portfolios leads to high turnover (Table 5).

Table 5. Basic orientation of spontaneous investor type (Source: compiled by authors)

Impactful biases:	Overconfidence, optimism, recency, winner's curse.
Basic orientation:	Regular income, some investment growth but not a priority.
Risk tolerance:	High to very high

Identified behavioural types display greatly different investment goals, approaches to the development of financial strategies, differently analyze information and have not the same scores of risk tolerance and are differently affected by behavioural factors in making financial and investment decisions. Determining individual investor type will help the individual to set clear guidelines in order to achieve own financial goals and design suitable strategy accordingly.

5. Conclusions

From the analyses carried out by foreign and in recent years Lithuanian scholars it is seen that assumption about complete rationality of economic man no longer meet real behaviour of market participants and there is an irrational investment decisions under conditions of uncertainty and risk.

Regardless the fact it can not be given a general definition to the irrationality similar to the definition of rationality of market participant, empirical research had been carried out in order to find out behavioural features of Lithuanian households leading to unprofitable financial and investment decisions. Comparison of behavioural finance theories and practices reveal the existence of irrational behaviour in financial decisions of Lithuanian market participants.

Lithuanian households are affected by many behavioural factors both emotional and cognitive which have been identified by foreign behavioural finance scholars, mostly from analyzing financial behaviour of American households. The irrationality of Lithuanian market participant is based on overconfidence in own financial literacy, individuals do not mathematically literate enough and might be inconsistent in own financial decisions and motives, because they do not fully admit unconscious risk. However, Lithuanian market participant is willing to take financial decisions independently without copying strategies of other participants of the market.

Set of main aspects of irrationality of Lithuanian individual would not be common for all Lithuanian households, because some behavioural characteristics in some situations might occur often and some might occur less. It proved there would be at least a couple of investor personality types defining irrational behaviour in the market and all of these types include specific behavioural features, motivation and goals for financial behaviour and risk attitude.

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