

BEHAVIOURAL FINANCE DURING ECONOMIC DOWNTURN IN LITHUANIA

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Abstract. In the global world of information technologies everybody can operate in financial markets and manage financial instruments. However to forecast markets and to earn profit becomes more and more complicated since financial market is affected not only by economic and political processes but also by behaviour of every investor making one or another financial decision. Decisions made by market participants have to be rational; however they often obey cognitive and emotional deviations. The authors strive to ascertain the factors that influence saving and investment behaviour of Lithuanian citizens and to identify behavioural changes in recent years in the article consequently. Accomplished survey shows, that there are positive variations in saving and investment behaviour of Lithuanians however they do not give preferences to savings for retirement.

Keywords: behavioural finance, cognitive and emotional biases, rational behaviour.

Jel classification: G02

1. Introduction

Globalization and revival of financial markets, permanent changes in the economy that is difficult to forecast highlight financial behaviour of market participants. Economic and social transformations and technological innovations determine increase of personal wealth and changes in assets' structure. Individuals' behavioural finance, its attitude towards personal finance management straining to behave efficiently in financial markets and to sew up enough income in the future modifies due to new financial instruments created in the market.

Traditional financial and investment theory proposes a plenty of models for ensuring sufficient income for the future. Modern portfolio theory outlines requirements for creating efficient portfolio, helps to choose effective investment instruments and create effective portfolio using precise ratios. Modern finance theory is a set of knowledge decompound from some keystones conceptions that allows formulating effective investment strategies:

- Miller and Modigliani arbitrage principles;
- Markowitz portfolio theory;
- Sharpe, Litner and Black capital asset pricing theory;

– Black, Scholes and Merton options pricing theory (Statman 1999);

– E.Fama efficient market hypothesis.

Investor has not to follow intuition, but to rule strict models while using these theories. It's a rational attitude towards personal finance and management as all financial decisions are based on certain mathematic-statistic models. Notwithstanding the theory is developing positively a couple of decades that substantially contradicts to keystone traditional financial theories and investment management provisions. Behavioural finance theory shapes up after finances, as a science, accumulates enough empirical knowledge stating that forecasting economic and investment decisions is impossible only on the basis of rational provisions.

Researches of behaviour finance strive to clarify why investors behave irrationally and what are the main reasons of it.

It will be observed that behavioural finance is insufficiently analysed in complex in Lithuania, there are practically no comprehensive investigations of behavioural investment. Without scientific inquiries of individuals' savings or investments behaviour made by the authors of current article (or with other joint authors, such as: Bikas, Kavaliuskas 2010; Jurevičienė, Gausienė 2010) K. Le-

višauskaitė, J.Kartašova (2011) could be noticed who also analyse problems behavioural finance of Lithuanians.

As life cycle theory indicates that consumption depends not only on current income but also on all life cycle expected income behavioural finances primarily settles personal saving peculiarities and skills. As a result it is significant to identify factors influencing savings formation and dynamics.

The goal of the paper is to determine the factors influencing savings and investments of Lithuanian households. Systematic literature, comparative, logical analysis, questionnaire, statistical processing of data, logical abstraction, induction, and graphical data visualization methods are used in the article.

2. Philosophy of behavioural finance

There is no jelled solid, strictly determined attitude of behavioural finance conception. Different interpretation of terminology displays novelty and multiplicity of this particular scientific area. Definitions of behavioural finance vary substantially even during the last decade (Table 1).

Behavioural finance inseparable from sociology, psychology and finances composes aggregated union due to (Ricciardi, Simon 2000):

- Psychology – a science that analysis processes of behaviour and mind, how processes are influenced by physical, psychical, and external environment of human being;

- Finances – system of formation, distribution and using of resources;

- Sociology – systematic science about socio-behaviour of human being or a group, emphasising influence of social relations on people attitude and behaviour.

Definition of behavioural finance supposes two important aspects – individual investors and entire market. In other words behavioural finance in a broad sense is divided to macro behavioural finance and micro behavioural finance (Pompian 2006). Macro behavioural finance discloses and describes anomalies of efficient market hypothesis that could be explained by models of people behaviour. Micro behavioural finance analysis behaviour and deviations of individual investors' and this separates them from strictly rational person, acting according stern mathematic-statistic models. Therefore conception of behaviour deepens to what influence has psychological factors for making financial decisions.

Table 1. Variety of Behavioural Finance Definitions

Author	Year	Definition
Goldberg J., Von Nitzsch R.	1999	Financial market theory orientated towards behaviour; subject which is applied to facts that people behave rationally only within specific limits
Thaler R.H.	1999	Integration of classical economics and financial theories within studies investigating psychology and decision making
Fuller R.J.	2000	Behavioural finance strives to explain consistent pattern of investors' contemplation processes and related emotional processes as well as how they influence decision making
Fromlet H.	2001	Analysis of collection, processing information by investors before making investment decisions
Ritter J.R.	2003	Behavioural finance strives to supplement standard financial theories introducing psychological dimension into decision making process
Levy H., Post T.	2005	Theories able to explain market inefficiency and market anomalies
Bodie Z., Kane A., Marcus A.	2007	Models of financial markets that emphasis potential intervention of psychological factors into investor's behaviour
Jordan B., Miller T.	2008	Financial range that deals with mistakes of investors' reasoning related to decision making and market prices

One of the first works on behavioural finance appeared in the XVIII century, it was Adam Smith's *The Theory of Moral Sentiments*, which determined mental and emotional human interaction and communication basics. *The Theory* was focused on such elements of a person's behaviour as pride, disgrace, insecurity, egoism; the work was based on them while explaining actions of a man and the pursuit of profit (Smith 1998).

At the beginning of the XIX century when economics was dominated by neoclassical theories, psychology was displaced from the factors which have an effect on discourse of economy. However, significant scientific research of 1940-60s laid foundation for further developments in the field of behavioural economics and finances.

Daniel Kahneman and Amos Nathan Tversky started their research on decision making under

uncertainty. The authors wrote: “the research was started based on cognition that intuitive decisions and opinions in difficult situations do not always comply with the probability theory and principles of statistics”. In 1979 encouraged by their success the authors wrote a work *Prospect Theory: An Analysis of Decision under Risk* (Kahneman, Tversky 1979). This piece is considered an essential primary work in the field of behavioural finance, and *Prospect Theory*, basically described how investors understand profit and loss. While making investments loss of the same amount has a more significant impact than profit (Pompian, 2006), whilst in essence, a rational person should have the same value at this point, only with a different marking.

In 1980 Richard H. Thaler expressed his view, which basically stated that “all economics theory is based on a model of rational maximization, which denotes how consumers *should* behave, however it was supposed to explain how the consumers behave indeed as well” (Thaler 1980). Thaler proved that in many situations behaviour of the majority of consumers indeed is not compatible with the economics theory and that it is the economics theory that makes systemic mistakes in such situations, whilst trying to predict behaviour of consumers.

Maurice Allais with his works proved that the theory of expected efficiency maximization, which was adopted for a number of decades, did not work for certain empirical decisions under risk and uncertainty (Pompian 2006). In 1985 Werner F. M. De Bondt and Richard Thaler stated in their work that people constantly and systemically react too sensitively to unexpected and dramatic events and news, therefore weak form inefficiency in exchange market forms and becomes evident constantly. In the same year Richard Thaler developed a new model of consumer behaviour, which in itself had a concept of mental accounting. Mental accounting is a set of cognitive (mind, thoughts) operations, which individuals use for assessment, organization and monitoring of their funds (Thaler 1985).

In 1998 Kahneman and Riepe wrote a work based on Howard Raiffa’s insights of a person’s decision making, which concentrated on how to help investors. The authors pointed out that the professional investment advisers should assess their business clients’ emotions more closely before they adopt investment decisions (Kahneman, Riepe 1998).

Another famous scientist Meir Statman concludes that people are “rational” in standard finances, whereas in financial behaviour they are

“normal”, i.e. they do not behave according to financial dogmas (Statman 1999).

Hersh Shefrin proved that investors assess past event in a wrong way – they give too much significance for positive events and too little – for negative aspects of the events, which encourages too much optimism in financial markets (Shefrin 2000).

3. Peculiarities of behavioural finance

One of the key concepts in financial theory is the efficient-market hypothesis. Paul Samuelson (1965) can be considered as the founder of this theory, the theory came to life by a famous scientist Eugene Fama, who denoted an efficient market as a market where prices of financial instruments reflect all available information and where prices are constantly fluctuating depending on the information (Fama 1970).

According to this concept, it is impossible to earn constantly more than the market while using the available information, which was assessed by the market already. If the market is efficient then no information or analysis can enable to earn more than a certain chosen index earns. The foundation of the theory consists of three fundamental statements (Shleifer 2000):

- Investors are rational; therefore they are able to assess securities and other financial assets in a sensible way;

- Some investors are not rational and their financial behaviour is random, therefore each consequent transaction annuls one another and does not impact the prices;

- Actions of rational investors eliminate the impact of irrational ones on the prices.

The efficient-market hypothesis states that investors set “fair” prices while competing for big profit. The efficient-market hypothesis takes into account that investors are rational, however, it does not take into account that the market itself is also functioning in a rational way. The theory also does not take into account that the market can predict the future; however, it takes into account that the future in the market is predicted in an objective way (Ritter 2003).

Trying to explain how investors’ financial behaviour influences market prices the efficient market hypothesis formulates four hypotheses (Akin-toye 2008):

- Naive Hypothesis*: the price of financial asset is a contractual issue and does not in any way depend either on how much they will be paid for in the future, or how much of periodical income it can bring.

Speculative Equilibrium Hypothesis: the behavioural finance of all investors is based on prediction of other investors' behaviour, underestimating possibilities of income earning from financial asset.

Intrinsic Value Hypothesis: prices of financial assets are related to future cash flow generated from them, without assessing a resale price.

Rational Expectations Hypothesis: assets prices are linked to future cash flow generated from them and their resale price.

Arbitration can be denoted as simultaneous purchase or sale of essentially similar financial asset in different markets due to a favourable price difference (Sharpe *et al.* 1999).

An effective market is related to rational expectations hypothesis as it takes into account all information on the asset. A closer to the reality version of the efficient-market hypothesis says that the price reflects information till marginal use from the information does not exceed its marginal expenses (Jensen 1978).

If there are many irrational investors and their financial behaviour does not correlate, and their transactions annul each other and does not impact the prices, however the assets are assessed according to the same rules, there is a question on too weak market assessment of irrational investors.

Behavioural finance combines three components (Fig. 1): cognitive and emotional deviations, arbitration limitations and prospect theory.

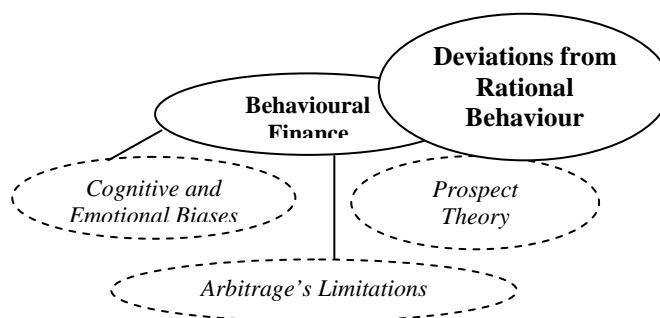


Fig.1. The Main Elements of Behavioural Finance (Source: Jurevičienė, Gausienė 2010)

Cognitive psychologists provide base for a number of human behaviour patterns, which are described as cognitive deviations (Fig. 2). Cognitive derivations are related to the way of human thinking.

A person tries to simplify everything in order to understand it more easily and have a certain opinion. Therefore human behaviour and decisions are influenced by their past, circumstances and other factors which are not rational. To be more precise they are rational whilst assessing from a point of view of a personality, however they are irrational in terms of the financial use they are bringing.

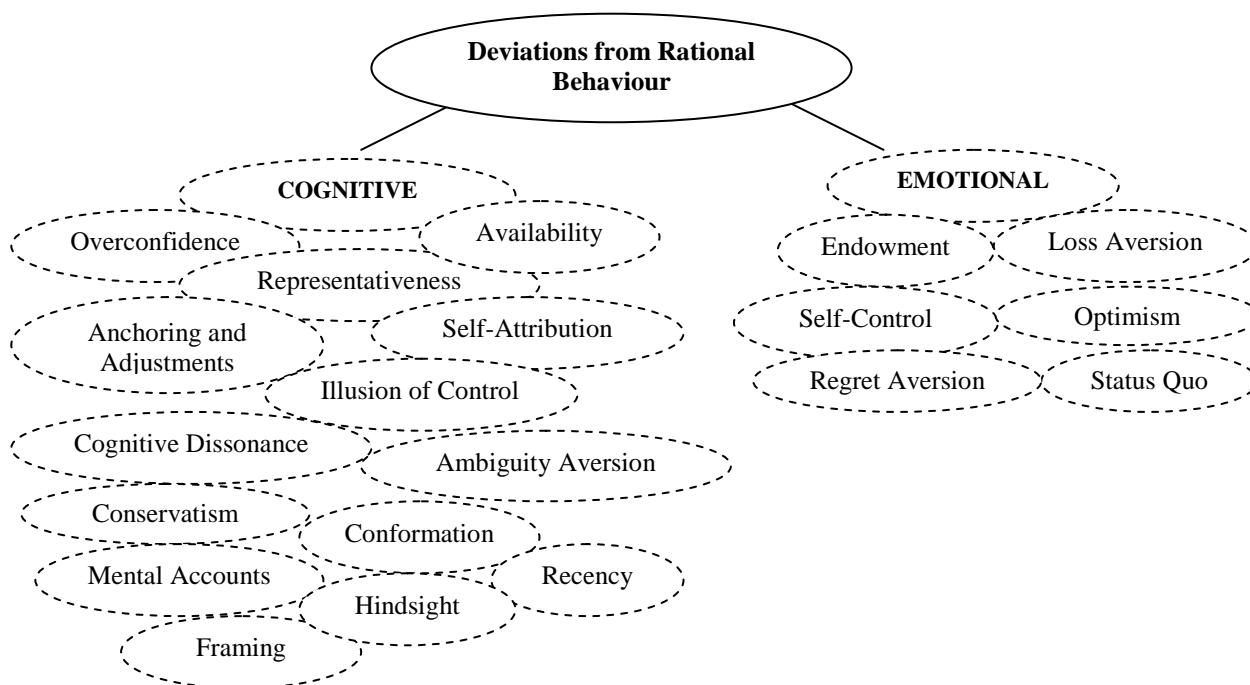


Fig.2. Deviations from Rational Behaviour (Source: Pompian 2006)

One of the key financial terms is arbitration. In theory, arbitration does not need any initial capital, nor does it implicit any risk. As soon as

the person obtains a cheaper financial asset and sells a more expensive one, the future cash flow is equal to zero, while the profit is obtained immedi-

ately. Arbitration is important while analysing a financial market because due to its activity the prices in the long run are equalled to a fair value and the market remains efficient (Shleifer, Vishny 1997).

However, incorrect assessment of the financial assets is a fairly common event, but it is not easy to avoid it whilst pursuing for a bigger profit. There are two incorrect assessment types (Ritter 2003): recurrent (or arbitrary) and non-recurrent (essentially, long term). When an incorrect assessment is repeated, it becomes possible to earn while using exchange strategies. While incorrect assessments are not repeated, it is impossible to predict rises and falls until they do not take place.

Limitations of arbitration occur due to risk, existence of which does not allow rational investors to avoid negative outcomes due to unfair pricing. In a real functional market possibilities of arbitration are risky and limited. The possibilities of arbitration are closely related to availability of financial asset of close substitutes, which irrational investors interchange. Often close substitutes are simply unavailable. Therefore, a rational person who is into arbitration cannot sell financial assets and buy a substitute at the same time. In such a case, the person can only sell or decrease financial assets, which irrational investor is interested in, however, such arbitration will be risky, and interest in it – limited. Arbitration limitations comprise assessment under which circumstances arbitration will be effective and under which not.

Kahneman and Tversky started researching how people make their decisions in reality. The psychologists developed the prospect theory which explains that people's priorities can be incompatible due to phrasing of their choices (Huckle 2003). The prospect theory is based on mathematical models; therefore economists can apply it to various calculations.

4. Analysis of Lithuanians' financial behaviour

In order to clarify the savings potential of Lithuanian population the survey has been carried out. Questionnaire is the only way to learn out individuals' money management habits and underlying motives. A survey was carried out anonymously; paper questionnaires, online questionnaire file, as well as the questionnaire posted on the Internet were used. Data were collected in September–October 2011. The questionnaire consists of 17 questions. Respondents could select more than one option or add their own answer. More than

450 respondents had to be interviewed*; 412 responses received. Reliability of survey is not less than 95%.

4.1. Analysis of respondents' social data

The composition of respondents was: 230 women (55.83 %) and 182 men (44.17 %); 184 (44.66 %) single, 228 (55.34 %) – married; place of residence: 348 (84.47 %) city, 34 – town (8.25 %), 30 – village (7.28 %). Respondents under 30 years old comprise 63.35 %. Majority of respondents (66.02 %) have higher (college or university) education. 238 respondents (57.77 %) indicated that they don't have children under 18 years, 105 respondents (25.49 %) have one child, 60 (14.56 %) have two children under 18 years; three or more children under 18 years have only 9 (2.18 %) respondents.

4.2. Analysis of Lithuanians' financial situation

The survey revealed that 52.67 % of all respondents set apart money, 75.12 % from them save a little bit, and 24.88 % – manage to save a lot. 29.13 % of all respondents indicated that they earn enough money, and 18.20 % don't save – they have to use their savings (57.33 %) or to borrow (42.67 %).

By comparison, the duplicate survey carried out in January–March 2009 (Jurevičienė, Gausienė 2010) has shown that even 65.83 % of Lithuania's population were able to save, while in 2011 only 52.67 %. So, on the basis of this and the previous surveys, it can be concluded that the financial situation of Lithuania's households has been deteriorating in recent years, and *Lithuanians' ability to set apart money for saving and investment is decreasing*.

Nearly half of respondents (44.66 %) answered that they don't monitor their expenses. The most important reason they indicated lack of discipline (37.55 %), nearly one third (33.09 %) – lack of time and more than one quarter of respondents (26.02 %) specified unwillingness to collect re-

* A simple probability sampling for this survey was used. General set – all adults of Lithuania (from 18 years old). In the beginning of 2011 there were nearly 2.7 million of them (Department of Statistics 2011). The sample size was determined by the formula of Paniotto (Паниотто 1986):

$$n = \frac{1}{\Delta^2 + \frac{1}{N}} = \frac{1}{0.05^2 + \frac{1}{2692968}} \approx 400 \quad (1)$$

Where: n – the required number of respondents; Δ – error; N – a whole number of members.

ceipts. Those who check their expenses prefer not to use any software (just to write out in some copybook) or to use only the simplest “Microsoft Excel” software.

Summarizing mentioned above factors it could be concluded, that more than half of all adults have money to save and invest. So, we can state that Lithuanians have financial potential for savings and investments and can meet their financial objectives. But it is important to pay attention that majority of respondents (57.04 %) have more or less liabilities and don't check their expenses.

4.3. Analysis of saving and investment behaviour of Lithuanian residents

Saving motives differ in accordance with income and social factors (age of individual, education, occupation, family status, suspense about future etc.). An individual can save at once for some objectives: to buy long-term consumer goods, for retirement, unforeseen events, vacation, etc.

In previous survey (Jurevičienė, Gausienė 2010) more than on fifth of respondents (21.69 %) had no savings and in 2011 there were less – 18.20 %. On the other hand, in survey of 2009 even 38.33 % of all respondents had 5000 litas savings and more, while in 2011 there were only 30.34 % of respondents having such amount of savings. Generally, in spite of decrease of saving potential even 81.80 % of respondents have accumulated more or less savings, while in 2009 there were 3.47 % less.

It is worth to analyse the objectives and type of savings. The most important objective indicated in the respondents' answers was accumulation for unforeseen situations: 31.45 % (in 2009–34.52 %); it may be related to instability in the markets yet, the high unemployment level and fear to lose permanent source of income (Table 1).

Saving for vacation and travels (16.51 % in 2011, 19.64 % in 2009) shows that Lithuanians try to spend purposeful leisure even in instable economic situation and treat saving as important enough (this objective decreases comparing with 2009 survey). The objective for home purchase and rehabilitation is on the fourth place (12.19 %) though is defined in scientific literature as one the most important saving motives for individuals during life cycle (in the survey of 2009 was on the third position).

Table 1. Change of Lithuanians' Saving Objectives (in per cent of Respondents Holding Savings) in January–March 2009 and September–October 2011 (Source: Jurevičienė, Gausienė 2010; the data of current survey)

Saving Objectives	Year	
	2009	2011
Unforeseen situations (illness, unemployment, etc.)	34.52 %	31.45 %
Vacation, travel	19.64 %	16.51 %
Retirement	5.36 %	13.76 %
Home purchase and rehabilitation	18.45 %	12.19 %
Purchase of a car or long-term consumer goods	10,72 %	8.65 %
Education	5.95 %	7.08 %
Repay debts	4.76 %	6.55 %
Other objectives	0.60 %	3.80 %

However it is worth to fix that in this survey even 13.76 % respondents-savers indicate that they save for retirement while in 2009 there were only 5.36 %. Though the amount of such savers nearly tripled during this period it is still not popular enough in Lithuania while accumulation of funds for this purpose is pointed out as one of the main goals in personal financial management scientific literature (Ando, Modigliani 1963; Hanna *et al.* 1995). This could be determined due to liabilities (57.04 % of respondents indicated financial commitments) or still vital trust in social insurance.

Summarizing figures indicated in the Table 1 we should note that impact of mentioned saving objectives decreased during analysed period, except saving for retirement (2.65 times increase) and debt repayments (1.37 times increase).

Thus as Lithuanians still tend to save for short terms goals and consumption needs, we may conclude that *Lithuanians prefer short term financial goals, but start to ensure accumulation of funds for retirement.*

The survey ascertains that even 49.03 % of savers use to accumulate their income in bank accounts or in cash; in bank deposit held 25.04 % savers and 13.93 % of them tend to invest in financial instruments (securities, various funds, investment insurance, etc.). Such forms of savings reflect that *Lithuanians do not tend to make long term financial plans.*

Even in saving for retirement Lithuanian residents are very conservative; more than half respondents indicated that they either pay premiums to Social security fund (47.93 %), or to private pension funds (18.13 %) and 12.60 % of them do not accumulate any funds for retirement. Moreover it is notable that accumulative life insurance is very popular – it is used by 7.36 % of all respon-

dents. The rest of them invest in financial instruments, real estate for rent or speculation and in bank deposit.

Lithuanian residents do not use long term saving instruments proposed by financial markets. It could be caused either due to low knowledge of investment possibilities (Jurevičienė 2007) or unwillingness to overtake risk, weak investment skills likewise suspect of financial markets. It again shows that *against existence of favourable long term financial conditions, Lithuanians intent to seek short term goals managing their finances and not feel concern about old age.*

5. Analysis of changes in correlation between savings and factors influencing it

The goal of analysis is to determine interrelationship between analysed quantitative factors, i.e.

Table 3. Pair Correlation Coefficients (r) in January–March 2009 and September–October 2011 (Source: Jurevičienė, Gausienė 2010; the data of current survey)

Pair correlation (r)	Y and X_1	Y and X_2	Y and X_3	Y and X_4	Y and X_5
2009	0.072557678	0.108566114	0.185225517	0.131675727	0.158369439
2011	0.121002478	0.011646896	0.119133182	0.007357616	0.055702084
Pair correlation (r)	Y and X_6	Y and X_7	Y and X_8	Y and X_9	Y and X_{10}
2009	0.299046501	0.339017592	0.084702797	0.513229871	0.017657698
2011	0.314042138	0.509556052	0.210599541	0.550625534	0.019646597

Here: Y – savings (LTL); X_1 – gender; X_2 – age; X_3 – family status; X_4 – children under 18 years; X_5 – residence; X_6 – education; X_7 – monthly income per person (LTL); X_8 – payment via credit cards; X_9 – self estimation of financial status; X_{10} – expenses follow-up (“yes” or “no”).

– Between amount of savings and habits to follow up expenses (0.019646597 in 2011 and 0.017657698 in 2009).

Average interdependence is:

– Interdependence between amount of savings and monthly income amount per person (0.509556052 in 2011 and 0.339017592 in 2009);

– Interdependence between amount of savings and self-financial status assessment (0.550625534) – the better people qualify their financial status, the more they tend to set apart income. This confirms that people tend to save more when they earn more and accumulate savings for the periods when income will be insufficient (in 2009 this interdependence was very similar – 0.513229871).

Summarizing it is notable, that mostly motivated savers are those who better qualify their financial status and whose monthly income is higher. Respondents aim for non-basic goal of personal financial management goal – to accumulate enough money for retirement period, but short term goal – to save more when they earn more and

whether individuals try to accumulate finances during “good times” for unforeseen situations and what factors mostly influence saving’s level.

Absolutely insignificant interdependence is (Table 3):

– Between amount of savings and age (0.011646896 in 2011 and 0.108566114 in 2009);
Between amount of savings and householders with children under 18 years (0.007357616 in 2011 and 0.131675727 in 2009);

– Between amount of savings and place of residence (0.055702084) – people living in cities, towns and villages have accumulated the same amount of savings (in 2009 correlation was higher – 0.158369439). This indicate positive trend of all respondents to care personal finances responsibly independently of living place;

accumulate savings for the periods when income will be insufficient. This indicates that trend in personal financial management in Lithuania is positive and individuals overtake personal responsibility for their financial situation. The level of savings is also a bit influenced by education, i.e. more educated people (with higher education) hold more savings and tend to save more than less educated ones.

6. Conclusions

Since 1990 scientists started to go into psychology as an important factor in finance theory. Behavioural finance was formulated – a new branch in finance theory, that combines psychology, sociology, and knowledge of other social sciences and finance theory. Behavioural finance better interpreted anomalies in the financial markets and behavioural finances of individuals due to integration of information and data from various sciences.

Summarizing mentioned above factors influencing savings among Lithuanians it could be concluded, that more than half of all adults have money to save and invest though this number decreases during last years.

In general the saving motive for retirement was indicated by 13.76 % of respondents and though it increases 2.56 times is still not sufficient in Lithuania as accumulation of funds for this purpose is one of the main goals in personal financial management scientific literature. This could be determined due to high level liabilities or still vital trust in social insurance.

According to pair correlation analysis it could be stated that average interdependence is between savings and monthly income amount per person (and grown up during analysed period) and between self-financial status assessment, that means – the better people qualify their financial status, more they tend to set apart income. A positive trend is noticed in interdependence between amount of savings and place of residence that implies attitude of respondents to care personal finances responsibly independently of living place

Concluding it is important to emphasize that Lithuanian residents understand the necessity of savings, but unfortunately do not give preferences to save for long term goals.

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