Testing Behavioral Asset Pricing Models on Russian Financial Market

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Abstract—**Behavioral finance attracts a great interest in Russia, but there are few studies in this field due to limited research base and a lack of literature on this topic. Such studies are done at Financial University under the Government of Russian Federation. The article outlines the stages of the development of Behavioral finance in Soviet Union and modern Russia. In the article the problems of the research on this topic are stipulated. The process of developing, the basis of the Behavioral finance in Russia is described. The results of some behavioristic researches in Russian M&A and stock markets are presented. The perspectives of the further development of the Behavioral finance are outlined. The latest behavioristic models of recognized scientists of Behavioral finance are implemented in Russian markets. This is the original and significant contribution to the implementation of Behavioral asset pricing models in Russia and never was done before.**

Index Terms—**Behavioral finance, behavioral valuation, DHS model, overconfidence.**

I. INTRODUCTION

The Behavioral Finance is a rare field in speedy growing Russian financial sciences. Comparing with the significant quantity of publications on Behavioral Finance in the West in Russia there is about one publication in financial scientific journal on this topic per year. Modern Russian financiers working in the behavioral finance are more prone to foreign experience than to their own heritage. Translations of the modern foreign authors prevail [1]. In-depth studies based on the domestic tradition are only commenced. Results of such studies done in the Financial University under the Government of Russian Federation are presented in this article.

Some modern Russian experts in the field of economic psychology and behavioral finance are the pupils of the giving-out Soviet economist – the scientist, the founder of economic psychology in former Soviet Union. It is Kitov Ahmed Ismailovich, the honored worker of science of the Russian Federation, the Honorable employee of the higher school, the doctor of psychological sciences, and the professor. During the pedagogical activity he was a head of the chairs of Economic psychology founded himself in different regions of a country [2]. In 55 years of pedagogical and scientific activity A. I. Kitov published scientific production with a total amount more than 600 printed pages in the central and high school publishing houses. Among

them – the country's first textbook on management psychology for higher education institution, the monograph "Psychology of an Economic Board" (1984) and "Economic psychology" (1987), 18 manuals, numerous articles in scientific magazines. Its works are translated to English, German, French, Swedish, Polish, Hungarian, Czech, Romanian, Arab and the Vietnamese languages some of them are presented in library of the Congress of the USA. In the late eighties the last century in Moscow he organized and headed the Soviet association of economic psychology, he was its president. In his face the whole world learned about existence of economic psychology in USSR and recognized high quality of the Soviet scientific development in this area. Certainly, ideological barriers did not give a scope for permission of the main problem – a property question. But all other conceptually methodological device in its works was ideally verified and balanced.

In his articles and books the Russian mentality in dealing with financial issues was most accurately reflected. He proposed the original approaches to many themes developed further more in the western Behavioral Finance. He studied the role of managerial decisions in the way that was developed later in 1998 in the DHS model of Daniel, Hirshleifer, and Subrahmanyam. His heritage of gender issue is similar to the theories developed later in articles on female role in Finance.

Three Russian universities are making efforts to organize courses on Behavioral Finance for their students. There are Academy of National Economy under the Government of the Russian Federation, High School of Economics and Financial University under the Government of Russian Federation. Academy of National Economy and Financial University under the Government of the Russian Federation prepared the textbooks for their courses in Russian. The courses are started only about four years ago. At the same time in the Financial University scientific research is developing in implementation of western approaches in Behavioral Finance into the Russian practice.

The research is conducted in two ways testing behavioral asset pricing models on Russian financial market:
- Examining the data of irrational deals on mergers and acquisition market in Russia;
- Analyzing irrational behavior of the participants of Russian exchange.

II. OVERCONFIDENCE IN RUSSIAN M&A MARKET

One example of the first line of research is very significant on the matter of Behavioral Finance in Russia. It explains why Behavioral Finance is not so popular in Russia as in the

West. Russian modern market economy is very young. And the financial knowledge and competences are not always on a high level. So when there is an irrational behavior it can be explained by either any theory of Behavioral Finance or often just by incompetence, lack of knowledge of the decision makers.

Here there is a description of the merger deal which happened recently illustrating this.

The search for the object of the investment, valuation procedures including the assessment of the investment risks took place in the middle of zero years. Then there was a competition of the capitals in Russian M&A market. A project financing managers went all over the country, trying to discover the ownerless enterprises. These enterprises were numerous just after the beginning of privatization in Russia in nineties. Soviet directors, hardliners were absolutely uncomfortable with new market conditions. And they were glad to pass the management to any investor providing them with cash. Because in those days there was a severe shortage of money supply in all economy due to the strict monetarisms of new Russian rulers.

But in the beginning of a new century there was no great luck in finding such enterprises. More often, there were objects already prepared for sale by new owners who received them in the nineties during privatization processes. They made many investments in reanimation and adaptation of these enterprises to the market. They already managed to attract unlucky investors, to incur big debts to banks. So awfully problem object in a beautiful wrapper was offered to the new potential owner. These enterprises liked investment pyramids with a prompt change of numerous investors. Provided with all these facts confirmed by financial analytics the decision maker – Russian oligarch, the holding's owner insisted on the purchase of new companies.

Happy M&A managers of one of the companies, greedy absorbing the Russian enterprises, returned from one of the business trip extremely happy. They found an object, worthy for attention of their chief. The object had many kinds of attractiveness: the unique product, the qualified personnel, monopolistic market position.

Whereas still in Russia there are some difficulties in getting the financial reports of closed companies the analytics of the holding managed to get the reports for analyzing the enterprise.

To the surprise of the analysts of absorbing firm the enterprise was absolutely unattractive from financial point of view. Directly from the report of profits and losses it was obvious that the enterprise had losses. The financial coefficient analysis had shown bad financial situation. All indicators proved that the enterprise was not attractive to investments.

Usually every new investor of such companies covers the losses of a previous one. But when a strategic investor buys a company this is not sustainable.

The managers who presented this enterprise to their oligarch explained this fact by the common situation which happens to Russian companies. Usually the bad official income report is made especially to hide the profits for paying fewer taxes. They reported an inside information about enterprise profit. Then bewilderment of analysts of

absorbing firm reached still higher degree. Shadow "profits" was comparable to enterprise revenue! But behaviouristic research of the financial reporting ended, without having managed to begin. The management hurried to purchase "attractive" object while it was not purchased by other participants of the market.

The result of the acquisition emotionally happened without taking into account the rational factors forming the price of an object was quit logical. Intelligence reports were not confirmed. The buyer spent big amounts for enterprise recovery. The enterprise was significantly unprofitable. This situation is a good example of overconfidence of the investor [3] very popular in Russia. But considering just poor understanding of classical financial analyses tools it may be classified like an example of just unprofessionalism.

III. Behavioral Asset pricing Model in Russian M&A Market

During their course of behavioral finance students of the Financial University under the Government of Russian Federation make a research on building a discount rate of behavioral asset pricing model [4]. In the Russian M&A market the most active segment is the deals with small and medium sized businesses. That is why students are asked to use the data on it.

The source of information on the initial offer is the most popular in Russia website for selling businesses "Sell the business". The whole information needed for the valuation of a company is presented there.

During the research for every industry presented in the website the sample of three or five companies was made. Every company was evaluated using three valuation approaches. More closely the researchers used the discounted cash flow method. After determining the value by the income approach – discounted cash flow the result was compared to the price asked by the seller.

The difference between these two values was explained by behavioral factor as it is postulated in Meir Statman, Kenneth L. Fisher, and Deniz Anginer article "Affect in a Behavioral Asset-Pricing Model". This deference was transferred to the behavioral premium in the discount rate. All these premiums for different industries and different companies where lately in compared and analyzed, as it is done in foreign researches [5]-[7].

TABLE I: DATA ON ENTERPRISES

Enterprise Value		Valuation	Seller's Price
Store children's shoes	mln.rubles	3,3	4
Children's store	mln.rubles	3	3,4
Children's store in the trading center	mln.rubles	3,1	3,5

Here is a result of calculations of the behavioral surplus to the discount rate for the retail companies operating in Moscow region. The data collected for calculation is

presented in Table I. The results of determining the Behavioral premium to the normal discount rate under CAPM are presented in Table II.

TABLE II: VALUATION RESULTS

Enterprise Value	Difference between Buyer's and Seller's prices, %	Discount rate of the Seller's offer	Behavioral premium to the normal discount rate under CAPM
Store children's shoes	15,20%	16,20%	2,10%
Children's store	10,50%	17,50%	0,70%
Children's store in the trading center	10,60%	17,10%	1,10%

The calculations of the behavioral premium to the discount rate under the CAPM model for other industries showed the same result. Behavioral factors for the small Russian businesses make around 2% to the CAPM discount rate.

IV. EXAMPLES OF IRRATIONAL BEHAVIOR IN RUSSIAN STOCK EXCHANGE

Apart from investigating situations of irrational behavior in Russian mergers and acquisition market, professors of Financial University under the Government of Russian Federation are implementing Behavioral Finance's models into the Russian stock market. During years of experience some illustrative situation to the different Behavioral Finances theories were revealed. Many of them are categorized as examples of belief-based models.

Here is a situation which happened in the beginning of a new century which illustrates the model of Investor Sentiment of Barberis, Shleifer, and Vishny.

Small Broker Company started trading on the exchange. Their start coincided with the rapid growth of the market. During the first months of their activity they had a very good financial result. But from the March, 2000 the boom had changed to the fall. In spite of this they continued to make only purchase deals. This resulted in losses. This kind of trading continued until the December, 2000. After that date the manager decided to change long positions to short ones. But exactly to this moment the market has reached its bottom. And upward trend was scheduled. In spite of this all trading decisions were made only for short positions. When other traders were trying to persuade him to change his approach to trading, he insistently refused and he gave no logical explanation. In this example there is a case of model of Investor Sentiment. The decision maker whishes not only to have a positive financial result due to the market direction, but he wants to gain money exclusively on that trend to which he is most prone, wherein his vision contradicts the market realities. As a result of this behavior the company incurred serious losses and eventually disappeared from the market.

The diversity of situations on Russian exchange provides examples for the Probability Misperception Model of Dacey and Zielonka. One investor considerably long - during several months kept the long position on one of the highly liquid Russian blue chip. For this period the stock has a

significant growth in value – up to several tens percents. Investor decided to fix a profit and to close the long position. However after a while he opened a new long position on the same stock again. When asked, why he did this, he answered: I bought cheaper. He did not take into account wherein that the stock could prolong to plunge furthermore. That is exactly what happened there. In addition to the theory of the Probability Misperception Model of Dacey and Zielonka from the trader's point of view the investor does not understand that the result is in money, not in stock's quantity. Here the general theory of Behavioral finance [8] and the modern overreaction theories [9] are demonstrated.

V. ILLUSTRATIONS OF DHS AND HONG AND STEIN MODELS ON RUSSIAN STOCK MARKET

For determining the impact of behavioral factors on the prices of stocks of Russian companies the research of market prices fluctuations and their fundamental values of stocks of different industries were done.

As part of a study the fluctuations of the prices and fundamental values of stocks of three biggest Russian oil companies were analyzed: Rosneft, TNK-BP and Tatneft. During the study period, from January 2008 to mid-February 2013, it was discovered that the fundamental value is almost always higher than the current market rate. This suggests a significant underestimation of the companies. In the reviewed period, there are three points of convergence of fundamental and market values. The first is in the middle of 2009, the second in early 2011 and the last is at the end of 2012. This convergence explains the mood of investors and the level of oil prices. So, every time when the market price of the company moved up to the fundamental value the optimism prevailed. For example, in early 2012, the vast majority of analysts spread the information that in the current year, the best investment is just the oil and gas sector. As a result, the market value of the companies under consideration moved in the same direction. Moreover, the peak of the interest was in the mid-2008. At that time when the fundamental value of the company was to continue to grow because of the oil prices rising, the market began to fall sharply, due to the investors' panic.

This is a very illustrative example of Hong and Stein Model. Momentum traders' actions lead to an overreaction of the market. When the activity of the "watching the news" responding to them is too high, there is a correction and the trend is changing. This pattern is clearly visible on the graphs.

Model of the investor awareness (DHS) - describes the over-confidence of the investor in the right, which leads to a short-term continuation of the trend and its subsequent long-term reversals. This can be observed throughout the period presented, which leads to substantial deviations from the fundamental market value. Illustration of a DHS and Hong and Stein models in Russian stock market are on the Fig. 1, Fig. 2 and Fig. 3: where the fluctuations of fundamental and market values of stocks of oil companies are presented. The companies were chosen under the behavioral portfolio formation [10].

Fig. 1. Fundamental and market values of the oil company Rosneft's stock.
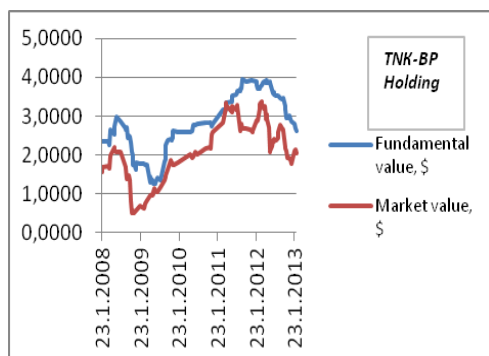

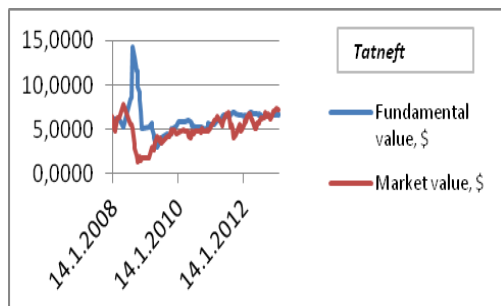Fig. 2. Fundamental and market values of the oil company TNK-BP's stock.

Fig. 3. Fundamental and market values of the oil company Tatneft's stock.

The same research was done for other blue chips of big companies of significant Russian industries: pharmaceutics, chemical, telecommunication, metallurgy. The results were similar to oil industry's stocks.

As in the case of the research of the behavioral asset pricing model of M&A deals of small businesses for every stock of an industry the behavioral premium was calculated at around 2%.

VI. CONCLUSION

Prospects of successful development of behavioral finance in Russia are dependent on several factors. Among them the most significant is improving financial education of managers of all levels. To achieve this goal on the Federative level the program of financial education for pupils is due to be started next year in all schools of a country.

Secondly, students need textbooks on Behavioral finance in Russian. Now there is only a translation of a part of the book of H. Kent Baker and John R. Nofsinger "Behavioral finance: Investors, Corporations, and Markets" and a book in Russian of a professor of the Academy of National Economy

under the Government of the Russian Federation "Behavioral finance or between the fear and greed".

To help Russian professors, students and researchers to implement a new discipline, which was mainly developed in the western countries, a live contact with foreign experts in this field is needed. To achieve this goal in the January, 2013 the specialist on Behavioral Valuation, professor of New Dehly University Sanjay Bakshi visited Financial University under the Government of Russian Federation and had lectures on the Behavioral Finance for the students. Before inviting a foreign professor more than thirty professors throughout the world from USA, Canada, Europe and Singapore were invited to come. But nearly all of them are rejected the offer. The reasons were either busy time schedule or severe Russian winter. Let's hope that western financial professors will be more opened and help in implementation of Behavioral finance in Russia.

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