

# Scientific and Technical Report

Execution stage 1/2020

**Project title:** The nexus between investor sentiment and equity market dynamics. A new sentiment indicator approach.

**Project code:** PN-III-P1-1.1-TE-2019-1702.

**Contract number:** TE 38/2020.

**Funding period:** September 15, 2020 – September 14, 2022

**Project leader:** Associate Professor Maria Miruna POCHEA.

**Team** (alphabetical order): Daniela CATAN, Angela Maria FILIP, Cristian Marius LITAN, Cristina NEGRU, Mihai NIȚOI.

**The main goal of this project** is to investigate the impact of investor sentiment indicators on equity markets and financial stability in Europe.

During the first stage of the project, carried out between September 15 to December 31, 2020, three main activities have been achieved:

*A1.1 Relevant literature review, analysis of sentiment indicators previously proposed in the literature in order to explain stock returns behavior and to detect drawbacks in the existing methodologies.*

*A1.2 Identifying new dimensions of investor sentiment such as behavioral factors (psychological, social, cognitive, and emotional) national culture, political climate, and reaction to news. (to be continued in 2021)*

*A1.3 Construction of a media sentiment component by using the dictionary-based approach and the machine learning techniques. (to be continued in 2021)*

The objectives and activities associated to this stage have been entirely accomplished according to the work plan, and the scientific results available on demand<sup>1</sup>, are the following:

I. **2 papers** submitted for publication in **Web of Science indexed journals**.

II. **3 working papers** in extenso.

In the following, we will present our scientific results in relation to the above-mentioned objectives and activities associated to this stage.

**I. 1. Extreme market sentiments and herding behavior** (under review in Journal of Behavioral and Experimental Economics)

Authors: *Angela-Maria FILIP, Maria Miruna POCHEA, Andreea Maria PECE*

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<sup>1</sup> See the references in the last section of each paper.

**A 1.1** During the last decades, numerous empirical and experimental studies have revisited the conventional financial theory, providing overwhelming evidence on its shortcomings. The standard theory of efficient capital markets and rational investors with homogenous expectations fails to explain common market anomalies and behavioral biases accompanying trading strategies and causing the deviation of stock prices from their fundamental values. Herding behavior is associated to an irrational acceptance of the prevailing beliefs of a certain group. Pioneer studies on this phenomenon are attributed to mastermind psychologists such as Le Bon (1895) and Pavlov (1906). The development of cognitive psychology inspired financial researchers to also integrate behavioral factors into traditional financial decision models. Supporters of behavioral finance paradigm (Grossman and Stiglitz (1980), De Bondt and Thaler (1985), Shiller (2003)) emphasize the major impact of investors' behavioral biases on the dynamics of stock markets and on the occurrence of market crashes. Christie and Huang (1995) associate herding behavior to the ignorance of personal beliefs and the adoption of the market consensus. Shiller (2000) highlights that herding behavior occurs as investors fail to estimate the fundamental values of assets. Our paper extends the existing literature by providing industry level evidence on the efficacy of sentiment indicators in isolating extreme market conditions and relating sentiment driven volatility to herding behavior

**A1.2** Empirical financial and psychological studies provide evidence that investors' sentiments are likely to influence the decision-making process (De Long *et al.*, 1990; Lee *et al.*, 2002; Baker and Wurgler, 2006). In this paper we assess the asymmetric effects of two sentiment indicators, the ARMS Index and the RSI Index, on herding behavior. The data is represented by daily data on stock prices, on market indices quotations and trading volumes captured five years before, during and five years after the recession of 2008 from January 2, 2003 to December 31, 2013 and it is collected from Thomson Reuters Datastream. Our sample comprises 218 companies listed in five CEE countries: Bulgaria, Croatia, Hungary, Poland, and Romania. For each market we built the ARMS and the RSI using historical daily data on the representative stock market indices, SOFIX, CROBEX, BUX, WIG, and BET. For robustness assessments, a third sentiment indicator was used, i.e., the Fear and Greed Index, computed by Bloomberg.

**I.2 Towards the direct measurement of risk premium implied by myopic loss aversion** (under review at Applied Economics Letters)

Authors: *Angela-Maria FILIP, Balint Zsolt NAGY*

**A 1.1** Ever since Benartzi-Thaler (1995) put forward the concept of myopic loss aversion (MLA) as an attempt to explain the *equity premium puzzle* (Mehra-Prescott, 1985), interest in the academia has been constant for this behavioural bias. Soon the first studies (Thaler et al (1997), Gneezy and Potters (1997)) appeared trying to prove experimentally the phenomenon. These studies established in a controlled setting that people do allocate significantly lesser weights to risky portfolios when these portfolios are evaluated more frequently.

Haigh-List (2005) and Abdellaoui et al (2011) found that professional traders were exposed to this bias even more pronouncedly than students. Klieger-Levitt (2009) looked at switching from daily to monthly trading on some stocks of the Tel-Aviv Stock exchange detecting a direct relationship between risk aversion and the frequency of the evaluation period. Larson et al (2016) took a significant further step by testing traders in a "natural field experiment", confirming Haigh-List (2005).

**A 1.2** A branch of the literature demonstrated the influence of social, ethical, religious factors on investors' risk aversion ([Eisenhauer, 2008](#); [Nielsen et al., 2017](#); [Berrada et al., 2018](#)). We calibrate an average myopic loss aversion premium, i.e., a difference in willingness to pay (WTP) prices offered for the same risky lottery in high-frequency (H) vs. low-frequency (L) setups (treatments). The expected payoffs and risks (standard deviations of the payoffs) are the same for both lotteries H and L. We also consider the allocation percentage into the lottery (APL, denoted by  $w_i$  in the formulas) versus the risk-free asset. Our main contribution is twofold: this is the first study that combines the allocation effect and the pricing (WTP) effect into a single, comprehensive measure of MLA premium; we provide results about the specific correlation between absolute risk aversion and myopic loss aversion.

**II.1 What the central banks are saying: A sentiment-index database** (working paper)

Authors: *Mihai NIȚOI, Maria Miruna POCHEA*

**A 1.1** Within this activity, we have investigated the existing literature on determinants of stocks returns. Recent studies show that network analysis is a useful tool in detecting interconnectedness among businesses and corporations. To fill a gap in the literature, we will analyze the impact of investors' sentiments on banking connectedness in Europe.

**A 1.3** In 2020, financial markets in general, and stock markets, in particular, were extremely volatile, being influenced by numerous negative events. Therefore, regulators have adopted several measures to reduce undesirable effects. Investors' sentiments and stock prices dynamic have been significantly influenced by central banks decisions and communications. We aim to construct a sentiment indicator based on natural language processing, by using programs such as Python and R, and financial dictionaries available in *Text Mining with R*. Within this activity, we have also analyzed sentiment indicators constructed by the European Central Bank and the Central Bank of South Korea. In 2021, we will continue activity 1.3. and will construct sentiment indicators for different central banks.

## **II.2 International portfolio allocation in a cultural perspective** (working paper)

Authors: *Cristina NEGRU, Alexandru TODEA*

**A 1.2** The objective of this study is to analyze the factors influencing investors' capital allocation preferences in international markets under specific cultural contexts. The dependent variable *foreign bias*, computed after the methodology proposed by Bekaert (2009), reflects the deviation of current portfolio weights from the optimal allocation, according to the modern portfolio theory. Anderson et al. (2011) demonstrate the effect of cultural proximity on foreign capital investments. We apply a Tobit model with random effects, on a sample of 37 developed countries, to test the hypothesis that variations in social norms and values have an impact on the deviation from the optimal portfolio.

## **II.3 Impact of investors' sentiments on ESG performance** (working paper)

Author: *Daniela CATAN*

**A 1.2** This paper investigates the impact of investors' sentiments on the ESG performance of a corporation. Empirical findings show that sustainability affects financial performance (Pagano et. al, 2005; Edmans, 2011; Borgers et. al, 2013; Eccles et al., 2014; Khan et. al, 2016). Investors' perceptions with respect to ESG may also affect portfolio returns, which include the sustainability component. If investors prefer companies with positive ESG sentiment (Białkowski et. al, 2016; Hartzmark et. al, 2018), fund managers will respond to their clients' preferences.

To conclude, the objectives and activities associated to this second stage have been 100% accomplished according to the work plan, and the scientific results are the following:

- **2 papers** submitted for publication in **Web of Science indexed journals**;
- **3 working papers** in extenso;
- the project's web page<sup>2</sup>;
- the scientific and technical report.

Project leader,

Associate Professor Maria Miruna POCHEA



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<sup>2</sup> <https://econ.ubbcluj.ro/NISEM/>