Arbeitsbereich Marketing und Innovation

MiBAS Seminar

Course number: 23-31.45.212

Title: Consumer and Management Decisions "Investing Behavior"

Winter term 2021 / 22

Instructor: Professor Dr. Thorsten Teichert

Event Type: Seminar

Displayed in the timetable as: Con. and Mgt. Dec.

Hours per week: 2 (= 7 sessions with 4 hours each)

Credits: 6,0

Language of instruction: English

Min. | Max. participants: - | -

Seminar Contents

The seminar gives an introduction into various aspects of investing behavior. Investors are expected to act irrationally and without complete information. Investors as actors and their behavior are in the focus of analysis. We investigate how investment decisions are formed and how investors err. We look at strategies and instruments to alleviate those errors.

Please note: The mandatory Kick-Off and the assignment of the topics will be held on Thursday, 14.10.2021, from 14.00 –18.00 in room VMP 9 B528.

To pass the course, you have to successfully pass the following examinations:

1. Written Report (due two weeks before assigned presentation date, electronic and print version; scope 12-15 pages per person). Detailed outlines may be sent to Prof. Teichert in advance to get feedback before handing in.
2. Presentation of own topic (15 to 20 minutes presentation, 10 minutes discussion)
3. Short presentation (5 min) on topic of fellow students with critical feedback. Assignment is conducted by the Chair. The documents are sent out two weeks in advance. Short presentation is the formal requirement to be eligible for examination.

Seminar Setup and Timeline

Date	Room	Content
14.10.2021, 14 – 18	VMP 9 B528	Kick-off meeting and **assignment of topics**
11.11.2021, 14 – 18	VMP 9 B528	**Literature search** with Web of Science
09.12.2021, 14 – 18	VMP 9 B528	Discussion of the **table of contents**
06.01.2022, 14 – 18	VMP 9 B528	Presentation of topics from **Block 1**: Foundations of Investors´ Behavior **Block 2**: (Multidimensional) Investor Goals
13.01.2022, 14 – 18	VMP 9 B528	Presentation of topics from **Block 3**: Imperfect Information **Block 4**: Limitations of Human Cognition
20.01.2022, 14 – 18	VMP 9 B528	Presentation of topics from **Block 5**: Biases in Information Processing **Block 6**: Execution of investments
27.01.2022, 14 – 18	VMP 9 B528	Presentation of topics from **Block 7**: Consequences **Block 8**: Trends
March 1th 2022		Deadline for handing in the written report

TOPICS

In the following, you will find literature for every single topic. Students should derive the conceptual framework and apply them to a specific application case. Students are expected to draw from consumer behavior literature and, in a second step, relate the findings to behavioral investing. Exceptions are topics that are exclusively relevant for behavioral investing.

Block 1: Foundations of Investors´ Behavior

Traditional versus Behavioral Finance

- Ricciardi, V., & Simon, H. K. (2000). What is behavioral finance?. Business, Education & Technology Journal, 2(2), 1-9.

  Abstract:
  While conventional academic finance emphasizes theories such as modern portfolio theory and the efficient market hypothesis, the emerging field of behavioral finance investigates the psychological and sociological issues that impact the decision-making process of individuals, groups, and organizations. This paper will discuss some general principles of behavioral finance including the following: overconfidence, financial cognitive dissonance, the theory of regret, and prospect theory. In conclusion, the paper will provide strategies to assist individuals to resolve these "mental mistakes and errors" by recommending some important investment strategies for those who invest in stocks and mutual funds.

- Ricciardi, V. (2008). Risk: Traditional finance versus behavioral finance. Handbook Of Finance, 3.

Abstract:
The notion of risk encompasses a wide range of meanings across different disciplines, notably the social sciences and business administration fields. Within academic finance, the focal point of traditional (or standard) finance researchers involves the objective nature of risk. This traditional finance viewpoint encompasses a quantitative measure of risk (e.g., beta, standard deviation) which is based on a macro-level assessment of risk incorporating all the participants in the financial markets. A fundamental assumption in traditional finance is the linear (positive) relationship between risk and return. In contrast, behavioral finance academics provide an extensive examination in which risk is based on a combination of both subjective and objective factors. The behavioral finance perspective incorporates a qualitative aspect of risk (e.g., the influence of cognitive issues and emotional factors) that is highly significant if on a micro level it is acknowledged that the decision maker is an essential aspect of defining and understanding risk. An emerging topic of interest and exploration by researchers in the behavioral finance camp has been the assessment of an inverse (negative) relationship between perceived risk and expected return (perceived gain). Ultimately, financial and investment risk is a situational, multidimensional judgment process that is dependent on the specific characteristics of the investment product or financial service.

- Nigam, R. M., Srivastava, S., & Banwet, D. K. (2018). Behavioral mediators of financial decision making–a state-of-art literature review. *Review of Behavioral Finance*, *10*(1), 2-41.

Abstract:
Purpose – The purpose of this paper is to review the insights provided by behavioral finance studies conducted in the last decade (2006-2015) examining behavioral variables in financial decision making.
Design/methodology/approach – The literature review assesses 623 qualitative and quantitative studies published in various international refereed journals and identifies possible scope of future work.
Findings – The paper identifies stock market anomalies which contradict rational agents of modern portfolio theory at an aggregate level and behavioral mediators, influencing the financial decision making at an investor level. The paper also attempts to classify different dimensions of risk as professed by the investor.
Originality/value – The authors synthesize the contribution made by behavioral finance studies in extending the knowledge of financial market and investor behavior.

Behavioral Biases

- Massa, M., & Simonov, A. (2005). Behavioral biases and investment. Review of Finance, 9(4), 483-507. Cheng, P. Y. (2007).

Abstract:
We investigate the way investors react to prior gains/losses. We directly examine investor reactions to different definitions of gains and losses (i.e., overall wealth, paper gains and losses, and realized capital gains and losses) and investigate how gains and losses in one category of wealth (e.g., real estate) affect holdings in other categories (e.g., financial assets). We show that investors change their holdings of risky assets as a function of both financial and real estate gains. Prior gains increase risk-taking, while prior losses reduce it. To interpret our results, we consider and compare three alternative hypotheses of investor behavior: prospect theory, house money effect and standard utility theory with decreasing risk aversion. Our evidence fails to support loss aversion, pointing in the direction of the

house money effect or standard utility theory. Investors consider wealth in its entirety, and risk-taking in financial markets is affected by gains/losses in overall wealth, financial wealth, and real estate wealth.

- Zahera, S. A., & Bansal, R. (2018). Do investors exhibit behavioral biases in investment decision making? A systematic review. Qualitative Research in Financial Markets, 10(2), 210-251.

  Abstract:
  Purpose – The purpose of this paper is to study and describe several biases in investment decision-making through the review of research articles in the area of behavioral finance. It also includes some of the analytical and foundational work and how this has progressed over the years to make behavioral finance an established and specific area of study. The study includes behavioral patterns of individual investors, institutional investors and financial advisors.
  Design/methodology/approach – The research papers are analyzed on the basis of searching the keywords related to behavioral finance on various published journals, conference proceedings, working papers and some other published books. These papers are collected over a period of year's right from the time when the most introductory paper was published (1979) that contributed this area a basic foundation till the most recent papers (2016). These articles are segregated into biases wise, year-wise, country-wise and author wise. All research tools that have been used by authors related to primary and secondary data have also been included into our table.
  Findings – A new era of understanding of human emotions, behavior and sentiments has been started which was earlier dominated by the study of financial markets. Moreover, this area is not only attracting the, attention of academicians but also of the various corporates, financial intermediaries and entrepreneurs thus adding to its importance. The study is more inclined toward the study of individual and institutional investors and financial advisors' investors but the behavior of intermediaries through which some of them invest should be focused upon, narrowing down population into various variables, targeting the expanding economies to reap some unexplained theories. This study has identified 17 different types of biases and also summarized in the form of tables.
  Research limitations/implications – The study is based on some of the most recent findings to have a quick overview of the latest work carried out in this area. So far very few extensive review papers have been published to highlight the research work in the area of behavioral finance. This study will be helpful for new researches in this field and to identify the areas where possible work can be done.
  Practical implications – Practical implication of the research is that companies, policymakers and issuers of securities can watch out of investors' interest before issuing securities into the market.
  Social implications – Under the Social Implication, investors can recognize several behavioral biases, take sound investment decisions and can also minimize their risk.
  Originality/value – The essence of this paper is the identification of 17 types of biases and the literature related to them. The study is based on both, the literature on investment decisions and the biases in investment decision-making. Such study is less prevalent in the developing country like India. This paper does not only focus on the basic principles of behavioral finance but also explain some emerging concepts and theories of behavioral finance. Thus, the paper generates interest in the readers to find the solutions to minimize the effect of biases in decision-making.

Behavioral Investing of Professionals

- Aharoni, Y. (2010). Behavioral elements in foreign direct investments. In The Past, Present and Future of International Business & Management (pp. 73-111). Emerald Group Publishing Limited.

  Abstract:
  The success of multinational enterprises (MNEs) is at least as much a function of management ability and behavior as it is of industry characteristics or environmental factors. MNE managers, like all managers, display human limitations, e.g., overconfidence that affect judgment. Yet IB researchers still tend to ignore management in their research, treating the firm as a black box. To the extent that the top management team is considered, rational behavior in the classical economic sense is assumed, yet, clearly, managers behave according to different rules than those assumed in much of the IB literature. Further, managers are not part of a herd, but unique. The result of such a lacuna is that theory fails to predict actual behavior and does not allow best guidance for policy options. The paper summarizes research on behavioral decision making and calls for its application in future research in international business.

- Hunjra, A. I., Rehman, K. U., & Ali Qureshi, S. (2012). Factors affecting investment decision making of equity fund managers. *Wulfenia Journal*, *19*(10).

  Abstract:
  Traditional theories of finance assume that investors use all available information and make rational investment decision but in reality the scenario is different. Based upon the growing importance of behavioral finance the present study is an attempt to investigate the effect of behavioral factors such as heuristics, risk aversion, use of financial tools and firm level corporate governance on the decision making of equity fund managers of Pakistan. The study collected response from 327 equity fund managers of insurance companies, commercial banks, and equity investment companies applying stratified random sampling technique. The results of the study demonstrate that a positive and significant relationship exist among heuristics, use of financial tools, risk aversion, firm-level corporate governance, and investment decision making. The results further demonstrate that firm-level corporate governance plays a pivotal role and is an important factor affecting investment decision making. Equity fund managers of institutions apply heuristics and financial tools while formulating their decisions. Equity fund managers of institutions are also found to be risk averse. Regulatory authorities and stock exchanges may use the results of the study. Regulatory authorities and exchanges may also use the results to create awareness by educating investors about the importance of behavioral factor and firm-level corporate governance. It may help to increase investors' confidence.

- Khan, A. M. (1987). Assessing venture capital investments with noncompensatory behavioral decision models. Journal of Business Venturing, 2(3), 193-205.

  Abstract:
  This article examines the prospect of a decision support system for the assessment of venture capital investments. It approaches the task of developing decision models from the perspective of the venture capitalist. Thus venture capitalists have played an active role in defining the predictor variables and in providing data on their own investments. Venture capitalists (and recent research) underscore the importance of the entrepreneur in new ventures and the predictor variables selected reflect this bias.
  The literature is now replete with studies demonstrating the superiority of multiattribute actuarial models over human judgment for diverse decision environments, ranging from

medical science to finance. This class of behavioral decision models consists of the simultaneous consideration of several attributes relevant to a decision. Actuarial models of this kind can be applied to attribute and decision data based on the decision maker's judgments (i.e., expected outcomes) before the events transpire—termed judgment-based models. They can also be applied to data on past events or actual outcomes where known—termed environment-based models. Again, it needs to be emphasized that actuarial models, whether based on the decision maker's judgments or on the environment, usually outperform the decision maker. These general principles are applied here.
Among actuarial models a particular subclass of models is called noncompensatory. In these models, a low value for one attribute cannot be compensated by a high value for another attribute. As an example: In selecting a place-kicker in football, athletic skills other than kicking ability are irrelevant.
In this study, two types of noncompensatory actuarial models, conjunctive and disjunctive, are used to model both venture capitalists' judgments and the environment. Interviews with venture capitalists reveal that some place strong emphasis on one or two attributes in judging a potential investment. This type of decision-making behavior indicates a disjunctive decision process. At the same time, there can be a tendency to ensure that a prospective investment is satisfactory at a minimum the entrepreneur's tenacity/courage is a redundant variable that is sublimated in desire for success and enthusiasm/capacity for work.

Block 2: (Multidimensional) Investor Goals

Behavioral Decision Making

- Stracca, L. (2004). Behavioral finance and asset prices: Where do we stand?. Journal of Economic Psychology, 25(3), 373-405.

  Abstract:
  This paper contains a survey of the anomalies identified in the behavioral finance literature, with a particular focus on those which might affect market prices. The anomalies are grouped in five categories, namely (i) decision heuristics, (ii) emotional and visceral factors, (iii) choice bracketing, (iv) unknown preferences, and (v) reference dependence. These anomalies are discussed against the background of the assumptions normally maintained in the standard approach based on expected utility maximization, in order to highlight the difference between the mainstream and the behavioral finance approaches.

- Benartzi, S., & Thaler, R. (2007). Heuristics and biases in retirement savings behavior. Journal of Economic perspectives, 21(3), 81-104.

  Abstract:
  Standard economic theories of saving implicitly assume that households have the cognitive ability to solve the relevant optimization problem and the willpower to execute the optimal plan. Both of the implicit assumptions are suspect. Even among economists, few spend much time calculating a personal optimal savings rate. Instead, most people cope by adopting simple heuristics, or rules of thumb. In this paper, we investigate both the heuristics and the biases that emerge in the area of retirement savings. We examine the decisions employees make about whether to join a savings plan, how much to contribute, and how to invest. Saving for retirement is a difficult problem, and most employees have little training upon which to draw in making the relevant decisions. Perhaps as a result, investors are relatively passive. They are slow to join advantageous plans; they make infrequent changes; and they adopt naive diversification strategies. In short, they need all the help they can get. We discuss the possible role of interventions aiming to improve retirement decision making.

Fortunately, many effective ways to help participants are also the least costly interventions: namely, small changes in plan design, sensible default options, and opportunities to increase savings rates and rebalance portfolios automatically.

- Schwartz, H. (2010). Heuristics or rules of thumb. Behavioral Finance: Investors, Corporations and Markets, Ed. by H. Kent Baker ve John R. Nofsinger, New Jersey, John Wiley & Sons, 57-72.

Abstract:
This chapter provides an overview of heuristics, shortcuts that reduce the search necessary to find a solution to a problem. It notes that initially, studies of heuristics dealt almost exclusively with cognitive processes, but they have come to incorporate emotional factors as well. Heuristics differ from strictly rational modes of choice, endeavoring to take account of choice in real world contexts, and to categorize the deviations from traditional rational choice. The chapter deals with specific as well as general heuristics, including what have been termed fast and frugal heuristics. Attention is given to both the strengths and weaknesses of heuristics.

ESG Investing

- Brooks, C., & Oikonomou, I. (2018). The effects of environmental, social and governance disclosures and performance on firm value: A review of the literature in accounting and finance. *The British Accounting Review*, 50(1), 1-15.

***Abstract**:*
This paper not only attempts to survey the burgeoning literature on environmental, social and governance disclosures and performance and their effects on firm value, but its focus also lies on highlighting stylised observations coming from the most recent work that has not yet become part of the 'conventional wisdom' in the field. In addition, it outlines some of the crucial knowledge gaps and interesting questions that have not, as of yet, been addressed and thus outlines a potential agenda for future research on socially responsible investing. Lastly, it introduces the papers published in this special issue of the British Accounting Review.

- Xie, J., Nozawa, W., Yagi, M., Fujii, H., & Managi, S. (2019). Do environmental, social, and governance activities improve corporate financial performance?. *Business Strategy and the Environment*, 28(2), 286-300.

***Abstract**:*
This study investigated the relationship between corporate efficiency and corporate sustainability to determine whether firms concerned about environmental, social, and governance (ESG) issues can also be efficient and profitable. We applied data envelopment analysis to estimate corporate efficiency and investigated the nonlinear relationship between corporate efficiency and ESG disclosure. Evidence shows that corporate transparency regarding ESG information has a positive association with corporate efficiency at the moderate disclosure level, rather than at the high or low disclosure level. Governance information disclosure has the strongest positive linkage with corporate efficiency, followed by social and environmental information disclosure. Moreover, we explored the relationship between particular ESG activities and corporate financial performance (CFP), including corporate efficiency, return on assets, and market value. We found that most of the ESG activities reveal a nonnegative relationship with CFP. These findings may provide evidence

about voluntary corporate social responsibility strategy choices for enhancing corporate sustainability.

- Arjaliès, D. L., & Bansal, P. (2018). Beyond numbers: How investment managers accommodate societal issues in financial decisions. *Organization Studies*, 39(5-6), 691-719.

***Abstract**:*
Investment managers use financial numbers to assess the quality of their portfolios, which requires them to estimate the market value of their assetsi.e., the priced trading of such assets. Prior research has shown that investment managers tend to disregard information that does not easily integrate into financial numbers, such as environmental, social and governance (ESG) criteria. We argue that when investment managers use visuals to incarnate ESG criteria, they are more likely to accommodate societal issues in their financial decisions. We undertook a three-year ethnography of an asset management company to better understand how investment managers respond to ESG criteria. We found that fixed-income investment managers attempted to include ESG criteria in their financial models by financializing the data, so that ESG-related information could be commensurated with their existing models. Equity investment managers, on the other hand, did not financialize ESG issues, but introduced visuals, specifically emojis, to incarnate ESG issues. In this way, ESG criteria were juxtaposed against, rather than integrated into, financial criteria. In doing so, equity managers created a sense of dissonance between financial numbers and the visuals, which fostered creative friction. The visuals permitted equity managers to analyze the ESG criteria not only for their financial insights, but also for the social and environmental information that could not be financialized. We discuss the implications of these findings for prior research on financialization and calculative devices.

Financial Well-Being

- Brüggen, E. C., Hogreve, J., Holmlund, M., Kabadayi, S., & Löfgren, M. (2017). Financial well-being: A conceptualization and research agenda. *Journal of Business Research*, 79, 228-237.

***Abstract**:*
With savings rates at record lows and inadequate long-term financial planning for retirement, financial well-being has become an important topic for individuals and households as well as for societies and countries. Research on the topic, however, remains scarce and scattered across disciplines. The present paper aims to consolidate and extend knowledge on financial well-being and makes a three-fold contribution to the discussion. First, we propose a new definition based on a perceptual perspective of financial well-being and link it to an individual's current and anticipated desired living standard and financial freedom. We then develop a framework that distinguishes key elements of financial well-being; namely, interventions and financial behaviors, consequences, contextual factors, and personal factors. We then present a research agenda to guide future research on financial well-being. This work is designed to inspire researchers to continue expanding the knowledge so that financial institutions can take measures to increase financial well-being.

- Netemeyer, R. G., Warmath, D., Fernandes, D., & Lynch Jr, J. G. (2018). How am I doing? Perceived financial well-being, its potential antecedents, and its relation to overall well-being. *Journal of Consumer Research*, 45(1), 68-89.

***Abstract**:*
Though perceived financial well-being is viewed as an important topic of consumer research, the literature contains no accepted definition of this construct. Further, there has been little

systematic examination of how perceived financial well-being may affect overall well-being. Using consumer financial narratives, several large-scale surveys, and two experiments, we conceptualize perceived financial wellbeing as two related but separate constructs: 1) stress related to the management of money today (current money management stress), and 2) a sense of security in one's financial future (expected future financial security). We develop and validate measures of these constructs (web appendix A) and then demonstrate their relationship to overall well-being, controlling for other life domains and objective measures of the financial domain. Our findings demonstrate that perceived financial well-being is a key predictor of overall well-being and comparable in magnitude to the combined effect of other life domains (job satisfaction, physical health assessment, and relationship support satisfaction). Further, the relative importance of current money management stress to overall well-being varies by income groups and due to the differing antecedents of current money management stress and expected future financial security. Implications for financial well-being and education efforts are offered.

- Chu, Z., Wang, Z., Xiao, J. J., & Zhang, W. (2017). Financial literacy, portfolio choice and financial well-being. *Social indicators research*, 132(2), 799-820.

  Abstract:

  This study examined potential effects of financial literacy on household portfolio choice and investment return, an indicator of financial wellbeing. Using data from the 2014 Chinese Survey of Consumer Finance, financial literacy was measured and further categorized into basic financial literacy and advanced financial literacy. This study tested the hypothesis that financial literacy affects household choice between stock and mutual fund. The results indicated that households with higher financial literacy, especially those with higher level of advanced financial literacy tended to delegate at least part of their portfolio to experts and invest in mutual fund. However, households who were overconfident about their financial literacy tended to invest by themselves and were more likely to hold only stocks in their portfolios. The findings also indicated that households with higher financial literacy had a better chance of receiving a positive investment return, suggesting that higher financial literacy may result in a better financial outcome.

Block 3: Imperfect Information

Corporate Disclosures

- Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. Journal of accounting and economics, 31(1-3), 405-440.

  ***Abstract**:*
  Financial reporting and disclosure are potentially important means for management to communicate firm performance and governance to outside investors. We provide a framework for analyzing managers' reporting and disclosure decisions in a capital markets setting, and identify key research questions, We then review current empirical research on disclosure regulation, information intermediaries, and the determinants and economic consequences of corporate disclosure. Our survey concludes that current research has generated a number of useful insights. We identify many fundamental questions that remain unanswered, and changes in the economic environment that raise new questions for research.

- Nagar, V., Schoenfeld, J., & Wellman, L. (2019). The effect of economic policy uncertainty on investor information asymmetry and management disclosures. *Journal of Accounting and Economics*, 67(1), 36-57.

***Abstract**:*
Investor uncertainty about firm value drives investors' information collection and trading activities, as well as managers' disclosure choices. This study examines an important source of uncertainty that likely cannot be influenced by most managers and investors: uncertainty about government economic policy. We find that this uncertainty is associated with increased bid-ask spreads and decreased stock price reactions to earnings surprises. Managers respond to this uncertainty by increasing their voluntary disclosures, but these disclosures only partly mitigate the bid-ask spread increase. We conclude that government economic policy uncertainty is an important component of firms' information environments and managers' voluntary disclosure decisions.

- Li, Y., & Zhang, L. (2015). Short selling pressure, stock price behavior, and management forecast precision: Evidence from a natural experiment. *Journal of Accounting Research*, 53(1), 79-117.

***Abstract**:*
Using a natural experiment (Regulation SHO), we show that short selling pressure and consequent stock price behavior have a causal effect on managers' voluntary disclosure choices. Specifically, we find that managers respond to a positive exogenous shock to short selling pressure and price sensitivity to bad news by reducing the precision of bad news forecasts. This finding on management forecasts appears to be generalizable to other corporate disclosures. In particular, we find that, in response to increased short selling pressure, managers also reduce the readability (or increase the fuzziness) of bad news annual reports. Overall, our results suggest that maintaining the current level of stock prices is an important consideration in managers' strategic disclosure decisions.

Media and Institutional Releases

- Chen, H., De, P., Hu, Y. J., & Hwang, B. H. (2014). Wisdom of crowds: The value of stock opinions transmitted through social media. *The Review of Financial Studies*, 27(5), 1367-1403.

***Abstract**:*
Social media has become a popular venue for individuals to share the results of their own analysis on financial securities. This paper investigates the extent to which investor opinions transmitted through social media predict future stock returns and earnings surprises. We conduct textual analysis of articles published on one of the most popular social media platforms for investors in the United States. We also consider the readers perspective as inferred via commentaries written in response to these articles. We find that the views expressed in both articles and commentaries predict future stock returns and earnings surprises.

- Bartov, E., Faurel, L., & Mohanram, P. S. (2018). Can Twitter help predict firm-level earnings and stock returns?. *The Accounting Review*, 93(3), 25-57.

***Abstract**:*

Prior research has examined how companies exploit Twitter in communicating with investors, and whether Twitter activity predicts the stock market as a whole. We test whether opinions of individuals tweeted just prior to a firm's earnings announcement predict its earnings and announcement returns. Using a broad sample from 2009 to 2012, we find that the aggregate opinion from individual tweets successfully predicts a firm's forthcoming quarterly earnings and announcement returns. These results hold for tweets that convey original information, as well as tweets that disseminate existing information, and are stronger for tweets providing information directly related to firm fundamentals and stock trading. Importantly, our results hold even after controlling for concurrent information or opinion from traditional media sources, and are stronger for firms in weaker information environments. Our findings highlight the importance of considering the aggregate opinion from individual tweets when assessing a stock's future prospects and value.

- Goodell, J. W., & Huynh, T. L. D. (2020). Did Congress trade ahead? Considering the reaction of US industries to COVID-19. *Finance Research Letters*, 36, 101578.

***Abstract**:*
During the ongoing COVID-19 pandemic in the US, there has been considerable media attention regarding several US legislators who traded stocks in late January through February 2020. The concern is that these legislators traded in anticipation of COVID-19 having a major impact on the financial markets, while publicly suggesting otherwise. We consider whether these legislator trades were in a time window, and of a nature, that would be consistent with trading ahead of the market. Towards this end, we assess the reactions of US industries to sudden COVID-related news announcements, concomitantly with an analysis of levels of investor attention to COVID. Results suggest that, at an industry-level, for legislator trading to be "ahead of the market" it needed to have been done prior to February 26, and involving the 15 industries we identify as having abnormal returns, especially medical and pharmaceutical products (positive); restaurants, hotels, and motels (negative); as well as services and utilities. These criteria are met by many of the legislator trades. Our results help to both parameterize concerns about this case of legislator trading; as well as provide insight into the reactions and expectations of investors toward COVID-19.

Ambiguity in Information

- Petkova, A. P., Wadhwa, A., Yao, X., & Jain, S. (2014). Reputation and decision making under ambiguity: a study of US venture capital firms' investments in the emerging clean energy sector. Academy of Management Journal, 57(2), 422-448.

***Abstract**:*
This study examines the role of reputation on decision making under ambiguity. Drawing on social cognition and behavioral theories, we propose that a firm's reputation exerts dual pressures on its decision making under ambiguity. On the one hand, a firm's reputation increases its aspirations for future performance and promotes its engagement in risky strategies to achieve them. On the other hand, preserving the already established reputation requires a firm to deliver consistent performance over time, which promotes greater use of risk reduction strategies. Our analyses of the U.S. venture capital firms' investments in the clean energy sector from 1990 to 2008 demonstrate that while reputable firms are more likely to invest in the emerging sector, they also employ risk reduction strategies more extensively. The sector's legitimation further influences these firms' investment decisions both directly and through its interaction with firm reputation.

- Cronqvist, H., & Siegel, S. (2014). The genetics of investment biases. *Journal of Financial Economics*, 113(2), 215-234.

  ***Abstract**:*
  For a long list of investment "biases," including lack of diversification, excessive trading, and the disposition effect, we find that genetic differences explain up to 45% of the remaining variation across individual investors, after controlling for observable individual characteristics. The evidence is consistent with a view that investment biases are manifestations of innate and evolutionary ancient features of human behavior. We find that work experience with finance reduces genetic predispositions to investment biases. Finally, we find that even genetically identical investors, who grew up in the same family environment, often differ substantially in their investment behaviors due to individual-specific experiences or events.

- Nelson, S. C., & Katzenstein, P. J. (2014). Uncertainty, risk, and the financial crisis of 2008. International Organization, 68(2), 361-392.

  ***Abstract**:*
  The distinction between uncertainty and risk, originally drawn by Frank Knight and John Maynard Keynes in the 1920s, remains fundamentally important today. In the presence of uncertainty, market actors and economic policy-makers substitute other methods of decision making for rational calculationspecifically, actors' decisions are rooted in social conventions. Drawing from innovations in financial markets and deliberations among top American monetary authorities in the years before the 2008 crisis, we show how economic actors and policy-makers live in worlds of risk and uncertainty. In that world social conventions deserve much greater attention than conventional IPE analyses accords them. Such conventions must be part of our toolkit as we seek to understand the preferences and strategies of economic and political actors.

Block 4: Limitations of Human Cognition

Risk Assessments

- Wang, X.L., Shi, K. and Fan, H.X. (2006), “Psychological mechanisms of investors in Chinese stock markets”, Journal of Economic Psychology, Vol. 27 No. 6, pp. 762-780.

  Abstract:
  The study investigated the psychological mechanisms of risky investment behaviors in Chinese Stock Markets. A 42-item questionnaire was developed and distributed to 1547 individual investors recruited by stratified random sampling from Nan Fang Bond Company. A speculative orientation and a low level of risk perception among Chinese investors were revealed. The results also showed that investors were deficient in investment knowledge and skills. Structural equation modeling was used to generate a risk perception-mediated model for investment behaviors. We found that information from organizational/institutional level can precipitate low risk perception and policy-oriented speculation of investors, which could be accounted for by the collectivistic culture in China and may not be beneficial to risk management in Chinese Stock Markets. Suggestions were made regarding the further development of stock markets in China.

- Sachse, K., Jungermann, H. and Belting, J.M. (2012), “Investment risk–the perspective of individual investors”, Journal of Economic Psychology, Vol. 33 No. 3, pp. 437-447.

Abstract:
The aim of the research presented in this paper is to investigate the perceived investment risk of lay investors. Two surveys were conducted to examine the financial risk perception of German individual investors (N = 119 in study 1; N = 171 in study 2). Participants were asked to rate the risk and several aspects of different types of investment products (e.g. shares and bank savings books).
Study 1 analyzed the specificity of risk perception of various common investment products. Separate regression analyses showed only minor differences in the composition of the risk perception models between the types of investment. A factor analysis revealed two dimensions of perceived investment risk, where one factor consists of aspects of loss and variability (factor risk), while the other comprises aspects of transparency and liquidity (factor manageability). The dimensions were used to classify the types of investment with regard to perceived risk.

Study 2 focused on effects of individual characteristics on financial risk perception. Only financial literacy (measured by means of a knowledge test) proved to be relevant in a regression analysis where perceived investment risk was explained by using gender, age, investment experience, and financial literacy as predictors.
Implications for an appropriate investment risk communication in financial consultancy were derived from the results.

- Subrahmanyam, A. (2008), "Behavioural finance: a review and synthesis", European Financial Management, Vol. 0, pp. 12-29

Abstract:
I provide a synthesis of the Behavioural finance literature over the past two decades. I review the literature in three parts, namely, (i) empirical and theoretical analyses of patterns in the cross-section of average stock returns, (ii) studies on trading activity, and (iii) research in corporate finance. Behavioural finance is an exciting new field because it presents a number of normative implications for both individual investors and CEOs. The papers reviewed here allow us to learn more about these specific implications.

Financial Expertise

- Soufian, M., Forbes, W. and Hudson, R. (2014), "Adapting financial rationality: is a new paradigm emerging?", Critical Perspectives on Accounting, Vol. 25 No. 8, pp. 724-742.

Abstract:
We discuss the implications of an alternative to the efficient market hypothesis (EMH) the adaptive market hypothesis (AMH). The AMH advances a theoretical basis for a new financial paradigm which can better model such phenomena as the recent financial crisis. The AMH regards the financial market order as evolving, tentative and defined by creative destruction in which trading strategies are introduced, mutate to survive, or face abandonment. The concept of investor rationality is less helpful than the distinction between investment strategies which are more or less well adapted to the prevailing market environment. We outline how a more systematic and grounded basis for behavioural finance can be developed in line with the latter approach. Based on this we develop testable hypotheses allowing the AMH to be distinguished from the EMH. Finally, we discuss how the AMH can aid our understanding of important issues in finance. A central insight is that in the survival of richest, as opposed to fittest, implied by the AMH there is much room for misallocation of resources as price and value uncouple. In this shifting financial market order the regulatory State features as a further market in which the vote market verifies or disrupts market conditions.

- Van Rooij, M., Lusardi, A., & Alessie, R. (2011). Financial literacy and stock market participation. Journal of Financial Economics, 101(2), 449-472.

Abstract:
We have devised two special modules for De Nederlandsche Bank (DNB) Household Survey to measure financial literacy and study its relationship to stock market participation. We find that the majority of respondents display basic financial knowledge and have some grasp of concepts such as interest compounding, inflation, and the time value of money. However, very few go beyond these basic concepts; many respondents do not know the difference between bonds and stocks, the relationship between bond prices and interest rates, and the basics of risk diversification. Most importantly, we find that financial literacy affects financial decision-making: Those with low literacy are much less likely to invest in stocks.

- Hayat, A. and Anwar, M. (2016), “Impact of behavioral biases on investment decision; moderating role of financial literacy”, SSRN Electronic Journal, pp. 1-14, available at: https://doi.org/10.2139/ssrn.2842502

Abstract:
This study focus to check the influence of behavioral biases in investment decision making with moderating role of financial literacy in Pakistan. Theories in traditional finance consider that the individual investor is rational because he makes all decision on the bases of all available information to maximize his wealth. On the other hand behavioral finance is totally opposed this theory and consider that the individual have some psychological impact toward his investment.

A simple survey questionnaire is used to collect data from 158 investors trading in Pakistan Stock Market. The results show that disposition effect, overconfidence and herding have significant positive impact on investment decision. Financial literacy has negative moderating role in herding bias and positive moderating role of overconfidence bias in investment decision. Results conclude that active investors show more overconfidence bias while passive investors show more herding bias. This study will help financial advisors to better advice their clients. The one more way to overcome these biases may be the training of investor and education. Research culture must be promoted and investor must have ability of technical analysis.

Psychology and Emotions

- Muradoglu, G., & Harvey, N. (2012). Behavioural finance: the role of psychological factors in financial decisions. Review of Behavioural Finance, 4(2), 68-80.

Abstract:
Purpose - The purpose of this paper is to introduce the special issue of Review of Behavioural Finance entitled “Behavioural finance: the role of psychological factors in financial decisions”.
Design/methodology/approach - The authors present a brief outline of the origins of behavioural economics; discuss the role that experimental and survey methods play in the study of financial behaviour; summarise the contributions made by the papers in the issue and consider their implications; and assess why research in behavioural finance is important for finance researchers and practitioners.
Findings - The primary input to behavioural finance has been from experimental psychology. Methods developed within sociology such as surveys, interviews, participant observation,

focus groups have not had the same degree of influence. Typically, these methods are even more expensive than experimental ones and so costs of using them may be one reason for their lack of impact. However, it is also possible that the training of finance academics leads them to prefer methodologies that permit greater control and a clearer causal interpretation.
Originality/value - The paper shows that interdisciplinary research is becoming more widespread and it is likely that greater collaboration between finance and sociology will develop in the future.

- Wolf, E. (2005), Why the House Always Wins: A Behavioral Perspective on Investor Trading in the Stock Market?, available at SSRN: https://ssrn.com/abstract=2026577

Abstract:
Why do people buy and sell stocks? To make money, of course. However, greed is not the only reason people seek to accumulate and attain wealth. Some people want personal comfort, security, or freedom. It seems simple enough. Then, why do so many people buy high and sell low? Why do some people buy stock, but never open their account statements? Why do some people stay up all night in "after hours" trading obsessing over the same ticker symbol? Greed? Fear? While "greed" and "fear" are common (and often correct) responses to these questions, the answers go beyond these base emotions, and are often much more complicated.
This paper explores the motivations and rationales underlying the decisions of individual investors in the stock market. My purpose here is to examine widespread beliefs about trading behavior based on theories of efficient market hypothesis, risk aversion, anticipatory regret, realization, rational choice, and the legal implications involved in these theories. Finally, instead of advocating avoiding investing in its entirety, I will explore strategies to minimize investment risk. My purpose here is not that we should bring an end the use of our capital markets as a valid wealth-creating and wealth-circulating function of our entrepreneurial-oriented economy. However, if investors and securities lawyers understand the biases and flaws inherent in investor decision-making, then the trading activity that causes many of the suits and complaints against brokers, corporations, and institutions can be reduced or eliminated.

- Duxbury, D. (2015). Behavioral finance: insights from experiments II: biases, moods and emotions. Review of Behavioral Finance, 7(2), 151-175.

Abstract:
Purpose - The purpose of this second of two companion papers is to further review the insights provided by experimental studies examining financial decisions and market behavior.
Design/methodology/approach - Focus is directed on those studies examining explicitly, or with direct implications for, the most robustly identified phenomena or stylized facts observed in behavioral finance. The themes for this second paper are biases, moods and emotions.
Findings - Experiments complement the findings from empirical studies in behavioral finance by avoiding some of the limitations or assumptions implicit in such studies.
Originality/value - The author synthesizes the valuable contribution made by experimental studies in extending the knowledge of how biases, moods and emotions influence the financial behavior of individuals, highlighting the role of experimental studies in policy design and intervention.

Personality

- Kubilay, B., & Bayrakdaroglu, A. (2016). An empirical research on investor biases in financial decision-making, financial risk tolerance and financial personality. International Journal of Financial Research, 7(2), 171-182.

  Abstract
  In financial investment decisions to be made by individual investors, it is highly important that they should be aware of the possibility of facing with psychological biases by knowing their own personality traits and should consider their own financial risk tolerances. In this study, the relation between personal traits, psychological biases and financial risk tolerance of inverstors were tested through a questionnaire. Sample of the study were selected among individual inverstor who live in İstanbul and operate in financial markets. The hypotheses made within the scope of the study were tested by chi-square analysis and logistic regression analysis. As a result of the hypotheses testing, it was concluded that there was a significant relation between the personality traits of investors and the psychological
  biases they faced and that the personality traits of investors affected their financial risk tolerances.

- Rizvi, S., & Fatima, A. (2015). Behavioral finance: A study of correlation between personality traits with the investment patterns in the stock market. In Managing in recovering markets (pp. 143-155). Springer, New Delhi.

  Abstract:
  Conventional theories are based on the assumption that investors are rational beings. All their decisions are logical and judgments fair and rational. Based on this assumption, they have derived all their financial models. The capital asset pricing model assumes that investors are rational beings and they have the same expectations. This assumption contradicts behavioral theories, which assume that investors under uncertainty behave in a not-so-rational or irrational manner. The phenomenon of behavioral finance was noticed post-2000, when IT bubble was built up and finally busted. During this time period, investors showed herd mentality, and they preferably invested in companies having ".com" attached to them. The market prices of IT companies rose much above their intrinsic value or fair value. It also happened in the subprime crisis when real estate prices in the USA started rising much above their fair value. After a certain time period, the bubble collapsed leading to the fall of stock prices, wiping off the hard-earned money of investors. The history of irrational behavior can be traced to the sixteenth century in Holland. The tulip bulbs were imported to Holland from Constantinople. These bulbs became very popular with Dutch elite class. Trading of these bulbs started on major stock exchanges in Europe. The prices rose to great heights and people started trading in bulbs in a big way. After a certain time period, people started selling these bulbs and the prices began falling. People started defaulting on their tulip contracts. This bubble finally collapsed leading to huge losses. Therefore, it was realized that there was something which these conventional models were unable to explain. These softer issues were never addressed and recognized by traditional theorist before. It was Kahnman and Smith who for the first time brought insights from behavioral sciences into the field of finance and economics. They stated that under uncertainty investors do not behave ideally but rather behave normally. The present paper describes the relationship between personality traits and investment pattern of investors. A survey of about 100 investors, who have invested in the stock market, has been conducted. The investors have been classified into various demographic profiles such as gender, age group, income level, number of dependents, profession, and marital status. The data for the study has been collected from both primary and secondary sources. Convenience sampling method is used

to select the sample of 100 investors. The Big Five personality test has been incorporated to assess the personality of investors, and its correlation with their investment behavior is being evaluated in the study using various statistical tools. The paper attempts to rate the personality of investors on parameters such as extraversion, agreeableness, conscientiousness, neuroticism, and openness. The study relates the personality of investors with stock market investment, type, objective, factors influencing the investments, and so on. The findings can be useful for portfolio managers, fund managers, and wealth managers to understand the mindset and behavior of their clients. This will facilitate them to construct a portfolio which may be less than optimal and which can be adhered to by the advisor and the client amicably. This is especially significant in the context of managing portfolios in these recovering markets post-recession which the global economies have witnessed in recent times. The concept of behavioral finance is one such emerging area which if incorporated well in the hard-core finance, based on fundamentals, can yield dividends for portfolio managers and equity analyst and also on the wealth generation of the overall economies emerging in the aftermath of the recession.

Block 5: Biases in Information Processing

Decision-Making Biases

- Kafayat, A. (2014), “Interrelationship of biases: effect investment decisions ultimately”, Theoretical and Applied Economics, Vol. 11 No. 6, pp. 85-110.

  Abstract:
  The purpose of this study is to examine if investors of Islamabad Stock Exchange are indicating tendencies of irrational behavior when exposed to certain psychological dilemmas related to the financial world and what are interrelationships among these dilemmas, This study deals with three dilemmas i.e. self-attribution bias, overconfidence bias and overoptimism bias. The main purpose of the study is to empirically prove the relationship among the biases and their effect on the rational decision making of an investor. For this study quantitative method is used and a survey is conducted. For measuring the behavioral impact on decision making, Structural Equation Modeling is used on the collected empirical data to obtain the results. The findings of this study can be useful for individual investors, financial brokers, financial manager and other financial decision makers to improve their cognitive thinking process and make more rational decisions.

- Suresh, A. (2013), “Understanding behavioral finance through biases and traits of trader vis À-vis investor”, Journal of Finance, Accounting and Management, Vol. 4 No. 2, pp. 11-25.

  Abstract:
  Behavioral finance said to be a field of finance that proposes psychology-based theories to explain stock market anomalies. Within behavioral finance, it assumed that the information structure and the characteristics of market participants systematically influence individuals’ investment decisions as well as market outcomes. When it comes to investing, trading or making financial decisions, an individual is not always as rational as he thinks he is. Several studies in the field of Behavioural Finance have shown how individual emotions and biases cloud over rational thinking and decision-making. Some emotional and cognitive biases such as loss aversion (expecting to get high returns with low risk), herding (imitating others decisions), media response (overreacting to headlines), and timing the market, etc. impact the overall performance of ones investments. This paper on understanding behavioral finance through biases and traits of trader vis-à-vis investor attempts to fill the void and explore the relationship among these factors. The concluding observation is that

understanding various behavioral key biases and traits can help individual take sound financial decisions and in turn make him a better trader/investor.

- Mallick, L.R. (2015), "Biases in behavioural finance: a review of literature", Journal of Advances in Business Management, Vol. 1 No. 3, pp. 100-104.

Abstract:
Purpose -The purpose of this paper is to study and describe several biases in investment decision-making through the review of research articles in the area of behavioral finance. It also includes some of the analytical and foundational work and how this has progressed over the years to make behavioral finance an established and specific area of study. The study includes behavioral patterns of individual investors, institutional investors and financial advisors.
Design/methodology/approach - The research papers are analyzed on the basis of searching the keywords related to behavioral finance on various published journals, conference proceedings, working papers and some other published books. These papers are collected over a period of year's right from the time when the most introductory paper was published (1979) that contributed this area a basic foundation till the most recent papers (2016). These articles are segregated into biases wise, year-wise, country-wise and author wise. All research tools that have been used by authors related to primary and secondary data have also been included into our table.
Findings - A new era of understanding of human emotions, behavior and sentiments has been started which was earlier dominated by the study of financial markets. Moreover, this area is not only attracting the, attention of academicians but also of the various corporates, financial intermediaries and entrepreneurs thus adding to its importance. The study is more inclined toward the study of individual and institutional investors and financial advisors' investors but the behavior of intermediaries through which some of them invest should be focused upon, narrowing down population into various variables, targeting the expanding economies to reap some unexplained theories. This study has identified 17 different types of biases and also summarized in the form of tables.
Research limitations/implications - The study is based on some of the most recent findings to have a quick overview of the latest work carried out in this area. So far very few extensive review papers have been published to highlight the research work in the area of behavioral finance. This study will be helpful for new researches in this field and to identify the areas where possible work can be done.
Practical implications - Practical implication of the research is that companies, policymakers and issuers of securities can watch out of investors' interest before issuing securities into the market.
Social implications - Under the Social Implication, investors can recognize several behavioral biases, take sound investment decisions and can also minimize their risk.
Originality/value - The essence of this paper is the identification of 17 types of biases and the literature related to them. The study is based on both, the literature on investment decisions and the biases in investment decision-making. Such study is less prevalent in the developing country like India. This paper does not only focus on the basic principles of behavioral finance but also explain some emerging concepts and theories of behavioral finance. Thus, the paper generates interest in the readers to find the solutions to minimize the effect of biases in decision-making.

Sentiments

- Da, Z., Engelberg, J., & Gao, P. (2015). The sum of all FEARS investor sentiment and asset prices. *The Review of Financial Studies*, *28*(1), 1-32.
Abstract*:*

We use daily Internet search volume from millions of households to reveal market-level sentiment. By aggregating the volume of queries related to household concerns (e.g., "recession," "unemployment," and "bankruptcy"), we construct a Financial and Economic Attitudes Revealed by Search (FEARS) index as a new measure of investor sentiment. Between 2004 and 2011, we find FEARS (i) predict short-term return reversals, (ii) predict temporary increases in volatility, and (iii) predict mutual fund flows out of equity funds and into bond funds. Taken together, the results are broadly consistent with theories of investor sentiment.

- Stambaugh, R. F., Yu, J., & Yuan, Y. (2012). The short of it: Investor sentiment and anomalies. Journal of Financial Economics, 104(2), 288-302.

  ***Abstract**:*
  This study explores the role of investor sentiment in a broad set of anomalies in cross-sectional stock returns. We consider a setting in which the presence of market-wide sentiment is combined with the argument that overpricing should be more prevalent than underpricing, due to short-sale impediments. Long-short strategies that exploit the anomalies exhibit profits consistent with this setting. First, each anomaly is stronger (its long-short strategy is more profitable) following high levels of sentiment. Second, the short leg of each strategy is more profitable following high sentiment. Finally, sentiment exhibits no relation to returns on the long legs of the strategies.

- Tetlock, P. C. (2007). Giving content to investor sentiment: The role of media in the stock market. *The Journal of finance*, *62*(3), 1139-1168.

  ***Abstract**:*
  I quantitatively measure the interactions between the media and the stock market using daily content from a popular Wall Street Journal column. I find that high media pessimism predicts downward pressure on market prices followed by a reversion to fundamentals, and unusually high or low pessimism predicts high market trading volume. These and similar results are consistent with theoretical models of noise and liquidity traders, and are inconsistent with theories of media content as a proxy for new information about fundamental asset values, as a proxy for market volatility, or as a sideshow with no relationship to asset markets.

External Influences, e.g. Herding

- Demirer, R. and Kutan, A.M. (2006), "Does herding behavior exist in Chinese stock markets?", Journal of International Financial Markets, Institutions and Money, Vol. 16 No. 2, pp. 123-142

  Abstract:
  This paper examines the presence of herd formation in Chinese markets using both individual firm- and sector-level data. We analyze the behavior of return dispersions during periods of unusually large upward and downward changes in the market index. We also distinguish between the Shanghai and Shenzhen stock exchanges at the sector-level. Our findings indicate that herd formation does not exist in Chinese markets. We find that equity return dispersions are significantly higher during periods of large changes in the aggregate market index. However, comparing return dispersions for upside and downside movements of the market, we observe that return dispersions during extreme downside movements of the market are much lower than those for upside movements, indicating that stock returns behave more similarly during down markets. The findings support rational asset pricing

models and market efficiency. Policy implications of the results for policymakers are discussed.

- Casavecchia, L. (2016), “Fund managers’ herding and mutual fund governance”, International Journal of Managerial Finance, Vol. 12 No. 3, pp. 242-276

  Abstract:
  Purpose - The purpose of this paper is to identify the implications of managerial herding for investors’ wealth and capital allocation across funds, and the critical role played by fund governance in monitoring herding incentives.
  Design/methodology/approach - The author adopt the fund herding measure first proposed by Grinblatt et al. (1995) over the long sample period 1992-2007. Univariate and multivariate tests are then constructed to examine the relationship between managerial herding, performance, and investors’ sensitivities. OLS, fixed-effect panel data models are utilized to conduct the tests.
  Findings - The author show that managers that do not herd have above-average managerial skills, trade less on noise, and significantly outperform herding managers. The author also illustrate that although fund herding could be used as a signal of managerial quality, underperforming herding funds manage to survive in equilibrium, indicating that investor flows do not adequately respond to the information content of a persistent herding behavior. Finally, the author demonstrate that better governance in the form of stronger managerial incentive schemes constitutes a significant deterrent against detrimental herding strategies, representing an effective monitoring device of the response of fund managers to poor flow-performance sensitivity.
  Originality/value - The paper provides original evidence on the efficacy of external and internal governance in deterring wealth-reducing herding strategies. The author document that where more effective managerial incentives schemes are put in place by the management companies, fund managers are more likely to be better informed, resulting in fewer incentives to mimic the trading decisions of their peers.

Block 6: Execution of investments

Nudging & other instruments to limit the effects of biases

- Benartzi, S., & Thaler, R. H. (2013). Behavioral economics and the retirement savings crisis. Science, 339(6124), 1152-1153.

  Beginning of the article (no abstract)*:*
  Many countries are facing a retirement savings crisis. In the United States, for example, the fraction of workers at risk of having inadequate funds to maintain their lifestyle through retirement is estimated to have increased from 31% to 53% from 1983 to 2010 (1). Roughly half of U.S. employees (78 million) have no access to retirement plans at their workplace (2). Fortunately, there are solutions to these problems. We simply have to change the choice architecture of retirement plans by utilizing the findings of behavioral economics research (3) and make such plans available to all workers. We describe a large-scale field demonstration of the potential impact of such research-based changes in how we save.

- Pompian, M. M. (2012). Behavioral finance and investor types: managing behavior to make better investment decisions. John Wiley & Sons.

  Beginning Preface (Book):

Over the past 20-plus years of working in the investment advisory business,I have been lucky enough to establish and build satisfying relationshipswith many different kinds of people. When I say "different," I mean in termsof temperament, occupation, economic circumstances, social strata, gender,and other factors. I've learned that human psychology is complex (big sur-prise!) and that people form their attitudes and habits in multi-faceted ways;attitudes and habits about everything from eating, to approaches to working,to interpersonal relationships and—you guessed it—money and investing areall part of the intricate web of the human mind. When working with some-thing as important as a person's money, it is extremely helpful to understandwhat behaviors might be affecting their decision making processes.These decisions are based on two basic psychological ideas: emotionsand cognitions. Emotions generally have to do with how people feel whilecognitions have to do with how people think. At first blush, this distinctionmay not appear overly helpful, but it is. It provides a framework for under-standing how people think and act in relation to their money. The book willcover this emotional-cognitive idea in due course. But first, an introductionto the overall thinking behind the book is in order.

- Nenkov, G.Y., Inman, J.J., Hulland, J. and Morrin, M. (2009), "The impact of outcome elaboration on susceptibility to contextual and presentation biases", Journal of Marketing Research (JMR), Vol. 46 No. 6, pp. 764-776.

  Abstract:
  The authors examine an important anomaly in investment behavior—namely, the tendency to fall prey to the effects of contextual and presentation biases, which emerge when people make different decisions as a function of how information is presented to them. They also identify an important factor that moderates these effects. The results from four studies show that investors with a stronger tendency to engage in predecision outcome elaboration are less susceptible to various contextual and presentation biases and are more likely to make consistent investment choices. Furthermore, the authors find that encouraging predecision elaboration on both the potential benefits and the potential risks of investing helps investors who tend not to engage in such elaboration become less influenced by peripheral cues, such as information framing and presentation mode. The findings offer implications for decision research and for the design, presentation, and communication of financial products.

Institutional Investing Behavior

- Brown, L. D., Call, A. C., Clement, M. B., & Sharp, N. Y. (2015). Inside the "black box" of sell-side financial analysts. Journal of Accounting Research, 53(1), 1-47.

  ***Abstract**:*
  Our objective is to penetrate the black box of sell-side financial analysts by providing new insights into the inputs analysts use and the incentives they face. We survey 365 analysts and conduct 18 follow-up interviews covering a wide range of topics, including the inputs to analysts' earnings forecasts and stock recommendations, the value of their industry knowledge, the determinants of their compensation, the career benefits of Institutional Investor All-Star status, and the factors they consider indicative of high-quality earnings. One important finding is that private communication with management is a more useful input to analysts' earnings forecasts and stock recommendations than their own primary research, recent earnings performance, and recent 10-K and 10-Q reports. Another notable finding is that issuing earnings forecasts and stock recommendations that are well below the consensus often leads to an increase in analysts' credibility with their investing clients. We conduct cross-sectional analyses that highlight the impact of analyst and brokerage characteristics on analysts' inputs and incentives. Our findings are relevant to investors, managers, analysts, and academic researchers.

- Ben-Rephael, A., Da, Z., & Israelsen, R. D. (2017). It depends on where you search: Institutional investor attention and underreaction to news. *The Review of Financial Studies*, 30(9), 3009-3047.

  ***Abstract**:*
  We propose a direct measure of abnormal institutional investor attention (AIA) using news searching and news reading activity for specific stocks on Bloomberg terminals. AIA is highly correlated with institutional trading measures and related to, but different from, other investor attention proxies. Contrasting AIA with retail attention measured by Google search activity, we find that institutional attention responds more quickly to major news events, leads retail attention, and facilitates permanent price adjustment. The well-documented price drifts following both earnings announcements and analyst recommendation changes are driven by announcements to which institutional investors fail to pay sufficient attention.

- McCahery, J. A., Sautner, Z., & Starks, L. T. (2016). Behind the scenes: The corporate governance preferences of institutional investors. The Journal of Finance, 71(6), 2905-2932.

  ***Abstract**:*
  We survey institutional investors to better understand their role in the corporate governance of firms. Consistent with a number of theories, we document widespread behind-the-scenes intervention as well as governance-motivated exit. These governance mechanisms are viewed as complementary devices, with intervention typically occurring prior to a potential exit. We further find that long-term investors and investors that are less concerned about stock liquidity intervene more intensively. Finally, we find that most investors use proxy advisors and believe that the information provided by such advisors improves their own voting decisions.

Cross-country Comparisons of Investor Behavior

- Covrig, V., Lau, S. T., & Ng, L. (2006). Do domestic and foreign fund managers have similar preferences for stock characteristics? A cross-country analysis. Journal of International Business Studies, 37(3), 407-429.

  ***Abstract**:*
  Using a new unique data set on mutual fund stockholdings, we identify several interesting similarities and differences in the stock preferences of domestic and foreign fund managers from 11 developed countries. Results show that both groups of managers prefer stocks with high return on equity, large turnover, and low return variability, and that they also exhibit differential investment behavior. Domestic managers also favor firms that pay large dividends, have low financial distress and high growth potential, whereas foreign managers prefer to invest in corporations that are globally well known. The demand for globally visible stocks by foreign managers is especially strong when their fund mandate is to diversify globally or across regions, and is weakened when their stock holdings are concentrated mainly in a specific local market. The results also show no difference in the stock preferences of American-, European- and Asian-based funds. In general, our overall evidence suggests that the differential mandates of fund managers and hence the geographic allocations of their fund investments influence their stock preferences, but not the geographic location of the managers.

- Döring, S., Drobetz, W., El Ghoul, S., Guedhami, O., & Schröder, H. (2021). Cross-country determinants of institutional investors' investment horizons. Finance Research Letters, 39, 101641.

  ***Abstract**:*
  Using a large dataset of firms from 35 countries, we study the country-level determinants of institutional investors' investment horizons. We show that an equity investor-friendly institutional environment is more important for long-term investors, while short-term investors seem to be less concerned about the quality of the financial and legal environment. Beyond the financial and legal structure, the cultural environment and economic policy uncertainty in a country are other important determinants of investor horizons. These findings improve our understanding of cross-country differences in the corporate governance role, i.e., engagement vs. exit, of institutional investors.

- Williams, G. (2007). Some determinants of the socially responsible investment decision: A cross-country study. Journal of Behavioral Finance, 8(1), 43-57.

  ***Abstract**:*
  This paper develops a general model of investor choice to analyze socially responsible investment (SRI). Drawing on data from a large survey of investors across five countries, we show that SRI may be driven more by investor attitudes toward the social aims of firms rather than by financial returns. We also show that investors who are concerned about social issues as consumers appear to extend this behavior into their portfolio strategies. We find little evidence that demographic factors affect SRI, but some indirect evidence that market context in terms of institutional ownership and the regulatory environment may play a role.

Block 7: Consequences

Portfolio analysis and formation

- Hoffmann, A.O.I., Shefrin, H.M. and Pennings, J.M.E. (2010), "Behavioral portfolio analysis of individual investors", SSRN Electronic Journal, pp. 1-45, available at: https://doi.org/10.2139/ssrn.1629786

  Abstract:
  Purpose - The purpose of this paper is to study and describe several biases in investment decision-making through the review of research articles in the area of behavioral finance. It also includes some of the analytical and foundational work and how this has progressed over the years to make behavioral finance an established and specific area of study. The study includes behavioral patterns of individual investors, institutional investors and financial advisors.
  Design/methodology/approach - The research papers are analyzed on the basis of searching the keywords related to behavioral finance on various published journals, conference proceedings, working papers and some other published books. These papers are collected over a period of year's right from the time when the most introductory paper was published (1979) that contributed this area a basic foundation till the most recent papers (2016). These articles are segregated into biases wise, year-wise, country-wise and author wise. All research tools that have been used by authors related to primary and secondary data have also been included into our table.
  Findings - A new era of understanding of human emotions, behavior and sentiments has been started which was earlier dominated by the study of financial markets. Moreover, this area is not only attracting the, attention of academicians but also of the various corporates,

financial intermediaries and entrepreneurs thus adding to its importance. The study is more inclined toward the study of individual and institutional investors and financial advisors' investors but the behavior of intermediaries through which some of them invest should be focused upon, narrowing down population into various variables, targeting the expanding economies to reap some unexplained theories. This study has identified 17 different types of biases and also summarized in the form of tables.
Research limitations/implications - The study is based on some of the most recent findings to have a quick overview of the latest work carried out in this area. So far very few extensive review papers have been published to highlight the research work in the area of behavioral finance. This study will be helpful for new researches in this field and to identify the areas where possible work can be done.
Practical implications - Practical implication of the research is that companies, policymakers and issuers of securities can watch out of investors' interest before issuing securities into the market.
Social implications - Under the Social Implication, investors can recognize several behavioral biases, take sound investment decisions and can also minimize their risk.
Originality/value - The essence of this paper is the identification of 17 types of biases and the literature related to them. The study is based on both, the literature on investment decisions and the biases in investment decision-making. Such study is less prevalent in the developing country like India. This paper does not only focus on the basic principles of behavioral finance but also explain some emerging concepts and theories of behavioral finance. Thus, the paper generates interest in the readers to find the solutions to minimize the effect of biases in decision-making.

- Daly, K. and Vo, X.V. (2013), "The determinants of home bias puzzle in equity portfolio investment in Australia", International Review of Financial Analysis, Vol. 27, pp. 34-42.

Abstract:
Despite the well documented gains from international diversification, investors continue to show a strong preference for investing in domestic assets, a phenomenon referred to in the literature as 'home bias'. This bias comes at a price — a higher cost of capital for businesses. We estimate the share of foreign equity in a typical Australian equity portfolio to be approximately 17% while the standard portfolio theory suggests that the proportion ought to be in the order of 98%. Applying these proportions to the typical Australian portfolio would cause Australian borrowing costs to fall by approximately two percentage points. This paper provides a detailed analysis of the drivers of home bias from the perspective of an Australian investor. The results indicate that the typical Australian investor undervalues the benefits of international diversification by investing a proportionally larger share of their equity in domestic stocks relative to overseas markets. Evidence from our research indicates that trade, governance, market size, cross-border capital controls and transaction costs play a positive and statistically significant role in influencing Australian investor's home bias.

Designing Investment Products

- Pompian, M. M., & Longo, J. M. (2004). A new paradigm for practical application of behavioral finance: creating investment programs based on personality type and gender to produce better investment outcomes. The Journal of Wealth Management, 7(2), 9-15.

Abstract:
The authors believe that the next phase in the practical application of behavioral finance is to correlate established investor biases with the psychographic and gender profiles of specific investors. They ask, "Are certain personality types or genders susceptible to biases

identified in the behavioral finance literature? If so, can this information be helpful to investors and advisors?" Their study examines the responses of 100 investors given a detailed Myers-Briggs Type Indicator® personality test and a questionnaire designed to reveal investor biases. They find that personality types and genders are differentially susceptible to numerous investor biases; accordingly, they introduce a new paradigm of practical application of behavioral finance that leverages their findings.

- Dierkes, M., Erner, C., & Zeisberger, S. (2010). Investment horizon and the attractiveness of investment strategies: A behavioral approach. Journal of Banking & Finance, 34(5), 1032-1046.

  Abstract:
  We analyze the attractiveness of investment strategies over a variety of investment horizons from the viewpoint of an investor with preferences described by Cumulative Prospect Theory (CPT), currently the most prominent descriptive theory for decision making under uncertainty. A bootstrap technique is applied using historical return data of 1926–2008. To allow for variety in investors' preferences, we conduct several sensitivity analyses and further provide robustness checks for the results. In addition, we analyze the attractiveness of the investment strategies based on a set of experimentally elicited preference parameters. Our study reveals that strategy attractiveness substantially depends on the investment horizon. While for almost every preference parameter combination a bond strategy is preferred for the short run, stocks show an outperformance for longer horizons. Portfolio insurance turns out to be attractive for almost every investment horizon. Interestingly, we find probability weighting to be a driving factor for insurance strategies' attractiveness.

- Pompian, M. M. (2011). Behavioral finance and wealth management: how to build investment strategies that account for investor biases (Vol. 667). John Wiley & Sons.

  Preface (Book):
  If successful, this book will change your idea about what an optimal investment portfolio is. It is intended to be a guide both to understanding irrational investor behavior and to creating individual investors' portfolios that account for these irrational behaviors. In this book, an optimal portfolio lies on the efficient frontier, but it may move up or down that frontier depending on the individual needs and preferences of each investor. When applying behavior finance to real-world investment programs, an optimal portfolio is one with which an investor can comfortably live, so that he or she has the ability to adhere to his or her investment program, while at the same time reach long-term financial goals. Given the run-up in stock prices in the late 1990s and the subsequent popping of the technology bubble, understanding irrational investor behaviour is as important as it has ever been. This is true not only for the markets in general but most especially for individual investors. This book will be used primarily by financial advisors, but it can also be effectively used by sophisticated individual investors who wish to become more introspective about their own behaviors and to truly try to understand how to create a portfolio that works for them. The book is not intended to sit on the polished mahogany bookcases of successful advisors as a showpiece: It is a guidebook to be used and implemented in the pursuit of building better portfolios. The reality of today's advisor-investor relationship demands better understanding of individual investors' behavioral biases and an awareness of these biases when structuring investment portfolios. Advisors need to focus more acutely on why their clients make the decisions the do and whether behaviors need to be modified or adapted to. If advisors can successfully accomplish this difficult task, the relationship will be strengthened considerably, and advisors can enjoy the loyalty of clients who end the search

for a new advisor. In the past 250 years, many schools of economic and social thought have been developed, some of which have come and gone, while others are still very relevant today. We will explore some of these ideas to give some perspective on where behavioral finance is today. In the past 25 years, the interest in behavioral finance as a discipline has not only emerged but rather exploded onto the scene, with many articles written by very prestigious authors in prestigious publications. We will review some of the key people who have shaped the current body of behavioural finance thinking and review work done by them. And then the intent is to take the study of behavioral finance to another level: developing a common understanding (definition) of behavioral biases in terms that advisors and investors can understand and demonstrating how biases are to be used in practice through the use of case studies—a "how-to" of behavioural finance. We will also explore some of the new frontiers of behavioural finance, things not even discussed by today's advisors that may be common knowledge in 25 years.

Fostering ESG (possible focus on ESG scores)

- Chen, M., & Mussalli, G. (2020). An integrated approach to quantitative ESG investing. The Journal of Portfolio Management, 46(3), 65-74.

  Abstract:
  ESG investing is an area of active interest for both the investment and academic communities. Despite the intense interest, there currently is no agreed upon definition of ESG investing, or how to best build investment portfolios that incorporate both return and sustainability dimensions. (Both are important for sustainability-minded investors.) In this article, the authors categorize the broad types of ESG investing currently in the market and introduce an ESG investment framework. This results in a portfolio that optimally combines the dual objectives of alpha and sustainability outperformance.

- Hübel, B., & Scholz, H. (2020). Integrating sustainability risks in asset management: The role of ESG exposures and ESG ratings. Journal of Asset Management, 21(1), 52-69.

  Abstract:
  The rising sustainability awareness among regulators, consumers and investors results in major sustainability risks of firms. We construct three ESG risk factors (Environmental, Social and Governance) to quantify the ESG risk exposures of firms. Taking these factors into account significantly enhances the explanatory power of standard asset pricing models. We find that portfolios with pronounced ESG risk exposures exhibit substantially higher risks, but investors can compose portfolios with lower ESG risks while keeping risk-adjusted performance virtually unchanged. Moreover, investors can measure the ESG risk exposures of all firms in their portfolios using only stock returns, so that even stocks without qualitative ESG information can be easily considered in the management of ESG risks. Indeed, strategically managing ESG risks may result in potential benefits for investors.

- Jacob, A., & Wilkens, M. (2021). What drives sustainable indices? A framework for analyzing the sustainable index landscape. A framework for analyzing the sustainable index landscape (June 26, 2021). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3874437

  Abstract:
  This article presents an encompassing four-step customizable framework for analyzing the heterogeneous sustainable index landscape. Compared to previous studies, we present means and methods to move the measurement and impact of sustainability performance in the center of attention and emphasize the often neglected aim of sustainable indices:

incorporating sustainability into investment tools. Besides traditional comparisons of return and risk indicators (step one), we analyze the sustainability profile of sustainable indices while actively managing the presence of ESG rating disagreement (step two). For the determination of index-specific return and risk sources, we integrate sustainability factors in factor analyses and risk decomposition approaches (step three). A performance attribution analysis based on sustainability classes increases the transparency on the composition strategies of sustainable indices (step four). Our framework facilitates the analyses of sustainable investment tools and thus supports investors in making more meaningful and forward-looking investment decisions in line with their sustainability-related preferences.

Behavioral asset pricing

- Chandra, A., & Thenmozhi, M. (2017). Behavioural asset pricing: Review and synthesis. Journal of Interdisciplinary Economics, 29(1), 1-31.

  Abstract:
  This article presents an overview of literature on behavioural and experimental asset pricing theory. We systematically review the evolution and current development of behavioural asset pricing models as an alternate approach to asset pricing in financial economics literature. A review and synthesis of research carried out in behavioural finance spreading across theoretical, empirical and experimental approaches are presented to understand the behavioural dimension of pricing of financial assets. From theoretical perspective, behavioural asset pricing models try to adopt additional behavioural variables into asset pricing process. In terms of empirical investigation perspective, it is documented that econometric and computational advancement takes its biggest place ever in financial literature when compared with the other field. Our review underlines the fact that the direction of advancing a methodology is changing from financial literature to economics due to the fact that there is huge account of raw data available to analyze. Future research direction should be judging the empirical power of the asset pricing models and their role in practice for incorporating a new dimension to the model. The distinctiveness of the study is that this is the first attempt to review literature written on behavioural asset pricing models in the form of structural empirical review. In doing so, the historical perspective of the concept and the place it will take in future are clarified and the way further researches will be conducted are explored.

- Daniel, K.D., Hirshleifer, D. and Subrahmanyam, A. (1998), "Investor psychology and security market under- and overreactions", Journal of Finance, Vol. 53 No. 6, pp. 1839-1886.

  Abstract:
  We propose a theory of securities market under- and overreactions based on two well-known psychological biases: investor overconfidence about the precision of private information; and biased self-attribution, which causes asymmetric shifts in investors' confidence as a function of their investment outcomes. We show that overconfidence implies negative long-lag autocorrelations, excess volatility, and, when managerial actions are correlated with stock mispricing, public-event-based return predictability. Biased self-attribution adds positive short-lag autocorrelations ("momentum"), short-run earnings "drift," but negative correlation between future returns and long-term past stock market and accounting performance. The theory also offers several untested implications and implications for corporate financial policy.

- Dash, S.R. (2016), “Does investor sentiment as conditioning information help to explain stock returns behaviour? a test of alternative asset pricing models”, Review of Behavioral Finance, Vol. 8 No. 2, pp. 174-198.

Abstract:
Purpose - The purpose of this paper is to use investor sentiment (IS) as a conditioning information variable for the cross-sectional return predictability tests of alternative asset pricing models (APMs).
Design/methodology/approach - Cross-sectional tests of alternative APMs in the linear beta representation and stochastic discount factor specifications, Fama and Macbeth and generalized method of moments techniques have been used.
Findings - Results reveal that IS as a conditioning information variable contains significant information for making the discount factors time varying. Model comparison test statistics suggests that among the alternative APMs, the conditional five-factor model (FFM) performs better.
Research limitations/implications - Empirical analysis does not extend to the inclusion of the business-cycle conditioning information variables for the test of APMs.
Practical implications - The potential benefit of the conditional FFM can be leveraged upon for cost of capital determination, and mutual fund manager’s portfolio performance evaluation when the portfolio is heavily weighted with sentiment-sensitive hard to value and difficult to arbitrage stocks. During volatile and boom periods in stock markets the IS scaled conditional APMs may be useful for the fundamental value determination of sentiment-sensitive stocks.
Originality/value - This study extends available literature in the context of both developed and emerging equity markets by exploring the cross-sectional tests of conditional APMs using IS as the conditioning information variable. To the author’s knowledge, this is perhaps the first study that examines IS as conditioning information for the cross-sectional tests of alternative APMs.

Block 8: Trends

Impact of Mobile Payment Systems

- Liébana-Cabanillas, F., Marinkovic, V., de Luna, I. R., & Kalinic, Z. (2018). Predicting the determinants of mobile payment acceptance: A hybrid SEM-neural network approach. *Technological Forecasting and Social Change*, 129, 117-130.

Abstract:
As a modern alternative to cash, check or credit cards, the interest in mobile payments is growing in our society, from consumers to merchants. The present study develops a new research model used for the prediction of the most significant factors influencing the decision to use m-payment. To this end, the authors have carried out a study through an online survey of a national panel of Spanish users of smartphones. Two techniques were used: first, structural equation modeling (SEM) was used to determine which variables had significant influence on mobile payment adoption; in a second phase, the neural network model was used to rank the relative influence of significant predictors obtained by SEM. This research found that the most significant variables impacting the intention to use were perceived usefulness and perceived security variables. On the other side, the results of neural network analysis confirmed many SEM findings, but also gave slightly different order of influence of significant predictors. The conclusions and implications for management provide companies with alternatives to consolidate this new business opportunity under the new technological developments.

- Park, J., Ahn, J., Thavisay, T., & Ren, T. (2019). Examining the role of anxiety and social influence in multi-benefits of mobile payment service. *Journal of Retailing and Consumer Services*, 47, 140-149.

Abstract:
Although there has been a steady increase in the offering and promoting of mobile payment services, a slow uptake in adoption has been reported. This present study proposes a research model, grounded in mental accounting theory, investigating the intention to adopt mobile payment services by emphasizing the role of multiple benefits. A total of 361 valid responses were collected from potential U.S. mobile payment users through an online survey. Structural equation modeling was performed to test hypothesized relationships. Social influence and technology anxiety impacts on multiple benefits of mobile payment services, while the path relationship between technology anxiety, information security, and economic benefit are not significant. Convenience, enjoyment, and economic benefits positively impact attitudes, whereas experiential benefit has a negative impact. Overall, attitudes positively influence the intention to adopt mobile payment services. The findings inform mobile payment service providers about the important role of benefits in determining mobile payment services.

- Sun, S., Law, R., & Schuckert, M. (2020). Mediating effects of attitude, subjective norms and perceived behavioural control for mobile payment-based hotel reservations. *International Journal of Hospitality Management*, 84, 102331.

***Abstract**:*
The impacts of website functionality and usability on the repurchase intention of consumers have been proven by previous literature. However, these impacts, along with the wide adoption of mobile payment for hotel reservations, remain unclear. Hence, this study integrates the conceptual model of website evaluation into theory of planned behaviour (TPB) to examine theimpacts of functionality and usability towards mobile payment on the repurchase intention of consumers within a Chinese context by mainly testing the mediating effects of attitude, subjective norms and perceived behaviour control. Based on a quantitative research design, findings revealed that mediating effects exist between mobile usability and customer satisfaction. Furthermore, the mediating effect of customer satisfaction are identified within the context of mobile payment for hotel reservations. Practical implications and ideas for further research are discussed.

Tokens and Crypto-currencies

- Bouri, E., Gupta, R., & Roubaud, D. (2019). Herding behaviour in cryptocurrencies. *Finance Research Letters*, 29, 216-221.

Abstract:
This study examines the presence of herding behaviour in the cryptocurrency market. The latter is the outcome of mass collaboration and imitation. Results from the static model suggest no significant herding. However, the presence of structural breaks and nonlinearities in the data series suggests applying a static model is not appropriate. Accordingly, we conduct a rolling-window analysis, and those results point to significant herding behaviour, which varies over time. Using a logistic regression, we find that herding tends to occur as uncertainty increases. Our findings induce useful insights related to portfolio and risk management, trading strategies, and market efficiency.

- Corbet, S., Lucey, B., Urquhart, A., & Yarovaya, L. (2019). Cryptocurrencies as a financial asset: A systematic analysis. *International Review of Financial Analysis*, 62, 182-199.

Abstract:
This paper provides a systematic review of the empirical literature based on the major topics that have been associated with the market for cryptocurrencies since their development as a financial asset in 2009. Despite astonishing price appreciation in recent years, cryptocurrencies have been subjected to accusations of pricing bubbles central to the trilemma that exists between regulatory oversight, the potential for illicit use through its anonymity within a young under-developed exchange system, and infrastructural breaches influenced by the growth of cybercriminality. Each influences the perception of the role of cryptocurrencies as a credible investment asset class and legitimate of value.

- Corbet, S., Meegan, A., Larkin, C., Lucey, B., & Yarovaya, L. (2018). Exploring the dynamic relationships between cryptocurrencies and other financial assets. *Economics Letters*, 165, 28-34.

Abstract
We analyse, in the time and frequency domains, the relationships between three popular cryptocurrencies and a variety of other financial assets. We find evidence of the relative isolation of these assets from the financial and economic assets. Our results show that cryptocurrencies may offer diversification benefits for investors with short investment horizons. Time variation in the linkages reflects external economic and financial shocks.

Automated Finance

- Kumiega, A., & Van Vliet, B. E. (2012). Automated finance: The assumptions and behavioral aspects of algorithmic trading. *Journal of Behavioral Finance*, *13*(1), 51-55.

Abstract:
Automated trading now dominates the financial markets. Yet no philosophy of academic research into the topic exists. As the growth in automated trading suggests their greater returns and predictability, this paper examines stability and statistical control of trading process outputs as method of justifying predictions of future performance. New assumptions presented can form a foundation for positive research under this revolutionary paradigm, one almost completely ignored in the financial literature. The traditional financial literature rests on the assumption of normality of inputs, while trading systems aspire to the more rigorous engineering standard of justification. The end game is that now behavioral aspects, not of traders but of trading system research and development projects, drive market returns.

- Groß-Klußmann, A., & Hautsch, N. (2011). When machines read the news: Using automated text analytics to quantify high frequency news-implied market reactions. Journal of Empirical Finance, 18(2), 321-340.

Abstract:
We examine high-frequency market reactions to an intraday stock-specific news flow. Using unique pre-processed data from an automated news analytics tool based on linguistic pattern recognition we exploit information on the indicated relevance, novelty and direction of company-specific news. Employing a high-frequency VAR model based on 20 s data of a cross-section of stocks traded at the London Stock Exchange we find distinct responses in returns, volatility, trading volumes and bid-ask spreads due to news arrivals. We show that

a classification of news according to indicated relevance is crucial to filter out noise and to identify significant effects. Moreover, sentiment indicators have predictability for future price trends though the profitability of news-implied trading is deteriorated by increased bid-ask spreads.

- Rook, D. (2013). Paying attention (due) to memory structure: Tail simulation and cyborg finance. Available at SSRN 2356929.

  Abstract:
  This article advocates increasing attention to human-computer (cyborg) interactions in studying biased financial judgments. Memory structure is described as a common, if unequal, limitation facing both minds and machines. Human brains have evolved two interacting forms of memory, semantic and episodic, to weaken this constraint. Evidence from neuroscience indicates that semantic and episodic systems interact in determining what is neglected versus noticed during search-recognition processes of judgment by linking external problem spaces within internal memory. How semantic-episodic interaction is used to construct and mentally simulate (or neglect) future tail events is discussed and compared to computer-driven tail simulations in finance.

- Gonçalves, C. P. (2018). Financial Risk and Returns Prediction with Modular Networked Learning. arXiv preprint arXiv:1806.05876.

  Abstract:
  An artificial agent for financial risk and returns' prediction is built with a modular cognitive system comprised of interconnected recurrent neural networks, such that the agent learns to predict the financial returns, and learns to predict the squared deviation around these predicted returns. These two expectations are used to build a volatility-sensitive interval prediction for financial returns, which is evaluated on three major financial indices and shown to be able to predict financial returns with higher than 80% success rate in interval prediction in both training and testing, raising into question the Efficient Market Hypothesis. The agent is introduced as an example of a class of artificial intelligent systems that are equipped with a Modular Networked Learning cognitive system, defined as an integrated networked system of machine learning modules, where each module constitutes a functional unit that is trained for a given specific task that solves a subproblem of a complex main problem expressed as a network of linked subproblems. In the case of neural networks, these systems function as a form of an "artificial brain", where each module is like a specialized brain region comprised of a neural network with a specific architecture.