Credit and Capital Markets, Volume 53, Issue 2, pp. 273–283
Reports

Retail Investor Behavior, Cryptocurrencies, and Financial Market Innovation – Insights from the 5th European Retail Investment Conference (ERIC)*

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Abstract

The 5th European Retail Investment Conference was hosted at Börse Stuttgart, Germany, from April 10th to 12th 2019. The conference chairs invited academics and practitioners to participate and discuss empirical and theoretical research focusing on retail investor products and services, the impact of technology on retail investors, investors' decision-making, investor protection schemes, and market microstructure. Albert Menkveld, Professor of Finance at Vrije Universiteit Amsterdam and Fellow at the Tinbergen Institute, held the keynote about the fundamental value of bitcoin.

I. Introduction

From April 10th to 12th 2019, the 5th European Retail Investment Conference (ERIC) was hosted at Börse Stuttgart, Germany. ERIC is designed to highlight the importance and breadth of topics that affect retail investors in their decisions and to influence financial products distributed to them. The aftermath of the financial crisis in the last decade has spread doubts on the functioning of financial institutions and motivated a variety of regulatory initiatives that fundamentally transformed the retail investor landscape. In addition, technological innovation is rapidly revolutionizing the market for retail investment products

* Financial Support from Börse Stuttgart is gratefully acknowledged.

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by facilitating competition between traditional banks and new entrants such as fintechs on the one hand and creating completely new forms of assets like cryptocurrencies on the other hand. To shed light on the impact of these changes, the conference chairs invited academics and practitioners to participate and discuss empirical and theoretical research focusing on retail investor products and services, the impact of technology on retail investors, investors' decision-making, investor protection schemes, and market microstructure. In addition to the main conference, PhD students were invited to present and discuss their work within a doctoral consortium supervised by experienced researchers.

In total, the organizers of the conference received 50 submissions from 16 countries worldwide for the main conference and the doctoral consortium. This corresponds to the previous conferences and highlights the continuing strong interest of national and international researchers to present and discuss their results in Stuttgart. Based on the double-blinded review process, only the best submissions were admitted to the conference and included in the program. As a result, many other high quality papers did not make it into the conference. Eventually, the final program of the main conference comprised 13 presentations, while six PhD students presented their papers at the doctoral consortium.

Professor Albert Menkveld (Vrije Universiteit Amsterdam and Tinbergen Institute) held the keynote speech about the fundamental value of bitcoin, the world's largest and most researched cryptocurrency. Professor Menkveld's research focuses on securities trading, liquidity, asset pricing, and financial econometrics and has been published in various journals such as The Journal of Finance, The Journal of Financial Economics, and The Review of Financial Studies.

II. Conference Presentations – State of the Research on Retail Investor Behavior, Cryptocurrencies, and Financial Market Innovation

This section provides a comprehensive overview of the conference contributions in a chronological order. The content of the summaries is partially derived from the respective paper abstracts.[1]

Session 1: Retail and Crypto

Miklós Farkas (University of Bristol) opened the first session of the conference on retail and crypto with his presentation "Do individual investors consciously speculate on reversals? Evidence from leveraged warrant trading". In

[1] Articles and further information are available on the ERIC Website www.retailinvestmentconference.org.

the paper, which is co-authored with Kata Váradi (Corvinus University of Budapest), the authors show that individual investors who trade bank-issued knock-out warrants bet on a short-term trend reversal of the underlying and that the knock-out features of these warrants, as opposed to contrarian trading strategies, are the cause of the contrarian aggregate trading. Their results imply that the mechanical channel of product design might explain a large part of the relationship between the recent returns of the underlying and individuals' aggregate position. *Farkas/Váradi* (2019) also find that the probability of individual investors selling recently appreciated warrants is higher than the probability of individual investors selling recently depreciated warrants, which enhances the effects of product design and is in line with the disposition effect.

The second contribution to the first session was "Who are the Bitcoin Investors? Evidence from Indirect Cryptocurrency Investments", presented by Tobin Hanspal (Research Center SAFE). Together with Dominique Lammer and Andreas Hackethal (both Goethe University Frankfurt), he investigates who invests in cryptocurrencies by analyzing trading data on structured retail products related to cryptocurrencies. While these products represent an indirect way to invest in cryptocurrencies, *Hackethal* et al. (2019) argue that their study analyzes investors with a predilection for the return profiles of cryptocurrencies on the one hand and who are averse to invest in unregulated environments on the other hand. They find that identified indirect cryptocurrency investors are mainly technology-savvy male investors with a high portfolio wealth. These investors trade actively, are susceptible to investment biases, and hold rather risky portfolios.

Session 2: Behavioral Finance

The second session commenced after the lunchbreak and shifted the focus towards behavioral finance. Matthias Pelster (Paderborn University) started with the presentation of "Paying Attention", a joint research paper with Marc Arnold (University of St. Gallen) and Marti G. Subrahmanyam (New York University). In their empirical study, *Arnold* et al. (2019) investigate how attention created by push messages on stocks affects the trading behavior of retail investors. To measure the impact of an attention trigger on individual stock trading, *Arnold* et al. (2019) divide the sample into a treatment group consisting of investors who receive push messages, and a control group of investors who do not receive push messages. This approach yields three main findings. Firstly, a push message increases the number of trades by more than 100 % within 24 hours after receiving the push message. Secondly, the attention-induced trades are riskier, but improve the portfolio diversification of investors. Thereby, the latter effect is usually dominant, leading to a lower portfolio risk of investors. Thirdly, *Arnold* et al. (2019) find that push messages decrease the trading performance of investors due to shorter holding periods and higher idiosyncratic risk.

With “Being an Expert when there are no Experts: The Impact of Knowledge Illusion on Probability Weighting”, Maren Baars (University of Münster) presented the second contribution to the session. In an empirical experiment together with Michael Goedde-Menke (University of Münster), the authors show that individuals exhibit different attitudes towards different risk sources. To create diversity in perceived expertise, they select three gambles that vary in popularity. Since the objective probabilities of each gamble are explicitly stated, the difference in perceived expertise is an illusion. *Baars/Goedde-Menke* (2019) find evidence that individuals engage less strongly in probability weighting if they have a higher perceived expertise regarding a decision. The findings could help explain the home bias and low participation in stock markets.

The last presentation in the behavioral finance session was “Reference-Dependent Return Chasing” by Fabian Brunner (University of Mannheim). In his study, *Brunner* (2019) finds that the reaction of mutual fund investors to the abnormal performance of a mutual fund depends on whether they hold the fund at a gain or a loss. For mutual funds held at a loss, the sensitivity of flows towards abnormal performance of these funds reduces significantly. According to *Brunner* (2019), these findings are in line with ambiguity aversion and the social transmission of investment concepts among investors.

Session 3: Investment Decisions

The last session of the first day was about investment decisions and started after the coffee break with Vimal Balasubramaniam (University of Warwick), who presented “Learning from Noise: Evidence from India’s IPO Lotteries”, a paper co-authored with Santosh Anagol (University of Pennsylvania) and Tarun Ramadorai (Imperial College London). In their empirical study, *Anagol* et al. (2019) analyze data on investors who participate in allocation lotteries for Indian IPO stocks. They find that winners of these completely randomized IPO lotteries increase both applications to future IPOs and their trading volume in non-IPO stocks relative to IPO lottery losers, with symmetrically negative effects for experienced losses. Furthermore, investors having received multiple past IPO allocations exhibit smaller responses, implying that learning and selection moderates responses to noise shocks. *Anagol* et al. (2019) explain these results by investors’ misinterpretation of random gains and losses as signals about their abilities.

Stefan Ruenzi (University of Mannheim) held the second presentation of the session. In “Daily Winners and Losers”, a paper co-authored with Alok Kumar (University of Miami) and Michael Ungeheuer (Aalto University), the authors examine the pricing and trading of stocks that have experienced large daily returns and which are therefore featured in winners and losers rankings in the media. The authors find that after an initial surge in retail buying pressure due to the ranking, ranked stocks underperform unranked stocks over the following months and years. Further trading activity analysis indicates that retail investors tend to acquire ranked stocks, whereby institutional investors tend to sell these stocks to provide liquidity. *Kumar* et al. (2019) explain these results by an attention-induced initial overpricing of ranked stocks.

Session 4: Fintech

The first session of the second conference day was about fintech and opened by Christoph Merkle (Kühne Logistics University), who presented "Algorithm Aversion in Financial Investing", a joint research project with Maximilian Germann (University of Mannheim). In their experimental study, *Germann/Merkle* (2019) analyze whether humans exhibit so-called algorithm aversion in financial decision-making by preferring human fund managers to algorithms, irrespective of the algorithms' performance. Within their study, they find that investors care about returns, but do not show strong preferences for who generates the returns. Additionally, *Germann/Merkle* (2019) find no evidence that investors lose their confidence faster after seeing an algorithm erring. However, the study suggests that investors fail to fully separate skill from luck when they evaluate the performance of both types of intermediaries.

The second contribution to the session was "Alternative Facts in Peer-to-Peer Loans? Borrower Misreporting and Loan Outcomes" by Vesa Pursiainen (Imperial College London and the University of Hong Kong). In his paper, *Pursiainen* (2019) studies the determinants of borrower misreporting in peer-to-peer loans for credit card debt repayment and consolidation. *Pursiainen* (2019) finds that potential misreporting is based on behavior-based indicators, namely the consistency of the loan amount with outstanding credit balance, the roundness of reported income, and the roundness of the chosen loan amount. By constructing a Misreporting Index out of these three indicators, the likelihood of default can be significantly predicted. Furthermore, higher interest does not compensate for a higher default risk, and misreporting is more likely in areas with lower social capital and for borrowers whose professions are considered less honest.

Session 5: Asset Pricing

Martin Rohleder (University of Augsburg) started the fifth session about asset pricing with his presentation of "Diseconomies of Scale, Information Processing and Hierarchy Costs: Evidence from Asset Management". In the empirical study together with Richard Evans (University of Virginia), Hendrik Tentesch and

Marco Wilkens (both University of Augsburg), *Evans* et al. (2019) use separate accounts to analyze if information processing and hierarchy costs vary between quantitative and fundamental investment approaches, causing diseconomies of scale. Their results show that quantitative investment professionals manage two to three times more assets than fundamental advisors. Due to greater use of hard information and lower information processing costs, quantitative approaches exhibit a higher factor model R^2, more stable factor loadings, and a higher information diffusion speed. Furthermore, their performance is independent of size, while fundamental second accounts show statistically and economically significant diseconomies of scale. *Evans* et al. (2019) conclude that information processing and hierarchy costs contribute to diseconomies of scale in general.

The second contribution to the session came from Esad Smajlbegovic (Erasmus University Rotterdam), who presented "Surprise in Short Interest", a joint research project together with Pavel Lesnevski (University of Mannheim). In their paper, *Lesnevski/Smajlbegovic* (2019) present a new measure of informed short selling, the so-called surprise in short interest. This new measure captures important cross-sectional, distributional differences in short selling. The authors find that stocks with surprisingly positive short selling activity significantly underperform stocks with surprisingly negative short selling activity. The resulting return spread can neither be explained by standard stock characteristics nor by the level of short selling or short-sale constraints. Furthermore, surprises in short selling also predict future surprises in company fundamentals, and the predictability of returns is stronger for illiquid and volatile stocks. *Lesnevsk/Smajlbegovic* (2019) draw the conclusion that markets do not efficiently price the information from short sale reports.

Session 6: Household Finance

The last session of the conference started after the lunchbreak with the presentation of "Perceived Attractiveness of Structured Financial Products: The Role of Presentation Format and Reference Instruments" by Martin Wallmeier (University of Fribourg). In the joint research project together with Vladimir Anic (University of Fribourg), the authors use an experimental framework with multiple investment decisions to analyze different presentation formats of the payoff probability histograms of structured equity-linked products. *Anic/Wallmeier* (2019) find that displaying probability distributions has a strong effect on how individuals perceive the attractiveness of the considered products, since participants find it much more difficult to state clear preferences when being confronted with probability histograms. This suggests that the reference instruments shown in graphical displays should be risk-adjusted in order to match the risk of the product. The results have practical implications and can be used to improve information documents for investors such as the Key Information Document required by European regulation.

Henning Cordes (University of Münster) made the last contribution to the conference with the presentation of "How the Provision of Inflation Information Affects Pension Contributions: A Field Experiment". In this experimental study conducted together with Thomas Langer (University of Münster) and in cooperation with a major German pension fund, *Cordes/Langer* (2019) analyze how the provision of inflation information affects pension contributions. On the one hand, inflation can have severe consequences for retirement savings and hence an individual's future financial wellbeing, but on the other hand, many pension funds often withhold information about inflation. The study reveals that the provision of inflation information increases the likelihood to increase pension contributions significantly, indicating that this seems to be an important determinant in retirement planning.

III. Keynote Speech

The ERIC 2019 keynote speech was held by Albert J. Menkveld (Vrije Universiteit Amsterdam and Tinbergen Institute) and addressed the fundamental value of cryptocurrencies from a theoretical and empirical point of view. After a preface on the historical role and development of currencies and other means of payment, Professor Menkveld discussed cryptocurrencies and their perception in modern financial markets. Trust is vital for transactions where buyers and sellers never meet in person, but it remains unclear whether the technological approach of the blockchain to create trust can fully replace the functional scope of tried and tested institutions such as central banks. While some researchers claim that cryptocurrencies like Bitcoin are pure bubbles that reflect assets without intrinsic value, the scale and scope of markets expands rapidly. However, to infer the intrinsic value of cryptocurrencies, one has to stretch one's imagination. In his keynote speech, Professor Menkveld offered this very stretch by presenting a theoretical and econometric framework to explore the dynamics of Bitcoin prices.

After highlighting related literature dealing with monetary economics, access to trading networks, and empirical analyses of cryptocurrency markets, Professor Menkveld explained the basic idea of the framework designed with his co-authors. It comprises different rational agents who prefer to consume different goods, possess different and randomly assigned endowments, and can trade in central-bank money and cryptocurrency. Both, central-bank money and the cryptocurrency, can be used to purchase the preferred goods for future consumption. In addition, the cryptocurrency provides transactional benefits that go beyond central-bank money, such as transferring funds in unstable or isolated economies. These benefits also come at a cost, such as a limited convertibility to other currencies, transaction costs on exchanges, hacks, low merchant acceptance, or mining fees. The costs of the banking system include rents earned by banks, moral hazard, governmental expropriation, and inflation. Eventually, agents choose their means of payment based on their expectations about net transactional benefits and future prices.

Based on his model, Professor Menkveld derived the following insights: the evolution of cryptocurrency prices reflects the present and future benefits, costs, and usefulness its users experience in the real economy. Thus, in the case of large transaction costs, agents require high expected returns to hold cryptocurrencies. Large transactional benefits, on the other hand, have the opposite effect. As a result, current cryptocurrency prices represent the future stream of net transactional benefits their holders hope to enjoy. For instance, this practically means that when Bitcoin is widely accepted and cheap, Bitcoin prices will be high, while expected returns will be low. However, Professor Menkveld emphasized that this link between present and future prices can also exhibit extrinsic noise on the equilibrium path, causing high volatility unrelated to fundamentals.

To test the predicted relation between cryptocurrency returns, transaction costs and transactional benefits, Professor Menkveld consulted Bitcoin prices from July 2010 to February 2018. The sample comprises data from 17 major cryptocurrency exchanges and captures the costs and benefits of using Bitcoin by the fees Bitcoin users attach to their transactions, thefts and hacks, and two indices. The first index measures transaction costs by events that affect the ease of exchanging Bitcoin, such as the openings or shutdowns of major markets. The second index measures transactional benefits and comprises events that affect the ability to buy goods and services with Bitcoin, such as shops starting to accept Bitcoin. Professor Menkveld continued that – consistent with the model – the data confirms the negative effect of transactional benefits and the positive impact of costs on expected Bitcoin returns. Looking back to 2011, e.g., the difficulty to convert Bitcoin into cash at that time added up to 15 % to weekly Bitcoin returns. However, this value dropped to 5 % in the following years as converting Bitcoin became easier. The same holds for transactional benefits, where the increasing acceptance of Bitcoin by merchants has led to a 6 % decrease in required returns since 2015.

Professor Menkveld summarized that the fundamental value of cryptocurrencies lies in the provision of transaction services. If, as illustrated before, the quality of these services improves, the fundamental value of the currency improves as well. However, he also stressed that while theoretical and empirical evidence underlines the impact of transactional costs and benefits on the variations of cryptocurrency prices, they only explain a small fraction of the observed volatility. Thus, the dynamics of Bitcoin and other cryptocurrencies are also driven by extrinsic noise and need to be explored in more detail.

IV. Doctoral Consortium

ERIC's doctoral consortium provided selected PhD-students the opportunity to present their research within an inspiring atmosphere at the University of Hohenheim. The presented papers covered various aspects of retail investor behavior, asset pricing, and implications of regulatory changes. The PhD-students engaged in fruitful discussions and received valuable feedback from the participating professors Albert Menkveld (VU Amsterdam) and Ryan Riordan (Queen's University).

The two most outstanding contributions were honored with the best paper awards, sponsored by the Sparkassen Finanzgruppe Wissenschaftsförderung, an initiative of the German Savings Bank Finance Group. The best paper was "A Surprise That Keeps You Awake: Overnight Returns After Earnings Announcements" by Fabian Gamm (University of Mannheim). In his paper, *Gamm* (2019) analyzes the overnight and intraday components of stock returns after earnings announcements. He finds that stocks with large positive and negative earnings surprises exhibit strong positive abnormal overnight returns for several weeks. The effect is stronger if retail investor attention is high and weaker if retail investors hold the stock at a gain. Additionally, intraday returns have the opposite sign if overnight returns drive prices away from their fundamental value with a stronger pattern for smaller firms and firms with low institutional ownership. *Gamm* (2019) explains the positive overnight returns with irrational trading behavior, e. g. attention-induced overpricing, and interprets negative intraday returns as rational price corrections.

The honor of the second best paper was awarded to Vesa Pursiainen (Imperial College London and the University of Hong Kong) for his contribution "When Paper Losses Get Physical: Domestic Violence and Stock Returns", co-authored with Tse-Chun Lin (The University of Hong Kong). In their paper, *Lin/Pursiainen* (2019) study negative stock market externalities on families. They find a significant negative relationship between local stock market returns during the week and reported domestic violence on the weekend, suggesting that wealth shocks caused by the stock market affect stress levels within families and trigger violent behavior.

V. Conclusion and Acknowledgements

Overall, the various contributions to the 5th European Retail Investment Conference highlighted that a profound analysis of retail investor behavior, products, and financial market innovation is still of growing relevance for both the scientific community and financial institutions. Whereas retail investors are still exposed to biases such as attention-induced overpricing or the disposition effect, the findings of this year's conference also suggest that retail investors could improve their investment decisions if they are supported by the right technologies and reasonable regulatory initiatives. Hence, future efforts of the scientific community and the financial industry should be directed to the development of innovative solutions that further increase the financial literacy of retail investors, especially when it comes to new types of financial assets like cryptocurrencies, and provide technological and regulatory assistance that enables them to take more sensible investment decisions.

The 5th European Retail Investment Conference has managed to keep the already high international interest among leading researchers and financial practitioners for the conference. Given this ongoing success, ERIC has established itself as one of the leading scientific finance conferences for retail investor topics in Europe. The high-quality presentations and the intense and fruitful discussions at the conference greatly contributed to new insights for all conference participants.

The survey responses and the feedback from the conference participants confirm this impression and show a very high satisfaction regarding the presented topics and the conference organization. The 6th European Retail Investment Conference will prospectively be held in 2021.

Finally, on behalf of the conference chairs and the organization committee of the 5th European Retail Investment Conference, we would like to thank the conference partners and sponsors, first and foremost Börse Stuttgart. Their financial and logistical support shows their dedication to both scientific progress and the understanding of the needs of retail investors. Again, our thanks also go to the Sparkassen Finanzgruppe Wissenschaftsförderung, an initiative of the German Savings Bank Finance Group, for sponsoring the doctoral consortium best paper awards, the L-Bank for supporting the wine reception, and Stuttgart Financial as a partner in many organizational endeavors. Furthermore, we would like to thank the members of the program committee and all reviewers for their evaluation of the submissions and the valuable and constructive feedback provided to the authors.

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