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Report on the 14th Annual Financial Market Liquidity Conference*

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1. Opening of the AFML conference and the first keynote speech

On the 9th and 10th of November 2023, the Corvinus University of Budapest (CUB) hosted the 14th Annual Financial Market Liquidity Conference (AFML), one of Hungary's most important international financial conferences. The conference's main organiser — the Institute of Finance at CUB — continued its long-term collaboration with the Game Theory Research Group of the Centre for Economic and Regional Studies. This year, the organising team included a new academic member organiser, the Faculty of Economics at Eötvös Loránd University. Continuing with the tradition, *Professor Péter Csóka* chaired the scientific committee, while this year's chair of the local organising committee was *Assistant Professor Attila* Víg.

The conference was also supported by prestigious local finance industry partners, KELER CCP, Morgan Stanley and OTP Bank. In addition, for the first time, the conference organisers included a "Women in finance" special session with mentoring, supported by a grant from the Academic Female Finance Committee (AFFECT) of the American Finance Association (AFA). The 14th edition of the AFML was also unique in terms of the number of keynote speakers, hosting five keynote speakers, four in person and one online.

The conference was opened by *Acting Rector Professor Lajos Szabó*, who acknowledged the long-term success of the conference and welcomed the local and international academics and industry professionals for two days of intensive research collaboration. After the official welcome message by the university leadership, the head of the Finance Institute, *Associate Professor Kata Váradi*, also briefly welcomed the academic and industry attendees and thanked the sponsors. She formally kicked off the conference and introduced the first keynote speaker, *Professor Thierry Foucault* from HEC Paris, who presented an insightful quantitative

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finance research paper on a special group of high frequency traders (HFTs) engaged in market making.

Professor Foucault's research, a collaborative effort with two colleagues, focused on algorithmic pricing and liquidity in securities markets. The authors explored the interaction of "Algorithmic Market-Makers" (AMMs) using Q-learning algorithms in a standard microstructure environment and compared AMMs' behaviours to the expected outcomes based on the existing theories. Their comparison was conducted under two scenarios: First, in a static environment with one trading round per period and second, in a dynamic environment with two trading rounds per period.

In the static environment, the analysis consisted of three steps: (1) deriving equilibrium prices using two benchmark cases (i.e. prices from a multiple dealer competitive Nash-Bertrand equilibrium and from a monopoly case); (2) describing the pricing policy from Q-learning algorithm used by AMMs; and (3) comparing the pricing policy offered by AMMs to the two theoretical benchmarks. The analysis provided several key insights conditionally on the market settings. In the single dealer case, AMMs using the Q-learning algorithm behaved more competitively than benchmarks, while in the duopoly case, the price posted by two competing AMMs were far above the Nash-Bertrand equilibrium price. In the presence of two AMMs and changing adverse selection, the quotes posted by AMMs were less competitive with more adverse selection, implying monopolist behaviour by the AMMs.

Subsequently, the welfare implications of AMMs were discussed where the total welfare effect is decomposed into consumer surplus and producer surplus effect. The consumer surplus and total welfare increase with the variance of clients' private valuation as demand elastically is lower, making the possibility of trade execution at a higher price. However, the increase in the volatility of asset payoffs is associated with lower profits, consumer surplus and hence total welfare. In addition, the study also documented that on average algorithms use a higher price in the second trading round than in the first with reduced adverse selection, resulting in AMMs using less competitive prices. As a result, the spreads tend to widen with adverse selection being reduced over time, a result which was contrary to the expectation from a competitive environment.

The main conclusions from this research were the following: Adverse selection cost is to be reflected in the quotes, while the quotes are updated in response to the observed order flow. AMMs' behaviours are quite different from what standard theories predict, with quotes generally above the competitive level and becoming less competitive with adverse selection being reduced over time.

2. AFML conference first day parallel sessions and the second keynote speech

Day one of the conference was heavily packed with twelve 30-minute presentations in three parallel sessions in the morning section. The session topics were titled "Interconnectedness", "Market liquidity and investments", and "Corporate governance and corporations" chaired by *Professor Barbara Będowska-Sójka* from Poznań University of Economics and Business, *Professor Niklas Wagner* from University of Passau, and *Professor Álmos Telegdy* from CUB, respectively. The conference organisers assigned expert reviewers as discussants to papers for which the presenters requested formal feedback with the objective of helping with future publications.

After a brief lunch break in the main aula of the university, there was time for networking and an opportunity to review research posters. The afternoon continued with another twelve 30-minute paper presentations, in three parallel sessions. The "Machine learning" session was chaired by *Professor Andras Fulop* from ESSEC, the "Stock markets, households" session was chaired by *Associate Professor Zsuzsa R. Huszar* from CUB, and the "Sustainable finance" session was chaired by *Professor Thomas Walker* from Concordia University.

After the parallel session and a quick coffee break, the first day of academic talks was concluded with the first keynote presentation by *Professor Jonathan A. Batten* from RMIT University, Australia. Professor Batten presented his research with two colleagues on insider trading and market manipulation. They revealed that market manipulation (MM) and insider trading (IT) may be opportunistic, but usually is strategic. By strategic, the authors mean that the potential offenders strategically weigh the potential profits against the probability of detection and potential penalties.

Detection of IT trades on over-the-counter (OTC) markets were generally more difficult than on organised exchanges, because market detection using market surveillance techniques for MM and IT tend to be limited. While Professor Butten advocated that strong regulatory oversight and market transparency are essential to prevent misuse and promote fair trading practices, he also stressed the importance of promoting sound ethical principles and individual responsibility for market participants.

The presentation aimed to highlight the issues and implications of MMs and ITs on financial markets related to liquidity, market timing and market concentration, among other things. The authors included a regulatory review and found that while the surveillance focus has been on concealment tactics, prosecution usually relied on whistleblowers. Professor Batton also highlighted that while ITs are often illegal when executed based on private information, these trades can be also opportunistic and liquidity driven. Differentiating between the two forms of IT is often overlooked.

While the academic consensus tends to label informational IT as bad, there is an ongoing debate. Some economists and legal scholars suggest that laws against insider trading should be repealed. Opponents of regulations argue that insider trading could benefit investors in the market, by speeding up the information dissemination process. In the presentation, two examples of insider trading related to Raj Rajaratnam and Galleon Group were also mentioned.

In the market manipulation overview, Professor Batton introduced several types of market manipulation, including liquidity pools, painting the tape, pump and dump, spoofing, front running and others. As an example, he mentioned the silver crisis, which resulted in a USD 150 million lawsuit against the Hunt Brothers. The silver fix was a daily benchmark process in the silver market, where a panel of banks determined the daily silver reference price. Similarly, to the famous LIBOR scandal, in the silver scandal key banks faced allegations of manipulation and collusion to influence the benchmark silver price for their own benefit.

Professor Batton concluded his keynote speech with some key lessons for markets: (a) limited industry-based market surveillance; (b) individual incentives driving unethical behaviour; (c) organisational culture may be responsible for facilitating or encouraging unethical behaviour; and (d) the frequent failure of top-down regulatory apparatus, and overreliance on whistleblowers. As final observations, he stressed the importance of ethical corporate strategies and especially the need for companies to evolve ethical considerations from the top down and holding individuals responsible for their own actions.

3. AFML conference second day morning parallel sessions and the third keynote speech

The second day started with three parallel sessions in the morning, the “Loans and lending” session, chaired by *Associate Professor Dániel Havran* from CUB, the “Theory and investments” session, chaired by *Assistant Professor Tomy Lee* from the Central European University (CEU), and the “Banking” session, chaired by *Associate Professor Barbara Dömötör* from CUB.

After the parallel sessions, *Associate Professor Zsuzsa R. Huszar* chaired the “Women in finance” session supported by AFFECT, where she highlighted some key statistics on the underrepresentation of women in the finance industry and in finance academia. She pointed out that in financial institutions globally, less than 20 per cent of board members and less than 2 per cent of the CEOs are female. The session sponsor AFFECT aims to address the gender inequality issue by promoting the advancement of women academics in the field of finance through research, networking and mentoring, among others. In the spirit of AFFECT's mission, Associate Professor Huszar proposed the establishment of a EuroAsian Female Finance Academics Association (EFFAA) to provide similar mentoring, networking and collaboration opportunities for female academics in Central and Eastern Europe (CEE) and in Asia and encouraged conference participants to sign up.

The distinguished first female keynote speaker in person of the AFML, *Professor Rose Neng Lai*, from the University of Macau, provided further statistics on female underrepresentation in decision-making positions, especially in the technology sector.[1] She cited common social media headline posts, such as "Women are less ambitious than men. Female leaders tend to take less risks with their business decisions". She explained that the motivation for the study was the "common wisdom" that women are more risk-averse and ethical, and decided with two of her colleagues, Shaohua Tian and Yang Zhang, to examine this issue empirically in the context of US tech firms. In their working paper entitled "The Myth of Risk Aversion from Female Leadership – the Case of US High-Tech Sector", their research aimed to explore whether gender plays a role in risk taking and what kind of risks female leaders tend to take.

Professor Lai described her dataset of over one thousand US high-tech firms from 1996 to 2021 in great detail before introducing the key results. While on average no significant effect on risk taking is associated with gender in US firms, the study shows that female CEOs in US high-tech firms tend to take more risk. More importantly, the higher risk taking tends to pay off, as these firms, firms with female CEOs are also associated with higher returns. The authors differentiated between total and idiosyncratic risk, but the results were similar. Interestingly, consistent with social media posts, female board members at US high-tech firms tend to take less risks. While macro conditions and economic uncertainty also play role, the results tend to be robust, and the findings are clearly inconsistent with the usual preconception that women tend to be more risk averse, noted Professor Lai.

In the sample, the female CEOs likely self-selected their jobs; thus, the empirical concern arises whether technical background may contribute to their "unexpected" risk-taking behaviour. Interestingly, the study found that not the tech background, but rather the financial background supports the risk taking as female CEOs with finance degrees "seem to know what they are doing and seem to take higher risk,

[1] During the two prior AFML conferences, effected by the Covid-19 pandemic, Professor Mariassunta Giannetti, from the Stockholm School of Economics, participated already as the first female keynote speaker, but only in online format via MS Teams.

according to our data", according to Professor Lai. Finally, the authors also examined the attitude of female CEOs and female board members towards innovation and found that while female CEOs were not significantly associated with higher level of innovations, female board members were. Touching on the hot topic of Environmental, Social and Governance (ESG) issues, the authors documented that female CEOs and female directors tend to be more concerned about sustainability and compliant with environmental regulations than their male counterparts. These results are important in supporting gender equality and diversity at boards, to support the move towards a sustainable future, from the top down.

After the inspiring presentation by Professor Lai, the first CEE academic mentoring event took place in the Faculty Club. The mentoring session was organised by Associate Professor Huszar with support from AFFECT and aimed to provide a platform for female academics for gain access to senior industry and academic mentors in a comfortable setting and learn from each other's experience. In the spirit of equal opportunity, the mentoring session welcomed all interested participants irrespective of gender, race or age. The mentoring session was organised around six tables with designated topics, such as academic career, green finance, quantitative finance, and central clearings and settlements. At each table there were 2 mentors, one industry and one academic mentor, and a couple of mentees, previously matched based on their research interest. From the university leadership, which has been actively supporting the initiative, *Associate Professor Réka Vas*, Vice Rector of Teaching, participated as a mentor. Industry mentors such as representatives of Hungary's central clearing facility, KELER CCP (Csilla Szanyi, CRO KELER CCP and Babett Pavlics, CEO KELER CCP), the Magyar Nemzeti Bank (MNB), the central bank of Hungary (Eszter Baranyai, Senior Expert at the MNB and Eszter Boros, International Expert at the MNB) and the Bank of China were also invited to stimulate discussion on real world issues where academic research can be particularly valuable. Overall, the event, which was open to all conference participants, drew 30+ participants, the majority of them women.

4. AFML conference second day afternoon session with the fourth and fifth keynote speech

The last part of the conference concluded with two distinguished invited speakers, *Professor Michael Halling* from the University of Luxembourg and *Professor Thomas Walker* from Concordia University, Canada.

The first keynote speech in the afternoon session by Professor Michael Halling presented a paper entitled "Firm-specific Climate Risk Estimated from Public News", co-authored with Thomas Dangl and Stefan Salbrechter. He highlighted the opportunities that news data offers for academic research. For example, with news, we can have long time-series historical data, while also have forward-looking information, with high-frequency. However, the benefit of the "large news data" also poses some challenges in terms of processing and data management, requiring the use of Natural Language Processing (NLP) tools. Additionally, news is inherently noisy, and the prevalence of fake news is a possible existing issue, making it difficult to address and potentially working against our efforts to find any effects. Thus, what do they do to solve these issues in firm-specific climate risk?

They employed a "white box" machine learning approach to generate climate-related topics focusing on both risks and opportunities. After that, they calculated firm-specific exposures to climate risks by analysing news data, and labelled firms as green or brown based on the firm's regulatory climate risk and physical climate risk portfolio. In the end, they computed regulatory and physical climate risk betas for a total of 9,000 companies to facilitate the generalisability of their approach.

Professor Halling and his coauthors were the first to document a statistically significant positive climate risk premium. They also documented a regime shift around 2012 and have shown that while the climate risk premium was positive at about 1.54 per cent from 2002 to 2012, it turned negative to about –2.56 per cent from 2012 to 2020. These findings, and the evidence of positive and negative risk premiums during different time periods, reconcile the conflicting climate risk premiums in the existing literature. Lastly, the high correlation of 0.64 between the news-based green-minus-brown (GMB) portfolio and E(SG)-sorted GMB portfolio indicates a significant relationship, suggesting that the information extracted from news sources closely aligns with E(SG) scores.

The last keynote speech was delivered by Professor Thomas Walker, who presented a paper entitled "Analysts and Affiliated Money Managers: Do They Talk More Than They Should?", co-authored with Sergey Barabanov. The authors aimed to solve two main research questions: first, which types of institutions or analysts are the most informed or better informed or least informed? Second, is there consistency between analyst actions and trading by affiliated money managers? Based on previous research, it was found that institutional trading is mostly based on information and can also increase the speed of adjustment to new information, as institutions react to public information and events, such as post-announcement drift.

Moreover, informed investors have several advantages, and they can benefit twice through trading aggressively prior to the public announcement and by unwinding part of the prior trade once the information becomes public and is partially or fully reflected in the stock price. While for individual investors, they may bear most of the losses in sued companies, and lack institutional skills, resources and analytical capabilities, they may revert to litigation as a substitute for corporate governance and monitoring. This research helps provide insights on information dynamics within financial institutions, the advantages of informed investors and the challenges faced by individual investors.

5. Summary

The 14th AFML conference attracted more than 130 participants during the two-day event. The Institute of Finance faculty was well represented with a wide range of topics from Emerging Market diversification, through sustainability and household finance to crypto assets. The conference also showcased effective mentoring by CUB senior faculty as several CUB students also presented research papers. PhD students Markus Martin and Fanni Dudás presented on the hot topic of sustainability, mentored by Professor Edina Berlinger, Associate Professor Barbara Dömötör and Associate Professor Helena Naffa. It is noteworthy to mention the research inspired CUB undergraduate student Boglárka Sass and master student Pálma Bernadett Szilárd, who also took part by presenting their research work under the supervision of Milán Csaba Badics, their thesis advisor. Sass presented her work on crypto market liquidity commonality in the poster session, while Szilárd presented her paper on geopolitical risks arising from OPEC decisions on the first day of the conference.

The conference featured five keynote speakers with renowned names such as Professor Jonathan A. Batten, Professor Thierry Foucault, Professor Michael Halling, Professor Rose Neng Lai, and Professor Thomas Walker. The keynote speakers represented finance academic experts from four continents, from the Americas, Europe, Asia and Australia Pacific. Additionally, four invited speakers also presented at the AFML conference: Professor Barbara Będowska-Sójka, Professor Igor Lončarski, Associate Professor Gábor Neszveda and Professor James Steeley.

Overall, the two-day, 14th edition of the AFML conference saw a total of 38 paper presentations and 6 posters. These presentations covered a wide range of theoretical and empirical topics, providing a unique opportunity to learn about current research techniques, interests and networking. For the first time, there was also an organised networking session where junior and senior researchers were matched based on research interests. The conference also actively promoted collaboration and connection with the industry during the mentoring session and throughout the conference, with a large number of industry representatives from Morgan Stanley and the management of KELER CCP.