Insider Trading & Market Manipulation Literature Watch

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Each quarter, this newsletter summarizes newly published literature in the areas of Insider Trading and Market Manipulation. The authors' own abstracts are included below and are unedited. Links to the full paper are provided. The inclusion of an article in this newsletter does not signify that CRA or any of its experts agree or disagree with the content or conclusions therein.

Insider Trading

Shadow Trading and Corporate Investments

Corporate insiders engage in shadow trading when they use private information pertaining to their own firm to trade in the shares of economically connected companies. We develop a model to analyze the consequences of shadow trading on corporate investment choices and derive four main findings. First, when a firm permits shadow trading it can externalize on shareholders of connected companies part of the cost of its insiders' compensation. Second, shadow trading can give insiders and shareholders incentives to prefer greater corporate risk-taking. Third, under certain conditions the prospect of shadow trading profits can lead both insiders and shareholders to prefer negative-expected-value projects over positive-expected-value ones. Fourth, when shareholders are unaware of the manager's engagement in shadow trading, the manager's strategic project choice can be inefficient for the firm and can increase stock price volatility. We then discuss the policy implications of our findings.

Lee, Yoon-Ho Alex and Liu, Lawrence and Romano, Alessandro, Shadow Trading and Corporate Investments (December 24, 2022). Journal of Law, Finance, and Accounting (Forthcoming), Available at SSRN: **https://ssrn.com/abstract=4307455**

Criminal Insider Trading in Personal Networks

This Article describes and comments on criminal insider trading prosecutions brought over an eleven-year period. The core common element among these cases is that they all involve alleged tipper/tippee insider trading or misappropriation insider trading implicating information transfers between or among friends or family members (rather than merely business connections). The ultimate objectives of the Article are to explain and comment on the nature of these criminal friends-and-family insider trading cases and to posit reasons why friends and family become

involved in criminal tipping and misappropriation - conduct that puts both the individual friends and family members and the relationships between and among them at risk.

Heminway, Joan MacLeod, Criminal Insider Trading in Personal Networks (November 27, 2022). Stetson Bus. L. Rev (2022), Available at
SSRN: **https://ssrn.com/abstract=4286973** or **http://dx.doi.org/10.2139/ssrn.4286973**

A Machine Learning Approach to Support Decision in Insider Trading Detection

Identifying market abuse activity from data on investors' trading activity is very challenging both for the data volume and for the low signal to noise ratio. Here we propose two complementary unsupervised machine learning methods to support market surveillance aimed at identifying potential insider trading activities. The first one uses clustering to identify, in the vicinity of a price sensitive event such as a takeover bid, discontinuities in the trading activity of an investor with respect to his/her own past trading history and on the present trading activity of his/her peers. The second unsupervised approach aims at identifying (small) groups of investors that act coherently around price sensitive events, pointing to potential insider rings, i.e. a group of synchronised traders displaying strong directional trading in rewarding position in a period before the price sensitive event. As a case study, we apply our methods to investor resolved data of Italian stocks around takeover bids.

Mazzarisi, Piero and Ravagnani, Adele and Deriu, Paola and Lillo, Fabrizio and Medda, Francesca and Russo, Antonio, A Machine Learning Approach to Support Decision in Insider Trading Detection (December 6, 2022). Available at
SSRN: **https://ssrn.com/abstract=4294752** or **http://dx.doi.org/10.2139/ssrn.4294752**

Disclosing and Cooling-Off: An Analysis of Insider Trading Rules

This paper analyzes insider-trading regulations, focusing on two recent proposals: advance disclosure and "cooling-off periods." The former requires an insider to disclose his trading plan at adoption, while the latter mandates a delay period before execution. Disclosure increases stock price efficiency but has mixed welfare implications. If the insider has large liquidity needs, in contrast to the conventional wisdom from "sunshine trading," disclosure can even reduce the welfare of all investors. A longer cooling-off period increases outside investors' welfare but decreases stock price efficiency. Its implication on the insider's welfare depends on whether the disclosure policy is already in place.

Deng, Jun and Pan, Huifeng and Yan, Hongjun and Yang, Liyan, Disclosing and Cooling-Off: An Analysis of Insider Trading Rules (October 16, 2022). Rotman School of Management Working Paper No. 4249189, Available at SSRN: **https://ssrn.com/abstract=4249189** or **http://dx.doi.org/10.2139/ssrn.4249189**

Do Companies Redact Material Information From Confidential SEC Filings? Evidence From the FAST Act

The Securities and Exchange Commission permits companies to redact proprietary information from material contract filings so long as the redacted information 1) would cause competitive harm if disclosed, and 2) the information is legally immaterial. Because these joint criteria are inherently contradictory, we examine whether legally immaterial redacted information is economically material

to investors. We find that firms' stock price discovery process is significantly slower and insider trading is significantly greater after companies file redacted contracts compared to non-redacted contracts. We then examine the impact of the 2019 FAST Act which reduced the SEC's oversight of redacted contracts. Companies redact more frequently and insider trading (but not speed of stock price discovery) is more pronounced after the FAST Act. Taken together, these findings suggest that at least some redacted information is economically material to investors and that reducing SEC oversight of redacted information may not be in investors' best interests.

Thompson, Anne and Urcan, Oktay and Yoon, Hayoung, Do Companies Redact Material Information From Confidential SEC Filings? Evidence From the FAST Act (October 5, 2022). The Accounting Review, Forthcoming, SMU Cox School of Business Research Paper No. 22-22, Available at SSRN: **https://ssrn.com/abstract=4240160**

Opportunism, Overconfidence and Irrationality: A Puzzling Triad

We empirically investigate managerial decision-making in a corporate context with combinations of rational/irrational managers and investors. There are noticeable differences in insider trading among these groups, particularly when exposed to market-wide and firm-level sentiment. We find that investor sentiment in the presence of managerial overconfidence has a significant impact on insider trading. We also show that managers behave opportunistically when timing stock splits and undertaking insider trading. Our findings linking splits to insider trading is robust under various specifications. In cases where irrational managers coexist with irrational investors, our study demonstrates important implications for the firms involved.

Altanlar, Ali and Amini, Shima and Holmes, Philip and Eshraghi, Arman, Opportunism, Overconfidence and Irrationality: A Puzzling Triad. Available at SSRN: **https://ssrn.com/abstract=4248311**

Identifying Opportunistic Managers Using Non-GAAP Disclosure and Insider Trading

Insiders have private information and often disclose non-GAAP earnings metrics with the claim that such metrics inform investors about earnings persistence. However, because insiders have private information about earnings persistence, they have opportunities to take advantage of this information by trading on it following non-GAAP earnings announcements. We find that insiders at firms that disclose non-GAAP earnings sell more shares of stock than insiders at other firms immediately following quarterly earnings announcements. This evidence is more pronounced for firms that: 1) Are monitored less intensively; 2) Are led by high-ability managers; and, 3) Disclose non-GAAP earnings more aggressively. Importantly, we also find that these insider sales enable managers to avoid statistically significant negative abnormal returns. Our research demonstrates the usefulness of examining both insider sales and negative abnormal return loss avoidance as approaches to identify opportunistic non-GAAP earnings disclosure, an area of difficulty for prior work. Moreover, our results suggest that regulators should consider the role of non-GAAP earnings when modifying existing insider trading rules.

Black, Dirk E. and Gao, Bo, Identifying Opportunistic Managers Using Non-GAAP Disclosure and Insider Trading (September 1, 2022). Available at SSRN: **https://ssrn.com/abstract=4207045** or **http://dx.doi.org/10.2139/ssrn.4207045**

Insider trading, gender diversity within the board room, CEO pay gap, and stock price crash risk

This paper investigates the impact of insider trading and managerial attributes on future stock price crashes. We conduct a series of regressions addressing the managerial attributes determinants of future stock price crashes including gender diversity, CEO age, and CEO power (measured by CEO pay disparity, CEO tenure and CEO duality). Our empirical results reveal a positive association between insider purchases and price crash risk. This implies that other than compensation and career concerns, insiders hoard bad news to fulfil their trading incentives. Our positive coefficients of insider sales also suggest that insider sellers can assess inside information promptly and anticipate shortly before the crashes. We further document that the presence of female directors on boards can mitigate stock price crash risk. However, firms with powerful or younger Chief Executive Officers are more likely to experience crashes. Overall, we highlight the importance of corporate managerial attributes in dealing with information asymmetry problems.

Le, V. P., Nguyen, A.-N., & Gregoriou, A. (2022). Insider trading, gender diversity within the board room, CEO pay gap, and stock price crash risk. International Journal of Finance & Economics, 1– 23. **https://doi.org/10.1002/ijfe.2731**

A Dilemma of Self-interest vs. Ethical Responsibilities in Political Insider Trading

Political insider trading has brought substantial attention to ethical considerations in the academic literature. While the Stop Trading on Congressional Knowledge (STOCK) Act prohibits members of Congress and their staff from leveraging non-public information to make investment decisions, political insider trading still prevails. We discuss political ethics and social contract theory to re-engage the debate on whether political insider trading is unethical and raises the issues of conflict of interest and social distrust. Empirically, using a novel measure of information risk, we find that senator trades are associated with substantially high levels of information asymmetry. Moreover, based on inside political information, senators earn significant market-adjusted returns (4.9% over 3 months). Thus, our results do not support the prediction made by social contract theory and thereby provide a potential resolution to the ongoing debate on banning stock trading for members of Congress.

Hanousek, J., Jo, H., Pantzalis, C. et al. A Dilemma of Self-interest vs. Ethical Responsibilities in Political Insider Trading. J Bus Ethics (2022). **https://doi.org/10.1007/s10551-022-05265-0**

Market Manipulation

Private Information and Trading Speed

This paper analyzes the strategic competition between privately informed fast (FT) and slow traders (ST). In accordance with the overwhelming findings in the empirical literature, we find that the speed advantage of FTs has a beneficial effect on market liquidity as well as price efficiency. We obtain that FTs earn higher expected profits than their slower counterparts. We find that price volatility is non-monotonic with the number of fast traders and their relative speed. Finally, our

model estimates that the participation rate of the fast traders to the volume is large and increases with their speed advantage.

BOCO, Hervé and Germain, Laurent and ROUSSEAU, Fabrice, Private Information and Trading Speed. Available at SSRN: **https://ssrn.com/abstract=4240582** or **http://dx.doi.org/10.2139/ssrn.4240582**

Retail Trading around Earnings Announcements: Evidence from Robinhood Traders

Extending recent findings from Barber et al. (2022) and Welch (2022), we document that retail investors from the discount broker Robinhood swarm into stocks with pending earnings announcements and stay away from them immediately after the announcements. We study four competing explanations for this phenomenon: liquidity provision, informed trading, lottery preference, and herding by noise traders. We find strong evidence that, immediately around earnings announcements, Robinhood investors' behavior is primarily driven by attention-induced noise trading. Our results offer new insights into retail traders' motivation for trading when they face heightened uncertainty from earnings announcements.

Liang, Qiqi and Najand, Mohammad and Selover, David D. and Sun, Licheng, Retail Trading around Earnings Announcements: Evidence from Robinhood Traders (December 5, 2022). Available at SSRN: **https://ssrn.com/abstract=4294065** or **http://dx.doi.org/10.2139/ssrn.4294065**

Black mouth, investor attention and stock return

We investigate "black mouth" in the Chinese stock market, which is a form of manipulation based on disinformation, and examine how investors react to such behavior and its underlying impact mechanism. Black mouth temporarily leads to abnormal investor attention and triggers an abnormal stock return. From the perspective of information diffusion, we show that different types of manipulators lead to different reaction patterns by sending different credible signals. Media attention impacts investor attention more, while media sentiment has a greater impact on stock return. We also find that the market is more responsive to credible signals under stronger publicity supervision or a down-trending market situation.

Hong, Ziyang and Liu, Qingfu and Tse, Yiuman and Wang, Zilu, Black mouth, investor attention and stock return (November 1, 2022). Available at SSRN: **https://ssrn.com/abstract=4286697** or **http://dx.doi.org/10.2139/ssrn.4286697**

Short, Disclose, and Distort

We study the voluntary disclosure decision of activist speculators. They receive multi-dimensional information and endogenously choose trading positions. We embed these two features into a variant of the model in Dye (1985). We show that the speculator's disclosure is not monotonic in the underlying news. She discloses the news in both tails but conceals it in the middle. Moreover, this distortion in disclosure enables her to engage in manipulative short-selling, whereby she takes a short position despite receiving favorable news. The firm's response to the speculator's disclosure induces the speculator to disclose more good news but withhold more bad news.

Gao, Pingyang and Lu, Jinzhi, Short, Disclose, and Distort (November 21, 2022). Available at SSRN: **https://ssrn.com/abstract=4282975** or **http://dx.doi.org/10.2139/ssrn.4282975**

Does High Frequency Market Manipulation Harm Market Quality?

Manipulation of financial markets has long been a concern. With the automation of financial markets, the potential for high frequency market manipulation has arisen. Yet, such behavior is hidden within vast sums of order book data, making it difficult to define and to detect. We develop a tangible definition of one type of manipulation, spoofing. Using proprietary user-level identified order book data, we show the determinants of spoofing. Exploiting a Dodd-Frank rule change that exogenously reduced spoofing, we show causal evidence that spoofing increases return volatility, increases trading costs, and decreases price efficiency. The findings indicate that spoofing harms liquidity and price discovery.

Brogaard, Jonathan and Li, Dan and Yang, Jeffrey, Does High Frequency Market Manipulation Harm Market Quality? (November 18, 2022). Available at
SSRN: **https://ssrn.com/abstract=4280120** or **http://dx.doi.org/10.2139/ssrn.4280120**

Derivatives under market impact: Disentangling cost and information

This paper studies the role of market impact in option pricing theory through the non-restrictive case study of the existence of a large trader. Under market impact, the standard Black-Scholes model and unique risk-neutral pricing theory are no more applicable. We postulate then that there are two sides to the story: i) the transaction costs and ii) the information of the large trader about its own activity.

To disentangle these two factors, we define a hypothetical trader called the insider trader who has the same level of information as the large trader but does not bear any transaction costs. We show that there exist a set of probability measures, which we call information-neutral probabilities under which the discounted asset is a martingale for the insider trader. We then derive the optimal cost hedging program for the large trader and emphasize the importance of avoiding any market manipulation in the optimal hedge problem so that it does not become inherent to the model. We conclude with pricing models and numerical examples for both the large and insider trader.

Alimoradian, Behzad and Barigou, Karim and Eyraud-Loisel, Anne, Derivatives under market impact: Disentangling cost and information (May 14, 2022). Available at
SSRN: **https://ssrn.com/abstract=4262080** or **http://dx.doi.org/10.2139/ssrn.4262080**

Identifying and Characterising Opening Auction Manipulation

We identify the motivations, characteristics and effects of opening price manipulation using a unique sample of 906 manipulated opening auctions. Detailed order-level data document significant increases in order amendments and cancellations immediately prior to manipulated auctions. Using prosecuted manipulations, we develop an index of the probability of opening price manipulation. Applying our index to opening auctions to 2021, we show that potential manipulation remains a persistent issue, particularly around futures expiry dates. Our index can be used by regulators and exchanges seeking to identify potential opening price manipulation, as well as by researchers who lack access to prosecution data.

Duong, Huu Nhan and Foley, Sean and Kalev, Petko S. and Lim, Kinsoon, Identifying and Characterising Opening Auction Manipulation. Available at
SSRN: **https://ssrn.com/abstract=4247373** or **http://dx.doi.org/10.2139/ssrn.4247373**

The Value of Executive Visibility

We examine whether executive visibility signals executive ability using special purpose acquisition companies (SPACs) as a laboratory, allowing us to separate the executive's public profile from that of the firm. We capture visibility in the press, on the Internet, and on social media. We find that investors perceive visibility positively, as the most visible executives raise 35.8 percent more funds and close an IPO in a third less time than those least visible. At merger announcement, a one-standard-deviation increase in visibility is associated with a 2.9 percent increase in returns, but this performance is not sustained in the long-run. Institutional investors trade on visibility by selling all SPACs but those led by the most visible, a subset which they buy, pump up the price of, attract retail investors to, and dump prior to merger completion.

Dimitrova, Lora and Fong, Margaret, The Value of Executive Visibility (November 1, 2022). Available at SSRN: **https://ssrn.com/abstract=4264933** or **http://dx.doi.org/10.2139/ssrn.4264933**

The Price Impact from Order Revision: Evidence from Order Spoofing

In this study, we investigate the impact of price on high-frequency trading order spoofing. To overcome the empirical challenges of identifying tick-by-tick order submission and the price impact for the executed orders, we use comprehensive submission orders and unique linkage of order execution. The outcomes demonstrate a positive price impact following the traders' cancellation of the aggressive order and submission of more aggressive opposing orders, which was their intended order spoofing tactic. When the quotation spread is wide and the same side quote depth is small in the futures and options markets, the price impact of cancelled aggressive orders is larger. When daily volatility is low and a number of large cancelled aggressive orders in the futures market, the price impact is more obvious.

Chen, Jianqiang and Hsieh, Pei-Fang, The Price Impact from Order Revision: Evidence from Order Spoofing (September 15, 2022). Available at
SSRN: **https://ssrn.com/abstract=4304143** or **http://dx.doi.org/10.2139/ssrn.4304143**

The Algorithmic Future of EU Market Conduct Supervision: A Preliminary Check

Technological innovation, such as advancements in Artificial Intelligence (AI) within the ramification of algorithmic trading, has been shaping the organisation and operation of global capital markets. Whereas AI can contribute to more efficient markets, concerns are growing about its potential to undermine fair and orderly trading. Specifically, powered by Machine Learning (ML), increasingly autonomous, capable and sometimes black-box trading systems can expose markets to unprecedented risks of rampant and subtle forms of market manipulation that are difficult to detect and prosecute. By contrast, technological innovation can also assist financial regulators in mitigating some of these risks. In particular, market conduct supervisors can benefit from an incremental use of supervisory technology (SupTech), such as AI-based surveillance systems and tools, to enhance their ability to cope with algorithmic market manipulation. Therefore, in envisioning a paradigm shift in market conduct supervision towards an increased reliance on AI/ML methods and techniques, this chapter examines ongoing technological trends and addresses some of the legal and institutional challenges that EU policymakers and regulators will have to face to safeguard public confidence in the integrity of EU capital markets.

Azzutti, A. (2023). The Algorithmic Future of EU Market Conduct Supervision: A Preliminary Check. In: Böffel, L., Schürger, J. (eds) Digitalisation, Sustainability, and the Banking and Capital Markets Union. EBI Studies in Banking and Capital Markets Law. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-031-17077-5_2

Information Leadership in Financial Market

We explore information leadership in the financial market. We first study an endogenous network formation model in which traders link with each other before financial tradings. We show the only stable outcome is a star network in which every trader links to the same person. The centre of this star network, as an information leader, communicates hard information to every participant of the network, causing excessive volatility in the financial market. We then study active information leadership by allowing the information leader to manipulate the information at a cost. Even rational traders rely on the manipulated public information to make trading decisions, so the market price partially reflects the information leader's preference. The exact influence of the information leader increases with the risk aversion but decreases with the private information accuracy and market noise accuracy.

Bo, Wang and Suli, Zheng, Information Leadership in Financial Market. Available at SSRN: https://ssrn.com/abstract=4153782 or http://dx.doi.org/10.2139/ssrn.4153782

AI trading and the limits of EU law enforcement in deterring market manipulation

As in many other sectors of EU economies, 'Artificial Intelligence' (AI) has entered the scene of the financial services industry as a game-changer. A growing number of investment firms have been adopting AI, and particularly 'Machine Learning' (ML) methods, within the ramification of algorithmic trading. While AI/ML trading is expected to deliver several efficiency gains for capital markets, it also brings unprecedented risks for their safety and integrity due to some of its technical specificities and related additional uncertainties. With a focus on new and emerging risks of AI-driven market manipulation, this study critically assesses the ability of the EU anti-manipulation law and enforcement regime to achieve credible deterrence. It argues that AI trading is currently left operating within a (quasi-)lawless market environment with the ultimate risk of jeopardising EU capital markets' integrity and stability. It shows how 'deterrence theory', as a normative framework, can allow us to think of innovative solutions to fix the many shortcomings of the EU legal framework in the fight against AI-driven market manipulation. In concluding, this study suggests improving the existing EU anti-manipulation law and enforcement regime with a number of policy proposals. Namely, (i) an improved, 'harm-centric' definition of manipulation; (ii) an improved, 'multi-layered' liability regime for AI-driven manipulation; and (iii) a novel, 'hybrid' public-private enforcement institutional architecture through the introduction of market manipulation 'bounty-hunters'.

Alessio Azzutti, AI trading and the limits of EU law enforcement in deterring market manipulation, Computer Law & Security Review, Volume 45, 2022, 105690, ISSN 0267-3649, https://doi.org/10.1016/j.clsr.2022.105690. (https://www.sciencedirect.com/science/article/pii/S0267364922000371)

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